Fillmore and Piru Basins
Groundwater Sustainability Agency

Appendix C

List of Public Meetings and Response to Comments

Fillmore and Piru Basins
Groundwater Sustainability Agency

Appendix C-1

List of Public Meetings on GSP Development

FPBGSA Public Meetings on GSP Development		
Date	**Meeting Type**	**GSP Topics**
July 18, 2019	FPBGSA Board Meeting	GSP development update, roles and responsibilities of the GSA and Board Members
September 27, 2019	FPBGSA Board Meeting	GSP development update, Groundwater model progress
November 21, 2019	FPBGSA Board Meeting	GSP development update, draft Guiding Principles, C&E Plan
December 19, 2019	FPBGSA Board Meeting	GSP development update, C&E Plan
January 16, 2020	FPBGSA Board Meeting	GSP development update, C&E Plan, Sampling and Analysis Plan
February 20, 2020	FPBGSA Board Meeting	GSP development update, C&E Plan
April 16, 2020	FPBGSA Board Meeting	GSP development update, Sustainable Management Criteria (SMC)
May 21, 2020	FPBGSA Board Meeting	GSP development update, Groundwater Dependent Ecosystems (GDEs)
June 18, 2020	FPBGSA Board Meeting	GSP development update, groundwater model, management areas
June 25, 2020	Stakeholder Workshop	Introduction to SGMA, hydrogeological conditions, groundwater model, water budget
July 16, 2020	FPBGSA Board Meeting	GSP development update, water budget, future conditions
August 20, 2020	FPBGSA Board Meeting	GSP development update, future conditions, SMC
September 17, 2020	FPBGSA Board Meeting	GSP development update, future conditions
October 1, 2020	Stakeholder Workshop	SMC
October 15, 2020	FPBGSA Board Meeting	GSP development update, SMC
November 4, 2020	FPBGSA Special Board Meeting	SMC
November 19, 2020	FPBGSA Board Meeting	GSP development update, SMC
December 9, 2020	Stakeholder Workshop	Groundwater model
December 17, 2020	FPBGSA Board Meeting	GSP development update, SMC
January 21, 2021	FPBGSA Board Meeting	GSP development update, SMC
February 18, 2021	FPBGSA Board Meeting	GSP development update, SMC
March 18, 2021	FPBGSA Board Meeting and Stakeholder Workshop	GSP development update, GDEs, SMC
April 1, 2021	FPBGSA Special Board Meeting and Stakeholder Workshop	GDEs, SMC
April 15, 2021	FPBGSA Board Meeting	GSP development update, SMC

FPBGSA Public Meetings on GSP Development		
Date	**Meeting Type**	**GSP Topics**
May 6, 2021	FPBGSA Special Board Meeting	SMC
May 20, 2021	FPBGSA Board Meeting	GSP development update, SMC
June 10, 2021	FPBGSA Special Board Meeting	SMC
June 17, 2021	FPBGSA Board Meeting	GSP development update
July 15, 2021	FPBGSA Board Meeting	GSP development update
August 19, 2021	FPBGSA Board Meeting	GSP development update
September 17, 2021	Stakeholder Workshop	Draft GSP
September 23, 2021	FPBGSA Board Meeting and Stakeholder Workshop	Draft GSP
October 21, 2021	FPBGSA Board Meeting	GSP development update

Fillmore and Piru Basins
Groundwater Sustainability Agency

Appendix C-2

Response to Comments on the Draft GSP

Comment Letters on the Fillmore Basin Draft GSP

The Fillmore and Piru Basin Groundwater Sustainability Agency (FPBGSA) received the following comment letters and comments via its website. Each of the comments is included in and responded to on the following Response to Comments table. The full comment letters are available at the FPBGSA website at https://www.fpbgsa.org/comments-received-for-fillmore-basin/.

Letters:

1. Bondy Groundwater Consulting, Inc., September 29, 2021
2. Brokaw, Katie, October 2, 2021
3. California Department of Fish and Wildlife, October 8, 2021
4. California Trout, Inc., October 8, 2021
5. National Marine Fisheries Service, September 22, 2021
6. State University of New York College of Environmental Science and Forestry, University of California Santa Barbara, and Cardiff University, October 9, 2021
7. The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund, October 9, 2021
8. United Water Conservation District, October 8, 2021
9. Ventura County Public Works Agency, Watershed Protection, October 8, 2021

Comments Submitted Via Website:

A. California Department of Fish and Wildlife, October 8, 2021

RESPONSE TO PUBLIC COMMENTS - FILLMORE GSP

GSP	Letter No.	Comment No.	Commenter(s)	Date	Section	Page No.	Line No.	Topic	Comment	Response
Fillmore	1	1-1	Bondy Groundwater Consulting, Inc.	9/29/2021	NS	NS	NS	Principal aquifers	Two principal aquifers are proposed in the GSPs. The proposed "Main Aquifer" consists of "Aquifer Systems" A & B. The proposed "Deep Aquifer" consists of "Aquifer System" C. The terminology used in the GSP may not be appropriate and may create confusion for some readers. Specifically, how can an "aquifer" consist of one or more "aquifer systems"? It is recommended that the A, B, and C "Aquifer Systems" be referred to as zones or horizons instead to avoid confusion.	We concur that the usage of Aquifer, Aquifer System, and Aquifer Zone was potentially confusing. Upon consultation with the commenter, UWCD, and DWR, we have adjusted the language in the GSP to a single Principal Aquifer composed of Aquifer Zones A and B. Zone C is designated as a non-Principal Aquifer. References to Aquifer System(s) have been removed.
Fillmore	1	1-2	Bondy Groundwater Consulting, Inc.	9/29/2021	NS	NS	NS	Principal aquifers	The identification of multiple principal aquifers appears to be based exclusively on technical criteria without consideration of the management and cost implication. The technical reasons provided include: (1) "the distribution and extent of hydraulic properties (i.e., hydraulic conductivity) in the United (2021a) VRGWFM", (2) unconfined vs. semi-confined conditions, and (3) an aquitard between the B and C "Aquifer Systems". Given that there is only one "Aquifer System" C groundwater elevation monitoring well in each basin, it does not appear that sufficient data are available to evaluate the degree of confinement of "Aquifer System" C. Similarly, there are insufficient borehole data to conclude that the aquitard between "Aquifer Systems" B and C is continuous across the Basins. This is indicated by the GSP cross-sections, which do not depict geologic strata beneath "Aquifer System" B over large portions of the Basins due to a lack of data at depth.	See response to previous comment.
Fillmore	1	1-3	Bondy Groundwater Consulting, Inc.	9/29/2021	NS	NS	NS	Principal aquifers	It is unclear whether identification of the "Deep Aquifer" is consistent with the definition of the term "principal aquifer". (GSP Emergency Regulations § 351 (aa) defines "Principal aquifers" as aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems.) Specifically, it is unclear whether the "Deep Aquifer" transmits significant or economic quantities of groundwater to wells. The GSPs indicate that only 1 to 4% of verifiable pumping in the basins occurs from this zone. Furthermore, the GSPs refer to "Deep Aquifer" pumping as "minor" when discounting "Deep Aquifer" data gaps. At a minimum, the designation of the "Deep Aquifer" as a Principal Aquifer contradicts the statements about the "minor" pumping from the "Deep Aquifer".	Aquifer Zone C is no longer referred to as a Principal Aquifer. Although there are a few wells extracting from this zone, the quantity of water being pumped is not a predominant source in the basin.
Fillmore	1	1-4	Bondy Groundwater Consulting, Inc.	9/29/2021	NS	NS	NS	Principal aquifers	The most significant concern is the apparent lack of consideration of the management and cost implications of the decision to identify the "Deep Aquifer" as a separate principal aquifer. The GSP does not communicate what management objective(s) would be met by identifying the "Deep Aquifer" as a principal aquifer. Rather, the GSP argues the opposite - that there is little concern about the "Deep Aquifer" because there is only a minor amount of pumping sourced from it. It is unclear why this small amount of pumping requires special consideration in the GSPs and how identifying separate principal aquifers furthers management of the basins. Moreover, the GSP does not consider the costs for complying with the additional self-imposed requirements that come with this decision. Specifically, the GSP Emergency Regulations require the following for each Principal Aquifer: 1. Hydrogeologic Conceptual Model GSP Section: a. General water quality b. Vertical and lateral extent 2. Groundwater Conditions GSP Section: a. Groundwater elevation contour maps b. Groundwater elevation hydrographs c. Hydraulic gradients between the Principal Aquifers 3. Monitoring Network: a. Sufficient density of monitoring wells to collect representative measurements in each Principal Aquifer to: i. Demonstrate groundwater flow directions ii. Demonstrate water quality iii. Calculate hydraulic gradients between Principal Aquifers 4. Annual Reports: a. Change in storage for each Principal Aquifer	See responses to comments 1-1, 1-2, and 1-3.
Fillmore	1	1-5	Bondy Groundwater Consulting, Inc.	9/29/2021	NS	NS	NS	Sustainable yield	The sustainable yields presented in the GSPs are based on the "pumping minus change in storage" approach applied to the water budget data. This approach underestimates the sustainable yield because it ignores the fact that the basins refill completely periodically and reject potential recharge during such periods. Simply stated, the basins could recover with higher pumping rates than used in the water budgets. Modeling results presented during various meetings have demonstrated this fact very clearly. Moreover, the basins experienced deeper groundwater levels prior to the historical water budget period without reported undesirable results, further suggesting that the sustainable yield is greater than that which results from a strict application of the "pumping minus change in storage" mathematics. Ideally, the sustainable yield would be estimated using numerical model simulations designed to estimate the true potential and resiliency of the basins. If this is not feasible in the time remaining for GSP completion, then it is recommended that the GSPs be updated to caveat the sustainable yield values as noted above.	- The "pumping minus change in storage" calculation is considered a minimum sustainable yield estimate (based on 50 year historical record adjusted for 2070CT climate change and associated increased pumping demand. The change in storage SMC will be updated to reflect using GW levels as a proxy.

RESPONSE TO PUBLIC COMMENTS - FILLMORE GSP

GSP	Letter No.	Comment No.	Commenter(s)	Date	Section	Page No.	Line No.	Topic	Comment	Response
Fillmore	1	1-6	Bondy Groundwater Consulting, Inc.	9/29/2021	NS	NS	NS	Data gaps	GSP Emergency Regulations § 351(l) defines "data gaps" as a "lack of information that significantly affects the understanding of the basin setting or evaluation of the efficacy of Plan implementation and could limit the ability to assess whether a basin is being sustainably managed." A potential interpretation of this definition is that anything identified as a "data gap" would need to be addressed during GSP implementation. The GSP Emergency Regulations make this clear for the monitoring network - "data gaps" must be addressed within five years following GSP adoption (GSP Emergency Regulations § 354.38(d)). A concern is that the term "data gap" is used in the GSP to describe data limitations that are not necessary to address to sustainably manage the Basins and for which the GSA has no plan to address. It is recommended that each use of the term "data gap" be carefully reconsidered to determine if the item in question is really a data gap as defined by the GSP Emergency Regulations. It is recommended that any items that are not truly data gaps (as defined by the GSP Emergency Regulations) and/or that the GSA is not committed to addressing be characterized using a different term, such as "data limitation" or "potential data gap."	"Data gaps" usage will be revised to only reflect HCM and SMC items that limit implementation of the GSP and assessment of sustainability. References to "data gaps" altered to "potential data gaps", where appropriate.
Fillmore	1	1-7	Bondy Groundwater Consulting, Inc.	9/29/2021	2.2.2.7, 3.2.5	NS	NS	Depletions of interconnected surface water - calculations	Calculations of interconnected surface water depletion are presented in Section 2.2.2.7 and referred to in Section 3.2.5. These calculations were developed by running the VRGWFM with historical pumping rates and comparing to a second simulation which employed a hypothetical 50% reduction in basin wide pumping. Appendix J discussed changes in streamflow using a similar analysis that eliminated pumping within 1 mile of the Santa Clara River. Both approaches do not calculate the full amount of depletion, as seems to be required by the GSP Emergency Regulations. In particular, indirect depletion2 is being underestimated. It is recommended that the analysis be revised to include removal of all pumping to fully estimate depletions. Doing so will ensure compliance with the GSP Emergency Regulations and provide a more robust technical basis and transparency for the decision to screen out the depletions of interconnected surface water sustainability indicator.	Our interpretation of the Emergency Regulations are a bit more pragmatic. The goal is to quantify the amount of surface water depletion due to groundwater extractions, which for this basin is possible at the East Grove and Fish Hatchery areas. The relationship between surface water flow (i.e., rising groundwater) is approximated by the empirical relationships between water levels in key wells and manual surface water flow measurements. The manual measurements are constrained to some upper limit that incorporates consideration of personnel safety while gathering the flow data. Hence the data in Figures 2-4 and 3-16 in Appendix J have upper flow rates at or near 50 cfs. The empirical relationship does not extend beyond this value, so if the water levels in the key wells rise to an elevation that falls outside the range of the field measurement (due to the hypothetical elimination of all groundwater extractions in the groundwater flow model), we do not currently have a mechanism to quantify that flow rate. The best available information for this topic is the empirical relationship.
Fillmore	1	1-8	Bondy Groundwater Consulting, Inc.	9/29/2021	3.2.5	NS	NS	Depletions of interconnected surface water - SMC	The justification for not developing SMC for the depletions of interconnected surface water sustainability indicator can be better described. Only a few sentences are devoted to this critical decision. The concern is that the basis for not developing SMC will be unclear to those who did not directly participate in the planning process, including certain stakeholders and DWR reviewers. It is suggested that Section 3.2.5 be expanded to more fully present the rationale for not developing depletions of interconnected surface water SMC. For example, Point No. 2 in Section 3.2.5 should be supported with appropriate references. Pertinent information from the Stillwater memo appendix could be summarized here together with a more detailed description of why the decision to not develop depletions of interconnected surface water SMC is not inconsistent with designation of the Santa Clara River as critical habitat for steelhead. Lastly, consider more fully describing the process for reaching the decision. More description of the number of meetings this matter was discussed, outreach, feedback received, etc. could be included to support the decision.	See the updated language in Appendix J, Section 3.6.5 and GSP Section 3.2.1.
Fillmore	1	1-9	Bondy Groundwater Consulting, Inc.	9/29/2021	Appendix J, Section 3.6.5	NS	NS	Depletions of interconnected surface water - SMC	Appendix J, Section 3.6.5 makes the argument no significant and unreasonable effects will occur because estimated past and future depletion rates are similar. This logic is questionable. For example, could GSAs in the Central Valley continue with subsidence so long as the subsidence rates are less than or equal to historical rates? Probably not. A potentially stronger argument may be that there have not been reported undesirable results historically and depletion rates are not projected to increase; therefore, undesirable results are not expected in the future. The lack of reported undesirable results should be emphasized and supported in the GSP and appendix to provide a more solid basis for not developing depletions of interconnected surface water SMC.	The rate of subsidence is not similar to rate of ISW depletions (the rate of ISW depletion at East Grove and Fish Hatchery areas fluctuates within a range of values through time), while a constant rate of subsidence will result in cumulatively worse conditions over time. Section 3.6.5 in Appendix J has been revised to expand on the rationale for not developing a MT.
Fillmore	1	1-10	Bondy Groundwater Consulting, Inc.	9/29/2021	NS	NS	NS	Degraded water quality - SMC	The GSP establishes minimum thresholds and measurable objectives for degraded water quality but then says the GSA is not responsible for meeting them. This approach does not appear to be consistent with the GSP Emergency Regulations because it does not address any degradation that could be caused by pumping or plan implementation. DWR has been very clear that GSPs must address any potential degradation that may be caused by pumping or plan implementation. The GSPs do not provide information concerning whether pumping or plan implementation can potentially cause water quality degradation. If there is no nexus between water quality degradation and groundwater pumping or plan implementation, then the GSPs should present the technical evidence, clearly state there is no nexus, and use this information to further justify the approach for this sustainability indicator. If there is potential for groundwater pumping or plan implementation to degrade water quality, then the GSPs should describe that potential and caveat the SMC by saying the criteria only apply if GSA determines that the degradation in question is being caused by pumping or plan implementation. This is the approach taken by several other GSAs.	Section 3.3.4 of the GSP states that the GSA will continue the water quality monitoring program during GSP implementation to assess if any observed material water quality changes are caused by the implementation actions. Neither historical or current extraction rates or water levels have resulted in undesirable GW quality results. The GSP does not propose any projects or management actions that would change the groundwater extraction regime in the basin.

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GSP	Letter No.	Comment No.	Commenter(s)	Date	Section	Page No.	Line No.	Topic	Comment	Response
Fillmore	1	1-11	Bondy Groundwater Consulting, Inc.	9/29/2021	3.2.3.1, 3.3.1	NS	NS	Chronic lowering of groundwater levels	Section 3.2.3.1 of the GSPs states that an undesirable result for chronic lowering of groundwater levels occurs when groundwater elevations drop below the bottom of well perforations (i.e., screen) in 25% of the representative monitoring sites. Section 3.3.1 goes on to say that "the Agency acknowledges wells going dry is an undesirable result, yet, a certain number of shallow water wells (i.e., less than 100 ft deep) going dry is acceptable (see DBS&A, 2021c [Appendix J]). A concern is that justification for the 25% criterion and "a certain number of shallow water wells going dry" is not supported by an analysis of impacts on beneficial uses. There is a concern that the DWR reviewers may conclude that there is insufficient justification for this criterion. It is suggested that the GSP be expanded to include a description of the effects on beneficial uses that would be expected if groundwater levels reached the minimum threshold levels and to provide justification for why those effects are not considered to be significant and unreasonable.	See Appendix J Section 3.3.1.1 for adjusted language that has been brought forward into the GSP.
Fillmore	1	1-12	Bondy Groundwater Consulting, Inc.	9/29/2021	3.3.2, 3.4 Appendix J	NS	NS	Reduction of groundwater storage	The GSP text and SMC Appendix (Appendix J) are in conflict. The GSP text (Section 3.3.2) uses the sustainable yield for the minimum threshold. In contrast, Appendix J uses groundwater levels as a proxy and adopts the minimum thresholds for the chronic lowering of groundwater levels sustainability indicator. The GSP text (Section 3.4) does not establish a measurable objective. In contrast, Appendix J uses groundwater levels as a proxy and adopts the measurable objective for the chronic lowering of groundwater levels sustainability indicator. The approach proposed in Appendix J is preferred because of the sustainable yield values presented in the GSPs understate the true pumping potential of the basins, as discussed in an earlier comment.	We have adjusted the text to remove the conflict.
Fillmore	1	1-13	Bondy Groundwater Consulting, Inc.	9/29/2021	NS	NS	NS	Implementation costs	Implementation costs were not included in the draft GSP. These should be made available as soon as possible for stakeholder review.	Full implementation costs can be developed once the Mitigation Plan for supplying supplemental groundwater supplies to the Cienega Springs Restoration project has been prepared and the Board of Directors has the opportunity to consider the other projects identified in Section 4 of the GSP.
Fillmore	1	1-14	Bondy Groundwater Consulting, Inc.	9/29/2021	3.2.2, 3.2.3	NS	NS	Groundwater levels and quality	GSP Sections 3.2.2 state that "water quality degradation beyond historical conditions" is an undesirable result. GSP Sections 3.2.3 state that "groundwater levels changes (i.e., declines) can extend to any of the applicable undesirable results. When considering these statements together, there is an implication that a causal relationship between groundwater levels and groundwater quality exists. The GSPs do not provide technical information to justify or refute a causal relationship between groundwater levels and groundwater quality. More information should be provided in the GSPs to clarify whether declining groundwater levels cause groundwater quality degradation. The statement in Section 3.2.3 should be revised if it is concluded that declining groundwater levels do not cause groundwater quality degradation.	Pumping does not have an evident impact on GW quality, based on analysis of GW level and quality trends (Appendix K, Section 2.2.2.5.2). The documented historical fluctuations in water levels have not resulted in undesirable results.
Fillmore	2	2-1	Katie Brokaw	10/2/2021	NS	NS	NS	Stakeholder engagement	The GSP seems too succinct in describing the process the GSA and stakeholders went through to develop the Plan. Because the Plan doesn't adequately reflect the great effort behind the Plan, it may result in an avoidable DWR review. DWR should be informed of how much we struggled with key issues for countless hours and how much the GSA engaged with stakeholders to resolve those issues. Otherwise they may conclude that the Plan is simply a "box-checking" exercise and initiate an unnecessary review.	See sections 2.1.5 and 3.2. Further description of stakeholder involvement in GSP development has been added to Section 2.1.5.3.
Fillmore	2	2-2	Katie Brokaw	10/2/2021	NS	NS	NS	Sustainable yield	The approach that the consultants took significantly underestimates the true resiliency and potential of the Fillmore Basin. As indicated by early model runs, this basin can refill with more pumping. I would therefore encourage the consultants to use those model runs where there was a lot more pumping and the Basin still recovered as the basis for our Sustainable Yield. The point should be clearly articulated that our Sustainable Yield is actually much higher than the one the consultants used, which is based on historical water budget.	We have adjusted that language in Section 2.2.3.7 to clarify that the sustainable yield estimate is a minimum value.
Fillmore	2	2-3	Katie Brokaw	10/2/2021	NS	NS	NS	Aquifer designations	It seems unnecessary to break out the deep aquifer C from the other combined category of Aquifers A & B. We are not using the deep aquifer C significantly (only between 1% and 4% of our supply) but breaking it out as a separate principal aquifer will add costs and monitoring effort for an insignificant source. I would suggest combining it with the A & B aquifer category.	See responses to comments 1-1, 1-2, and 1-3.

RESPONSE TO PUBLIC COMMENTS - FILLMORE GSP

GSP	Letter No.	Comment No.	Commenter(s)	Date	Section	Page No.	Line No.	Topic	Comment	Response
Fillmore	2	2-4	Katie Brokaw	10/2/2021	NS	Various pages referenced - see comment text	Various line numbers referenced - see comment text	Data gaps	As I understand it the regulatory definition of "data gap" is a lack of data that significantly impairs our ability to manage the aquifer sustainably. It appears that the consultants in a number of places in the GSP used the term data gap inappropriately when they lacked information or had limited data about something that does not impact our ability to sustainably manage the basin. For example in Section 2-41 lines 2-6, the text reads: "Data gaps exist for the hydraulic gradients between the Main and Deep principal aquifers throughout the Basin that would help refine the HCM; however, these data gaps are not considered significant enough to prevent this Plan from demonstrating that the Basin can be managed sustainably, especially because relatively little groundwater is used from the Deep Aquifer." If the lack of information on the hydraulic gradients is not considered significant enough to prevent the Basin from being managed sustainably, then that lack of information is not, by definition, a "data gap" and therefore, should not be referred as such. It seems to me other instances of the improper use of "data gap" occurred as follows: Section 2-59 starting at Line 20, Section 2-38 starting at Line 3, Section 3-16 starting at Line 7, Section 2-37 starting at Line 24, Section 3-15 staring at Line 9, Section 2-56 starting at Line 16, Section 3-29 starting at Line 17. I would ask the consultants to carefully review their use of "data gap" at these places in the GSP to be sure they are referring to true "data gaps" and not simply to areas where they lack information that is not critical to sustainable management (i.e. "nice to know" but not essential to sustainability).	See the repsonse to comment 1-6. Section 2 and 3 of the GSP have been updated accordingly.
Fillmore	3, A	3,A-1	California Department of Fish and Wildlife (CDFW)	10/8/2021	2.2.1.6, Appendix K	2-37; Appendix K page 132	23-28	Hydrologic Conceptual Model (HCM) data gaps	There is insufficient information in the Draft GSP about the hydrologic interconnection between the shallow aquifer and the Main aquifer. Page 2-37 of the Draft GSP states, "*Data gaps (Figure 2.2-15) in the HCM comprise a lack of groundwater level data in the shallow groundwater of the Main Aquifer along the streams (e.g., Santa Clara River and Sespe Creek), and a lack of groundwater level data in the Deep Aquifer. The shallow groundwater data gaps in the stream areas will be addressed with the installation of monitoring wells by the Agency (per DWR Grant Funding) and installation of shallow monitoring wells by UCSB (Stillwater, 2021b)*". CDFW appreciates the efforts the GSA undertook to analyze the Basin in terms of geologic and hydrogeologic characterization. CDFW also appreciates FBGSA's proposed plans to utilize the updated HCM to fill in the data gaps and deficiencies identified in the Draft GSP. However, there is a need for a better understanding of the interactions between interconnected surface water and groundwater particularly in the GDE areas (Cienega Riparian Complex Area, East Grove, Fillmore Basin Santa Clara River Riparian Shrubland, Sespe Creek, Fillmore Basin Tributary Riparian). Additional clarification is needed in the final GSP along with a description of future assessments on how this data gap will be addressed. Recommendation #1(a): Accurate hydrogeologic modeling requires an accurate and complete data set. CDFW recommends the installation of shallow groundwater monitoring wells near potential GDEs and interconnected surface waters. Recommendation #1(b): CDFW also recommends pairing multiple-completion wells with additional streamflow gages to facilitate an improved understanding of surface water- groundwater interconnectivity and subsurface recharge channels. CDFW agrees with the FBGA proposal to install more multiple-well monitoring facilities across the basin. The Draft GSP states that "*Construction of twenty of these facilities equally spaced across the Basins would greatly decrease GSP analysis uncertainty and would be consistent with the DWR's data quality recommendations but would likely be cost prohibitive for FPBGSA rate payers in the Fillmore and Piru Basins.*" (Page 3-33, Lines 22-25, Draft Text). CDFW recommends the FBGA commit to a more modest number of strategically placed well monitoring facilities in the Project and Management Actions.	- Surface water occurs at limited areas during various time periods. The only perennial surface water areas are the East Grove, followed by Cienega Riparian Complex (which goes dry during drought periods). The other GDE areas depend on groundwater and occasionally have surface water present nearby. - RE: Recommendation #1(a) - the GSA plans to install shallow GW monitoring wells near the GDEs - RE: Recommendation #1(b) - streamflow gages have been considered infeasible (UWCD, 2006, 2016b) in the SCR and lower Sespe Creek channels by USGS, Ventura County and United. Multi-completion wells are not necessary (only clustered, single-completion wells are necessary) for understanding shallow GW levels near/beneath GDEs. The difficulty of maintaining streamflow gages within the basin prevents characterization of potential interconnected SW, with the limited exception of identifying surface water with aerial imagery and/or field mapping.

RESPONSE TO PUBLIC COMMENTS - FILLMORE GSP

GSP	Letter No.	Comment No.	Commenter(s)	Date	Section	Page No.	Line No.	Topic	Comment	Response
Fillmore	3, A	3,A-2	California Department of Fish and Wildlife (CDFW)	10/8/2021	Appendix D, Section 6.4.3	Appendix D page 111	NS	Groundwater Dependent Ecosystems	Monitoring of groundwater levels and vegetative health is only considered for two of the five riparian GDE units. Page 111 of Appendix D states, "The evaluations of the GDE units in the Fillmore and Piru basins suggests that the following units are the most important for inclusion in the GSP analyses and the development of Sustainable Management Criteria: Del Valle, Cienega, and East Grove". Since the Del Valle GDE is located in the Piru Basin CDFW will focus on the Cienega and East Grove GDE located in the Fillmore Basin in this letter. The Draft GSP has done a thorough analysis of identifying ecosystems that potentially rely on groundwater known as "indicators of groundwater dependent ecosystems" (iGDEs). CDFW is concerned with the Draft GSP's wording of "inclusion" of GDEs in the Basin. Five areas within the Basin were mapped as containing iGDEs (Appendix D, Section 6.2.2, Fillmore Groundwater Basin, Page 88). They are as follows: • Area 1 – Cienega Riparian Complex Area: 133.6 acres with mulefat and giant reed; • Area 2 – East Grove: 1,101.9 acres with dense riparian forest with mulefat, black cottonwood, and red willow; • Area 3 – Fillmore Basin Santa Clara River Riparian Shrubland: 1,046.0 acres with lower density and low- stature shrubs and is dominated by mulefat; • Area 4 – Sespe Creek: 103.4 acres with mixed hardwood and low-stature willows; and, • Area 5 – Fillmore Basin Tributary Riparian: 196.6 acres with coast live oaks and hardwoods. The FBGA utilized three categories when evaluating groundwater dependence of iGDEs: unlikely, possible, and certain. The FBGA determined that only the Cienega Riparian Complex Area and East Grove Area are certain to be groundwater dependent. The Santa Clara Riparian Shrubland GDE and Sespe Creek Riparian GDE were categorized as having possible groundwater dependence. The Fillmore Basin Tributary Riparian GDE Unit was categorized as unlikely to be groundwater dependent. The FBGA indicated that the Santa Clara Riparian Shrubland GDE was located where "Intermittent surface water flows are likely not interconnected with groundwater" (Appendix D, Page 110). The FBGA indicated that the Sespe Creek Riparian GDE was located where "Surface water flows are perennial for the upper portions of the reach and intermittent downstream. The connection to groundwater in the upper portion is unknown but unlikely" (Appendix D, Page 110).	- Shallow GW monitoring wells are proposed near the other GDEs and the significance of GW depth on GDE health (measured using NDVI) can be evaluated in the future.
		3,A-2 (cont'd)							The Draft GSP is using words such as "likely not connected" and "unknown but unlikely" to rule out GDEs from further monitoring because there are data gaps in the monitoring system. The elevation and movement of subsurface flow is uncertain as is the interconnectivity of surface water relative to shallow aquifers and the main aquifers. CDFW believes the shallow perched groundwater, shallow alluvium, and surface water can still be connected to groundwater and hydrologic connectivity cannot be ruled out. These sources of water could be impacted in the future by new production wells that would adversely affect these GDEs. Water Code § 10721 (x)(6) requires GSPs avoid significant and unreasonable adverse impacts to beneficial uses of surface water including aquatic ecosystems reliant on interconnected surface water. If hydrologic-connectivity exists between a terrestrial or aquatic ecosystem and groundwater, then that ecosystem is a potential GDE and must be identified in a GSP. [23 CCR§354.16 (g).] Hydrologic-connectivity between surface water and groundwater, as well as groundwater-accessibility to terrestrial vegetation, must, therefore, be evaluated carefully, and conclusions should be well-supported. Hydrologic-connectivity considerations include connected surface waters, disconnected surface waters and transition surface waters. According to The Nature Conservancy (TNC), "if pumping is concentrated in deeper aquifers, SGMA still requires GSAs to sustainably manage groundwater resources in shallow aquifers, such as perched aquifers, that support springs, surface water, domestic wells, and GDEs (Figure 2). This is because vertical groundwater gradients across aquifers may result in pumping from deeper aquifers to cause adverse impacts onto beneficial users reliant on shallow aquifers or interconnected surface water" (TNC 2019). CDFW believes shallow perched aquifers, intermittent surface flows and shallow alluvial aquifers, although rarely used for a water supply, are extremely important to the ecological communities or species that depend on groundwater emerging from all aquifers or from groundwater occurring near the surface within the Basin.	

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GSP	Letter No.	Comment No.	Commenter(s)	Date	Section	Page No.	Line No.	Topic	Comment	Response
Fillmore		3,A-2 (cont'd)							Recommendation 2(a): CDFW recommends the five areas within the Basin that were mapped as containing potential GDEs be included in the Final GSP as GDEs because these areas rely on the shallow perched groundwater, bedrock groundwater and/or surface water within the Basin. The FBGA has not provided enough data to make the assertion that the groundwater interaction with these GDEs should remain omitted. Water in the shallow alluvial aquifer can also percolate to the main aquifer below. As groundwater pumping occurs from the principal aquifer, water from the shallow alluvial aquifer can become depleted as it recharges the principal aquifer. These are important contributions to sustaining these habitats and Areas 3, 4, and 5 should be reinstated in the Final GSP as GDEs. This shallow alluvial "aquifer" needs to be protected under SGMA. If these GDEs are adversely impacted, groundwater plans should be in place to facilitate appropriate and timely monitoring and management response actions. Recommendation 2(b): CDFW recommends that the best scientific data on depth to groundwater be included in the analysis of interconnected surface waters before any data is excluded. USGS mapped springs/seeps and comparisons of recent groundwater level contours to vegetation root zones should also be included in the analysis. Mapping GDEs and other beneficial uses is an essential component in the consideration, development, and implementation of GSPs (Water Code §10723.2) and in assessing the potential effects on groundwater beneficial uses. GSAs must also include sustainable management criteria and monitoring to detect adverse impacts on all groundwater beneficial users. Recommendation 2(c): CDFW recommends using Normalized Difference Vegetation Index (NDVI) and Normalized Difference Moisture Index (NDMI) to assess habitat health for all five areas on an annual basis and should inform the revision of both the planning and minimum thresholds for the representative wells to within or near the historic baseline. CDFW does not recommend relying solely on soils information. For example, the presence of sandy, dry, and friable soils, does not mean that existing plant species do not rely on groundwater for some portion of their life cycle. Capillary fringe associated with root networks from native plants could be accessing groundwater from deeper depths.	A)There isn't any evidence that potential GDEs rely on perched groundwater or groundwater from the bedrock. The Riparian Shrubland GDEs are mostly comprised of mulefat and other plants that combine shallow roots (< 2 ft) with low water requirements. These plants are generally located where groundwater is 5-10 ft at its shallowest, and generally deeper , based on the new depth to water map in Fall 2011 (ie., the roots are located above the groundwater elevation and the capillary fringe). They are outside the area of mapped rising groundwater and typically do not support surface flow. The plants that make up this GDE may use groundwater during wet years given some uncertainty in the elevation of groundwater, but if groundwater were typically within the rooting zone, the dominant vegetation likely be cottonwoods and willows. B)The depth to groundwater map has been updated using Fall 2011 groundwater contours provided by United Water, based on the assumption that this wet year represents the highest summer groundwater levels in the basin. A discussion of the depth relative to rooting zones has been added to the GSP. C)NDVI and NDMI monitoring of the potential GDE sites has been included in the monitoring program.
Fillmore	3, A	3,A-4	California Department of Fish and Wildlife (CDFW)	10/8/2021	Appendix K, Section 6.2.1	Appendix K page 136		Fish Hatchery pumping	CDFW is concerned that the Fillmore Fish Hatchery pumping is overquantified. The FBGA states on page 136 that "…there is potential that Fish Hatchery groundwater pumping which constitutes the largest pumping by a single entity in the basins for some years may complicate interpretation of water level data gathered from a new monitor well facility (i.e., measured water levels may not be representative static water levels if they are significantly influenced by the nearby pumping)." Although the Draft GSP identifies the Fish Hatchery as the largest pumping entity (pg. 136), impacts to groundwater levels are substantially minimized by returning pumped water to the main aquifer for recharge. Most of the water pumped from CDFW groundwater wells enter the fish hatchery raceway to sustain young fish. Although some water is lost from evaporation after entering the raceway, the majority of pumped well water is returned to the groundwater system via soil saturation and percolation. CDFW agrees with the FBGA's concern (pg. 136) that the Fish Hatchery production well has the potential to interfere with the accuracy of data collected from the shallow monitoring wells. The Fish Hatchery well is screened at the 300-foot-level whereas the shallow monitoring wells have been proposed at the 100-foot-level. The cone of depression from the Fish Hatchery production well has the potential to skew data as the surrounding areas of the production well in aquifer are slowly replenished. Recommendation #3(a): CDFW recommends the final GSP accurately quantify pumping activities at the Fillmore Fish Hatchery using both pumping and return flow quantities that recharge the aquifer when evaluating impacts to the groundwater. The rising groundwater area around the Fish Hatchery should retain sufficient water levels to protect both the pumping of water and key GDEs as suggested on page ES-1 of the Draft GSP. Recommendation #3(b): CDFW recommends the FBGA investigate adding additional shallow aquifer monitoring wells away from the vicinity of the Fish Hatchery production well to generate additional monitoring data that will accurately identify groundwater pumping trends, interactions, or interferences.	The Fish Hatchery pumping is self reported and quantified in a consistent manner as other wells in the Basin. - RE: Recommendation #3(a) - pumping is accurately measured; return flows are not measured by CDFW, UWCD, or VCWPD, however return flows were included in the groundwater flow model. measured and commonly quantified/estimated based on GW model calibration - RE: Recommendation #3(b) - The GSA can consider additional monitoring wells at locations that assist in the managment of the groundwater resources and are included in Section 4 of the GSP.

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Fillmore	3, A	3,A-5	California Department of Fish and Wildlife (CDFW)	10/8/2021	4.1	4-2	23-27	Mitigation	CDFW has not engaged in meaningful discussions of Basin overdraft mitigation with FBGA regarding SGMA project and management actions at the Cienega Springs Ecological Reserve. Page 4-2 of the Draft GSP states, "The FPBGSA desires to dampen the impacts of groundwater extraction by supporting the restoration efforts at the Cienega Restoration Project. The primary action being considered by the FPBGSA is to provide supplemental groundwater to the restoration program during multiyear droughts when the shallow groundwater levels decline to below the Critical Water Level" (Draft Text, Page 4-2). Page 4-2 of the Draft GSP also states, "FPBGSA staff have engaged with CDFW representatives about this project and the conversations are continuing. A detailed Mitigation Plan will be developed after the GSP has been adopted by the FPBGSA and the GSP submitted to DWR for their review (Jan 2022)" (Draft Text, Page 4-2). CDFW had a meeting on July 12, 2021 to talk about the Cienega Riparian Complex Area with members of TNC and FBGA. Beyond any initial discussions, CDFW has not received detailed information on FBGA's mitigation proposal. CDFW is open to discussing FBGA's potential mitigation projects or management actions that may include the construction of a production well on CDFW property. CDFW believes the Cienega Riparian Complex is situated in an area of rising groundwater. This Cienega Riparian Complex should retain sufficient water levels to protect key GDEs as suggested on page ES-1 of the Draft GSP except during "below normal years of precipitation". During instances of "below normal years of precipitation," the Cienega Riparian Complex has the potential to remain resilient through project and adaptive management actions. Recommendation #4(a): CDFW recommends the installation of additional shallow monitoring wells to inform specific trigger levels and thresholds requiring adaptive management actions. Recommendation #4(b): CDFW recommends the FBGA consider alternate project and management actions as opposed to a production well on CDFW property such as: i) reduced groundwater pumping; ii) implement groundwater pumping allocations; iii) implement Arundo donax removal; and iv) increase the quantity of imported water. CDFW looks forward to discussing these project and management actions to achieve groundwater sustainability within the Basin. Recommendation #4(c): CDFW proposes the final GSP incorporate Recommendation #3(b).	The Basin is not in overdraft. CDFW representative(s) are aware of and have attended FPBGSA Board meetings, where discussion among Board members and stakeholders has occurred regarding potential mitigative actions at the Cienega Springs Restoration Project area. The Board, in consultation with stakeholders, determined that a mitigation project of supplemental water for GDE support during droughts is the best solution for all beneficial users and uses of groundwater. GSA staff have met with CDFW representatives on at least two occassions to outline the proposed mitigative program. The current high-level mitigation plan is to provide supplemental water (from an existing deep well) to restoration experts (i.e., CDFW, TNC) who already have invested time and money in formal plans to make GDEs more resiliant and have jurisdiction over and expert knowledge regarding the best use of water for GDEs. - Recommendation #4(a) - shallow MWs are proposed and planned to be installed at the CSRP area. - Recommendation #4(b) - (i) pumping reductions have been shown to be ineffective at providing total mitigation of declining water levels in prolonged droughts and functionally shift the total impact of drought-induced water level declines to groundwater pumper (including the Fish Hatchery operations). Pumpers have no control over drought-induced groundwater declines, (ii) pumping allocations are not considered reasonable by the Board and merely shift the undesirable impacts from one beneficial user group to others. An allocation program could mean that the Fish Hatchery operations would be subject to a reduction in its groundwater extractions, also. Allocations would also impact the DACs in the basin. Allocations are not favored given the ability to use supplementabl water to mitigate GDE dieoff and reduce undesirable results on GW pumpers (i.e., the economy); (iii) and (iv) are being considered by the Board following GSP adoption. - Recommendation #4(c) - see response to comment 3,A-4
Fillmore	3, A	3,A-6	California Department of Fish and Wildlife (CDFW)	10/8/2021	3.2.5	3-7	3-13	SMC - southern California steelhead	CDFW is concerned the depletion of interconnected surface waters will have undesirable impacts on the Federal Endangered Species Act (ESA)-listed southern California steelhead (Oncorhynchus mykiss or steelhead). The FBGA states on page 3-7, lines 3-13 "The Agency deliberated extensively to determine if undesirable results related to the depletion of interconnected surface water, namely loss of Steelhead rearing and spawning habitat along the Santa Clara River as a sustainability indicator, is a significant and unreasonable effect of groundwater conditions. Ultimately, the Agency does not consider this a significant and unreasonable effect related to depletions of interconnected surface water because: (1) there is no designated existing or potential beneficial use for spawning and rearing along the Santa Clara River in the Basin per the LARWQCB Basin Plan (LARWQCB, 1994); (2) there is no evidence of these fish using the surface water (except during major flood events when the Santa Clara River is fully connected with runoff); and (3) even severe (i.e., 50%) pumping reductions would not prevent the surface water at Cienega Riparian Complex from going dry during severe droughts". The Santa Clara River is designated as critical habitat for the survival of steelhead and contains important steelhead spawning and rearing habitat in Southern California (NMFS 2021). The Southern California Steelhead Recovery Plan published in January 2012 by the National Marine Fisheries Service (NMFS) identified the Santa Clara River as one of the highest priority sites for recovery actions, as one of the most likely to sustain independently viable populations, and as critical for ensuring viability of the species as a whole (NMFS, 2012). Threats to steelhead, such as excessively high-water temperatures in the spring, summer, and early fall, reduce available juvenile rearing habitat. Low flows in the fall and winter can delay adult passage to critical spawning areas. CDFW is concerned that groundwater overdraft will lead to losing streams, temperature increases, diminishing refugia pools, and a lack of connectivity flows needed for steelhead migration. Recommendation #5: CDFW believes the Sustainable Management Criteria (SMC) needs to be revised to implement measures that will protect against significant and unreasonable effects related to depletions of interconnected surface water that have been identified in the Basin. Minimum thresholds and measurable objectives for the SCR are important tools that SGMA has provided to quantify groundwater conditions and ensure groundwater sustainability. Monitoring the temperature of the Santa Clara River, which is critical to steelhead survival, is a much-needed component in the Final GSP.	- Depletion of ISW is considered not unreasonable per SWRCB designations of beneficial uses/users (which are specifically referred to in SGMA) and the lack of evidence of spawning/rearing of Steelhead to support the significance of NMFS defined critical habitat. Beneficial use related to fish is limited to migration activities, which are conceptualized to occur when large surface water flows occur along the SCR and tributaries during storm events and wet periods, rather than during dry periods when surface water flow is limited to areas of rising groundwater (i.e., the basin boundaries). The GSA hosted multiple discussions with stakeholders on the merit of including surface water temperature monitoring in the ISW MT. It is not evident how the GSA would alter the GSP if the temperature data were available. Groundwater extraction reductions during prolonged droughts have been shown to not mitigate groundwater declines and shift undesirable impacts to other beneficial uses/users (e.g., DACs, agricultural operations, municipal water supplies).
Fillmore	3, A	3,A-7	California Department of Fish and Wildlife (CDFW)	10/8/2021	2.1	2-4	15-17	Editorial	This Draft GSP, the supporting documents and appendices are not user-friendly for public review. There are several instances where a corresponding Appendix is missing in the document labelled "FPBGSA Fillmore Basin GSP Public Review Draft Text With Figures No Appendices". For example, this sentence is missing the appendix letter at the end: "More information for the VCWPD water16 resources monitoring program can be found in the Monitoring Program and Data Gaps TM (Appendix #)" (Section 2.1.2.1 Watershed Protection District of Ventura County, Page 2-4, Lines 15-17). Recommendation #6(a): CDFW recommends streamlining the Final GSP Package to ensure there are no missing documents. Recommendation #6(b): CDFW recommends the FBGA provide a red-lined version of the Final GSP to understand the changes made between the Draft GSP and Final GSP.	We have updated the list of appendices to assist the reader.

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Fillmore	3, A	3,A-8	California Department of Fish and Wildlife (CDFW)	10/8/2021	NS	NS	NS	Sensitive species and habitats	Three of the five GDEs identified in the draft GSP as wetland, and riverine features, excluded by the FPBGSA are utilized by ESA-listed Steelhead; the FESA-and California Endangered Species Act (CESA)-listed least Bell's vireo (Vireo bellii pusillus), and the FESA-CESA-listed southwestern willow flycatcher (Empidonax traillii extimus). Southwestern pond turtle (Actinemys pallida) was designated as a California Species of Special Concern (SSC) in 1994 and is known to occur throughout the Santa Clara River watershed in four of the five GDEs specified in the Draft GSP. Southwestern pond turtle preferred habitat is permanent ponds, lakes, streams, or permanent pools along intermittent streams associated with standing and slow-moving water. A potentially important limiting factor for the southwestern pond turtle is the relationship between water level and flow in off-channel water bodies (groundwater dependent), which can both be affected by groundwater pumping. Other wildlife resources that could be substantially adversely affected based on declining water levels designated as SSC include coast horned lizard (Phrynosoma blainvillii); coast patch-nosed snake (Salvadora hexalepis virgultea); California legless lizard (Anniella spp.); two-striped garter snake (Thamnophis hammondii); and burrowing owl (Athene cunicularia). If groundwater depletion results in reduced streamflow due to interconnected surface waters, the nesting and foraging success of the SSC yellow warbler (Dendroica petechia), the SSC yellow breasted chat (Icteria virens), least Bell's vireo, southwestern willow flycatcher and other bird species may be diminished due to the reduced nesting habitat and food availability. Proper management of both shallow and deep groundwater pumping combined with reduced surface water pumping and diverting such as that from the would ensure that the Basin is not negatively impacted. Unsustainable use of groundwater can impact the shallow aquifers and interconnected surface waters on which these species and GDEs reply on for survival. This may lead to adverse impacts on fish and wildlife and the habitat they need to survive. Determining the effects groundwater levels have on surface water flows in the Basin will inform how the groundwater levels may be associated with the health and abundance of riparian vegetation. Poorly managed groundwater pumping, and surface water flows have the potential to reduce the abundance and quality of riparian vegetation, reducing the amount of shade provided by the vegetation, and ultimately leading to increased water temperatures in the Basin. Additionally, shallow groundwater levels near ISWs should be monitored to ensure that groundwater use is not depleting surface water and adversely affecting fish and wildlife resources in the Basin.	There is no recorded surface water pumping in this basin. The surface water diversions in this basin average less than 100 AF/year. The GSP provides a rationale for managing groundwater extractions in the basin within sustainable parameters. The GSP increases groundwater monitoring in the areas of rising groundwater in the Fillmore Basin, particularly near the Cienega and East Grove, where rising groundwater connects to interconnected surface water (discharges to the surface, generating surface water).
Fillmore	3, A	3,A-9	California Department of Fish and Wildlife (CDFW)	10/8/2021	NS	NS	NS	CDFW - environmental conclusions	CDFW has significant concerns about data gaps in the Hydrologic Conceptual Model (HCM), Riparian Groundwater Dependent Ecosystems being eliminated, the description of the CDFW Fillmore Fish Hatchery and listing the proposed Mitigation Plan Project as a SGMA project. CDFW urges the GSA to plan for and engage in responsible groundwater management that minimizes or avoids these impacts to the maximum extent feasible as required under applicable provisions of SGMA and the Public Trust Doctrine. In conclusion, the Draft GSP does not comply with all aspects of SGMA statute and regulations, and CDFW deems the Draft GSP inadequate to protect fish and wildlife beneficial users of groundwater for the following reasons: 1. The assumptions, criteria, findings, and objectives, including the sustainability goal, undesirable results, minimum thresholds, measurable objectives, and interim milestones are not reasonable and/or not supported by the best available information and best available science. [CCR § 355.4(b)(1)] (See Comments 3,A-1, 3.A-2, and 3.A-5); 2. The Draft GSP does not identify reasonable measures and schedules to eliminate data gaps. [CCR § 355.4(b)(2)] (See Comments 3,A-1, 3,A-2, 3,A-3, 3,A-4 and 3,A-5); 3. The sustainable management criteria and projects and management actions are not commensurate with the level of understanding of the basin setting, based on the level of uncertainty, as reflected in the Draft GSP. [CCR § 355.4(b)(3)] (See Comments 3,A-2, 3,A-3, 3,A-4 and 3,A-5); and, 4. The interests of the beneficial uses that are potentially affected by the use of groundwater in the basin, have not been considered. [CCR § 355.4(b)(4)] (See Comments 3,A-1, 3,A-2, 3,A-3, 3,A-4, 3,A-5 and 3,A-9).	See responses to comments 3, A-1, -2, -3, -4, and -5.

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Fillmore	4	4-1	California Trout Inc.	10/8/2021	NS	NS	NS	Southern California steelhead	Within the FPBGSA jurisdictional area, there is federally designated critical habitat for the endangered Southern California Steelhead (Southern steelhead) in the mainstem Santa Clara River (SCR), Sespe Creek, and other smaller tributaries. Southern steelhead serve as an indicator of total watershed health and integrity. To maintain the landscape level ecosystem function and service on which we all depend, is imperative that we conserve and restore theses habitats and the processes that are needed to maintain them. Sustainable groundwater use is directly related and inseparable from the status of Southern steelhead. The Santa Clara River, while maintaining more natural character in comparison to other river systems in Southern California, has seen significant loss of habitat for Southern steelhead and other native species. This has been through extensive modification, simplification and degradation of aquatic habitats including GDEs and depletion of instreams flows due to over utilization through groundwater extractions and surface diversions. Depletion of groundwater has been shown to shrink or degrade available habitat for all development stages of southern steelhead by reducing baseflows, increasing surface water types, reducing habitat complexity, and impacting native riparian vegetation and wetland habitats (Barlow and Leake 2012, Glasser et al. 2007, Hayes et al. 2008). The value of habitat remaining in this basin was central to NMFS's Southern Steelhead Recovery Plan (NMFS 2012) assessment that the SCR should be prioritized for recovery actions. FPGSA's management area contains multiple listed riparian and aquatic species, and is central to the long- term success of Ventura and Oxnard communities. The Sustainable Groundwater Management Act (SGMA) clearly specifics the requirement to identify and consider significant and unreasonable adverse impacts to GDEs and for all recognized beneficial uses and users of groundwater including aquatic ecosystems and species dependent on interconnected waters. Unfortunately, this plan does not accomplish that task. It is California Trout Inc.'s (CalTrout) judgement that this plan does not sufficiently characterize the relationship between groundwater and GDEs or interconnected surface waters within their jurisdictional area. It has been repeated shown that groundwater management decisions in the SCR basin within the FPGSA management area have impacts on surface flow conditions and GDEs (Stillwater Sciences 2007a, 2007b).	Stillwater Sciences 2007b does not address groundwater pumping. Stillwater Sciences 2007a largely infers an effect of groundwater pumping but does not show that it has impacted surface flow and GDEs in the Santa Clara Basin. As Stillwater Sciences (2007a) states, there have been numerous pressures on vegetation including water diversions, groundwater pumping, land clearing, urbanization, and invasive species. Pumping reduces groundwater elevation, but the effect of pumping (versus inflows to the basin) on GDEs is not clear. Model results presented in the GSP show that there is an impact of groundwater management on surface flow. Reducing pumping by 50% in the model caused surface flows to decrease by an average of 4 cfs near Cienega and about 5 cfs near Willard Road in the East Grove. The effect of groundwater pumping on surface flows in Sespe Creek area is unknown. The relative influence of pumping versus water inflows to the basin on groundwater levels supporting GDEs is not well constrained. NDVI is relatively consistent during wetter periods, but it declines during droughts at the Cienega and East Grove. The widespread mortality during the most recent drought at Cienega reflects a deepening of groundwater conditions and the degree to which these are due to drought versus pumping is discussed in Appendix J Section 3.6.2.1. It is clear that pumping is not the only factor contributing to the decline in water levels during prolonged droughts (i.e., lack of precipitation). This basin displays a strong cyclic pattern of water levels declining during prolonged droughts and recover during wetter periods (even with a 50% hypothetical reduction in pumping). Additional groundwater monitoring near the GDEs will help to better constrain changes to groundwater levels and infer the influence of pumping on GDEs.
Fillmore	4	4-2	California Trout Inc.	10/8/2021	NS	NS	NS	GDE, southern California steelhead	The draft GSP shows near complete disregard for core SGMA requirements to ensure no adverse impacts to beneficial uses or users of groundwater in the GSA when they determined that the SCR Riparian Shrubland GDE has "low vulnerability to groundwater reduction" and simply serves as an upstream migration corridor during high flows. This assessment takes the narrowest vantage point possible in determining how Southern steelhead utilize different habitat types to make long-term groundwater management decisions. It also appears to be justified by incomplete or little no to data at all, a fact acknowledged by the GSP. Without robust data to support this decision, the FPGSP cannot ensure that there are not adverse impacts as a result of their future pumping allocations to this GDE.	The best available science supports our assessment of the streams in the Fillmore Basin as primarily a migration corridor for steelhead (Kelley 2004, Stoecker and Kelley 2005). Rearing is unlikely due to poor habitat and temperature conditions (Stoecker and Kelley 2005). We have added a discussion of outmigration for smolts to the technical appendix. Modeling suggests that reducing the pumping by 50% reduces instream flows by an average of 4 cfs. As outlined in the GDE Appendix, this is unlikely to affect spawning or rearing, particularly given the lack of evidence of rearing in the system. The lack of historical connection to groundwater in the Riparian Shrubland reach is supported by the absence of historical riparian forests outside of the East Grove, Cienga, and Del Valle as documented in the historical ecology assessment (Beller et al. 2011). We have revised the groundwater depth map to use 2011 groundwater levels, which shows that groundwater is generally 10 ft below the ground surface and unlikely to be connected even during wet years. Moreover, the Riparian Shrubland GDE in the Fillmore basin is comprised of plants (mostly mulefat) that are typical of higher relative elevation in the East Grove and Cienega GDEs. In these GDEs that are otherwise connected, the shallow-rooted mulefat (~ 2 ft rooting depth) typically occurs in areas where the groundwater is too deep for willow and cottonwood roots to connect with. Taken together, the historical lack of a riparian forest, groundwater data, vegetation along the channel, and observed dry conditions suggests that the riparian shrubland is not connected to groundwater.

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Fillmore	4	4-3	California Trout Inc.	10/8/2021	NS	NS	NS	GDE, southern California steelhead	The plan is particularly deficient when it comes to the relationship between groundwater quantity and the seasonality of instream flow conditions and interconnected surface waters. These habitats and biotic conditions play and critical role in southern steelhead migration to and from major tributaries that have confluences within the GSA. Sespe Creek is vital to the long-term survival of several listed species. This plan, while acknowledging that immediately upstream is perennial, then decides that connection to groundwater in the GDE is "unknown but unlikely." The plan offers not data to support this decision or any monitoring plans to determine if it is an accurate assumption.	A map of interconnected reaches has been included in the revised GSP. The lower reach of Sespe Creek is mapped as uncertain. Figure 2-2 in the revised GDE appendix shows that groundwater is relatively deep (>30 ft) upstream of Highway 126 along Sespe Creek. This is based on limited well data, but planned monitoring wells within the Sespe Creek reach will help to re-evaluate the connection to surface water for subsequent updates to the GSP. The transition from the upstream perennial section occurs where the alluvial sediment below the creek thickens toward the Santa Clara River. Limited measurements of Sespe flow near Highway 126 shown on Figure 4-7 suggest that Sespe Creek is a losing reach between the USGS gage (near the basin boundary) and Highway 126 where flows are generally a few cfs lower. Taken together it is likely that at least parts of Sespe Creek are disconnected from groundwater, but the extent of connected groundwater is somewhat uncertain.
Fillmore	4	4-4	California Trout Inc.	10/8/2021	2.1.5.2	2-15	NS	Environmental stakeholder organizations	On page 2-15, the GSP identifies Environmental Stakeholder Director for this GSA as representing the interests of the Santa Clara River Environmental Groundwater Committee. It further elaborates that this committee is under the direction of CalTrout and is comprised of the Santa Clara River Steelhead Coalition (SCRSC). This is a mischaracterization of CalTrout's role in the on-going SMGA process for this basin and of the intended purpose of the SCRSC. The SCRSC is a California Department of Fish and Wildlife (CDFW) grant funded program to advance watershed restoration project in that Santa Clara Basin that conserve and protect southern steelhead and their required habitat. There is no named or established Santa Clara River Environmental Groundwater Committee within the SCRSC. We have discussed as a group the importance of groundwater and the relationship it has on mediating fluvial ecosystem processes, but this is not our singular focus. The SCRSC supports processed-based watershed restoration that represent community developed resource management solutions. The appointed Environmental Director of this GSA does not serve at the direction of CalTrout or the SCRSC. Edit this and any other section that implies this to better reflect the representation of environmental interests in this SGMA process.	The referenced text has been corrected.
Fillmore	4	4-5	California Trout Inc.	10/8/2021	NS	NS	NS	Groundwater Dependent Ecosystems	Ultimately this plan does very little to address the adverse impact groundwater pumping has on the depletion of interconnected surface waters and GDEs. This is evident in how the plan repeatedly dismisses any relationship between groundwater pumping and GDEs or interconnected surfaces waters but routinely acknowledges that limited data was used to draw these conclusions. For the SGMA requirements of sustainability to be meet, the GSA must provide sufficient data describing the relationship between interconnected surface waters and GDEs to current and future groundwater pumping levels. This data should specifically address shallow aquifer conditions for the entire GSA planning area in the same manner and intensity that the principal aquifer is analyzed. It is only with this data collected and analyzed can we determine what sustainability indicators describe these relationships and how anticipated undesirable results will be mitigated or managed to meet the sustainability criteria set out by SGMA.	The analysis of the effects of pumping on GDEs outlined in the technical memorandum relied on trends in groundwater data through time, the groundwater model in Appendix E, our understanding of the patterns of interconnected surface water, vegetation types present along the river, and links between relative elevation of the ground surface and vegetation occurrence in forested wetlands along the Santa Clara. Individual wells show that groundwater typically declines during droughts and recovers during wetter periods. A similar trend was seen for GDEs prior to the recent drought which was long enough and severe enough to cause mortality of willows and cottonwoods in the Cienega GDE Unit. The degree to which the groundwater decline was exacerbated by pumping in this reach is not clear. The model predicted that the lack of surface flow in the Cienega shown in Figure 4-7 of the GDE Technical Appendix was exacerbated by pumping for a few months over the 3 years where surface flow was absent.
Fillmore	5	5-1	National Marine Fisheries Service	9/22/2021	NS	NS	NS	Southern California steelhead	The Draft GSP does not adequately address the recognized instream beneficial uses of the Santa Clara River or the principal tributaries within the boundaries of the Fillmore Groundwater Basin, or other GDE, potentially affected by the management of groundwater within the Fillmore Basin. In particular, Draft GSP does not adequately recognize or analyze the groundwater recharge program associated with the Fillmore Basin (and the interrelated upstream surface diversions), and its potential adverse effects on the federally endangered southern California steelhead (*Oncorhynchus mykiss*).	The GSP describes the groundwater recharge quantities and frequencies in Section 2.2.3.3 and Table 2.2-8 that are associated with water releases from Santa Felicia Dam and Castaic Lake. The GSP does not propose SMC for surface water flows in the SCR or its primary tributaries because: (1) it flows intermittently, (2) the SWRCB only designates beneficial uses related to migration (i.e., when the river flows substantially more due to storm events than groundwater contributions) and does not designate beneficial uses related to spawning or rearing, and (3) there is no evidence or documentation of O mykiss using the SCR or its tributaries within the basin (where they occur within the Basin) for spawning or rearing to support the NMFS critical habitat as a significant beneficial use. See Section 3.2.1 for updates.

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Fillmore	5	5-2	National Marine Fisheries Service	9/22/2021	NS	NS	NS	Southern California steelhead	The Draft GSP does not adequately address the depletion of interconnected shallow groundwater basins and the pattern of groundwater extraction and surface water diversions that have occurred historically, currently, and are likely to occur in the future. Of particular concern is the potential adverse effects on designated critical habitat for southern California steelhead within the Santa Clara River, and tributaries that are essential for the recovery of endangered steelhead, including Sespe Creek within the boundaries of the Fillmore Basin. The surface flows at the confluence of Sespe Creek, for example, are important for maintaining surface hydrologic connectivity for steelhead (and other native aquatic-dependent species) attempting to migrate between these major tributaries and the middle reaches of the Santa Clara River.	The GDE Appendix has an extensive discussion of steelhead in the basin focusing on fish passage and the likely lack or rearing habitat within the Fillmore and Piru basins. We have added information about outmigrating smolts to the GDE technical memorandum. The effect of groundwater pumping on flows in Sespe Creek is unknown. As shown in Figure 2-2, the groundwater is quite deep even during wet years. Additional groundwater monitoring data from Sespe Creek as described in the monitoring section will help to better understand interconnected surface water in this reach.
Fillmore	5	5-3	National Marine Fisheries Service	9/22/2021	NS	NS	NS	Southern California steelhead	National Marine Fisheries Service has previously provided extensive comments related to southern California steelhead (letter of April 01, 2021 regarding the "Draft Technical Memorandum-Assessment of Groundwater Dependent Ecosystems for the Fillmore and Piru Basins Groundwater's Sustainability Plan"), which remain largely unaddressed in the Draft GSP.	The Draft GSP provided responses to each comment in the April 01, 2021 NMFS letter on the Draft GDE Technical Memorandum. See Draft GSP Appendix C3, responses to comments numbered GDE_041 through GDE_096. As indicated in these responses, a number of changes were made to the Technical Memorandum in response to NMFS' comments. In particular, text describing the role of specific tributaries for steelhead rearing and their connection to groundwater and the principal aquifer was added to the GDE memorandum. In addition, the connection of surface water flows to groundwater in intermittent reaches was discussed in the response to comments and in the memorandum.
Fillmore	6	6-1	State University of New York College of Environmental Science, University of California Santa Barbara, and Cardiff University	10/9/2021	NS	NS	NS	Groundwater Dependent Ecosystems	Commentors shared research findings to help improve the identification and consideration of GDEs in the Fillmore Basin. These include: 1. Riparian vegetation die-off during the 2012-2016 drought is linked to groundwater decline. 2. The groundwater decline causes more water stress to riparian vegetation than climatic variables. 3. Native cottonwood and willow trees are groundwater-dependent species that rely on constant root access to groundwater for survival and growth, especially during dry summer months and in drought years. 4. The rate of groundwater level decline is as important to riparian vegetation as the absolute depth below which their roots completely lose access to the water table ("critical water depth"). 5. The installation of more shallow monitoring wells is needed to support ongoing efforts to understand the ecohydrological links between groundwater and riparian forests along the SCR. See comment letter for further discussion of these findings.	Additional monitoring wells are planned following the adoption of the GSP. We have added text about the importance of the rate of groundwater decline to the text of the GDE memo and added a reference to Kibler 2021.
Fillmore	7	7-1	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/9/2021	NS	NS	NS	Disadvantaged Communities and Drinking Water Users	The identification of Disadvantaged Communities (DACs) and drinking water users is insufficient. The GSP provides a map of DACs by block group (Figure 2-1.4). However, the plan does not document the population for each DAC. The GSP also failed to include the population dependent on groundwater as their source of drinking water in the basin. The GSP provides a density map of domestic wells in the basin. However, the plan fails to provide depth of these wells (such as minimum well depth, average well depth, or depth range) within the basin. These missing elements are required for the GSA to fully understand the specific interests and water demands of these beneficial users, and to support the consideration of beneficial users in the development of sustainable management criteria and selection of projects and management actions. Recommendations: 1. Include a map showing domestic well locations and average well depth across the basin. 2. Provide the population of each identified DAC. 3. Identify the sources of drinking water for DAC members, including an estimate of how many people rely on groundwater (e.g., domestic wells, state small water systems, and public water systems).	Figure 2.1.4 provides information on domestic well locations (with bottom of screen depths), DAC populations (with bottom of screen depth) and water sytems.

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Fillmore	7	7-2	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/9/2021	NS	NS	NS	Interconnected Surface Waters	The identification of Interconnected Surface Waters (ISWs) is insufficient, due to lack of supporting information provided for the ISW analysis. To assess ISWs, the plan refers to a previous report by United Water Conservation District, included in the GSP as Appendix E. This Appendix describes a numerical model developed for a regional area that includes the Fillmore Basin. The main text of the GSP presents a summary of annual depletions of ISW in the Fillmore Basin at two locations of the Santa Clara River. The ISW section of the GSP concludes with the statement (p. 2-59): "*Data gaps remain regarding identifying the extent and timing of interconnectedness of other stream channel areas (e.g., Sespe Creek and central portions of the Santa Clara River), due to a lack of paired groundwater level and surface water level monitoring sites. Stream conditions here are considered to vary between all three stream conditions depicted on Figure 2.2-29. The significance of interconnected surface water and groundwater conditions at these areas is less than that of the two primary areas of rising groundwater, because surface water exists in these reaches much less often (Figure 2.2-12), and therefore, provides less opportunity for beneficial uses related to aquatic habitat or surface water diversions*." However, no map is provided to show the stream reaches to which this statement refers. Without a map of labeled stream reaches in the basin, it is difficult to understand the location of these reaches, and whether the GSP has included them as potential ISWs in the GSP. In addition, it is unclear whether the GSP is only considering ISWs in areas with "rising groundwater" (gaining conditions). Under SGMA's ISW definition, they must also include losing reaches that maintain a connection with the saturated zone at any point in time and space.	
		7-2 (cont'd)							Recommendations: 1. Provide a map showing all the stream reaches in the basin, with reaches clearly labeled with stream name and interconnected or disconnected. 2. Provide more discussion in the GSP about the groundwater elevation data and streambed elevation data used to verify interconnected reaches. Include a map of the interpolated groundwater elevations and spatial extent of groundwater monitoring wells used to produce the map. Discuss screening depth of monitoring wells and ensure they are monitoring the shallow principal aquifer. 3. Overlay the stream reaches shown with depth-to-groundwater contour maps to illustrate groundwater depths and the groundwater gradient near the stream reaches. For the depth-to-groundwater contour maps, use the best practices presented in Attachment D of the comment letter. Specifically, ensure that the first step is contouring groundwater elevations, and then subtracting this layer from land surface elevations from a Digital Elevation Model (DEM) to estimate depth-to-groundwater contours across the landscape. This will provide accurate contours of depth to groundwater along streams and other land surface depressions where GDEs are commonly found. 4. On the ISW map, clearly label the areas with data gaps. While the GSP clearly identifies data gaps and their locations in the text, we recommend that the GSP considers any segments with data gaps as potential ISWs and clearly marks them as such on maps provided in the GSP.	1. A map of the reaches has been added to the GDE memo and the discussion and Figure 2.2-27 in the GSP. 2. Water level data from the shallow aquifer zone has limited spatial distribution. The ability to generate water table contour surfaces is therefore limited. New shallow monitoring wells are planned for construction and select appropriately screen existing well are planned to be added to the monitoring network. 3. These are included in updated Stillwater GDE tech memo (Appendix E).
Fillmore	7	7-3	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/9/2021	NS	NS	NS	Groundwater Dependent Ecosystems	The identification of GDEs is incomplete. We commend the GSA for their comprehensive evaluation of GDEs in the basin, as presented in the GDE Technical Memorandum (Appendix D). The GSP mapped GDEs and potential GDEs using multiple sources, including the NC Dataset (also referred to in the GSP as the iGDE database), California Department of Fish and Wildlife (CDFW) VegCAMP, US Department of Agriculture (USDA) CalVeg, and National Wetlands Inventory data. Table 2.2-5 describes the type of GDEs in the basin with dominant flora species and acreage within the basin. Table 2.2-7 presents the critical habitat and special status species in the basin. The Appendix states (p. 21): "*In light of the limitations of the monitoring well data, the groundwater elevation data presented in this section are intended to illustrate general trends within GDE units. The spring 2019 depth to water surface (Section 2.1.2), as opposed to monitoring well data, is used to establish GDE connectivity with shallow groundwater.*" The Appendix describes the challenges with using groundwater monitoring well data for some of the GDE units and explains that 2019 groundwater levels are conservative for GDE mapping. However, we would like to see additional discussion and use of groundwater data from the pre-SGMA benchmark date of 2015 where available (e.g., pre-drought 2011 water levels) to determine which GDE units are connected to groundwater. Furthermore, we found that some mapped features in the NC dataset were improperly disregarded (i.e., coastal live oak (Quercus agrifolia) on slopes). NC dataset polygons were incorrectly excluded for mapped vegetation growing on a clear slope, based on landscape position and improbable connection to groundwater. However, without groundwater data, there is no way to confirm that these NC dataset polygons are not GDEs. If no data are available, then these polygons should be retained as potential GDEs. Recommendations: 1. For GDE units where groundwater elevation data are available, we recommend the pre-SGMA period of 2005-2015 be used to verify a connection to groundwater. If complete data from this period are not available, consider the use of data from 2011 (a wet year) since it is before the SGMA benchmark date of 2015. 2. Re-evaluate the NC dataset polygons that were removed based on their location on a slope. If groundwater elevation data are not available to verify connection to groundwater, retain these polygons as potential GDEs in the GSP.	The 30 ft depth to water was altered based on Fall 2011 water surface data. This increased the extent of GDEs in the Piru Basin, but had little influence on GDEs in the Fillmore Basin. The justification of removal of coast live oak was expanded in the text of the Section 2.1.3 GDE Appendix "These stands typically occur on the fringes of the basin, where the non-water bearing Pico Formation bedrock outcrops (Figure 2.2-3) and average slopes exceed 20%. It is therefore extremely unlikely that oaks in these areas are connected to groundwater-bearing alluvial or fluvial sedimentary formations."

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Fillmore	7	7-4	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/9/2021	NS	NS	NS	Native vegetation and managed wetlands	Native vegetation and managed wetlands are water use sectors that are required to be included in the water budget. The integration of native vegetation into the water budget is sufficient. We commend the GSA for including the groundwater demands of this ecosystem in the historical, current and projected water budgets. Managed wetlands are not mentioned in the GSP, so it is not known whether or not they are present in the basin. Recommendation: 1. State whether or not there are managed wetlands in the basin. If there are, ensure that their groundwater demands are included as separate line items in the historical, current, and projected water budgets.	There are no managed wetlands in the Basin and the water budget includes evapotranspiration values for the various land use or vegetative categories.
Fillmore	7	7-5	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/9/2021	NS	NS	NS	Stakeholder engagement	Stakeholder engagement during GSP development is insufficient. SGMA's requirement for public notice and engagement of stakeholders is not fully met by the description in the Communication and Engagement Plan (Appendix B). We note the following deficiencies with the overall stakeholder engagement process: 1. The opportunities for public involvement and engagement are described in very general terms. They include attendance at public meetings, a stakeholder email list, updates to the GSP website and social media, and information shared at meetings held by other local agencies and organizations. There is no specific outreach during the GSP development process described for environmental stakeholders and domestic well owners. 2. The Communication and Engagement Plan does not include a detailed plan for continual opportunities for engagement through the implementation phase of the GSP that is specifically directed to environmental stakeholders. Recommendations: 1. Include a more detailed and robust Communication and Engagement Plan that describes active and targeted outreach to engage DAC members, domestic well owners, and environmental stakeholders during the remainder of the GSP development process and throughout the GSP implementation phase. Refer to Attachment B of the comment letter for specific recommendations on how to actively engage stakeholders during all phases of the GSP process.	The FPBGSA conducts extensive outreach to actively engage all stakeholder interests within the basin. Additional text has been added to GSP Section 2.1.5 Notice and Communication that further describes stakeholder outreach and engagement that occured during GSP preparation, including targeted outreach to domestic well owners, including those within DACs. DACs and well owners within those communities are represented on the Board by the Ventura County, City of Fillmore, and Pumpers Association Directors. In addition, among the organizations represented by the Environmental Stakeholder Director is Central Coast Alliance United for a Sustainable Economy (CAUSE), which protects environmental and DAC interest. Outreach to DACs includes numerous mailings and communications to well owners by the Pumpers Associations and FBGSA participation at targeted stakeholder outreach and education meetings ("WaterTalks") sponsored by the Watersheds Coalition of Ventura County Integrated Regional Water Management (IRWM). Environmental interests are represented on the FPBGSA Board by the Environmental Stakeholder Director. A number of local environmental organizations nominate the Environmental Director and she regularly reaches out and coordinates with numerous local environmental organizations as described in Section 2.1.5. The Ventura County Director provides information and updates to IRWM and Santa Clara River Watershed Committee. The FPBGSA will use the Communications and Engagement Plan and continue GSP development outreach methods to engage a diversity of stakeholders through GSPimplementation.
Fillmore	7	7-6	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/9/2021	NS	NS	NS	Disadvantaged Communities and drinking water users - groundwater levels	For chronic lowering of groundwater levels, the GSP mentions impacts to DACs and domestic drinking water wells when defining undesirable results. The GSP states (p. 3-3): "Groundwater levels below the base of well perforations (or screen intervals) prevents beneficial uses (i.e., domestic) and users (i.e., DACs) from benefiting from the California Human Right to Water due to dry well conditions." However, the GSP does not sufficiently describe how the existing minimum threshold groundwater levels are consistent with avoiding undesirable results in the basin. The measurable objectives set for groundwater elevations do not consider DACs and drinking water users. Recommendations: 1. Describe further the direct and indirect impacts on DACs and drinking water users when defining undesirable results for chronic lowering of groundwater levels. 2. Consider and evaluate the impacts of selected minimum thresholds and measurable objectives on DACs and drinking water users within the basin. Further describe the impact of passing the minimum threshold for drinking water users. For example, provide the number of domestic wells that would be de-watered at the minimum threshold.	The reviewers comments suggest that DACs in the Fillmore basin are a separate group of stakeholders that are not included within other stakeholder categories. The DACs in the Fillmore basin are served by a combination of the City of Fillmore's water system, various mutual water companies, or by their own domestic wells. The GSP addresses impacts to DACs when discussing how projected future groundwater conditions will effect municipal and industrial, domestic well owners, and agricultural users. It is not correct in this basin to equate all DACs to domestic well users nor are all domestic well operators DACs. The MT for the Declining Water Level sustainability indicator was set by the FPBGSA Board of Directors at when the water levels in 25% of the representative wells (there are 11 in the Fillmore basin) decline to depths below the bottom of the well perforations (functionally a dry well). The representative wells are spatially distributed throughout the basin and complete at a variety of depths. So, the number of domestic wells that would be impacted by a MT violation would depend on which suite of the representative wells had water levels fall below the bottom of the well screen. There are several possible permutations. Qualitatively, if the deepest 25% of the representative wells exceed the MT, then several shallow domestic wells would be impacted, however if the shallowest 25% of the representative wells exceeded the MT, the number of shallow domestic wells that would be impacted will be less. Based on the forward groundwater modeling analyses that included climate change, it is considered unlikely that the MT will be exceeded. Future water levels are expected to be similar to historic levels.

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Fillmore	7	7-7	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/9/2021	NS	NS	NS	Disadvantaged Communities and drinking water users - water quality	The GSP states (2-43): "*Historically water quality chemicals (analytes or constituents) of concern (COCs) in the Fillmore and Piru basins have generally included, but are not necessarily limited to, the following analytes: Total Dissolved Solids (TDS), Sulfate, Chloride, Nitrate, and Boron.*" The GSP further states (2-52): "*Additional potential COCs in the Fillmore Basin were identified [as] Radiochemistry (gross alpha and uranium), Selenium, Lead, Iron, and Manganese*." The GSP states that the minimum thresholds for degraded water quality correspond with water quality objectives (WQOs) and maximum contaminant levels (MCLs) established by the Los Angeles Regional Water Quality Control Board (LARWQCB) Basin Plan and California Division of Drinking Water (DDW), respectively. However, they are not specifically provided in Section 3 (Sustainable Management Criteria) of the GSP. For degraded water quality, the GSP does not discuss direct and indirect impacts on DACs or drinking water users when defining undesirable results for degraded water quality, nor does it evaluate the cumulative or indirect impacts of proposed minimum thresholds on these stakeholders. The GSP does not set any measurable objectives for the degraded water quality sustainability indicator. Recommendations: 1. Describe direct and indirect impacts on DACs and drinking water users when defining undesirable results for degraded water quality. For specific guidance on how to consider these users, refer to "Guide to Protecting Water Quality Under the Sustainable Groundwater Management Act." 2. Evaluate the cumulative or indirect impacts of proposed minimum thresholds for degraded water quality on DACs and drinking water users. 3. Include the minimum thresholds established for the identified COCs in Section 3 (Sustainable Management Criteria) of the GSP, instead of just stating that they align with drinking water standards. 3. Set measurable objectives for the degraded water quality sustainability indicator.	Evaluations of impacts to DACs are included in the evaluations for municipal, domestic, and agricultural water uses. DACS are not a separate beneficial user that is not already considered (See response to comment 7-6) The water quality MTs are the currently existing water quality objectives (WQOs) or maximum contaminant levels (MCLs) contained in a variety of regulations. All beneficial water uses are already subject to these values. The GSP is not proposing any new water quality objectives and the GSA does not have regulatory authority over water quality. The GSA is responsible for analyzing water quality changes associated with implementation of the GSP, however, the GSP does not contain any changes to the pumping regime and therefore no material water quality changes are anticipated.
Fillmore	7	7-8	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/9/2021	NS	NS	NS	Sustainable Management Criteria - Groundwater Dependent Ecosystems	We commend the GSA for their comprehensive analysis of undesirable results for GDEs and ISWs. The GSP analyzes the impacts on GDEs when defining undesirable results for three sustainability indicators (i.e., chronic lowering of groundwater levels, degraded water quality, and depletions of interconnected surface waters). For minimum thresholds, the GSP states (p. 3-9): "*The MT for groundwater levels in the Cienega Restoration / Fish Hatchery area is set at the critical water level (Kibler, 2021 and Kibler et al., 2021), 10 ft below 2011 low groundwater levels (i.e., the MO). If/when this MT is exceeded, mitigation (Section 4) will be implemented to offset the undesirable result that would occur without adequate soil moisture.*" The GSP does not, however, assess the impacts of minimum thresholds on the other GDEs in the basin. The GSP notes that the Cienega Riparian Complex has historically shown the greatest degradation due to groundwater levels (p. 2-80). It also describes this impact as an undesirable result due to groundwater levels declining, resulting in (p. 3-4) "*die off of riparian vegetation (e.g., cottonwood or willow species in the Cienega Riparian Complex GDE unit), due to groundwater level declines below the critical water level, that are attributable to groundwater pumping.* " If the minimum threshold is exceeded, the referenced mitigation action will require months or years to implement. However, there is no discussion of interim pumping reductions or other actions that could have an immediate positive impact on the undesirable result. Recommendations: 1. Provide explicit discussion of how the minimum threshold (10 feet below 2011 groundwater levels) will prevent undesirable results specifically for all GDEs in the basin, not just those in the Cienega Restoration / Fish Hatchery area. 2. State directly what the depth to groundwater corresponds to under the GDEs for the proposed minimum threshold (10 feet below 2011 groundwater levels). 3. Consider GDEs when establishing measurable objectives and evaluate the measurable objectives based on GDE water needs.	We used Kibler 2021 as the source for definig a critical water level. Kibler's analyses indicated that a 10 ft decline in the water level was an important threshold below which vegetation can die off. This relationship was presumed to be applicable to other the other GDEs. Based on Stillwater 2021a, the only GDE area to experience material die off was the Cienega/Fish Hatchery area. The explicit MT is shown at Figure 3.5-4. The MO for GDEs is the 2011 low water level which functionally represents "a full basin condition".

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Fillmore	7	7-9	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/9/2021	NS	NS	NS	Climate change	The SGMA statute identifies climate change as a significant threat to groundwater resources and one that must be examined and incorporated in the GSPs. The GSP Regulations require integration of climate change into the projected water budget to ensure that projects and management actions sufficiently account for the range of potential climate futures. The integration of climate change into the projected water budget is insufficient. The GSP does incorporate climate change into the projected water budget using DWR change factors for 2070. However, the GSP does not consider multiple climate scenarios (e.g., the 2070 extremely wet and extremely dry climate scenarios) in the projected water budget. The GSP should clearly and transparently incorporate the extremely wet and dry scenarios provided by DWR into projected water budgets or select more appropriate extreme scenarios for their basins. While these extreme scenarios may have a lower likelihood of occurring, their consequences could be significant, therefore they should be included in groundwater planning. We acknowledge and commend the inclusion of climate change into key inputs (e.g., precipitation, evaporation, and surface water flow) of the projected water budget. Additionally, the sustainable yield is calculated based on the projected pumping with climate change incorporated. However, if the water budgets are incomplete, including the omission of extremely wet and dry scenarios, then there is increased uncertainty in virtually every subsequent calculation used to plan for projects, derive measurable objectives, and set minimum thresholds. Plans that do not adequately include climate change projections may underestimate future impacts on vulnerable beneficial users of groundwater such as ecosystems, DACs, and domestic well owners. Recommendations: 1. Integrate climate change, including extreme wet and dry scenarios, into all elements of the projected water budget to form the basis for development of sustainable management criteria and projects and management actions. 2. Incorporate climate change scenarios into projects and management actions.	Use of the 2070CT climate change factors in the forward groundwater modeling effort indicated that the basin was in a functionally sustainable condition. Analysis of the extreme wet future climate scenario, would have resulted in the basin being "more sustainable." The 2070CT extremely dry scenario was not considered likely based on independent analyses provided by Oakley et al 2019. The 2070CT climate change factors are considered sufficient in other approved GSPs. Climate change factors were incorporated into the projected water budgets. When the GSA is prepared to consider their projects and management actions, they will likely conduct further analyses on the cost-benefit relationship under future climate scenarios.
Fillmore	7	7-10	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/9/2021	NS	NS	NS	Data gaps	The consideration of beneficial users when establishing monitoring networks is insufficient, due to lack of specific plans to increase the Representative Monitoring Points (RMPs) in the monitoring network that represent water quality conditions and shallow groundwater elevations around DACs and domestic wells in the basin. Figure 2.1-8 (Existing Groundwater Elevation Monitoring Programs Map) and Figure 2.1-9 (Existing Groundwater Quality Monitoring Programs Map) show that no monitoring wells are located across portions of the basin near DACs and domestic wells. Beneficial users of groundwater may remain unprotected by the GSP without adequate monitoring and identification of data gaps in the shallow aquifer. The Plan therefore fails to meet SGMA's requirements for the monitoring network. The GSP provides comprehensive discussion of data gaps for GDEs and ISWs. Section 3.5.4.4.2 (Potential New Monitor Wells) discusses plans to include installation of new shallow monitoring wells to provide water level data around GDEs and ISWs, which is further described in Appendix D (Assessment of Groundwater Dependent Ecosystems for the Fillmore and Piru Basins Groundwater Sustainability Agency) and Appendix K (Monitoring Network and Data Gaps). However, this information is scattered across several locations in the GSP without a comprehensive set of maps provided. Recommendations: 1. Provide maps that overlay monitoring well locations with the locations of DACs and domestic wells to clearly identify potentially impacted areas. Increase the number of representative monitoring points (RMPs) in the shallow aquifer across the basin for the groundwater elevation and water quality groundwater condition indicators. Prioritize proximity to DACs and drinking water users when identifying new RMPs. 2. Provide maps that overlay existing and proposed monitoring well locations with the locations of GDEs and ISWs to clearly identify potentially impacted areas. 3. Describe further the biological monitoring that can be used to assess the potential for significant and unreasonable impacts to GDEs or ISWs due to groundwater conditions in the basin. Appendix D discusses remote sensing of GDEs using NDVI or other data to monitor the health of GDEs through time, but few details are provided.	1. Additional monitoring wells are being installed with DWR Grant Funding; Figure 3.5-1 shows the locations of the proposed new wells to be added to the monitoring network. The GSA can consider adding some of the new monitoring wells to the RMP list if is assists with water resource management strategies. the data gap figure can be updated with domestic wells to demonstrate sufficient data coverage 2. Section 3 contains a figure (3.5-1) showing GDEs, ISW and proposed monitoring points. 3. The biological monitoring will be focused on the use of NDVI analyses from the Fall of each year and will be evaluated and summarized in each 5-year GSP update.

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Fillmore	7	7-11	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/9/2021	NS	NS	NS	Projects and Management Actions	The consideration of beneficial users when developing projects and management actions is insufficient, due to the failure to completely identify benefits or impacts of identified projects and management actions to beneficial users of groundwater such as DACs and drinking water users. We commend the GSA for including several projects and management actions with explicit benefits to the environment. However, the GSP does not discuss the manner in which DACs and drinking water users may be benefitted or impacted by projects and management actions identified in the GSP. Potential project and management actions may not protect these beneficial users. Groundwater sustainability under SGMA is defined not just by sustainable yield, but by the avoidance of undesirable results for all beneficial users. The plan's commitment to mitigate the undesirable result on the Cienega Riparian Complex GDE is insufficient. The plan is confusing in that the mitigation refers only to the Cienega Springs Restoration project and does not seem to propose any mitigation for the Cienega Riparian Complex GDE. Furthermore, it is not clear how proposed projects 1 & 2 would mitigate impacts to the Cienega Riparian Complex GDE even if it is part of the Cienega Springs Restoration project area. Recommendations: 1. For DACs and domestic well owners, include a drinking water well impact mitigation program to proactively monitor and protect drinking water wells through GSP implementation. Refer to Attachment B of comment letter for specific recommendations on how to implement a drinking water well mitigation program. 2. For DACs and domestic well owners, include a discussion of whether potential impacts to water quality from projects and management actions could occur and how the GSA plans to mitigate such impacts. 3. For GDEs, include the following: 1) Add a map showing the locations of the Cienega Riparian Complex GDE and the Cienega Springs Restoration project, 2) Explain how the proposed management actions will mitigate the undesirable result occurring at the Cienega Riparian Complex GDE, 3) Develop immediate and longer term management actions to address the undesirable result occurring at the Cienega Riparian Complex (e.g., immediate pumping reductions when the minimum threshold is reached, non-native vegetation removal should die-off occur).	1. We refer to the Statewide Dry Well Reporting system for collecting information on dry well conditions (known have been reported in this system, nor at Board meetings by representatives). Domestic well users frequently fall into the de minimus category and the GSA cannot mandate that de minimus users report their groundwater extractions or water levels. The GSA can, with the approval of the de minimus user, record water levels. The GSP does not explicitedly follow the system offered in the Drinking Water Well Impact Mitigation Framework, however, many of its element have been incorporated into the GSP. For example, no "Yellow Light" or "Red Light" triggers (as presented in the DWWIMF) exist for the Fillmore basin. 2. See response to comment 7-7. The Mitigation Plan for the Cienega Springs Restoration Project has yet to be developed. The details of that plan will include a consideration of how the mitigative actions will effect both the CSRP and CRC GDEs. (3) Pumping reductions near the Santa Clara River have been shown to be ineffective at totally mitigating declining water levels during a drought. Pumping reductions likely create undesirable impacts to groundwater users such as DACs, municipalities, and agriculture. The GSP includes a potential Project and Management Action regardin non-native vegetation removal that will be considered by the GSA in the future.
		7-11 (cont'd)							4. Recharge ponds, reservoirs, and facilities for managed stormwater recharge can be designed as multiple-benefit projects to include elements that act functionally as wetlands and provide a benefit for wildlife and aquatic species. For guidance on how to integrate multi-benefit recharge projects into your GSP, refer to the "Multi-Benefit Recharge Project Methodology Guidance Document" 5. Develop management actions that incorporate climate and water delivery uncertainties to address future water demand and prevent future undesirable results.	Ample recharge capacity is available via the existing streams (e.g., Santa Clara River) in the Basin. The groundwater flow model (UWCD 2021b) incorporates these variables.
Fillmore	8	8-1	United Water Conservation District	10/8/2021	1.0	NS	NS	Introduction	The Fillmore basin GSP is well organized and well written. The purpose and sustainability goals of the Fillmore basin GSP are clearly defined, and the background agency information presented is consistent with United's understanding.	Comment noted
Fillmore	8	8-2	United Water Conservation District	10/8/2021	2.0	NS	NS	Plan Area and Basin Setting	United appreciated the opportunity to contribute to the Fillmore basin GSP through the development of the recent updates for the hydrogeologic conceptual model and the numerical surface water and groundwater flow modeling that were referenced and used throughout much of Section 2.0. As new data become available in the future, we look forward to collaborating with the FPBGSA to continually improving our understanding of surface water and groundwater conditions, refine the hydrogeologic conceptual model for the basin, if necessary, and refine and update the numerical surface water and groundwater models, as needed.	Comment noted
Fillmore	8	8-3	United Water Conservation District	10/8/2021	3.0	NS	NS	Sustainable Management Criteria	United believes the sustainable management criteria described in the GSP and supporting documents, including measurable objectives and minimum thresholds, are defined appropriately and are reasonable. However, we suggest that more content from Appendix J (Technical Memorandum relating to the Sustainable Management Criteria) be included within the relevant portions of the GSP document and be referenced more clearly, especially in Section 3.4 where measurable objectives are addressed. United agrees that the current understanding of present-day and future groundwater uses in Fillmore basin does not suggest that significant and unreasonable impacts should be expected for the six SGMA sustainability indicators. United agrees that undesirable results related to seawater intrusion are not applicable sustainable management criteria in Fillmore basin as described in Section 2.2.2.4 of the draft GSP. Additionally, United agrees that the potential future depletion of interconnected surface water as presented in the Fillmore basin GSP in the context of temporary habitat loss is reasonable and should not be considered a significant and unreasonable effect, as supported by the explanations mentioned in Section 3.2.5 of the draft GSP. Related to the monitoring network background, analysis, and proposed expansion, United agrees with the information provided in Section 3 of Fillmore basin's draft GSP and looks forward to supporting efforts to collect additional data related to the current and proposed expansion of the monitoring network for the sustainable management criteria for which sustainable management criteria have been developed.	See updated Section 3.4
Fillmore	8	8-4	United Water Conservation District	10/8/2021	4.0	NS	NS	Projects and Management Actions	United agrees with the proposed projects and management actions that support the five sustainable management criteria for which sustainable management criteria have been developed. We agree that these projects and management actions have the potential to enhance the water resources of the Fillmore basin and aid in keeping the basin closer to the desired future conditions. United looks forward to supporting efforts related to ongoing project planning and implementation in the near future.	Comment noted

RESPONSE TO PUBLIC COMMENTS - FILLMORE GSP

GSP	Letter No.	Comment No.	Commenter(s)	Date	Section	Page No.	Line No.	Topic	Comment	Response
Fillmore	8	8-5	United Water Conservation District	10/8/2021	5.0	NS	NS	Implementation	United is committed to supporting efforts related to ongoing project planning and implementation in the future.	Comment noted
Fillmore	9	9-1	Ventura County Public Works Agency	10/8/2021	Executive Summary	ES-1	NS	Editorial - SMC terminology	On page ES-1, it is recommended that the sustainability criteria be renamed to match the terminology used in the regulations: 1. Chronic Lowering of Groundwater Levels 2. Reduction of Groundwater Storage 3. Seawater Intrusion 4. Degraded Water Quality 5. Land Subsidence 6. Depletions of Interconnected Surface Water	See updated ES-1.
Fillmore	9	9-2	Ventura County Public Works Agency	10/8/2021	Executive Summary	ES-1	NS	Sustainable Management Criteria, Groundwater Dependent Ecosystems and Interconnected Surface Waters	On page ES-1, the rationale for exclusion of the sustainable management criteria (SMC) for Interconnected Surface Water because it is "not applicable due to significant effect of droughts that deplete rising groundwater areas" should be explained in more detail. There is interconnected surface water as well as GDEs supported by rising groundwater, all of which are influenced by the hydrology, including groundwater pumping. This comment applies to all portions of the Draft where interconnected surface water and GDEs are discussed and the SMC is excluded, particularly in Section 3 (SMC).	See Sections 2.2.1.5.6, 2.2.2.7 and 3.2.1 in the GSP, as well as additional technical details in Appendix J.
Fillmore	9	9-3	Ventura County Public Works Agency	10/8/2021	NS	NS	NS	Editorial, groundwater model	There are references to the groundwater model in Appendix E throughout the text body. It would be helpful to include a summary discussion on the model in the GSP text rather than requiring the reader to review the detailed modeling appendix.	Comment noted
Fillmore	9	9-4	Ventura County Public Works Agency	10/8/2021	2.1.3	2-8	11-16	Water demand changes	On page 2-8, section 2.1.3, lines 11-16, there should be a description of the assumptions/estimate of demand changes or reasons for why demand changes that are not going to occur.	See updated Section 2.1.3 (reference to land use zoning and General Plan CURB zones)
Fillmore	9	9-5	Ventura County Public Works Agency	10/8/2021	2.2.1.4	NS	NS	Editorial - aquifer descriptions	Section 2.2.1.4 lists the two principal aquifers in the Subbasin (unconfined Main Aquifer and the semi-confined Deep Aquifer). There are subsequent references to Aquifer Zones A, B and C per United (2021a). Discussion of the relationship between the principal aquifers and the Aquifer Zones is not introduced until Section 3.5.4.2. It would be helpful to the reader to introduce this relationship in Section 2.2.1.4 and when discussing Aquifer Zones in other parts of the text. Further, it would be helpful to include the relative depths (and thickness) of these aquifers and the aquitard separating them found in Section 2.2.1.4.2 to better support Section 2.2.1.3.	See responses to comments 1-1, 1-2, and 1-3. See updated Section 2.2.1.4.
Fillmore	9	9-6	Ventura County Public Works Agency	10/8/2021	2.2.2.5.2	NS	NS	Nitrate concentration	Section 2.2.2.5.2 reports that elevated nitrate concentrations in the Fillmore area may be related to agricultural practices. Septic and wastewater treatment systems may also contribute to the higher concentrations of nitrates.	See updated Section 2.2.2.5.2.
Fillmore	9	9-7	Ventura County Public Works Agency	10/8/2021	NS	2-46, 2-56	NS	Editorial - constituents of concern	On pages 2-46 and 2-56, a summary table of constituents of concern (COCs) would be helpful by showing the maximum and minimum regulatory COC thresholds.	Comment noted. The GSP is purposely generic on this topic so that all future changes to water quality regulatory threshold are incorporated by reference.
Fillmore	9	9-8	Ventura County Public Works Agency	10/8/2021	Figures	Figure 2.2-19	NA	Editorial - graphic legend	A legend should be provided on Figure 2.2–19 clarifying what the different color dots represent.	See updated figure
Fillmore	9	9-9	Ventura County Public Works Agency	10/8/2021	NS	NS	NS	Editorial - fugure numbers	The water budget graphic is incorrectly identified as Figure 2.2-30 in the text. It should be identified as Figure 2.2-33.	The text has been adjusted.
Fillmore	9	9-10	Ventura County Public Works Agency	10/8/2021	2.2.2.7	NS	NS	Surface water diversions	It would be informative to list surface water diversions for the tributaries of the Santa Clara River within the Subbasin and estimated annual quantity of diverted water for each (Section 2.2.2.7). Is this represented as the "Unaccounted Flows" value in Table 2.2-11?	See updated Sections 2.2.2.7 and 2.2.3.1.2
Fillmore	9	9-11	Ventura County Public Works Agency	10/8/2021	2.2.3.3.2	2-72	3-6	Pumping levels	On page 2-72, lines 3-6, the apparent reduction in average pumping demand during the current drought is inferred, as metered pumping data are not available. The lower recent pumping could be an artifact of the water budget calculations and not supported by evidence (pumping data and/or groundwater levels).	This is based on estimates from production data reported to United (i.e., Fish Hatchery reduced pumping significantly).
Fillmore	9	9-12	Ventura County Public Works Agency	10/8/2021	3.0	3-1	22-25	Stakeholder engagement	On page 3-1, lines 22–25, were disadvantaged communities (DACs) and private well owners actively involved in the stakeholder process? It would be beneficial to add this information to the text.	See response to Comment 7-5, above.
Fillmore	9	9-13	Ventura County Public Works Agency	10/8/2021	3.2.4	3-6	22-24	Editorial - monitoring sites	On page 3-6, lines 22 – 24, it is unclear if the representative monitoring sites are included in the network at this time. Summary tables in the text would be helpful.	The Rep. Monitoring Sites are currently in the monitoring network. Summary table is added
Fillmore	9	9-14	Ventura County Public Works Agency	10/8/2021	3.3.5	3-11	NS	Subsidence minimum threshold	On page 3-11, section 3.3.5, the text should provide the rationale for establishment of the subsidence MT by the FPBGSA Board of Directors.	The subsidence MT is established based on tech memo from Pumper's Association / Bryan Bondy.
Fillmore	9	9-15	Ventura County Public Works Agency	10/8/2021	4	NS	NS	Projects	It could be beneficial to include a project in Section 4 to survey existing wells within the Subbasin for well status and annual extractions.	UWCD compiles the groundwater extraction data from known active wells in the basin. Should the basin begin to approach the sustainable yield value, then updating the well status might identify previously unknown extractors.

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GSP	Letter No.	Comment No.	Commenter(s)	Date	Section	Page No.	Line No.	Topic	Comment	Response
Fillmore	9	9-16	Ventura County Public Works Agency	10/8/2021	4.2, 4.3	4-3	NS	Projects	On page 4-3, the narrative should be revised to indicate the difference between Projects 2 and 3 for shallow monitoring wells. Where are the wells in Project 3 likely to be needed?	Project 2 includes wells in the Cienega Springs Restoration Project area. Project 3 is for locations outside of the CSRP. Additional monitoring wells might be appropriate, if they assist the GSA in managing the basin, near the Sespe Creek and Santa Clara River confluence, for example. Other locations could be added as the GSA identifies the need to augment the current monitoring program network.

APPENDIX C-2. RESPONSE TO COMMENTS ON THE PIRU BASIN DRAFT GSP

The Fillmore and Piru Basin Groundwater Sustainability Agency (FPBGSA) received the following comment letters and comments via its website. Each of the comments is included in and responded to on the following Response to Comments table. The full comment letters are available at the FPBGSA website at https://www.fpbgsa.org/comments-received-for-fillmore-basin/.

Letters:

1. Bondy Groundwater Consulting, Inc., September 29, 2021 (Same comment letter as for Fillmore)
2. California Department of Fish and Wildlife, October 20, 2021
3. Los Angeles County Sanitation Districts, October 22, 2021
4. State University of New York College of Environmental Science and Forestry, University of California Santa Barbara, and Cardiff University, October 22, 2021
5. The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund, October 20, 2021
6. United Water Conservation District, October 22, 2021
7. Ventura County Public Works Agency, Watershed Protection, October 21, 2021

Comments Submitted Via Website:

A. California Department of Fish and Wildlife, October 21, 2021 (Same as letter)
B. State University of New York College of Environmental Science and Forestry, October 22, 2021 (same as letter)

RESPONSE TO PUBLIC COMMENTS - PIRU GSP

GSP	Letter No.	Comment No.	Commenter(s)	Date	Section	Page No.	Line No.	Topic	Comment	Response
Piru	1	1-1	Bondy Groundwater Consulting, Inc.	9/29/2021	NS	NS	NS	Principal aquifers	Two principal aquifers are proposed in the GSPs. The proposed "Main Aquifer" consists of "Aquifer Systems" A & B. The proposed "Deep Aquifer" consists of "Aquifer System" C. The terminology used in the GSP may not be appropriate and may create confusion for some readers. Specifically, how can an "aquifer" consist of one or more "aquifer systems"? It is recommended that the A, B, and C "Aquifer Systems" be referred to as zones or horizons instead to avoid confusion.	We concur that the usage of Aquifer, Aquifer System, and Aquifer Zone was potentially confusing. Upon consultation with the commenter, UWCD, and DWR, we have adjusted the language in the GSP to a single Principal Aquifer composed of Aquifer Zones A and B. Zone C is designated as a non-Principal Aquifer. References to Aquifer System(s) have been removed.
Piru	1	1-2	Bondy Groundwater Consulting, Inc.	9/29/2021	NS	NS	NS	Principal aquifers	The identification of multiple principal aquifers appears to be based exclusively on technical criteria without consideration of the management and cost implication. The technical reasons provided include: (1) "the distribution and extent of hydraulic properties (i.e., hydraulic conductivity) in the United (2021a) VRGWFM", (2) unconfined vs. semi-confined conditions, and (3) an aquitard between the B and C "Aquifer Systems". Given that there is only one "Aquifer System" C groundwater elevation monitoring well in each basin, it does not appear that sufficient data are available to evaluate the degree of confinement of "Aquifer System" C. Similarly, there are insufficient borehole data to conclude that the aquitard between "Aquifer Systems" B and C is continuous across the Basins. This is indicated by the GSP cross-sections, which do not depict geologic strata beneath "Aquifer System" B over large portions of the Basins due to a lack of data at depth.	"See previous comment" We concur that the usage of Aquifer, Aquifer System, and Aquifer Zone was potentially confusing. Upon consultation with the commenter, UWCD, and DWR, we have adjusted the language in the GSP to a single Principal Aquifer composed of Aquifer Zones A and B. Zone C is designated as a non-Principal Aquifer. References to Aquifer System(s) have been removed.
Piru	1	1-3	Bondy Groundwater Consulting, Inc.	9/29/2021	NS	NS	NS	Principal aquifers	It is unclear whether identification of the "Deep Aquifer" is consistent with the definition of the term "principal aquifer". (GSP Emergency Regulations § 351 (aa) defines "Principal aquifers" as aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems.) Specifically, it is unclear whether the "Deep Aquifer" transmits significant or economic quantities of groundwater to wells. The GSPs indicate that only 1 to 4% of verifiable pumping in the basins occurs from this zone. Furthermore, the GSPs refer to "Deep Aquifer" pumping as "minor" when discounting "Deep Aquifer" data gaps. At a minimum, the designation of the "Deep Aquifer" as a Principal Aquifer contradicts the statements about the "minor" pumping from the "Deep Aquifer".	Aquifer Zone C is no longer referred to as a Principal Aquifer. Although there are a few wells extracting from this zone, the quantity of water being pumped is not a predominant source in the basin.
Piru	1	1-4	Bondy Groundwater Consulting, Inc.	9/29/2021	NS	NS	NS	Principal aquifers	The most significant concern is the apparent lack of consideration of the management and cost implications of the decision to identify the "Deep Aquifer" as a separate principal aquifer. The GSP does not communicate what management objective(s) would be met by identifying the "Deep Aquifer" as a principal aquifer. Rather, the GSP argues the opposite - that there is little concern about the "Deep Aquifer" because there is only a minor amount of pumping sourced from it. It is unclear why this small amount of pumping requires special consideration in the GSPs and how identifying separate principal aquifers furthers management of the basins. Moreover, the GSP does not consider the costs for complying with the additional self-imposed requirements that come with this decision. Specifically, the GSP Emergency Regulations require the following for each Principal Aquifer: 1. Hydrogeologic Conceptual Model GSP Section: a. General water quality b. Vertical and lateral extent 2. Groundwater Conditions GSP Section: a. Groundwater elevation contour maps b. Groundwater elevation hydrographs c. Hydraulic gradients between the Principal Aquifers 3. Monitoring Network: a. Sufficient density of monitoring wells to collect representative measurements in each Principal Aquifer to: i. Demonstrate groundwater flow directions ii. Demonstrate water quality iii. Calculate hydraulic gradients between Principal Aquifers 4. Annual Reports: a. Change in storage for each Principal Aquifer	See responses to comments 1-1, 1-2, and 1-3.
Piru	1	1-5	Bondy Groundwater Consulting, Inc.	9/29/2021	NS	NS	NS	Sustainable yield	The sustainable yields presented in the GSPs are based on the "pumping minus change in storage" approach applied to the water budget data. This approach underestimates the sustainable yield because it ignores the fact that the basins refill completely periodically and reject potential recharge during such periods. Simply stated, the basins could recover with higher pumping rates than used in the water budgets. Modeling results presented during various meetings have demonstrated this fact very clearly. Moreover, the basins experienced deeper groundwater levels prior to the historical water budget period without reported undesirable results, further suggesting that the sustainable yield is greater than that which results from a strict application of the "pumping minus change in storage" mathematics. Ideally, the sustainable yield would be estimated using numerical model simulations designed to estimate the true potential and resiliency of the basins. If this is not feasible in the time remaining for GSP completion, then it is recommended that the GSPs be updated to caveat the sustainable yield values as noted above.	- The "pumping minus change in storage" calculation is considered a minimum sustainable yield estimate (based on 50 year historical record adjusted for 2070CT climate change and associated increased pumping demand. The change in storage SMC will be updated to reflect using GW levels as a proxy.
Piru	1	1-6	Bondy Groundwater Consulting, Inc.	9/29/2021	NS	NS	NS	Data gaps	GSP Emergency Regulations § 351(l) defines "data gaps" as a "lack of information that significantly affects the understanding of the basin setting or evaluation of the efficacy of Plan implementation and could limit the ability to assess whether a basin is being sustainably managed." A potential interpretation of this definition is that anything identified as a "data gap" would need to be addressed during GSP implementation. The GSP Emergency Regulations make this clear for the monitoring network - "data gaps" must be addressed within five years following GSP adoption (GSP Emergency Regulations § 354.38(d)). A concern is that the term "data gap" is used in the GSP to describe data limitations that are not necessary to address to sustainably manage the Basins and for which the GSA has no plan to address. It is recommended that each use of the term "data gap" be carefully reconsidered to determine if the item in question is really a data gap as defined by the GSP Emergency Regulations. It is recommended that any items that are not truly data gaps (as defined by the GSP Emergency Regulations) and/or that the GSA is not committed to addressing be characterized using a different term, such as "data limitation" or "potential data gap."	"Data gaps" usage will be revised to only reflect HCM and SMC items that limit implementation of the GSP and assessment of sustainability. References to "data gaps" altered to "potential data gaps", where appropriate.

RESPONSE TO PUBLIC COMMENTS - PIRU GSP

GSP	Letter No.	Comment No.	Commenter(s)	Date	Section	Page No.	Line No.	Topic	Comment	Response
Piru	1	1-7	Bondy Groundwater Consulting, Inc.	9/29/2021	2.2.2.7, 3.2.5	NS	NS	Depletions of interconnected surface water - calculations	Calculations of interconnected surface water depletion are presented in Section 2.2.2.7 and referred to in Section 3.2.5. These calculations were developed by running the VRGWFM with historical pumping rates and comparing to a second simulation which employed a hypothetical 50% reduction in basin wide pumping. Appendix J discussed changes in streamflow using a similar analysis that eliminated pumping within 1 mile of the Santa Clara River. Both approaches do not calculate the full amount of depletion, as seems to be required by the GSP Emergency Regulations. In particular, indirect depletion2 is being underestimated. It is recommended that the analysis be revised to include removal of all pumping to fully estimate depletions. Doing so will ensure compliance with the GSP Emergency Regulations and provide a more robust technical basis and transparency for the decision to screen out the depletions of interconnected surface water sustainability indicator.	Our interpretation of the Emergency Regulations are a bit more pragmatic. The goal is to quantify the amount of surface water depletion due to groundwater extractions, which for this basin is possible at the East Grove and Fish Hatchery areas. The relationship between surface water flow (i.e., rising groundwater) is approximated by the empirical relationships between water levels in key wells and manual surface water flow measurements. The manual measurements are constrained to some upper limit that incorporates consideration of personnel safety while gathering the flow data. Hence the data in Figures 2-4 and 3-16 in Appendix J have upper flow rates at or near 50 cfs. The empirical relationship does not extend beyond this value, so if the water levels in the key wells rise to an elevation that falls outside the range of the field measurement (due to the hypothetical elimination of all groundwater extractions in the groundwater flow model), we do not currently have a mechanism to quantify that flow rate. The best available information for this topic is the empirical relationship.
Piru	1	1-8	Bondy Groundwater Consulting, Inc.	9/29/2021	3.2.5	NS	NS	Depletions of interconnected surface water - SMC	The justification for not developing SMC for the depletions of interconnected surface water sustainability indicator can be better described. Only a few sentences are devoted to this critical decision. The concern is that the basis for not developing SMC will be unclear to those who did not directly participate in the planning process, including certain stakeholders and DWR reviewers. It is suggested that Section 3.2.5 be expanded to more fully present the rationale for not developing depletions of interconnected surface water SMC. For example, Point No. 2 in Section 3.2.5 should be supported with appropriate references. Pertinent information from the Stillwater memo appendix could be summarized here together with a more detailed description of why the decision to not develop depletions of interconnected surface water SMC is not inconsistent with designation of the Santa Clara River as critical habitat for steelhead. Lastly, consider more fully describing the process for reaching the decision. More description of the number of meetings this matter was discussed, outreach, feedback received, etc. could be included to support the decision.	See the updated language in Appendix J, Section 3.6.5 and GSP Section 3.2.1.
Piru	1	1-9	Bondy Groundwater Consulting, Inc.	9/29/2021	Appendix J, Section 3.6.5	NS	NS	Depletions of interconnected surface water - SMC	Appendix J, Section 3.6.5 makes the argument no significant and unreasonable effects will occur because estimated past and future depletion rates are similar. This logic is questionable. For example, could GSAs in the Central Valley continue with subsidence so long as the subsidence rates are less than or equal to historical rates? Probably not. A potentially stronger argument may be that there have not been reported undesirable results historically and depletion rates are not projected to increase; therefore, undesirable results are not expected in the future. The lack of reported undesirable results should be emphasized and supported in the GSP and appendix to provide a more solid basis for not developing depletions of interconnected surface water SMC.	The rate of subsidence is not similar to rate of ISW depletions (the rate of ISW depletion at East Grove and Fish Hatchery areas fluctuates within a range of values through time), while a constant rate of subsidence will result in cumulatively worse conditions over time. Section 3.6.5 in Appendix J has been revised to expand on the rationale for not developing a MT.
Piru	1	1-10	Bondy Groundwater Consulting, Inc.	9/29/2021	NS	NS	NS	Degraded water quality - SMC	The GSP establishes minimum thresholds and measurable objectives for degraded water quality but then says the GSA is not responsible for meeting them. This approach does not appear to be consistent with the GSP Emergency Regulations because it does not address any degradation that could be caused by pumping or plan implementation. DWR has been very clear that GSPs must address any potential degradation that may be caused by pumping or plan implementation. The GSPs do not provide information concerning whether pumping or plan implementation can potentially cause water quality degradation. If there is no nexus between water quality degradation and groundwater pumping or plan implementation, then the GSPs should present the technical evidence, clearly state there is no nexus, and use this information to further justify the approach for this sustainability indicator. If there is potential for groundwater pumping or plan implementation to degrade water quality, then the GSPs should describe that potential and caveat the SMC by saying the criteria only apply if GSA determines that the degradation in question is being caused by pumping or plan implementation. This is the approach taken by several other GSAs.	Section 3.3.4 of the GSP states that the GSA will continue the water quality monitoring program during GSP implementation to assess if any observed material water quality changes are caused by the implementation actions. Neither historical or current extraction rates or water levels have resulted in undesirable GW quality results. The GSP does not propose any projects or management actions that would change the groundwater extraction regime in the basin.
Piru	1	1-11	Bondy Groundwater Consulting, Inc.	9/29/2021	3.2.3.1, 3.3.1	NS	NS	Chronic lowering of groundwater levels	Section 3.2.3.1 of the GSPs states that an undesirable result for chronic lowering of groundwater levels occurs when groundwater elevations drop below the bottom of well perforations (i.e., screen) in 25% of the representative monitoring sites. Section 3.3.1 goes on to say that "the Agency acknowledges wells going dry is an undesirable result, yet, a certain number of shallow water wells (i.e., less than 100 ft deep) going dry is acceptable (see DBS&A, 2021c [Appendix J]). A concern is that justification for the 25% criterion and "a certain number of shallow water wells going dry" is not supported by an analysis of impacts on beneficial uses. There is a concern that the DWR reviewers may conclude that there is insufficient justification for this criterion. It is suggested that the GSP be expanded to include a description of the effects on beneficial uses that would be expected if groundwater levels reached the minimum threshold levels and to provide justification for why those effects are not considered to be significant and unreasonable.	See updated language in Section 3.2.3.1 of the GSP
Piru	1	1-12	Bondy Groundwater Consulting, Inc.	9/29/2021	3.3.2, 3.4 Appendix J	NS	NS	Reduction of groundwater storage	The GSP text and SMC Appendix (Appendix J) are in conflict. The GSP text (Section 3.3.2) uses the sustainable yield for the minimum threshold. In contrast, Appendix J uses groundwater levels as a proxy and adopts the minimum thresholds for the chronic lowering of groundwater levels sustainability indicator. The GSP text (Section 3.4) does not establish a measurable objective. In contrast, Appendix J uses groundwater levels as a proxy and adopts the measurable objective for the chronic lowering of groundwater levels sustainability indicator. The approach proposed in Appendix J is preferred because of the sustainable yield values presented in the GSPs understate the true pumping potential of the basins, as discussed in an earlier comment.	We have adjusted the text to remove the conflict.
Piru	1	1-13	Bondy Groundwater Consulting, Inc.	9/29/2021	NS	NS	NS	Implementation costs	Implementation costs were not included in the draft GSP. These should be made available as soon as possible for stakeholder review.	Full implementation costs can be developed once the Mitigation Plan for supplying supplemental groundwater supplies to the Cienega Springs Restoration project has been prepared and the Board of Directors has the opportunity to consider the other projects identified in Section 4 of the GSP.

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GSP	Letter No.	Comment No.	Commenter(s)	Date	Section	Page No.	Line No.	Topic	Comment	Response
Piru	1	1-14	Bondy Groundwater Consulting, Inc.	9/29/2021	3.2.2, 3.2.3	NS	NS	Groundwater levels and quality	GSP Sections 3.2.2 state that "water quality degradation beyond historical conditions" is an undesirable result. GSP Sections 3.2.3 state that "groundwater levels changes (i.e., declines) can extend to any of the applicable undesirable results. When considering these statements together, there is an implication that a causal relationship between groundwater levels and groundwater quality exists. The GSPs do not provide technical information to justify or refute a causal relationship between groundwater levels and groundwater quality. More information should be provided in the GSPs to clarify whether declining groundwater levels cause groundwater quality degradation. The statement in Section 3.2.3 should be revised if it is concluded that declining groundwater levels do not cause groundwater quality degradation.	Pumping does not have an evident impact on GW quality, based on analysis of GW level and quality trends (Appendix K, Section 2.2.2.5.2). The documented historical fluctuations in water levels have not resulted in undesirable results.
Piru	2, A	2,A-1	California Department of Fish and Wildlife (CDFW)	10/20/2021	2.2.1.6, Appendix K	2-35; Appendix K page 132	15-19	Hydrologic Conceptual Model (HCM) data gaps	There is insufficient information in the Draft GSP about the hydrologic interconnection between the shallow aquifer and the Main aquifer. Page 2-35 of the Draft GSP states, "Data gaps (Figure 2.2-14) in the HCM comprise a lack of groundwater level data in the shallow groundwater of the Main Aquifer along the streams (e.g., Santa Clara River and Piru Creek), and a lack of groundwater level data in the Deep Aquifer. The shallow groundwater data gaps in the stream areas will be addressed with the installation of monitoring wells by the Agency (per DWR Grant Funding) and installation of shallow monitoring wells by UCSB (Stillwater, 2021b)". CDFW appreciates the efforts the GSA undertook to analyze the Basin in terms of geologic and hydrogeologic characterization. CDFW also appreciates PBGA's proposed plans to utilize the updated HCM to fill in the data gaps and deficiencies identified in the Draft GSP. However, there is a need for a better understanding of the interactions between interconnected surface water and groundwater particularly in the GDE areas mentioned below in Comment 2,A-2. Additional clarification is needed in the final GSP along with a description of future assessments on how this data gap will be addressed. Recommendation #1(a): Accurate hydrogeologic modeling requires an accurate and complete data set. CDFW recommends the installation of shallow groundwater monitoring wells near potential GDEs and interconnected surface waters. Recommendation #1(b): CDFW also recommends pairing multiple-completion wells with additional streamflow gages to facilitate an improved understanding of surface water- groundwater interconnectivity and subsurface recharge channels. CDFW agrees with the PBGA proposal to install more multiple-well monitoring facilities across the basin. The Draft GSP states that "Construction of twenty of these facilities equally spaced across the Basins would greatly decrease GSP analysis uncertainty and would be consistent with the DWR's data quality recommendations but would likely be cost prohibitive for FPBGSA rate payers in the Fillmore and Piru Basins." (Page 3-33, Lines 20-23, Draft Text). CDFW recommends the PBGA commit to a more modest number of strategically placed well monitoring facilities in the Project and Management Actions.	- Surface water occurs at limited areas during various time periods. The only perennial surface water areas are the East Grove, followed by Cienega Riparian Complex (which goes dry during drought periods). The other GDE areas depend on groundwater and occasionally have surface water present nearby. - RE: Recommendation #1(a) - the GSA plans to install shallow GW monitoring wells near the GDEs - RE: Recommendation #1(b) - streamflow gages have been considered infeasible in the SCR and lower Sespe Creek channels by USGS, Ventura County and United. Multi-completion wells are not necessary (only clustered, single-completion wells are necessary) for understanding shallow GW levels near/beneath GDEs. The difficulty of maintaining streamflow gages within the basin prevents characterization of potential interconnected SW, with the limited exception of identifying surface water with aerial imagery and/or field mapping.
Piru	2, A	2,A-2	California Department of Fish and Wildlife (CDFW)	10/20/2021	Appendix D, Section 6.4.1	Appendix D page 98	NS	Groundwater Dependent Ecosystems	The Draft GSP presents a thorough analysis of ecosystems potentially reliant on groundwater known as "indicators of groundwater dependent ecosystems" (ridges), however, of the five areas within the Basin that were mapped as containing iGDEs, only one area was considered as certain to be groundwater dependent. (Appendix D, Section 6.4.1, Piru Groundwater Basin, starting on Page 98). They are as follows: •Area 1 – Cienega Riparian Complex Area: 154 acres with mulefat and giant reed (Arundo donax); •Area 2 – Del Valle: 433 acres with riparian forest and widespread willows and cottonwoods; •Area 3 – Piru Basin Santa Clara River Riparian Shrubland: 317 acres; giant reed (Arundo donax), patches of sandbar willows and large mulefat thickets; •Area 4 – Piru Creek Riparian: 246 acres; and, •Area 5 – Piru Basin Tributary Riparian: 5.6 acres. The PBGA utilized three categories when evaluating groundwater dependence of iGDEs: unlikely, possible, and certain. The Cienega Riparian Complex Area was the only GDE to be categorized as certain to be dependent on groundwater. The Del Valle GDE was categorized as likely to be groundwater dependent. The Piru Basin Santa Clara River Riparian GDE was categorized as possible to be groundwater dependent. The Piru Basin Tributary Riparian GDE Unit and Piru Creek Riparian GDE were categorized as unlikely to be groundwater dependent. The PBGA indicated that the Del Valle GDE was located where "Perennial surface water flows are likely connected with groundwater" (Appendix D, Page 98). The PBGA indicated that the Piru Basin Santa Clara River Riparian GDE was located where "Intermittent surface flows are not connected with groundwater" (Appendix D, Page 100). The PBGA indicated that the Piru Basin Tributary Riparian GDE was located where "Intermittent and ephemeral surface water flows are not connected with groundwater. Hopper Canyon Creek within the Piru Basin may be a passage corridor for O. mykiss, but is likely dependent on surface water flows rather than groundwater for passage" (Appendix D, Page 104). The PBGA indicated that the Piru Creek Riparian GDE was located where "Groundwater wells in the rooting zone of plants (<30 ft) are rare in this unit and Releases from Santa Felicia Dam sustain surface flows" (Appendix D, Page 103).	No comment needed
Piru		2,A-2 (cont'd)							The Draft GSP uses words such as "likely not connected" and "unknown but unlikely" to rule out GDEs from further monitoring because there are data gaps in the monitoring system. The elevation and movement of subsurface flow is uncertain as is the interconnectivity of surface water relative to shallow aquifers and the main aquifers. CDFW believes the shallow perched groundwater, shallow alluvium, and surface water can still be connected to groundwater and hydrologic connectivity cannot be ruled out. These sources of water could be impacted in the future by new production wells that would adversely affect these GDEs. Water Code § 10721 (x)(6) requires GSPs avoid significant and unreasonable adverse impacts to beneficial uses of surface water including aquatic ecosystems reliant on interconnected surface water. If hydrologic-connectivity exists between a terrestrial or aquatic ecosystem and groundwater, then that ecosystem is a potential GDE and must be identified in a GSP. [23 CCR§354.16 (g).] Hydrologic-connectivity between surface water and groundwater, as well as groundwater-accessibility to terrestrial vegetation, must, therefore, be evaluated carefully, and conclusions should be well-supported. Hydrologic-connectivity considerations include connected surface waters, disconnected surface waters and transition surface waters. According to The Nature Conservancy (TNC), "if pumping is concentrated in deeper aquifers, SGMA still requires GSAs to sustainably manage groundwater resources in shallow aquifers, such as perched aquifers, that support springs, surface water, domestic wells, and GDEs (Figure 2). This is because vertical groundwater gradients across aquifers may result in pumping from deeper aquifers to cause adverse impacts onto beneficial users reliant on shallow aquifers or interconnected surface water" (TNC 2019). CDFW believes shallow perched aquifers, intermittent surface flows and shallow alluvial aquifers, although rarely used for a water supply, are extremely important to the ecological communities or species that depend on groundwater emerging from all aquifers or from groundwater occurring near the surface within the Basin.	The presence of extensive shallow perched aquifers in the Piru Basin has not been shown, although the area of rising groundwater near the Fillmore/Piru basin boundary is a possible area. The FPBGSA has an ongoing project to install three shallow monitoring wells in this area to investigate those waters and provide properly constructed monitoring locations. The TNC (2019) reference is a general comment and the inference that there are significant vertical gradients across the hydrostratigraphic units in the Piru basin is not supported by the data. Intermittent surface water flow (detached from the underlying aquifers) is not, by definition, groundwater. If vegetation, for example, is supported by the intermittent surface water flows, it does not meet the definition of a Groundwater Dependent Ecosystem. It is well documented that much of the Santa Clara River in the Piru Basin is disconnected from the underlying aquifers with the exception being the area of rising groundwater near the Fillmore/Piru basin boundary.

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GSP	Letter No.	Comment No.	Commenter(s)	Date	Section	Page No.	Line No.	Topic	Comment	Response
Piru		2,A-2 (cont'd)							Recommendation #2(a): CDFW recommends the five areas within the Basin that were mapped as containing potential GDEs be included in the Final GSP as GDEs because these areas rely on the shallow perched groundwater, bedrock groundwater and/or surface water within the Basin. The PBGA has not provided enough data to make the assertion that the groundwater interaction with these GDEs should remain omitted. Water in the shallow alluvial aquifer can also percolate to the main aquifer below. As groundwater pumping occurs from the principal aquifer, water from the shallow alluvial aquifer can become depleted as it recharges the principal aquifer. These are important contributions to sustaining these habitats and Areas 3, 4, and 5 should be reinstated in the Final GSP as GDEs. This shallow alluvial "aquifer" needs to be protected under SGMA. If these GDEs are adversely impacted, groundwater plans should be in place to facilitate appropriate and timely monitoring and management response actions. Recommendation #2(b): CDFW recommends that the best scientific data on depth to groundwater be included in the analysis of interconnected surface waters before any data is excluded. USGS mapped springs/seeps and comparisons of recent groundwater level contours to vegetation root zones should also be included in the analysis. Mapping GDEs and other beneficial uses is an essential component in the consideration, development, and implementation of GSPs (Water Code §10723.2) and in assessing the potential effects on groundwater beneficial uses. GSAs must also include sustainable management criteria and monitoring to detect adverse impacts on all groundwater beneficial users. Recommendation #2(c): CDFW recommends using Normalized Difference Vegetation Index (NDVI) and Normalized Difference Moisture Index (NDMI) to assess habitat health for all five areas on an annual basis and should inform the revision of both the planning and minimum thresholds for the representative wells to within or near the historic baseline. CDFW does not recommend relying solely on soils information. For example, the presence of sandy, dry, and friable soils, does not mean that existing plant species do not rely on groundwater for some portion of their life cycle. Capillary fringe associated with root networks from native plants could be accessing groundwater from deeper depths.	A) There isn't any evidence that potential GDEs rely on perched groundwater or groundwater from the bedrock. The Riparian Shrubland GDEs are mostly comprised of mulefat and other plants that combine shallow roots (< 2 ft) with low water requirements. These plants are generally located where groundwater is 5-10 ft at its shallowest, and generally deeper , based on the new depth to water map in Fall 2011 (ie., the roots are located above the groundwater elevation and the capillary fringe). They are outside the area of mapped rising groundwater and typically do not support surface flow. The plants that make up this GDE may use groundwater during wet years given some uncertainty in the elevation of groundwater, but if groundwater were typically within the rooting zone, the dominant vegetation likely be cottonwoods and willows. B) The depth to groundwater map has been updated using Fall 2011 groundwater contours provided by United Water, based on the assumption that this wet year represents the highest summer groundwater levels in the basin. A discussion of the depth relative to rooting zones has been added to the GSP. C) NDVI and NDMI monitoring of the potential GDE sites has been included in the monitoring program.
Piru	2, A	2,A-3	California Department of Fish and Wildlife (CDFW)	10/20/2021	Appendix K, Section 6.2.1	Appendix K page 136	NS	Fish Hatchery pumping	CDFW is concerned that the Fillmore Fish Hatchery pumping is overquantified. The PBGA states on page 136 that "…there is potential that Fish Hatchery groundwater pumping which constitutes the largest pumping by a single entity in the basins for some years may complicate interpretation of water level data gathered from a new monitor well facility (i.e., measured water levels may not be representative static water levels if they are significantly influenced by the nearby pumping)." Although the Draft GSP identifies the Fish Hatchery as the largest pumping entity (pg. 136), impacts to groundwater levels are substantially minimized by returning pumped water to the main aquifer for recharge. Most of the water pumped from CDFW groundwater wells enter the fish hatchery raceway to sustain young fish. Although some water is lost from evaporation after entering the raceway, the majority of pumped well water is returned to the groundwater system via soil saturation and percolation. CDFW agrees with the PBGA's concern (pg. 136) that the Fish Hatchery production well has the potential to interfere with the accuracy of data collected from the shallow monitoring wells. The Fish Hatchery well is screened at the 300-foot-level whereas the shallow monitoring wells have been proposed at the 100-foot-level. The cone of depression from the Fish Hatchery production well has the potential to skew data as the surrounding areas of the production well in aquifer are slowly replenished. Recommendation #3(a): CDFW recommends the final GSP accurately quantify pumping activities at the Fillmore Fish Hatchery using both pumping and return flow quantities that recharge the aquifer when evaluating impacts to the groundwater. The rising groundwater area around the Fish Hatchery should retain sufficient water levels to protect both the pumping of water and key GDEs as suggested on page ES-1 of the Draft GSP. Recommendation #3(b): CDFW recommends the PBGA investigate adding additional shallow aquifer monitoring wells away from the vicinity of the Fish Hatchery production well to generate additional monitoring data that will accurately identify groundwater pumping trends, interactions, or interferences.	- Depletion of ISW is considered not unreasonable per SWRCB designations of beneficial uses/users (which are specifically referred to in SGMA) and the lack of evidence of spawning/rearing of Steelhead to support the significance of NMFS defined critical habitat. Beneficial use related to fish is limited to migration activities, which are conceptualized to occur when large surface water flows occur along the SCR and tributaries during storm events and wet periods, rather than during dry periods when surface water flow is limited to areas of rising groundwater (i.e., the basin boundaries). The GSA hosted multiple discussions with stakeholders on the merit of including surface water temperature monitoring in the ISW MT. It is not evident how the GSA would alter the GSP if the temperature data were available. Groundwater extraction reductions during prolonged droughts have been shown to not mitigate groundwater declines and shift undesirable impacts to other beneficial uses/users (e.g., DACs, agricultural operations, municipal water supplies).
Piru	2, A	2,A-4	California Department of Fish and Wildlife (CDFW)	10/20/2021	4.1	4-2	23-27	Mitigation	CDFW has not engaged in meaningful discussions of Basin overdraft mitigation with PBGA regarding SGMA project and management actions at the Cienega Springs Ecological Reserve. Page 4-2 of the Draft GSP states, "The FPBGSA desires to dampen the impacts of groundwater extraction by supporting the restoration efforts at the Cienega Restoration Project. The primary action being considered by the FPBGSA is to provide supplemental groundwater to the restoration program during multiyear droughts when the shallow groundwater levels decline to below the Critical Water Level" (Draft Text, Page 4-2, Lines 1-4). Page 4-2 of the Draft GSP also states, "FPBGSA staff have engaged with CDFW representatives about this project and the conversations are continuing. A detailed Mitigation Plan will be developed after the GSP has been adopted by the FPBGSA and the GSP submitted to DWR for their review (Jan 2022)" (Draft Text, Page 4-2, Lines 23-26). CDFW had a meeting on July 12, 2021 to talk about the Cienega Riparian Complex Area with members of TNC and PBGA. Beyond any initial discussions, CDFW has not received detailed information on PBGA's mitigation proposal. CDFW is open to discussing PBGA's potential mitigation projects or management actions that may include the construction of a production well on CDFW property. CDFW believes the Cienega Riparian Complex is situated in an area of rising groundwater. This Cienega Riparian Complex should retain sufficient water levels to protect key GDEs as suggested on page ES-1 of the Draft GSP except during "below normal years of precipitation". During instances of "below normal years of precipitation," the Cienega Riparian Complex has the potential to remain resilient through project and adaptive management actions. Recommendation #4(a): CDFW recommends the installation of additional shallow monitoring wells to inform specific trigger levels and thresholds requiring adaptive management actions. Recommendation #4(b): CDFW recommends the PBGA consider alternate project and management actions as opposed to a production well on CDFW property such as: i) reduced groundwater pumping; ii) implement groundwater pumping allocations; iii) implement Arundo donax removal; and iv) increase the quantity of imported water. CDFW looks forward to discussing these project and management actions to achieve groundwater sustainability within the Basin. Recommendation #4(c): CDFW proposes the final GSP incorporate Recommendation #3(b).	The Basin is not in overdraft. CDFW representative(s) are aware of and have attended FPBGSA Board meetings, where discussion among Board members and stakeholders has occurred regarding potential mitigative actions at the Cienega Springs Restoration Project area. The Board, in consultation with stakeholders, determined that a mitigation project of supplemental water for GDE support during droughts is the best solution for all beneficial users and uses of groundwater. GSA staff have met with CDFW representatives on at least two occassions to outline the proposed mitigative program. The current high-level mitigation plan is to provide supplemental water (from an existing deep well) to restoration experts (i.e., CDFW, TNC) who already have invested time and money in formal plans to make GDEs more resiliant and have jurisdiction over and expert knowledge regarding the best use of water for GDEs. - Recommendation #4(a) - shallow MWs are proposed and planned to be installed at the CSRP area. - Recommendation #4(b) - (i) pumping reductions have been shown to be ineffective at providing total mitigation of declining water levels in prolonged droughts and functionally shift the total impact of drought-induced water level declines to groundwater pumper (including the Fish Hatchery operations). Pumpers have no control over drought-induced groundwater declines, (ii) pumping allocations are not considered reasonable by the Board and merely shift the undesirable impacts from one beneficial user group to others. An allocation program could mean that the Fish Hatchery operations would be subject to a reduction in its groundwater extractions, also. Allocations would also impact the DACs in the basin. Allocations are not favored given the ability to use supplementabl water to mitigate GDE dieoff and reduce undesirable results on GW pumpers (i.e., the economy); (iii) and (iv) are being considered by the Board following GSP adoption. - Recommendation #4(c) - see response to comment 3,A-4

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Piru	2, A	2,A-5	California Department of Fish and Wildlife (CDFW)	10/20/2021	3.2.5	3-7	3-13	SMC - southern California steelhead	CDFW is concerned the depletion of interconnected surface waters will have undesirable impacts on the Federal Endangered Species Act (ESA)-listed southern California steelhead (Oncorhynchus mykiss or steelhead). The PBGA states on page 3-7, lines 3-13 "The Agency deliberated extensively to determine if undesirable results related to the depletion of interconnected surface water, namely loss of Steelhead rearing and spawning habitat along the Santa Clara River as a sustainability indicator, is a significant and unreasonable effect of groundwater conditions. Ultimately, the Agency does not consider this a significant and unreasonable effect related to depletions of interconnected surface water because: (1) there is no designated existing or potential beneficial use for spawning and rearing along the Santa Clara River in the Basin per the LARWQCB Basin Plan (LARWQCB, 1994); (2) there is no evidence of these fish using the surface water (except during major flood events when the Santa Clara River is fully connected with runoff); and (3) even severe (i.e., 50%) pumping reductions would not prevent the surface water at Cienega Riparian Complex from going dry during severe droughts". The Santa Clara River is designated as critical habitat for the survival of steelhead and contains important steelhead spawning and rearing habitat in Southern California (NMFS 2021). The Southern California Steelhead Recovery Plan published in January 2012 by the National Marine Fisheries Service (NMFS) identified the Santa Clara River as one of the highest priority sites for recovery actions, as one of the most likely to sustain independently viable populations, and as critical for ensuring viability of the species as a whole (NMFS, 2012). Threats to steelhead, such as excessively high-water temperatures in the spring, summer, and early fall, reduce available juvenile rearing habitat. Low flows in the fall and winter can delay adult passage to critical spawning areas. CDFW is concerned that groundwater overdraft will lead to losing streams, temperature increases, diminishing refugia pools, and a lack of connectivity flows needed for steelhead migration. Recommendation #5: CDFW believes the Sustainable Management Criteria (SMC) needs to be revised to implement measures that will protect against significant and unreasonable effects related to depletions of interconnected surface water that have been identified in the Basin. Minimum thresholds and measurable objectives for the SCR are important tools that SGMA has provided to quantify groundwater conditions and ensure groundwater sustainability. Monitoring the temperature of the Santa Clara River, which is critical to steelhead survival, is a much- needed component in the Final GSP.	- Depletion of ISW is considered not unreasonable per SWRCB designations of beneficial uses/users (which are specifically referred to in SGMA) and the lack of evidence of spawning/rearing of Steelhead to support the significance of NMFS defined critical habitat. Beneficial use related to fish is limited to migration activities, which are conceptualized to occur when large surface water flows occur along the SCR and tributaries during storm events and wet periods, rather than during dry periods when surface water flow is limited to areas of rising groundwater (i.e., the basin boundaries). The GSA hosted multiple discussions with stakeholders on the merit of including surface water temperature monitoring in the ISW MT. It is not evident how the GSA would alter the GSP if the temperature data were available. Groundwater extraction reductions during prolonged droughts have been shown to not mitigate groundwater declines and shift undesirable impacts to other beneficial uses/users (e.g., DACs, agricultural operations, municipal water supplies).
Piru	2, A	2,A-6	California Department of Fish and Wildlife (CDFW)	10/20/2021	NS	NS	NS	Editorial	The GSA may need to revise the GSP before it is finalized and adopted by the GSA. Recommendation #6: CDFW recommends the GSA provide a red-lined version of the final GSP to understand the changes made between the daft GSP and final GSP. Alternatively, CDFW recommends the GSA provide a summary of changes made and comments addressed by the GSA in preparation of a final GSP.	A red-lined draft Final GSP was posted on the FPBGSA wesbite and available for public review prior to adoption of the Final GSP by the FPBGSA.
Piru	2, A	2,A-7	California Department of Fish and Wildlife (CDFW)	10/20/2021	NS	NS	NS	Sensitive species and habitats	Three of the five GDEs identified in the draft GSP as wetland, and riverine features, excluded by the PBGA are utilized by ESA-listed Steelhead; the FESA-and California Endangered Species Act (CESA)-listed least Bell's vireo (Vireo bellii pusillus), and the FESA-CESA-listed southwestern willow flycatcher (Empidonax traillii extimus). Southwestern pond turtle (Actinemys pallida) was designated as a California Species of Special Concern (SSC) in 1994 and is known to occur throughout the Santa Clara River watershed in four of the five GDEs specified in the Draft GSP. Southwestern pond turtle preferred habitat is permanent ponds, lakes, streams, or permanent pools along intermittent streams associated with standing and slow-moving water. A potentially important limiting factor for the southwestern pond turtle is the relationship between water level and flow in off-channel water bodies (groundwater dependent), which can both be affected by groundwater pumping. Other wildlife resources that could be substantially adversely affected based on declining water levels designated as SSC include coast horned lizard (Phrynosoma blainvillii); coast patch- nosed snake (Salvadora hexalepis virgultea); California legless lizard (Anniella spp.); two-striped garter snake (Thamnophis hammondii); and burrowing owl (Athene cunicularia). If groundwater depletion results in reduced streamflow due to interconnected surface waters, the nesting and foraging success of the SSC yellow warbler (Dendroica petechia), the SSC yellow breasted chat (Icteria virens), least Bell's vireo, southwestern willow flycatcher and other bird species may be diminished due to the reduced nesting habitat and food availability. Proper management of both shallow and deep groundwater pumping combined with reduced surface water pumping and diverting such as that from the would ensure that the Basin is not negatively impacted. Unsustainable use of groundwater can impact the shallow aquifers and interconnected surface waters on which these species and GDEs reply on for survival. This may lead to adverse impacts on fish and wildlife and the habitat they need to survive. Determining the effects groundwater levels have on surface water flows in the Basin will inform how the groundwater levels may be associated with the health and abundance of riparian vegetation. Poorly managed groundwater pumping, and surface water flows have the potential to reduce the abundance and quality of riparian vegetation, reducing the amount of shade provided by the vegetation, and ultimately leading to increased water temperatures in the Basin. Additionally, shallow groundwater levels near ISWs should be monitored to ensure that groundwater use is not depleting surface water and adversely affecting fish and wildlife resources in the Basin.	There is no recorded surface water pumping in this basin. The surface water diversions in this basin average less than 100 AF/year. The GSP provides a rationale for managing groundwater extractions in the basin within sustainable parameters. The GSP increases groundwater monitoring in the areas of rising groundwater in the Fillmore Basin, particularly near the Cienega and East Grove, where rising groundwater connects to interconnected surface water (discharges to the surface, generating surface water).
Piru	2, A	2,A-8	California Department of Fish and Wildlife (CDFW)	10/20/2021	NS	NS	NS	CDFW - environmental conclusions	CDFW has significant concerns about data gaps in the Hydrologic Conceptual Model (HCM), Riparian Groundwater Dependent Ecosystems being eliminated, the description of the CDFW Fillmore Fish Hatchery and listing the proposed Mitigation Plan Project as a SGMA project. CDFW urges the GSA to plan for and engage in responsible groundwater management that minimizes or avoids these impacts to the maximum extent feasible as required under applicable provisions of SGMA and the Public Trust Doctrine. In conclusion, the Draft GSP does not comply with all aspects of SGMA statute and regulations, and CDFW deems the Draft GSP inadequate to protect fish and wildlife beneficial users of groundwater for the following reasons: 1.The assumptions, criteria, findings, and objectives, including the sustainability goal, undesirable results, minimum thresholds, measurable objectives, and interim milestones are not reasonable and/or not supported by the best available information and best available science. [CCR § 355.4(b)(1)] (See Comments 2,A-1, 2, and 5); 2.The Draft GSP does not identify reasonable measures and schedules to eliminate data gaps. [CCR § 355.4(b)(2)] (See Comments 2,A-1, 2, 3, 4 and 5); 3.The sustainable management criteria and projects and management actions are not commensurate with the level of understanding of the basin setting, based on the level of uncertainty, as reflected in the Draft GSP. [CCR § 355.4(b)(3)] (See Comments 2,A-2, 3, 4 and 5); and, 4.The interests of the beneficial uses that are potentially affected by the use of groundwater in the basin, have not been considered. [CCR § 355.4(b)(4)] (See Comments 2,A-1, 2, 3, 4, 5 and see General Comments).	See responses to comments 3, A-1, -2, -3, -4, and -5.

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GSP	Letter No.	Comment No.	Commenter(s)	Date	Section	Page No.	Line No.	Topic	Comment	Response
329:3329	3	3-1	Los Angeles County Sanitation Districts	10/22/2021	NS	NS	NS	Water quality	The Santa Clarita Valley Sanitation Districts are concerned that the chloride, sulfate, and total dissolved solids (TDS) results from wells in the Lower Area East of Piru Creek were compared to incorrect water quality objectives. Per Table 3-13 in Chapter 3 of the Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan), the water quality objectives for the Lower Area East of Piru Creek are 200 mg/L for chloride, 1,200 mg/L for sulfate, and 2,500 for TDS, which are not reflected in the draft GSP. We recommend that the water quality objectives used in the GSP match those in the Basin Plan. The Sanitation Districts would like to suggest several changes that reflect progress that has been made to comply with the Upper Santa Clara River (USCR) Chloride Total Maximum Daily Load (TMDL), which is designed in part to protect groundwater in the east Piru Basin. (See comments 3-2 through 3-5.)	See adjusted text in Section 2.2.2.5.2 of the GSP.
Piru	3	3-2	Los Angeles County Sanitation Districts	10/22/2021	2.2.2.5.2	2-44	13 and 19-20	Water quality	Suggested deletions indicated with double underline, and additions in **bold text**: Section 2.2.2.5.2, TDS, page 2-44, lines 13 and 19-20: Recommend correcting the TDS water quality Objective (WQO) and stating that the TDS result was below the WQO (if the result was below 2,500 mg/L). We also recommend including the TDS result when it's compared to the WQO. Line 13: "• Lower area east of Piru Creek (WQO = 1,200 mg/L **2,500 mg/L**)" Lines 19-20: "One well **[Enter result]** shows TDS by TFR above **below** the WQO in Lower area East of Piru Creek."	See adjusted text in Section 2.2.2.5.2 of the GSP.
Piru	3	3-3	Los Angeles County Sanitation Districts	10/22/2021	2.2.2.5.2	2-45	19 and 24-25	Water quality	Suggested deletions indicated with double underline, and additions in **bold text**: Section 2.2.2.5.2, Sulfate, page 2-45, lines 19 and 24-25: Recommend correcting the sulfate water quality Objective (WQO) and stating that the sulfate result was below the WQO." Line 19: "• Lower area east of Piru Creek (WQO = 600 mg/L **1,200 mg/L**)" Lines 24-25: "One well (646 mg/L) shows sulfate above **below** the WQO in Lower area East of Piru Creek."	See adjusted text in Section 2.2.2.5.2 of the GSP.
Piru	3	3-4	Los Angeles County Sanitation Districts	10/22/2021	2.2.2.5.2	2-46	19 and 24-25	Water quality	Suggested deletions indicated with double underline, and additions in **bold text**: Section 2.2.2.5.2, Chloride, page 2-46, lines 19 and 24-25: Recommend correcting the chloride water quality Objective (WQO) and stating that the chloride results were below the WQO." Line 19: "• Lower area east of Piru Creek (WQO = 100 mg/L **200 mg/L**)" Lines 24-25: "All three wells (117 - 158 mg/L) sampled in 2015 show **chloride below** sulfate above the WQO limit and **but** at or above the toxicity threshold for avocados in Lower area East of Piru Creek."	See adjusted text in Section 2.2.2.5.2 of the GSP.
Piru	3	3-5	Los Angeles County Sanitation Districts	10/22/2021	2.2.2.5.2	2-47	22-24	Water quality	Suggested deletions indicated with double underline, and additions in **bold text**: Section 2.2.2.5.2, Chloride, page 2-47, lines 22-24: Recommend correcting the year the USCR Chloride TMDL was adopted. The USCR Chloride TMDL was fully adopted in 2004. In addition, the Sanitation District has made progress on implementing TMDL actions to mitigate chloride impacts and we recommend that this progress be noted. Lines 22-24: "A chloride total maximum daily load (TMDL) for the Upper Santa Clara River was adopted in 2008 **2004**, but the proposed TMDL actions to reduce and mitigate chloride impacts in the Piru Basin have not yet been fully implemented, **and actions to comply with the TMDL implementation plan to reduce and mitigate chloride impacts in the Upper Santa Clara River and east Piru Basin are underway. The Sanitation District has begun operating the UV disinfection facilities at the Saugus and Valencia WRPs and anticipates that the Advanced Water Treatment Facility will be operational by December 2022, which will bring the Valencia and Saugus WRPs into full compliance with the requirements of the Upper Santa Clara River Chloride TMDL.**"	See adjusted text in Section 2.2.2.5.2 of the GSP.
Piru	4,B	4,B-1	State University of New York College of Environmental Science, University of California Santa Barbara, and Cardiff University	10/9/2021	NS	NS	NS	Groundwater Dependent Ecosystems	Commentors shared research findings to help improve the identification and consideration of GDEs in the Fillmore Basin. These include: 1. Riparian vegetation die-off during the 2012-2016 drought is linked to groundwater decline. 2. The groundwater decline causes more water stress to riparian vegetation than climatic variables. 3. Native cottonwood and willow trees are groundwater-dependent species that rely on constant root access to groundwater for survival and growth, especially during dry summer months and in drought years. 4. The rate of groundwater level decline is as important to riparian vegetation as the absolute depth below which their roots completely lose access to the water table ("critical water depth"). 5. The installation of more shallow monitoring wells is needed to support ongoing efforts to understand the ecohydrological links between groundwater and riparian forests along the SCR. See comment letter for further discussion of these findings.	Additional monitoring wells are planned following the adoption of the GSP in the Cienega area (near the boundary with the Fillmore Basin), along Piru Creek, and between the Del Valle GDE Unit and the confluence with Piru Creek. We have added text about the importance of the rate of groundwater decline to the text of the GDE memo and added a reference to Kibler 2021.

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Piru	5	5-1	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/20/2021	NS	NS	NS	Disadvantaged Communities and Drinking Water Users	The identification of Disadvantaged Communities (DACs) and drinking water users is incomplete. The GSP provides information on DACs, including identification by name and location on a map (Figure 2.1-4). However, the GSP fails to clearly state the population of each DAC or include the population dependent on groundwater as their source of drinking water in the basin. The GSP provides a density map of domestic wells in the basin. However, the plan fails to provide depth of these wells (such as minimum well depth, average well depth, or depth range) within the basin. These missing elements are required for the GSA to fully understand the specific interests and water demands of these beneficial users, and to support the consideration of beneficial users in the development of sustainable management criteria and selection of projects and management actions. Recommendations: 1. Provide the population of each identified DAC. 2. Identify the sources of drinking water for DAC members, including an estimate of how many people rely on groundwater (e.g., domestic wells, state small water systems, and public water systems). 3. Include a map showing domestic well locations and average well depth across the basin.	Figure 2.1.4 provides information on the domestic well locations (with the bottom of the well screen depths) and DAC population. In addition, all of the existing well information is publically available at www.https://fillmore-piru.gladata.com/. Groundwater is the source of drinking water for the entire basin.
Piru	5	5-2	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/20/2021	NS	NS	NS	Interconnected Surface Waters	The identification of Interconnected Surface Waters (ISW) is insufficient, due to lack of supporting information provided for the ISW analysis. To assess ISWs, the plan refers to a previous report by United Water Conservation District, included in the GSP as Appendix E. This Appendix describes a numerical model developed for a regional area that includes the Piru Basin. The main text of the GSP presents a summary of annual depletions of ISW in the Piru Basin at one location of the Santa Clara River. The ISW section of the GSP concludes with the statement (p. 2-56): "Data gaps remain regarding identifying the extent and timing of interconnectedness of other stream channel areas (e.g., Piru Creek and central and eastern portions of the Santa Clara River), due to a lack of paired groundwater level and surface water level monitoring sites. Stream conditions are considered to vary between all three stream conditions depicted on Figure 2.2-28, except at the Dell Valle potential GDE unit (Figure 2.2-30), where stream flows are sustained perennially by wastewater effluent from the Santa Clara River Valley East. The significance of interconnected surface water and groundwater conditions at these areas is less than that of the area of rising groundwater, because surface water exists less often in the Piru Creek and central Santa Clara River reaches (Figure 2.2-11) and surface water flows are sustained in Piru Creek by United releases from Lake Piru." However, no map is provided to show the stream reaches to which this statement refers. Without a map of labeled stream reaches in the basin, it is difficult to understand the location of these reaches, and whether the GSP has included them as potential ISWs in the GSP. In addition, it is unclear whether the GSP is only considering ISWs in areas with "rising groundwater" (gaining conditions). Under SGMA's ISW definition, they must also include losing reaches that maintain a connection with the saturated zone at any point in time and space.	No comment needed
Piru		5-2 (cont'd)		10/20/2021					Recommendations: 1. Provide a map showing all the stream reaches in the basin, with reaches clearly labeled with stream name and interconnected (gaining, losing) or disconnected status. 2. Provide more discussion in the GSP about the groundwater elevation data and streambed elevation data that could be used to verify the modeling analysis for interconnected reaches. Include a map of the interpolated groundwater elevations and spatial extent of groundwater monitoring wells used to produce the map. Discuss screening depth of monitoring wells and ensure they are monitoring the shallow principal aquifer. 3. To confirm the results of the groundwater modeling, overlay the stream reaches shown with depth-to-groundwater contour maps to illustrate groundwater depths and the groundwater gradient near the stream reaches. For the depth-to-groundwater contour maps, use the best practices presented in Attachment D. Specifically, ensure that the first step is contouring groundwater elevations, and then subtracting this layer from land surface elevations from a Digital Elevation Model (DEM) to estimate depth-to-groundwater contours across the landscape. This will provide accurate contours of depth to groundwater along streams and other land surface depressions where GDEs are commonly found. 4. On the ISW map, clearly label the areas with data gaps. While the GSP clearly identifies data gaps and their locations in the text, we recommend that the GSP considers any segments with data gaps as potential ISWs and clearly marks them as such on maps provided in the GSP.	1. A map of the interconnected reaches (Figure 4-6) has been added to the GDE memo 2. The data resolution for shallow groundwater and land surface elevations are not sufficent to accurately generate interconnected reaches by the method suggested in Attachment D of the reviewers comment. Additional shallow monitoring wells are planned to augment the current water level information for the shallow aquifer. 3. Depth to groundwater maps were generated using methods outlined in the recomendations and have been clarified in the text. 4. Reaches with uncertain connection to groundwater were highlighted.
Piru	5	5-3	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/20/2021	NS	NS	NS	Groundwater Dependent Ecosystems	The identification of Groundwater Dependent Ecosystems (GDEs) is incomplete. We commend the GSA for their efforts to evaluate GDEs in the basin, as presented in the GDE Technical Memorandum (Appendix D). The GSP mapped GDEs and potential GDEs using multiple sources, including the NC Dataset (also referred to in the GSP as the iGDE database), California Department of Fish and Wildlife (CDFW) VegCAMP, US Department of Agriculture (USDA) CalVeg, and National Wetlands Inventory data. However, we would also like to see aquatic GDEs (e.g., steelhead critical habitat) mapped. Table 2.2-5 describes the type of GDEs in the basin with dominant flora species and acreage within the basin. Table 2.2-7 presents the critical habitat and special status species in the basin. The Appendix states (p. 21): "In light of the limitations of the monitoring well data, the groundwater elevation data presented in this section are intended to illustrate general trends within GDE units. The spring 2019 depth to water surface (Section 2.1.2), as opposed to monitoring well data, is used to establish GDE connectivity with shallow groundwater." The Appendix describes the challenges with using groundwater monitoring well data for some of the GDE units and explains that 2019 groundwater levels are conservative for GDE mapping. However, we would like to see additional discussion and use of groundwater data from the pre-SGMA benchmark date of 2015 where available (e.g., pre-drought 2011 water levels) to determine which GDE units are connected to groundwater. Furthermore, we found that some mapped features in the NC dataset were improperly disregarded (i.e., coastal live oak (Quercus agrifolia) on slopes). NC dataset polygons were incorrectly excluded for mapped vegetation growing on a clear slope, based on landscape position and improbable connection to groundwater. However, without groundwater data, there is no way to confirm that these NC dataset polygons are not GDEs. If no data are available, then these polygons should be retained as potential GDEs. Recommendations: 1. For GDE units where groundwater elevation data are available, we recommend the pre-SGMA period of 2005-2015 be used to verify a connection to groundwater. If complete data from this period are not available, consider the use of data from 2011 (a wet year) since it is before the SGMA benchmark date of 2015. 2. Identify aquatic GDE habitats (e.g., steelhead critical habitat) in the GSP, and specify which reaches support migration, spawning, and rearing. 3. Re-evaluate the NC dataset polygons that were removed based on their location on a slope. If groundwater elevation data are not available to verify connection to groundwater, retain these polygons as potential GDEs in the GSP.	The 30 ft depth to water was altered based on Fall 2011 water surface data. This increased the extent of GDEs in the Piru Basin, but had little influence on GDEs in the Fillmore Basin. Aquatic GDE units (represented by connected reaches are shown in the new figure 4-6 in the GDE appendix. The justification of removal of coast live oak was expanded in the text of the Section 2.1.3 GDE Appendix "These stands typically occur on the fringes of the basin, where the non-water bearing Pico Formation bedrock outcrops (Figure 2.2-3) and average slopes exceed 20%. It is therefore extremely unlikely that oaks in these areas are connected to groundwater-bearing alluvial or fluvial sedimentary formations."

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Piru	5	5-4	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/20/2021	NS	NS	NS	Native vegetation and managed wetlands	Native vegetation and managed wetlands are water use sectors that are required to be included in the water budget. The integration of native vegetation into the water budget is sufficient. We commend the GSA for including the groundwater demands of this ecosystem in the historical, current and projected water budgets. Managed wetlands are not mentioned in the GSP, so it is not known whether or not they are present in the basin. Recommendation: 1. State whether or not there are managed wetlands in the basin. If there are, ensure that their groundwater demands are included as separate line items in the historical, current, and projected water budgets.	1. There are no managed wetlands in the Basin (based on ...). Evapotranspiration (ET) in the water budget represents all vegetation water use.
Piru	5	5-5	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/20/2021	NS	NS	NS	Stakeholder engagement	Stakeholder engagement during GSP development is insufficient. SGMA's requirement for public notice and engagement of stakeholders is not fully met by the description in the Communication and Engagement Plan (Appendix B). We note the following deficiencies with the overall stakeholder engagement process: 1. The opportunities for public involvement and engagement are described in very general terms. They include attendance at public meetings, a stakeholder email list, updates to the GSP website and social media, and information shared at meetings held by other local agencies and organizations. There is no specific outreach during the GSP development process described for environmental stakeholders and domestic well owners. 2. The Communication and Engagement Plan does not include a detailed plan for continual opportunities for engagement through the implementation phase of the GSP that is specifically directed to environmental stakeholders. Recommendations: 1. Include a more detailed and robust Communication and Engagement Plan that describes active and targeted outreach to engage DAC members, domestic well owners, and environmental stakeholders during the remainder of the GSP development process and throughout the GSP implementation phase. Refer to Attachment B for specific recommendations on how to actively engage stakeholders during all phases of the GSP process.	The FPBGSA conducts extensive outreach to actively engage all stakeholder interests within the basin. Additional text has been added to GSP Section 2.1.5 Notice and Communication that further describes stakeholder outreach and engagement that occured during GSP preparation, including targeted outreach to domestic well owners, including those within DACs. DACs and well owners within those communities are representated on the Board by the Ventura County, City of Fillmore, and Pumpers Association Directors. In addition, among the organizations represented by the Environmental Stakeholder Director is Central Coast Alliance United for a Sustainable Economy (CAUSE), which protects environmental and DAC interest. Outreach to DACs includes numerous mailings and communications to well owners by the Pumpers Associations and FPBGSA participation at targeted stakeholder outreach and education meetings ("WaterTalks") sponsored by the Watersheds Coalition of Ventura County Integrated Regional Water Management (IRWM). Environmental interests are represented on the FPBGSA Board by the Environmental Stakeholder Director. A number of local environmental organizations nominate the Environmental Director and she regularly reaches out and coordinates with numerous local environmental organizations as described in Section 2.1.5. The Ventura County Director provides information and updates to IRWM and Santa Clara River Watershed Committee. The FPBGSA will use the Communications and Engagement Plan and continue GSP development outreach methods to engage a diversity of stakeholders through GSPimplementation."
Piru	5	5-6	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/20/2021	NS	NS	NS	SMCS/Disadvantaged Communities and drinking water users - groundwater levels	For chronic lowering of groundwater levels, the GSP mentions impacts to DACs and domestic drinking water wells when defining undesirable results. The GSP states (p. 3-3): "Groundwater levels below the base of well perforations (or screen intervals) prevents beneficial uses (i.e., domestic) and users (i.e., DACs) from benefiting from the California Human Right to Water due to dry well conditions." However, the GSP does not sufficiently describe how the existing minimum threshold groundwater levels are consistent with avoiding undesirable results in the basin. The measurable objectives set for groundwater elevations do not consider DACs and drinking water users. The GSP states (2-41): "Historically water quality chemicals (analytes or constituents) of concern (COCs) in the Fillmore and Piru basins have generally included, but are not necessarily limited to, the following analytes: Total Dissolved Solids (TDS), Sulfate, Chloride, Nitrate, and Boron." The GSP further states (2-50): "Additional potential COCs in the Piru Basin were identified [as] Radiochemistry (gross alpha and uranium), Selenium, Lead, Iron, and Manganese." The GSP states that the minimum thresholds for degraded water quality correspond with water quality objectives (WQOs) and maximum contaminant levels (MCLs) established by the Los Angeles Regional Water Quality Control Board (LARWQCB) Basin Plan and California Division of Drinking Water (DDW), respectively. However, they are not specifically provided in Section 3 (Sustainable Management Criteria) of the GSP. For degraded water quality, the GSP does not discuss direct and indirect impacts on DACs or drinking water users when defining undesirable results for degraded water quality, nor does it evaluate the cumulative or indirect impacts of proposed minimum thresholds on these stakeholders. The GSP does not set any measurable objectives for the degraded water quality sustainability indicator.	No cooment needed

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Piru	5	5-6 (cont'd)	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund						Recommendations re: Chronic Lowering of Groundwater Levels: 1. Describe further the direct and indirect impacts on DACs and drinking water users when defining undesirable results for chronic lowering of groundwater levels. 2. Consider and evaluate the impacts of selected minimum thresholds and measurable objectives on DACs and drinking water users within the basin. Further describe the impact of passing the minimum threshold for drinking water users. For example, provide the number of domestic wells that would be de-watered at the minimum threshold. Recommendations re: Degraded Water Quality: 1. Describe direct and indirect impacts on DACs and drinking water users when defining undesirable results for degraded water quality. For specific guidance on how to consider these users, refer to "Guide to Protecting Water Quality Under the Sustainable Groundwater Management Act." 2. Evaluate the cumulative or indirect impacts of proposed minimum thresholds for degraded water quality on DACs and drinking water users. 3. Include the minimum thresholds established for the identified COCs in Section 3 (Sustainable Management Criteria) of the GSP, instead of just stating that they align with drinking water standards. 4. Set measurable objectives for the degraded water quality sustainability indicator.	The GSA is responsible for the impacts associated with the implementation of the GSP. The GSP does not materially change how the water resources in the basin are being managed. DACs are subsets of the domestic, municipal, and agricultural groundwater users in the basin. The reviewers comments suggest that DACs in the Piru basin are a separate group of stakeholders that are not included within other stakeholder categories. The DACs in the basin are served by a combination of the Town of Piru's water system, various mutual water companies, or by their own domestic wells. The GSP addresses impacts to DACs when discussing how projected future groundwater conditions will effect municipal and industrial, domestic well owners, and agricultural users. It is not correct in this basin to equate all DACs to domestic well users nor are all domestic well operators DACs. The MT for the Declining Water Level sustainability indicator was set by the FPBGSA Board of Directors at when the water levels in 25% of the representative wells (there are several in the basin) decline to depths below the bottom of the well perforations (functionally a dry well). The representative wells are spatially distributed throughout the basin and complete at a variety of depths. So, the number of domestic wells that would be impacted by a MT violation would depend on which suite of the representative wells had water levels fall below the bottom of the well screen. There are several possible permutations. Qualitatively, if the deepest 25% of the representative wells exceed the MT, then several shallow domestic wells would be impacted, however if the shallowest 25% of the representative wells exceeded the MT, the number of shallow domestic wells that would be impacted will be less. Table 2.2-3 provides a summary table of the regulatory water quality thresholds for several analytes, however, it is acceptable to incorporate references to water quality standards rather than providing a detailed list in the GSP. MOs were not set for the degraded water quality sustainability indicator as the GSA is not responsible for regulating water quality in this basin. The inclusion of MOs sets objectives that the GSA is expected to strive for, however, they lack the regulatory authority over water quality.
Piru	5	5-7	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/20/2021	NS	NS	NS	SMCs/ Groundwater Dependent Ecosystems and Interconnected Surface Waters	We commend the GSA for their comprehensive analysis of undesirable results for GDEs and ISWs. The GSP analyzes the impacts on GDEs when defining undesirable results for three sustainability indicators (i.e., chronic lowering of groundwater levels, degraded water quality, and depletions of interconnected surface waters). For minimum thresholds, the GSP states (p. 3-9): "The MT for groundwater levels in the Cienega Restoration / Fish Hatchery area is set at the critical water level (Kibler, 2021 and Kibler et al., 2021), 10 ft below 2011 low groundwater levels (i.e., the MO). If/when this MT is exceeded, mitigation (Section 4) will be implemented to offset the undesirable result that would occur without adequate soil moisture." The GSP does not, however, assess the impacts of minimum thresholds on the other GDEs in the basin. The GSP notes that the Cienega Riparian Complex has historically shown the greatest degradation due to groundwater levels (p. 2-78). It also describes this impact as an undesirable result due to groundwater levels declining, resulting in (p. 3-4) "die off of riparian vegetation (e.g., cottonwood or willow species in the Cienega Riparian Complex GDE unit), due to groundwater level declines below the critical water level, that are attributable to groundwater pumping." If the minimum threshold is exceeded, the referenced mitigation action will require months or years to implement. However, there is no discussion of interim pumping reductions or other actions that could have an immediate positive impact on the undesirable result. Recommendations: 1. Provide explicit discussion of how the minimum threshold (10 feet below 2011 groundwater levels) will prevent undesirable results specifically for all GDEs in the basin, not just those in the Cienega Restoration / Fish Hatchery area. 2. State directly what the depth to groundwater corresponds to under the GDEs for the proposed minimum threshold (10 feet below 2011 groundwater levels), and how it compares to plant rooting depth information. 3. Consider GDEs when establishing measurable objectives and evaluate the measurable objectives based on GDE water needs.	We used Kibler 2021 as the source for definig a critical water level. Kibler's analyses indicated that a 10 ft decline in the water level was an important threshold below which vegetation can die off. This relationship was presumed to be applicable to other the other GDEs. Based on Stillwater 2021a, the only GDE area to experience material die off was the Cienega/Fish Hatchery area. The explicit MT is shown at Figure 3.5-4. The MO for GDEs is the 2011 low water level which functionally represents "a full basin condition".
Piru	5	5-8	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/20/2021	NS	NS	NS	Climate change	The SGMA statute identifies climate change as a significant threat to groundwater resources and one that must be examined and incorporated in the GSPs. The GSP Regulations8 require integration of climate change into the projected water budget to ensure that projects and management actions sufficiently account for the range of potential climate futures. The effects of climate change can intensify the impacts of water stress on GDEs, making available shallow groundwater resources more critical for their survival. Research shows that GDEs are more likely to succumb to water stress and rely more on groundwater during times of drought9. When shallow groundwater is unavailable, riparian forests can die off and key life processes (e.g., migration and spawning) for aquatic organisms, such as steelhead, can be impeded. The integration of climate change into the projected water budget is insufficient. The GSP does incorporate climate change into the projected water budget using DWR change factors for 2070. However, the GSP does not consider multiple climate scenarios (e.g., the 2070 extremely wet and extremely dry climate scenarios) in the projected water budget. The GSP should clearly and transparently incorporate the extremely wet and dry scenarios provided by DWR into projected water budgets or select more appropriate extreme scenarios for their basins. While these extreme scenarios may have a lower likelihood of occurring, their consequences could be significant, therefore they should be included in groundwater planning. The GSP includes climate change into key inputs (e.g., precipitation, evapotranspiration, surface water flow, and sea level) of the projected water budget. However, imported water is not included in the projected water budget or stated to be adjusted for climate change. The GSP calculates a sustainable yield based on the projected water budget with climate change incorporated. However, if the water budgets are incomplete, including the omission of extremely wet and dry scenarios and projected climate change effects on imported water volumes, then there is increased uncertainty in virtually every subsequent calculation used to plan for projects, derive measurable objectives, and set minimum thresholds. Plans that do not adequately include climate change projections may underestimate future impacts on vulnerable beneficial users of groundwater such as ecosystems, DACs, and domestic well owners. Recommendations: 1. Integrate climate change, including extreme wet and dry scenarios, into all elements of the projected water budget to form the basis for development of sustainable management criteria and projects and management actions. 2. Incorporate imported water inputs that are adjusted for climate change to the projected water budget. 3. Incorporate climate change scenarios into projects and management actions.	Use of the 2070CT climate change factors in the forward groundwater modeling effort indicated that the basin was in a functionally sustainable condition. Analysis of the extreme wet future climate scenario, would have resulted in the basin being "more sustainable." The 2070CT extremely dry scenario was not considered likely based on independent analyses provided by Oakley et al 2019. The 2070CT climate change factors are considered sufficient in other approved GSPs. Climate change factors were incorporated into the projected water budgets. When the GSA is prepared to consider their projects and management actions, they will likely conduct further analyses on the cost-benefit relationship under future climate scenarios. It is important to recognize that the future climate conditions for this inland portion of Ventura County are not dramatically different from current conditions and certainly those differences are not of the magnitude forecast for other regions.

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GSP	Letter No.	Comment No.	Commenter(s)	Date	Section	Page No.	Line No.	Topic	Comment	Response
Piru	5	5-9	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/20/2021	NS	NS	NS	Data gaps	The consideration of beneficial users when establishing monitoring networks is insufficient, due to lack of specific plans to increase the Representative Monitoring Points (RMPs) in the monitoring network that represent water quality conditions and shallow groundwater elevations around DACs and domestic wells in the basin. Figure 2.1-8 (Existing Groundwater Elevation Monitoring Programs Map) and Figure 2.1-9 (Existing Groundwater Quality Monitoring Programs Map) show that no monitoring wells are located across portions of the basin near DACs and domestic wells (see maps provided in Attachment E). Beneficial users of groundwater may remain unprotected by the GSP without adequate monitoring and identification of data gaps in the shallow aquifer. The Plan therefore fails to meet SGMA's requirements for the monitoring network. The GSP provides comprehensive discussion of data gaps for GDEs and ISWs. Section 3.5.4.4.2 (Potential New Monitor Wells) discusses plans to include installation of new shallow monitoring wells to provide water level data around GDEs and ISWs, which is further described in Appendix D (Assessment of Groundwater Dependent Ecosystems for the Fillmore and Piru Basins Groundwater Sustainability Agency) and Appendix K (Monitoring Network and Data Gaps). However, this information is scattered across several locations in the GSP without a comprehensive set of maps provided. Recommendations: 1. Provide maps that overlay monitoring well locations with the locations of DACs and domestic wells to clearly identify potentially impacted areas. Increase the number of representative monitoring points (RMPs) in the shallow aquifer across the basin for the groundwater elevation and water quality groundwater condition indicators. Prioritize proximity to DACs and drinking water users when identifying new RMPs. 2. Provide maps that overlay existing and proposed monitoring well locations with the locations of GDEs and ISWs to clearly identify potentially impacted areas. 3. Describe further the biological monitoring that can be used to assess the potential for significant and unreasonable impacts to GDEs or ISWs due to groundwater conditions in the basin. Appendix D discusses remote sensing of GDEs using NDVI or other data to monitor the health of GDEs through time, but few details are provided. 4. Provide discussion that adaptive changes in SMC for GDEs will be made, if GDE groundwater or biological monitoring reveals that existing SMC are not protective of these ecosystems.	1. Additional monitoring wells are being installed with DWR Grant Funding; Figure 3.5-1 shows the locations of the proposed new wells to be added to the monitoring network. The GSA can consider adding some of the new monitoring wells to the RMP list if is assists with water resource management strategies. the data gap figure can be updated with domestic wells to demonstrate sufficient data coverage 2. Section 3 contains a figure (3.5-1) showing GDEs, ISW and proposed monitoring points. 3. The biological monitoring will be focused on the use of NDVI analyses from the Fall of each year and will be evaluated and summarized in each 5-year GSP update.
Piru	5	5-10	The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, Clean Water Action/Clean Water Fund	10/20/2021	NS	NS	NS	Projects and Management Actions	The consideration of beneficial users when developing projects and management actions is insufficient, due to the failure to completely identify benefits or impacts of identified projects and management actions to beneficial users of groundwater such as DACs and drinking water users. We commend the GSA for including several projects and management actions with explicit benefits to the environment. However, the GSP does not discuss the manner in which DACs and drinking water users may be benefitted or impacted by projects and management actions identified in the GSP. Potential project and management actions may not protect these beneficial users. Groundwater sustainability under SGMA is defined not just by sustainable yield, but by the avoidance of undesirable results for all beneficial users. The plan's commitment to mitigate the undesirable result on the Cienega Riparian Complex GDE is insufficient. The plan is confusing in that the mitigation refers only to the Cienega Springs Restoration project and does not seem to propose any mitigation for the Cienega Riparian Complex GDE. Furthermore, it is not clear how the proposed Projects 1 & 2 would mitigate impacts to the Cienega Riparian Complex GDE even if it is part of the Cienega Springs Restoration project area. Recommendations: 1. For DACs and domestic well owners, include a drinking water well impact mitigation program to proactively monitor and protect drinking water wells through GSP implementation. Refer to Attachment B for specific recommendations on how to implement a drinking water well mitigation program. 2. For DACs and domestic well owners, include a discussion of whether potential impacts to water quality from projects and management actions could occur and how the GSA plans to mitigate such impacts. 3. For GDEs, include the following: 1) Add a map showing the locations of the Cienega Riparian Complex GDE and the Cienega Springs Restoration project, 2) Explain how the proposed management actions will mitigate the undesirable result occurring at the Cienega Riparian Complex GDE, 3) Develop immediate and longer term management actions to address the undesirable result occurring at the Cienega Riparian Complex (e.g., immediate pumping reductions when the minimum threshold is reached, non-native vegetation removal should die-off occur). 4. If the data gathered from additional monitoring in the basin reveals that other GDEs are present, develop mitigation actions for undesirable impacts on those GDEs.	1. We refer to the Statewide Dry Well Reporting system for collecting information on dry well conditions (known have been reported in this system, nor at Board meetings by representatives). Domestic well users frequently fall into the de minimus category and the GSA cannot mandate that de minimus users report their groundwater extractions or water levels. The GSA can, with the approval of the de minimus user, record water levels. The GSP does not explicitedly follow the system offered in the Drinking Water Well Impact Mitigation Framework, however, many of its element have been incorporated into the GSP. For example, no "Yellow Light" or "Red Light" triggers (as presented in the DWWIMF) exist for the Piru basin. 2. The Mitigation Plan for the Cienega Springs Restoration Project has yet to be developed. The details of that plan will include a consideration of how the mitigative actions will effect both the CSRP and CRC GDEs. (3) Pumping reductions near the Santa Clara River have been shown to be ineffective at totally mitigating declining water levels during a drought. Pumping reductions likely create undesirable impacts to groundwater users such as DACs, municipalities, and agriculture. The GSP includes a potential Project and Management Action regardin non-native vegetation removal that will be considered by the GSA in the future.
Piru		5-10 (cont'd)							5. Recharge ponds, reservoirs, and facilities for managed stormwater recharge can be designed as multiple-benefit projects to include elements that act functionally as wetlands and provide a benefit for wildlife and aquatic species. For guidance on how to integrate multi-benefit recharge projects into your GSP, refer to the "Multi-Benefit Recharge Project Methodology Guidance Document." 6. Develop management actions that incorporate climate and water delivery uncertainties to address future water demand and prevent future undesirable results.	5) No response required 6) When the GSA is prepared to consider their projects and management actions, they will likely conduct further analyses on the cost-benefit relationship under future climate conditions.
Piru	6	6-1	United Water Conservation District	10/22/2021	1.0	NS	NS	Introduction	The Piru Basin GSP is well organized and well written. The purpose and sustainability goals of the Piru Basin GSP are clearly defined, and the background agency information presented is consistent with United's understanding.	Comment noted
Piru	6	6-2	United Water Conservation District	10/22/2021	2.0	NS	NS	Plan Area and Basin Setting	United appreciated the opportunity to contribute to the Piru basin GSP through the development of the recent updates for the hydrogeologic conceptual model and the numerical surface water and groundwater flow modeling that were referenced and used throughout much of Section 2. The GSP hydrogeologic conceptual model identifies and describes aquifer zones A, B, and C within the basins that are based on varying aquifer properties and depths of occurrence following United's presentation of a similar convention within the referenced modeling reports. We believe that the GSP adequately describes the variability within the aquifer zones with the data currently available. For management purposes, we believe that identifying a single Principal Aquifer within both the Piru and Fillmore basins is appropriate given the limited number of wells screened only in zone C, as well as the number of wells that are screened across zones B and C in both basins. As new data become available in the future, we look forward to collaborating with the FPBGSA to continually improving our understanding of surface water and groundwater conditions, refine the hydrogeologic conceptual model for the basins if necessary, and periodically refine and update the numerical surface water and groundwater flow models, as needed.	Comment noted

RESPONSE TO PUBLIC COMMENTS - PIRU GSP

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Piru	6	6-3	United Water Conservation District	10/22/2021	3.0	NS	NS	Sustainable Management Criteria	United believes the sustainable management criteria described in the GSP and supporting documents, including measurable objectives and minimum thresholds, are defined appropriately and are reasonable. However, we suggest that more content from Appendix J (Technical Memorandum relating to the Sustainable Management Criteria) be included within the relevant portions of the GSP document and be referenced more clearly, especially in Section 3.4 where measurable objectives are addressed. United agrees that the current understanding of present-day and future groundwater uses in Piru Basin does not suggest that significant and unreasonable impacts should be expected for the six SGMA sustainability indicators. United agrees that undesirable results related to seawater intrusion are not applicable sustainable management criteria in Piru Basin as described in Section 2.2.2.4 of the draft GSP. Additionally, United agrees that the potential future depletion of interconnected surface water as presented in the Piru Basin GSP in the context of temporary habitat loss is reasonable and should not be considered a significant and unreasonable effect, as supported by the explanations mentioned in Section 3.2.5 of the draft GSP. Related to the monitoring network background, analysis, and proposed expansion, United agrees with the information provided in Section 3 of Piru Basin's Draft GSP and looks forward to supporting efforts to collect additional data related to the current and proposed expansion of the monitoring network for the sustainable management criteria for which sustainable management criteria have been developed.	See updated Section 3.4
Piru	6	6-4	United Water Conservation District	10/22/2021	4.0	NS	NS	Projects and Management Actions	United agrees with the proposed projects and management actions that support the five sustainable management criteria for which sustainable management criteria have been developed. We agree that these projects and management actions have the potential to enhance the water resources of the Piru Basin and aid in keeping the basin closer to the desired future conditions. United looks forward to supporting efforts related to ongoing project planning and implementation in the near future.	Comment noted
Piru	6	8-5	United Water Conservation District	10/22/2021	5.0	NS	NS	Implementation	United is committed to supporting efforts related to ongoing project planning and implementation in the future.	Comment noted
Piru	7	7-1	Ventura County Public Works Agency	10/21/2021	Executive Summary	ES-1	NS	Editorial - SMC terminology	On page ES-1, it is recommended that the sustainability criteria be renamed to match the terminology used in the regulations: 1. Chronic Lowering of Groundwater Levels 2. Reduction of Groundwater Storage 3. Seawater Intrusion 4. Degraded Water Quality 5. Land Subsidence 6. Depletions of Interconnected Surface Water	See updated ES-1
Piru	7	7-2	Ventura County Public Works Agency	10/21/2021	Executive Summary	ES-1	NS	SMCs, Groundwater Dependent Ecosystems and Interconnected Surface Waters	On page ES-1, the rationale for exclusion of the sustainable management criteria (SMC) for Interconnected Surface Water because it is "not applicable due to significant effect of droughts that deplete rising groundwater areas" should be explained in more detail. There is interconnected surface water as well as GDEs supported by rising groundwater, all of which are influenced by the hydrology, including groundwater pumping. This comment applies to all portions of the Draft where interconnected surface water and GDEs are discussed and the SMC is excluded, particularly in Section 3 (SMC).	See Sections 2.2.1.5.6, 2.2.2.7 and 3.2.1 inthe GSP, as well as additional technical details in Appendix J.
Piru	7	7-3	Ventura County Public Works Agency	10/21/2021	NS	NS	NS	Editorial, groundwater model	There are references to the groundwater model in Appendix E throughout the text body. It would be helpful to include a summary discussion on the model in the GSP text rather than requiring the reader to review the detailed modeling appendix.	Comment noted
Piru	7	7-4	Ventura County Public Works Agency	10/21/2021	Executive Summary	ES-2	57	Water quality	On page ES-2, line 57 states "Water quality changes in the basin are not expected due to the implementation of the GSP." It should be noted if there are water quality impacts from upstream wastewater effluent disposal.	See updated language in the Executive Summary
Piru	7	7-5	Ventura County Public Works Agency	10/21/2021	2.1.2.2	NS	NS	Conjunctive use programs	In Section 2.1.2.2, recommend listing the conjunctive use programs between the Upper Santa Clarita Water District and United Water Conservation District that would provide greater operational flexibility of groundwater resources within the Basin.	See updated language in Section 2.1.2.2
Piru	7	7-6	Ventura County Public Works Agency	10/21/2021	2.2.1.3	NS	NS	Sustainable yield, basin storage	In Section 2.2.1.3, the description of the interface of the water-bearing alluvium and underlying consolidated material of the San Pedro Formation implies that the basin bottom is not clearly defined. There is no discussion of how this could affect the estimated sustainable yield or basin storage.	- This does not significantly affect the ability to evaluate changes in storage because the significant changes in storage occur in the shallower portions of the aquifer by virtue of changes in the water table associated with the predominant unconfined conditions of the Principal Aquifer.
Piru	7	7-7	Ventura County Public Works Agency	10/21/2021	2.2.1.4	NS	NS	Aquifer zones	Section 2.2.1.4 lists the two principal aquifers in the Subbasin (unconfined Main Aquifer and the semi-confined Deep Aquifer). There are subsequent references to Aquifer Zones A, B and C per United (2021a). Discussion of the relationship between the principal aquifers and the Aquifer Zones is not introduced until Section 3.5.1.2.2. It would be helpful to the reader to introduce this relationship in Section 2.2.1.4 and when discussing Aquifer Zones in other parts of the text. Further, it would be helpful to include the relative depths (and thickness) of these aquifers and the aquitard separating them found in Section 2.2.1.4.2 to better support Section 2.2.1.3.	See responses to comments 1-1, 1-2, and 1-3. See updated Section 2.2.1.4.
Piru	7	7-8	Ventura County Public Works Agency	10/21/2021	2.2.1.4.4	NS	NA	Well status	Section 2.2.1.4.4 states that 316 wells have at least one historical water quality sample. Are these wells still active and can they be sampled?	There are many active wells in the basin (147), however, it is unknown how many could be sampled for water quality. The ability to sample the wells depends on the access to the property, wellhead configuration (i.e., is the well equipped with a sampling port or similar method to collect a water sample), presence/absence of pumping equipment in the well, and availability of power to operate the pump.
Piru	7	7-9	Ventura County Public Works Agency	10/21/2021	2.2.1.4.4, 2.2.2.5.1	NS	NS	Groundwater quality	In Sections 2.2.1.4.4 and 2.2.2.5.1, elevated chloride and sodium levels in groundwater east of Piru Creek could be attributed to wastewater effluent discharged to the Santa Clara River from upstream Santa Clarita wastewater treatment plants (WWTPs). Have there been any actions or orders from the Los Angeles Regional Water Quality Control Board (LARWQCB) to reduce chloride and sodium in these effluents?	See updated language in Section 2.2.2.5.1 in the GSP

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Piru	7	7-10	Ventura County Public Works Agency	10/21/2021	2.2.1.5.6	NS	NS	Surface water diversions	In Section 2.2.1.5.6, it would be informational to include an estimate of the quantities of water diverted by each listed entity.	See updated information is this section of the GSP
Piru	7	7-11	Ventura County Public Works Agency	10/21/2021	2.2.2.5.2	NS	NS	Groundwater quality	In Section 2.2.2.5.2, elevated nitrate levels could be attributed to upstream discharges from septic systems and agricultural fertilizers and chemicals.	Comment noted
Piru	7	7-12	Ventura County Public Works Agency	10/21/2021	2.2.2.5.3	NS	NS	Groundwater quality	Section 2.2.2.5.3 states that the water percolated by the Piru WWTP percolation ponds likely does not have sufficient volume to impact the groundwater quality in the basin. Has a comparison been made between COC concentrations of the effluent discharged by the Piru WWTP to other WWTPs in Santa Clarita? Additional monitoring wells located on the eastern boundary of the basin might provide further data pertaining to the influx of chloride and other COCs from upstream sources.	A comparison of the upstream WWTPs effluent water quality and that of the Piru WWTP has not been performed.
Piru	7	7-13	Ventura County Public Works Agency	10/21/2021	NS	2-6	9,18	Surface water budget	On page 2-62, lines 9 and 18, recommend explaining how the surface water diversions are accounted for in the groundwater model.	Surface water diversions are discussed in Appendix E
Piru	7	7-14	Ventura County Public Works Agency	10/21/2021	NS	2-63	7	Surface water budget	On page 2-63, line 7 states "The Basin water budget is estimated based on flows calculated from the calibrated VRGWFM (United, 2021a)." It would be beneficial to elaborate on the main components of the groundwater and surface water budgets.	Subsequent sections in the GSP contain more information on the details of the water budgets.
Piru	7	7-15	Ventura County Public Works Agency	10/21/2021	NS	2-63	26-28	Surface water budget	On page 2-63, lines 26–28 state "underflow from the East Santa Clara River Valley basin is modelled as essentially zero in the groundwater model because the outside hydrogeology is significantly less permeable and the aquifer material…is thin." Has the underflow been quantified or estimated?	- The groundwater model budget has been updated to include underflow (compare ranges to historical studies).
Piru	7	7-16	Ventura County Public Works Agency	10/21/2021	NS	2-64	28	Surface water budget	On page 2-64, line 28 states "the maximum ET flux was increased to 0.014 feet per day (5.2 feet per year) in order to account for…" This reference is from the groundwater model. Are other groundwater model assumptions used as components of the water budget?	- Yes they are described in greater detail in each corresponding water budget component in the United GW model documentation.
Piru	7	7-17	Ventura County Public Works Agency	10/21/2021	NS	2-67	Table 2.2-8, 5-7	Groundwater budget	In Table 2.2-8 and lines 5–7, "United's allocation of imported SWP water deliveries varies from between zero and 60% (of the 3,150 AFY allocation for Santa Clara River Valley basins) during dry years, to more than 60% and even more than 100% during above average and wet years." There may be more recent estimates of average deliveries. The 2019 SWP Delivery Capability Report has reported Table A deliveries at 52-58%.	- Incorporated.
Piru	7	7-18	Ventura County Public Works Agency	10/21/2021	NS	NS	Table 2.3-9	Historical water budget	In Table 2.2-9, a note should be added for the years that are represented as "historical." The text later indicates 1988-2015 for groundwater budget on Table 2.2-10. Is this the same period for surface water? What is the relationship between the values from the surface water budget and the groundwater budget?	- Table updated with historical years noted. (1988-2015) - Same period for surface water. (1988-2015) - The surface water budget and groundwater budget are related primarily by the SW-GW exchange component.
Piru	7	7-19	Ventura County Public Works Agency	10/21/2021	NS	2-70	11-13	Historical water budget	On page 2-70, lines 11-13 state "Higher average pumping rates during dry periods (Figure 2.2-34) is biased largely due to wells that pumped during the early 1990s drought but have since become inactive or destroyed." How does this affect pumping in future scenarios?	- Future pumping relates to analogous years from the historic pumping records. Analogous years were selected based on the years in the historic record that are similar to the precipitation and temperature of each year in the future climate dataset (created based on adjusting historic time period 1943 through 2019 with climate change factors provided by DWR). Therefore, the future pumping samples historic pumping from a mixture of years, including the higher pumping rates from the early 1990s and lower pumping rates from recent years (i.e., 2017-2019).
Piru	7	7-20	Ventura County Public Works Agency	10/21/2021	NS	NS	Tables 2.2-10, 2.2-12, 2.2-14	Groundwater budget	An explanation should be provided regarding how the annual flow for Mountain Front Recharge is calculated/estimated in Tables 2.2-10, 2.2-12 and 2.2-14. Is this based on stream exchange data?	Please refer to Section 3.5.2.4 in Appendix E.
Piru	7	7-21	Ventura County Public Works Agency	10/21/2021	3.2.3.1	3-5	NS	Undesirable results criteria	On page 3-5, Section 3.2.3.1, more rationale should be provided on the criteria to define undesirable results (i.e., drop below well screen in 25% of the representative monitoring sites or groundwater elevations drop below the minimum threshold (MT) [not yet discussed] equivalent to the critical water level of 10 feet below fall of 2011 conditions.	- See updated Section 3.2.3.1.
Piru	7	7-22	Ventura County Public Works Agency	10/21/2021	3.3.1	NS	NS	Groundwater levels	Section 3.3.1 indicates that no dry wells have occurred in Ventura County, according to the DWR Household Water Supply Shortage Reporting System. Does FPBGSA plan to survey wells to assess if any have become dry?	The Pumpers Association can initiate outreach to pumpers, but there is no significant threat identified based on historical groundwater elevation contours and similarities simulated in the future GW model with climate change. Domestic wells are likely de minimus extractors and are not required to report their pumping to the GSA, but can certainly share water level data from their wells with the GSA at their discretion. The GSA does not cuttently have plans to survey the domestic wells.
Piru	7	7-23	Ventura County Public Works Agency	10/21/2021	3.3.5	NS	NS	Subsidence minimun threshold	In Section 3.3.5, the rationale for the establishment of the subsidence MT should be explained.	The subsidence MT is established based on tech memo from Pumper's Association / Bryan Bondy, as well as extensie stakeholder discussions at multiple board meetings and workshops.

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Piru	7	7-24	Ventura County Public Works Agency	10/21/2021	NS	NS	NS	Evapotransporation	Is there an available and up-to-date evapotranspiration map available for the Basin and/or the adjacent Fillmore Basin? Figure 2.1-3 is a Land Use Map listing various crops in the Basin, but it would be helpful to develop an evapotranspiration figure based on the various crops.	Basin-scale evapotranspiration maps are not included in the UWCD groundwater model documentation or the GSP. An evapotranspiration map can be developed for the 5 year GSP update, if deemed appropriate.
Piru	7	7-25	Ventura County Public Works Agency	10/21/2021	3.5.4.1.1, 3.5.4.4.2	NS	NS	Data gaps - monitoring points	Sections 3.5.4.1.1 and 3.5.4.4.2 state that there is a potential monitoring point data gap in the eastern portion of the Basin and there are a limited number of wells that access deep groundwater from the Deep Principal Aquifer. Does FPBGSA plan to install additional monitoring points to address these gaps?	See adjusted text in these sections.
Piru	7	7-26	Ventura County Public Works Agency	10/21/2021	4.5	NS	NS	Water quality monitoring	In Section 4.5, water quality monitoring wells should be installed to monitor shallow groundwater quality, especially entering the eastern boundary of the Basin.	The alluvium thickness in the extreme eastern portion of the Piru basin is thin (a few 10s of feet) and this area was not prioritized for new monitoring wells at this time. If grant or other funds become available in the future, the GSA can consider additional monitoring wells in the extreme eastern portion of the basin.

Fillmore and Piru Basins
Groundwater Sustainability Agency

Appendix C-3

Response to Comments on Preliminary Draft Subsidence Technical Memorandum

Fillmore and Piru Basins
Groundwater Sustainability Agency

Appendix C-4

Response to Comments on Preliminary Draft Groundwater Dependent Ecosystems Assessment

RESPONSE TO COMMENTS

Comment number	Comment	Organization	Issue	Response
GDE_001	**Do Not Eliminate GDEs Based on the 30-foot Depth to GroundwaterCriterionComment:** 2.1.2 Procedure, starting on p. 11 - GDE identification, required per California Code of Regulations, Title 23 § 354.16(g), is based on methods that risk exclusion of ecosystems that may depend on groundwater. **Issue #1:** The GDE-FPB Memo utilizes Rohde *et al* . (2018) by "*assigning GDE status to vegetation communities either within 30 feet of the ground surface or where interconnected surface waters are observed* " (pg. 11). This depth-to-groundwater method applied to the Natural Communities Commonly Associated with Groundwater (NCCAG) dataset to eliminate potential GDEs is fallible.	CDFW	Do not use 30 ft depth to Groundwater	The 30 foot depth to water threshold does a reasonable job of capturing phreatophytes in the basins and is considerably deeper than the rooting depth of most of the mapped vegetation which is <15 ft. In addition, because the gradient in groundwater is relatively steep outside the zones of rising groundwater, increasing the threshold depth would not change the extent of GDEs very much (see Figure 2.1-2 in the revised document).
GDE_002	**Issue #2:** CDFW is concerned with the removal of potential GDEs with a depth to groundwater greater than 30 feet from the 2005-2015 baseline. The 2005-2015 baseline that the analysis depends on (starting pg. 74) falls several years into a historic drought when groundwater levels throughout the Fillmore Basin were trending lower than usual due to reduced surface water availability. As such, this period of groundwater elevations with several years of a historic drought does not consider representative climate conditions or account for GDEs that can survive a finite period without groundwater access (Naumburg et al. 2005). Naumburg *et al* .(2005) presents several models that evaluate how GDEs rely on fluctuating groundwater elevations for long-term survival. GDEs have been sustained by groundwater, despite the depth of the groundwater table being greater than 30 feet below ground surface due to these fluctuating groundwater elevations.	CDFW	Do not use 30 ft depth to Groundwater	Our approach used the highest groundwater data (e.g., Spring 2019) that was available to us. Our goal was to include vegetation communities that could potentially use groundwater at any time in their life history (i.e., not just in summer or drought years). We did not exclude GDEs within 30 ft, but do note where the rooting depth of most plants is shallow and groundwater is deep. The text was revised to clarify the approach we used.
GDE_003	**Recommendation:** CDFW recommends developing a hydrologically robust baseline that considers the groundwater elevation fluctuations associated with climate conditions. This approach would also account for the inter-seasonal and inter-annual variability of GDE water demand.	CDFW	Develop new baseline hydrology	See above, we do this by using the highest groundwater available.
GDE_004	**Comment**: 3.3.1 Piru Groundwater Basin, p. 27 - data gap regarding effluent releases in Los Angeles County. Issue: CDFW agrees with the GDE-FPB Memorandum that effluent releases in Los Angeles County are believed to be a significant contributor to surface water flow. Riparian habitat, a GDE within the basin, relies on various locations with a high groundwater table and the subsurface flows that help to maintain the high groundwater table.	CDFW	Effluent into basin as a data gap	Given the relatively thin alluvial sediments in this reach, the team was unable to find a suitable place to monitor groundwater.
GDE_005	Recommendation: CDFW recommends closely monitoring effluent releases in Los Angeles County, to understand and incorporate how much the effluent releases contribute to not only surface flow, but also subsurface flow and groundwater recharge.	CDFW	Effluent into basin as a data gap	Releases from Los Angeles County will continue to be monitored by UWCD.
GDE_006	Comment #3: Additional Remote Sensing and Shallow Groundwater Wells are Needed to Understand Groundwater Elevations for GDE Units Comment: 3.1 Groundwater Levels, p. 19 - data gaps "because there are no representative wells located in or near the unit. Many of the wells used in the analysis below are screened below the shallow groundwater depths used by GDEs and may not accurately represent the actual groundwater elevation."	CDFW	Sparse monitoring network	See response GDE_008
GDE_007	Issue: CDFW agrees with the GDE-FPB Memorandum that the groundwater levels may not be accurate under the GDEs due to lack of critical groundwater level data. According to p. 30 - "The role of shallow groundwater elsewhere in the basin is less certain and will be assessed based on interpolated groundwater elevation and vegetation." The current monitoring network lacks enough representative distribution of shallow groundwater monitoring wells to monitor impacts to environmental beneficial uses and users of groundwater and interconnected surface waters [23 CCR § 354.34(2)].	CDFW	Sparse monitoring network	See response GDE_008
GDE_008	Recommendation: CDFW recommends the installation of shallow groundwater monitoring wells near potential GDEs and interconnected surface waters, potentially pairing multiple-completion wells with additional streamflow gauges. CDFW agrees with the GDE-FPB Memorandum's recommendation on p. 91 that states: "remote sensing and shallow groundwater elevation monitoring, particularly during and following droughts is recommended." This will facilitate an improved understanding of surface water-groundwater interconnectivity and the overall health of GDEs.	CDFW	Sparse monitoring network	The Fillmore and Piru Basins GSA has identified 6 new or modified wells to monitor groundwater elevations. These wells are located near GDEs and cover gaps in the data record.
GDE_009	Many wells are located at higher elevations compared to GDEs, and when comparing depth-to-groundwater well data to plant rooting depths this can result in misinterpretation in groundwater-connectivity. Recommendation: Instead of using groundwater well data near GDEs, correct for land surface elevation at GDEs to determine depth-to-groundwater at the GDEs. See Best Practice #5 in this TNC guidance: https://groundwaterresourcehub.org/public/uploads/pdfs/TNC_NCdataset_BestPracticesGuide_2019.pdf	FSCR	Sparse monitoring network	Added description of GDE elevation transects to Section 3.1. Added maximum and minimum GDE elevations to depth to water plots and discussion.
GDE_010	Section 5.4.3 should describe groundwater thresholds for the 3 GDE units most susceptible to groundwater impacts. For example, it is highly recommended that groundwater levels at Cienega be restored to pre-drought (circa 2011) levels. This will ensure that groundwater conditions can facilitate riparian succession can occur, that the invasive non-native Arundo donax doesn't take over and increase evapotranspiration losses in the basin, and critical species habitat isn't permanently lost. Recommendation: One way to determine thresholds and objectives (ideal conditions) for your three target GDEs is to plot NDVI versus depth to groundwater (DEM corrected). This would assist in determining what depth to groundwater conditions are needed to maintain GDE conditions. Use a baseline prior to the recent drought, which is more hydrologically robust, building in resilience and taking precautions for future droughts and accounting for projected mega-droughts. The average 2011 hydrograph and groundwater level in the shallowest aquifer could perform as a measurable objective.	FSCR	Describe groundwater thresholds for GDE units	Added depth to water and NDVI plots to the technical memo.
GDE_011	The Nature Conservancy has new updated guidance on developing groundwater thresholds and objectives for ecosystems. Recommendation: Please review https://groundwaterresourcehub.org/public/uploads/pdfs/GroundwaterThresholdFramework_Final_updated_Dec2020.pdf	FSCR	Updated Nature Conservancy guidance on depth to water	Added description of GDE elevation transects to Section 3.1. Added max/min GDE elevations to depth to water plots and discussion.
GDE_012	Reevaluate Elimination of GDE's Based on a 30-foot Depth to Groundwater Criteria. At the March 18, 2021 FPBGSA stakeholder workshop, California Department of Fish and Wildlife representative Steve Slack noted that the Department has noted GDE's with the rooting depth to groundwater that was greater than 30 feet and voiced concern with the removal of potential GDEs using this criteria. Page 3 of 9 FPBGSA Draft GDE Tech Memo Recommendation: Follow CDFW suggestion to develop a hydrologically robust baseline that considers groundwater elevation fluctuations associated with climate conditions, inter-seasonal and inter-annual variability of GDE water demand and source species list noting GDE's with a rooting depth greater than 30 feet.	FSCR	Do not use 30 ft depth to Groundwater	See Response to GDE_002.
GDE_013	Projected Flow Releases from Los Angeles County. Effluent releases from Santa Clarita wastewater treatment works and bypass flows from Pyramid Dam (Southern State Water Project) are contributors to surface water flow, and riparian habitat and GDEs within the basin. Both facilities are going through re-permitting processes. Recommendation: Monitoring and/or request reporting of effluent releases from Los Angeles County needs to be adequately captured in the inter-basin memorandum of understanding. The MOU should include timelines to adequately capture any and all foreseen changes to future releases, particularly if these trigger minimum thresholds associated with sustainable management criteria for beneficial users and uses.	FSCR	Effluent into basin as a data gap	UCWD will continue to monitor effluent releases from LA County.
GDE_014	However, the potential effects on non-vegetative beneficial users and uses such as Southern steelhead, and the subsequent steps of setting of sustainability criteria for these, needs further development and improvement. Without a thorough understanding of hydrologic/biotic relationship, the draft Groundwater Sustainability Plan cannot ensure that significant and unreasonable adverse impacts from groundwater depletion are avoided (California Department of Water Resources 2016).	FSCR	Non-vegetation GDEs	Text changes were made to section to specifically address O. mykiss.
GDE_015	Recommendation: Further analysis and efforts to assess the quantity and timing of interconnected surface water and groundwater is necessary for GDE's. These either need to be developed or captured as a data gap with actionable study to address data gap by the five-year review of the GSP. Installation of additional shallow groundwater monitoring wells and streamflow gauges near GDEs are necessary to understand the interconnectedness and monitor ongoing health and SMC compliance.	FSCR	Interconnected surface water	Additional monitoring wells are discussed in the monitoring appendix. These wells are located near GDEs and should improve our understanding of shallow groundwater dynamics. There is a section on interconnected flows in the document and we have more explicitly discussed fish passage and interconnected surface water.

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Comment number	Comment	Organization	Issue	Response
GDE_016	Currently, the Draft Sustainability Criteria for GDEs are based on statewide data on "vegetation known to use groundwater" and doesn't include minimum thresholds and measurable objectives for groundwater used by other biological resources, such as seasonal migration of fishes. The TNC framework does call for further biological assessment in the case of endangered species. The lack of further biological assessment and SMC development would be a gross omission in thoroughly identifying GDE needs in the Draft Plan. In addition to supplying water to the root zone of plants, groundwater can also contribute to surface flows, influencing the timing, duration, and magnitude of surface flows, particularly base flows that support aquatic invertebrates, avian fauna, and fish species, including native resident and anadromous fishes. Groundwater that supports seasonal surface flows can also contribute to the life-cycle of migratory fishes, such as steelhead and lamprey, that can make use of intermittent flows for both migration, spawning and rearing. While we appreciate and commend Stillwater Sciences on identifying GDE, the current vegetative-centric approach to minimum thresholds and measurable objectives of GDE's is not sufficient to capture the potential impact to other beneficial uses/biota.	FSCR	Interconnected surface water	We have added more information on O. mykiss passage related to groundwater. O. Mykiss rearing in the mainstem is a data gap. SMC development is discussed elsewhere in the GSP.
GDE_017	Recommendation: All identified environmental beneficial uses and users need to be explicitly included in the Draft Plan's sustainability goals, not solely vegetative communities. SMC's need to be developed that will capture and protect all GDE's identified. Model-based predictions suggest a minimum flow of 800 cfs is required to provide a depth of 0.6 ft continually across 10ft of channel (Keller et.al, 2006), and should be considered when setting sustainability criteria for a wider set of beneficial uses/users in the GSP.	FSCR	Assess impacts on in-stream habitat	The beneficial users have been more explicitly described in the text. Text changes were made to section to specifically address O. mykiss in relation to interconnected surface water.
GDE_018	While these groundwater-influenced flows may not support permanent vegetative cover, they can nevertheless support seasonal use of this reach of the Santa Clara River for migratory or rearing purposes, depending on the amount, and timing of annual rainfall and runoff and the groundwater elevation. The Santa Clara River along its entire reach is always connected to an aquifer because it either receives water from the surrounding sediments or supplies water to the surrounding sediments, or both. This reach is also designated critical steelhead habitat and constitutes a beneficial use.	FSCR	Assess impacts on in-stream habitat	We have expanded this discussion. Note that interconnected surface water requires that the groundwater be connected to surface flows through a continuous saturated zone. Groundwater recharge from disconnected surface water is common in many reaches of the Santa Clara River.
GDE_019	It is also important to recognize that the TNC assessment of groundwater water conditions reflects conditions that have been and continue to be significantly influenced by extensive water developments within the Santa Clara River watershed, including extensive water diversion and groundwater pumping programs (e.g., Pyramid, Santa Felicia, and Castaic dams); these activities have had a cumulative affect on groundwater levels and related surface flows within the Fillmore and Piru basins (Stillwater 2011a). Past and/or current effects of anthropogenic activities should not exclude or significantly delay the capacity of the aquatic environment to develop or maintain essential physical or biological features that species rely upon for growth and survival, otherwise the SMC's and ultimately the GSP would not be consistent with the sustainability requirements of SGMA. This reiterates the importance of the MOU and inter-basin agreement with upstream users aforementioned...To ensure that the Fillmore and Piru Basins GSA's GDE Tech Memo and subsequent GSP's adequately recognizes instream beneficial uses of the Santa Clara River that are potentially affected by the management of groundwater within the basins, the sustainable management criteria, minimum thresholds, and measurable objectives, must analyze and capture the important relationship between the extensive surface diversions and groundwater recharge program within the basins, and its potential adverse effects on GDE's and namely the federally endangered steelhead (Oncorhynchus mykiss).	FSCR	Assess impacts on in-stream habitat	Text changes were made to section to specifically address O. mykiss in relation to interconnected surface water.
GDE_020	Undesirable results for Southern steelhead include any adverse loss or modification to critical steelhead habitat (rearing, spawning and migration corridors) that hinders the ability of designated critical habitat to provide for steelhead survival because of pumping. Outside of the aforementioned flow metricadditional complementary sustainability metrics could include those used in NMFS "envelope method"3. Many natural variables such as seasonal surface flow patterns, water quality including temperature and established wetted channel, are significantly impacted by artificial modification in freshwater habitat and are possible metrics for minimum thresholds and measurable objectives. Ultimately identifying a metric that will identify an affect to the timing, duration and/or magnitude of surface flows essential for steelhead migration, spawning and rearing due to sub-surface extractions. Steelhead metrics will likely have a spatial and temporal component, as sustainability needs may vary due to life-cycle needs and migration windows, which may require dedicated management areas.	FSCR	Assess impacts on in-stream habitat	Steelhead rearing in the Santa Clara River is a data gap. There is no data on steelhead rearing in the Fillmore and Piru basins, although previous research has identified the mainstem Santa Clara River as a migration corridor (Stoecker and Kelley 2005). We have adjusted the text to reflect the connection bewteen rising groundwater and steelhead passage.
GDE_021	. To adequately address Southern steelhead impacts, a steelhead limiting factor analysis may likely be needed, as the Recovery Plan's analysis may be too course for these two basins. This is a data gap that can better inform management decisions that invariably may impact the endangered species. The GSA needs to identify the flow levels that effectively support essential life-history functions, specifically flows that adequately support adult steelhead and smolt migration during the winter and spring, and juvenile rearing year-round. The steelhead limiting factor analysis, shallow groundwater monitoring wells paired with stream flow gauges will begin to address the existing data gap around hydrologic/biotic relationships. Low summer baseflow is a significant stress to steelhead, and groundwater inputs can affect fine scale surface flow conditions and will need to be closely monitored in identified GDE areas.	FSCR	Assess impacts on in-stream habitat	Based on the lack of data on steelhead use of interconnected surface water in the Fillmore and Piru Basins, a limiting factors analysis is beyond the scope of the GSA's responsibility, but the GSA would offer letters of support for such a study.
GDE_022	While pool depths and riffle depth were discussed as possible sustainability metrics, it was acknowledged that changing channel morphology makes it difficult to map in a reliable way. Furthermore, we would caution using a minimum instream flow need, as these don't necessarily address broader life history needs and habitat requirements for long-term survival and recovery. Functional flows that incorporate and provide migration cues for adult steelhead and ecological flow functions will need to be sustained.	FSCR	Assess impacts on in-stream habitat	See previous comments regarding steelhead.
GDE_023	FSCR requests that a revised Draft Tech Memo and Sustainable Management Criteria Matrix be re-circulated to give interested parties an opportunity to review and comment on the memo before it is finalized. Particularly, as per the TNC Critical Species Lookbook, it behooves the GSA to formally request NMFS' comments on the draft at this juncture. Further input from the Santa Clara River Steelhead Coalition could also be requested to ensure pertinent stakeholders are adequately engaged.	FSCR	Additional agency input	Noted.
GDE_024	We do however recommend removal of the California Condor, as known condor habitats are not associated valley floor riparian areas.	UWCD	Change species inventory	Condor is removed as a GDE species because the habitat is not part of a GDE in these basins.
GDE_025	As noted by the authors, the Tech Memo also includes multiple incorrect references to Pacific lamprey occurrence in the Santa Clara River upstream of Sespe Creek and in lower Piru Creek. Please remove those inaccurate references.	UWCD	Change species inventory	This has been fixed.

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Comment number	Comment	Organization	Issue	Response
GDE_026	The authors appear to presuppose that all riparian habitats in the Piru and Fillmore basins are Groundwater Dependent Ecosystems (GDEs). The documents consistently refers to all riparian communities as "GDE Units." Simply "riparian plant communities" or "potential GDE Units" would be a much better working reference throughout the document. Consistent use of the GDE Unit term applied to areas that are finally determined to not be GDEs provides ample opportunity for inaccurate or misleading citations or references to the Tech Memo. Notable, the authors drop the GDE Unit tag in Section 5.4.3 when three Riparian Complexes are identified as important GDEs for consideration in the Groundwater Sustainability Plans (GSPs) for the Piru and Fillmore basins.	UWCD	GDE vs riparian unit	We've added some discussion to clarify this and describe the GDEs as potential GDEs, then discuss GDE likelihood in Section 5.
GDE_027	The Tech Memo lacks a clear definition of what distinguishes a GDE from other riparian communities sustained by surface water flows, soil moisture, or shallow local/perched groundwater occurrence that is not subject to significant influence from pumping from the main aquifers of the basins. It would be helpful if these definitions were included early in the document.	UWCD	GDE vs riparian unit	This has been clarified in the text.
GDE_028	Discussion of the hydrology associated with the Del Valle Riparian Complex could be much improved. United's understanding is that rising groundwater primarily occurs in the upper portions of this complex in the western portion of the Eastern basin (in Los Angeles County). Less than a mile downstream of the county line (the rather arbitrary head of the Piru basin), the abandoned Blue Cut gaging station is located on a bedrock high. From this point downstream to the Las Brisas bridge, surface flow is thought to be stable, and sustained by the rising water and recycled water discharges in Los Angeles County. The river transitions to a losing reach near the Las Brisas bridge, the current location of the USGS stream gage. A shallow water table commonly exists in this area, but is clearly sustained by the surface water flows from upstream areas. Please take care to describe this area in more detail and note that the occurrence of rising water in this area is not influenced by any known groundwater pumping in the Fillmore basin.	UWCD	Del Valle hydrology discussion	Added description of Del Valle and upstream hydrology, following UCWD comments.
GDE_029	Please take care when referencing United's groundwater elevation contours. Noting a shallow depth to water in a single year near the western margins of Santa Clara River Riparian Shrubland habitats in the Piru and Fillmore basins should not suggest that United believes shallow groundwater is common across those habitats. United agrees with Stillwater's assessment that Tributary Riparian areas are not likely to be "connected to groundwater."	UWCD	UCWD groundwater elevation contour references	We've added a map of the contour depth and text that clarifies that these are high groundwater conditions and are not reflective of typical groundwater levels.
GDE_030	Well 03N20W08A01S may be a poor choice to represent shallow groundwater elevations in the East Grove Riparian Complex. Water level records from this well appear to show a confined aquifer response from deeper production zones. One would expect shallow groundwater levels to be much more stable in this area known to commonly have groundwater discharge to the channel of the Santa Clara River.	UWCD	Selection of representative wells	Well deleted.
GDE_031	Regarding the Del Valle Riparian Complex, surface water flow in the first mile of the Santa Clara River within the Piru basin likely includes groundwater inputs, but below Blue Cut the river is stable or losing. Care should be taken to appropriately characterize how or if groundwater production in the Piru basin would significantly influence the health or extent of the Del Valle Riparian Complex.	UWCD	Impact of groundwater production in Piru basin on Del Valle unit	Added discussion of Del Valle.
GDE_032	Page 2 states flows on Piru Creek have been regulated except for the 1969 flood. In 2005 the dam also spilled (12,000 cfs?) and so there may be other instances of this. UWCD staff should check the records to verify this statement.	Ventura Co Public Works	Piru surface water	Refer this question/comment to United.
GDE_033	Page 4, reference to USGS gauge 11114000 seems to indicate it is still active. The USGS has not maintained or published the data for this gauge for sometime. Currently this is done by Watershed Protection for their gauge 723 and wehave operated the gauges at locations 720 and 724 as well.	Ventura Co Public Works	Gage 11114000	The period of record (1927-2004) was added to the text.
GDE_034	The inconsistent use of plant community nomenclature throughout the document, as well as the lack of clear community descriptions, invalidates the conclusions regarding ecological value and dependence on groundwater.	Ventura Co Public Works	Vegetation descriptions	We have clarified some of the community names in the text (e.g., tamarisk versus saltcedar). We decided to use the community name assigned by the relevant vegetation map (there were 3 different). We then used our experience in the basin to assess dominant species and things like rooting depth.
GDE_035	Incorrect usage/spelling of common and scientific names occurs throughout the text.	Ventura Co Public Works	Vegetation descriptions	This has been edited.
GDE_036	For special-status species, we suggest emphasizing that SWFL and WYBC requiremore extensive and contiguous riparian woodlands, compared to LBVI which canmake use of smaller scrub patches.	Ventura Co Public Works	Vegetation descriptions	Added text to describe this.
GDE_037	We agree that m ore shallow wells are needed to discern the true level and extent of groundwater in the GDEs. Incomplete data sets lead to many assumptions in the analyses.	Ventura Co Public Works	Sparse monitoring network	Comment noted.
GDE_038	We agree with the conclusion that the Del Valle, Cienega, and East Riparian Complexes are the most important GDE units Grove to consider in the GSP analyses. We recommend more study and data collection to determine how the Santa Clara River Riparian Shrubland GDE units are affected by groundwater and if its management wou ld affect them. The Shrublands form substantial cover within the river and provide habitat connectivity among the Riparian Complexes.	Ventura Co Public Works	Sensitivity of SCR Riparian Shrubland units to GW changes	One of the monitoring wells proposed by FPBGSA is located near the downstream end of the riparian shrubland. This unit has very shallow rooted plants, disconnected surface water and very rare shallow groundwater.
GDE_039	In this section, please clarify why the FPBGSA has not determined projects and/or management actions are needed. Do the conclusions in this and other reports indicate the GDEs are adequately sustained and current groundwater extractions are not affecting them? Or has the FPBGSA not yet developed management actions due to a need for more information or time?	Ventura Co Public Works	Projects and management actions	This is clarified in the Draft GSPs.
GDE_040	The Stillwater Sciences 2013 reference page 11 is not included in the list of literature cited.	Ventura Co Public Works	References	Reference updated.
GDE_041	As explained more fully in the enclosure, the Draft Memorandum does not, but should, adequately address the recognized instream beneficial uses of the Santa Clara River, or other GDE, potentially affected by the management of groundwater within the Fillmore and Piru Groundwater Basins. In particular, the revised Draft Memorandum should adequately recognize or analyze the important relationship between the extensive groundwater extractions program within Fillmore and Piru Groundwater Basins (and the conjunctively managed Fox Canyon Groundwater Basin) and its potential adverse effects on the federally endangered steelhead (Oncorhynchus mykiss) and habitat for this species.	NMFS	Assess impacts on in-stream habitat	We have clarified the discussion of interconnected surface water where the interconnected water occurs and have highlighted special status species dependent on interconnected water.
GDE_042	Management of the groundwater of the Fillmore and Piru Basins has affected the water resources and other related natural resources in the Santa Clara River Watershed. For example, extraction of groundwater from these basins has lowered groundwater levels to the point of inducing eliminated artesian springs that supported a wide variety of plant and animal species, and affected surface flows that support the migrations of endangered steelhead in the Santa Clara River Watershed (Stillwater Sciences 2007a, 2007b, 2011a, 2011b, Beller et al. 2011). The development and operation of surface water supply facilities throughout the Santa Clara River are integral in the management of the groundwater resources associated with the Santa Clara River. Facilities such as Pyramid Reservoir, Santa Felicia Dam, Piru Creek Diversion and spreading basins, and the Vern Freeman Diversion Dam and spreading basins have profoundly altered the natural surface flow and groundwater recharge patterns in the Santa Clara River Watershed, from the headwaters to the Pacific Ocean (e.g., NMFS 2008a, 2008b). Unless the Draft Memorandum is revised to reflect the operation of these integral components of the groundwater management program for the Santa Clara River, the future adopted GSP will be unable to meet the requirement of SGMA to explicitly provide for the protection of habitats, including those recognized instream beneficial uses that are dependent on groundwater such as fish migration, spawning and rearing, as well as other GDE.	NMFS	Assess impacts on in-stream habitat	We have expanded the discussion of O. mykiss and compared groundwater flows with passage flows and more explicitly indicated that while this reach of the Santa Clara is thought to be primarily a migration corridor, the use of the interconnected portions of the stream for rearing is a data gap.

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Comment number	Comment	Organization	Issue	Response
GDE_043	When analyzing impacts on steelhead or other aquatic organisms resulting from groundwater and related streamflow diversions, identifying flow levels that effectively support essential life functions of this organism is critical (Belin 2018, Barlow and Leake 2012). Specifically, it is essential to determine what flows (and pool depths) adequately supports adult steelhead migration during the winter and spring, and juvenile rearing year round. Without an understanding of these hydrologic/biotic relationships, a GSP cannot ensure that significant and unreasonable adverse impacts from groundwater depletion (and in the case of the Santa Clara River, the integrally related surface water diversion/groundwater recharge program) are avoided (Heath 1983, California Department of Water Resources 2016	NMFS	Assess impacts on in-stream habitat	We have added information on passage flows for the mainstem Santa Clara. See response to NMFS 2 regarding rearing habitat.
GDE_044	page 1. The Draft Memorandum relies heavily on the Nature Conservancy's (TNC) guidance for GDE analysis (Rohde et al. 2018). According to this guidance, GDE are defined on their dependence on groundwater for all or a portion of their water needs. The Draft Memorandum concludes, "Mapping GDEs requires mapping vegetation that can tap groundwater through their root systems, assessing where the depth of groundwater is within the rooting depth of that vegetation, and mapping the extent of surface water that is interconnected with groundwater (Rohde et al. 2018)." The method used by TNC in identifying GDE is based on statewide data on "vegetation known to use groundwater", and therefore does not adequately reflect the uses made of groundwater by other biological resources, such as seasonal migration of fishes, or other organisms such as invertebrates that have differing life-cycles and environmental requirements than plants (TNC 2018). In addition to supplying water to the root zone of plants, groundwater can also contribute to surface flows, influencing the timing, duration, and magnitude of surface flows, particularly base flows. These base flows provide essential support to aquatic invertebrates, avian fauna, and fish species, including native resident and anadromous fishes. In addition, groundwater that only seasonally supports surface flows can contribute to the life-cycle of migratory fishes, such as steelhead, that can make use of intermittent flows for both migration, spawning and rearing (Boughton et al. 2009, 2006).	NMFS	Non-vegetation GDEs	We have expanded the discussion of interconnected surface water as GDEs and the influence of base flows.
GDE_045	pages 5-7 The Draft Memorandum relies almost exclusive on historical ecology study of Beller et al. (2011). This study, while providing valuable information on the type and distribution of various vegetative communities does not provide comparable information on aquatic species associated with the Santa Clara River. The habitats covered Beller et al (2011) are principally riparian and terrestrial, omitting coverage of various types of aquatic habitats (e.g., pools, runs, riffles, glades, etc.) should be covered explicitly.	NMFS	Assess impacts on in-stream habitat	See discussion of aquatic habtats in the Section 4.1.4. Given the correspondence between the historical wetlands and interconnected surface water Beller et al. (2011) seems appropriate. We do not know the changes to the extent of habitat units through time, but this is likley tied to changes in geomorphology rather than groundwater.
GDE_046	pages 8-14 methodology focuses exclusively on vegetation known to use groundwater and, therefore, ignores the seasonal variation in the groundwater levels in the reach of the Santa Clara River underlain by the Fillmore and Piru Basins that can periodically (seasonally, or intra-annually) support surface flows by affecting their timing magnitude, and duration.	NMFS	Interconnected surface water	We have clarifiied the correspondence between the historical wetland units and interconnected surface water.
GDE_047	The surface flows at the confluence of Piru Creek, Hopper Creek, Pole Creek and Sespe Creek are important for maintaining surface hydrologic connectivity for steelhead (and other native aquatic-dependent species) attempting to migrate between these major tributaries and the middle reaches of the Santa Clara River (Kelley 2004, Kajtaniak 2008, Francis 2009). While these groundwater-influenced flows may not be sufficient to support permanent vegetative cover, they can nevertheless support seasonal use of this reaches of the Santa Clara River for migratory or rearing purposes, depending on the amount and timing of annual rainfall and runoff and the groundwater elevation. (For a study of the role of intermittent flows in the rearing phase of O. mykiss, see Erman and Hawthorne 1976, Boughton et al. 2009).	NMFS	Assess impacts on in-stream habitat	Groundwater connection of these reaches is not known.
GDE_048	page 16 In describing its procedure to identifying sensitive species, the Draft Memorandum includes "Direct—species directly dependent on groundwater for some or all water needs (e.g., cottonwood with roots in groundwater, juvenile steelhead in dry season)." We would note that groundwater levels can influence late spring surface flows, and these flows can be important for juvenile O. mykiss attempting to emigrate out of the Santa Clara River Watershed, including from the Piru Creek, Hopper Creek, and Sespe Creek tributaries that are within the boundaries of the Fillmore and Piru Basins.	NMFS	Assess impacts on in-stream habitat	We expanded the discussion of O. Mykiss.
GDE_049	page 19. The revised Draft Memorandum should recognize that the effects of droughts on groundwater levels can be and often are exacerbated by groundwater extractions. One of the primary purposes of SGMA is to identify these anthropogenic effects on groundwater levels (and the related GDE) so that groundwater resources may be managed in a way to protect all beneficial uses of groundwater, including fish and wildlife, such a southern California steelhead (as well as other native aquatic resources). Therefore, when revising the Draft Memorandum, every effort should be made to ensure that: 1) all anthropogenic effects on the amount and extent of groundwater are properly and accurately cataloged, 2) practices are defined to remedy the cataloged effects on GDE, and 3) the practices are instituted and the effects adaptively managed to ensure GDE receive sufficient protection in accordance with the SGMA.	NMFS	anthropogenic effects on groundwater levels	New modeling information discussing the effects of groundwater pumping on surface flows have been added to the discussion.
GDE_050	page 19. The Draft Memorandum also notes, "Long-term records of shallow groundwater are relatively rare in the Fillmore and Piru groundwater basins." And, "We were unable to examine the groundwater levels in the Tributary Riparian GDE unit because there are no representative wells located in or near the unit." As noted above, groundwater levels that support surface flows, particularly in the late spring can be important in maintaining surface flow connectivity between the Santa Clara River and the tributaries (Sespe Creek, Pool Creek, Hopper Creek, Piru Creek) which lay within the boundaries of the Fillmore and Piru Basins. These surface flows can be important for juvenile O. mykiss attempting to emigrate out of the Santa Clara River watershed, including from the Piru Creek, Hopper Creek, Pole Creek, and Sespe Creek tributaries. Interrupting the timing, magnitude, and duration of these flows as a result of groundwater extraction can be deleterious to juvenile O. mykiss. Groundwater levels should be monitored in the Tributary Riparian GDE, and any potential effects should be addressed in the revised Draft Memorandum.	NMFS	Interconnected surface water	It is not clear that these reaches have interconnected surface water and most of the Tributary Riparian Unit is unlikley to be affectd by groundwater extraction.
GDE_051	page 27. The Draft Memorandum notes, "Surface waters within the Piru and Fillmore groundwater basins have varying degrees of connection to groundwater." And the "Santa Clara River has alternating perennial and intermittent reaches with perennial reaches occurring where rising groundwater contributes the vast majority of the surface water (except during storm events with significant runoff) and the intermittent reaches are losing reaches that are disconnected from groundwater during most of the year." The pattern of alternating perennial and intermittent/or ephemeral surface flows are known as an "interrupted" surface flow regime, and is common in southern California watersheds, particularly where groundwater play a role in maintaining surface flows. This pattern can be altered through changing the groundwater elevations; this issue should be addressed in the revised Draft Memorandum.	NMFS	Interconnected surface water	The area's rising and falling groundwater have persisted since the earliest records (see Beller et al. 2011) and are geologically controlled by variations int the valley width rather than by grounwater extractions.
GDE_052	The Draft Memorandum notes, "Several small ephemeral tributaries to the Santa Clara River and Piru Creek occur in the reach and are disconnected from groundwater." It is not clear what tributaries are being referred to here. In addition to several unnamed tributaries in this reach (which may be ephemeral), there are also two other significant tributaries which enter from the north side of the Piru Basin (Piru Creek and Hopper Creek); neither of these should be classified as intermittent, though both have been impacted by water surface water diversions (Santa Felecia Dam on Piru Creek) and groundwater extractions (from both Piru Creek and Hopper Creek).	NMFS	Piru surface water	We are not aware of evidence suggesting that Piru Creek was historically perennial in the basin and would be happy to get some. Similarly, the degree to which Hopper Creek within the basin is disconnected due to groundwater pumping rather than due to deep surface groundwater is not known.

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Comment number	Comment	Organization	Issue	Response
GDE_053	page 28. The Draft Memorandum also notes, "To our knowledge, there has not been a systematic exploration of the extent of surface water in lower Piru Creek." We would note that similarly there is no known systematic exploration of the extent of surface water in lower Hopper Creek. For a discussion of the hydrology and steelhead resources of Piru Creek, (including lower Piru Creek, see NMFS (2008b).	NMFS	Piru surface water	Uncertainty surrounding Hopper Creek has been added.
GDE_054	page 28. The Draft Memorandum notes, "Other tributaries within the Fillmore Groundwater Basin, including Pole Creek, Boulder Creek, and Timber Creek are typically ephemeral or intermittent." The upper reaches of Pole Creek maintains perennial flows, but surface flows in the lower reaches within the Fillmore Groundwater Basin have been impacted by development on the alluvial fan formed by the confluence of Pole Creek and the Santa Clara River. As noted above groundwater levels that support surface flows, particularly in the late spring can be important in maintaining surface flow connectivity between the Santa Clara River and the tributaries (Pole Creek and Sespe Creek) which lay within the boundaries of the Fillmore Basin. These surface flows are important for juvenile O. mykiss attempting to emigrate out of the Santa Clara River watershed. Interrupting the timing, magnitude, and duration of these flows as a result of groundwater extraction can be deleterious to juvenile O. mykiss. This potential effect should be addressed in the revised Draft Memorandum.	NMFS	Assess impacts on in-stream habitat	The lower reaches of Pole Creek are not currently connected to groundwater, and the degree to which the upper reaches are connected to groundwater or to the main aquifer is a data gap.
GDE_055	page 28. The Draft Memorandum noted, "This period includes [a] relatively wet 2011 and the 2012–2016 drought." The revised Draft Memorandum should provide correlative groundwater extraction rates for these years to better understand the effects of variable groundwater levels and precipitation.	NMFS	anthropogenic effects on groundwater levels	We have included a model showing the change to surface flows if 50% of the pumping (pumping near the river) was eliminated.
GDE_056	page 28. Additionally, the timeframe for depicting historic hydrologic conditions is relatively short, and does not capture the hydrological conditions that prevailed before large-scale water development in the Santa Clara River Watershed. Using an environmental baseline that has been highly modified as framework for identifying impacts to GDE and developing management strategies to address those impacts runs the risk of falling into the "shifting baseline syndrome" that results in a distorted view of ecosystem functions, and inappropriate conservation goals and objectives (Pauly 1995, 2019).	NMFS	Develop new baseline hydrology	We are limited in our baseline hydrology by the available groundwater data.
GDE_057	page 30. The Draft Memorandum noted, "There are few shallow groundwater wells in the Fillmore and Piru groundwater basins, but many of the deeper wells show that there continues to be shallow groundwater and interconnected surface water at the basin boundaries at the historical Del Valle, Cienega, and East Grove riparian woodlands (Figure 1.4-1)." Without shallow groundwater wells that would provide specific data on relationship between groundwater levels and surface flows is not clear how an assessment can be made of the effects extracting groundwater from these areas might effect GDE. This appears to be a significant data gap. The revised Draft Memo should address this by identifying the installation of shallow groundwater wells (or piezometers) to better describe these relationships.	NMFS	Sparse monitoring network	The text has been updated to be more clear. Shallow groundwater wells will be installed near the Cienega site and East Grove.
GDE_058	pages 30-55. See comments above regarding the focus on vegetative GDE.	NMFS	Non-vegetation GDEs	We have clarified the correlation between GDE units and surface water extent.
GDE_059	Page 35-38. In addition to designating critical habitat for the federally listed endangered Southern California Steelhead DPS, NMFS has also identified intrinsic potential habitat in the watershed for this species as part of its recovery planning process. As noted above, this habitat includes habitats that has the potential to provide spawning and rearing habitat. Within the Fillmore and Piru Basin, NMFS identified intrinsic potential habitat in Sespe Creek, upper Pole Creek, Hopper Creek, and Piru Creek (Boughton and Goslin 2006). The ability of these habitats to provide spawning and rearing opportunities has been negatively affected by surface water diversions and groundwater extractions. As noted above, reducing the connectivity between the mainstem of the Santa Clara River and the lower reaches of these tributaries impairs the intrinsic potential of these habitats. Restoring and maintaining surface hydrologic connectivity for steelhead attempting to migrate to or emigrate out of these major tributaries to the middle reaches of the Santa Clara River is an important objective of NMFS's Southern California Steelhead Recovery Plan. When revising the Draft Memorandum, the recognition of this GDE is should be explicit, and the GSP should ensure that, this GDE is not unreasonably impacted by groundwater extraction from the Fillmore and Piru Basin.	NMFS	Assess impacts on in-stream habitat	We have expanded our discussion of O. mykiss needs. The degree to which groundwater pumping inhibits passage is not known.
GDE_060	Pages 47 – 51. This section of the Draft Memorandum contains only a brief discussion fishes, and specifically discusses only one tributary, Piru Creek. There is no recognition or discussion of the Hopper Creek. The lower reach of Hopper Creek within the Piru Basin boundaries has been designated critical habitat; additionally NMFS has identified intrinsic potential spawning and rearing habitat throughout the Hopper Creek watershed; see Francis 2009. The Draft Memorandum indicates, "Most of the fish species listed in Table 4.1-4 are likely to occur in perennial reaches within the basin." It should also recognize that the anadromous species (e.g., O mykiss and Entosphenus tridentata) may also occur in the intermittent reaches, and that non-migratory species (e.g., Catostomus santaanae) fishes (as well as other native aquatic organisms) may occur in intermittent reaches. Therefore, the Draft Memorandum should be revised to provide a complete and accurate characterization of the environmental setting.	NMFS	Non-vegetation GDEs	Added Hopper Creek critical habitat to the text. Added potential use of Hopper Creek to the text.
GDE_061	Pages 62-65 This section of the Draft Memorandum contains only a brief discussion fishes, and specifically mentions only one tributary, Sespe Creek. There is no recognition of discussion of the Pole Creek; see, Kajtaniak (2008) for a survey of this watershed. The Draft Memorandum indicates, "Disconnected ephemeral tributaries in the Fillmore Groundwater Basin can be used by fish species seasonally, but do not contain surface water yearround and are not connected to groundwater and thus not considered here." Sespe Creek is a major tributary to the Santa Clara River whose confluence is within the boundaries of the Fillmore Basin. This tributary is currently intermittent in its lowermost reaches. However, its base surface flows have been and continued to be impacted by both surface diversions and groundwater extraction. Pole Creek, which is joins the Santa Clara River within the boundaries of the Fillmore Basin is intermittent (not ephemeral) in its lower reaches, and is perennial in its upper reaches; see Kajtaniak (2008) for a survey of this watershed. The revised Draft Memorandum should reflect this information.	NMFS	Non-vegetation GDEs	Added a discussion of Pole Creek to the document. Given that access to Pole Creek is blocked, only about 500 feet of the channel occurs upstream of the community within the basin, we have not included an extensive investigation of Pole Creek.
GDE_062	Page 69 The Draft Memorandum indicates, "The ecological value of each GDE unit was characterized by evaluating the presence and groundwater-dependence of special-status species and ecological communities, and the vulnerability of these species and their habitat to changes in groundwater levels (Rohde et al. 2018)." As noted above the method used by The Nature Conservancy in identifying GDE is based on statewide data on "vegetation known to use groundwater", and therefore does not adequately reflect the uses made of groundwater by other biological resources, such as seasonal migration of fishes, or other organisms such as invertebrates that have differing life-cycle and environmental requirements than plants.	NMFS	Non-vegetation GDEs	The GDEs include interconnected surface waters and aquatic beneficial users. We have made this more explicit in the updated draft.
GDE_063	Pages 69-70 In assessing the ecological values of the GDE in the Piru Basin, the Draft Memorandum did not, but should, consider the ecological values of Hopper Creek. This is a significant omission, because the surface hydrologic connectivity between Hopper Creek and the mainstem of the Santa Clara River can be affected by groundwater extractions; see additional comments above regarding Hopper Creek.	NMFS	Interconnected surface water	A discussion of Hopper Creek has been been added to the tributary riparian section.

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Comment number	Comment	Organization	Issue	Response
GDE_064	Page 70-71 In assessing the ecological values of the GDE in the Piru Basin, the Draft Memorandum did not, but should, consider the ecological values of Pole Creek. This is a significant omission, because the surface hydrologic connectivity between Pole Creek and the mainstem of the Santa Clara River can be affected by groundwater extractions; see additional comments above regarding Pole Creek.	NMFS	Interconnected surface water POLE CREEK	Pole Creek has been added to the text.
GDE_065	Page 74 The Draft Memorandum notes, "This section focuses on changes in vegetation through time using remote sensing data. While increases or decreases in vegetation health do not provide a definitive indication that other components of the ecosystem are thriving or under stress, it provides a reasonable first-order check on the clear linkage between groundwater and the other communities that compose the ecosystem." While changes to vegetation is an important component in assessing the ecological health aquatic habitats (Faber et al. 1989), it should not be used, as it is here, essentially as a substitute for other metrics, e.g., such as measured effects on surface flows, or depth or extent of pool habitat in response to artificial depletion of groundwater levels. See comments above regarding GDE Identification.	NMFS	Interconnected surface water	We have added text in the report to clarify this point and point to the difficulty of assessing changes in other features of the ecosystem.
GDE_066	Pages 75-79 The focus of the analysis is on vegetative features of four areas: De Valle Riparian Scrub GDE, Santa Clara River Riparian Scrub GDE, Piru Creek Riparian GDE, and Piru Basin Tributary GDE. None of these directly involves aquatic habitats. Also, the Draft Memorandum does not, but should, recognize Hopper Creek. As noted above, the surface flows at the confluence of Hopper Creek are important for maintaining surface hydrologic connectivity for steelhead (but also other native aquatic species) attempting to migrate between this tributary and the middle reaches of the Santa Clara River. Interrupting the timing, magnitude, and duration of these flows as a result of groundwater extraction can be deleterious to juvenile O. mykiss. This potential effect should be addressed in the revised Draft Memorandum.	NMFS	Assess impacts on in-stream habitat	Hopper Creek has been added to the discussion on tributary ripairan streams.
GDE_067	Pages 79-86 The focus of the analysis is on vegetative features of five areas: Santa Clara River Riparian Scrub, Cienega Riparian Complex GDE, East Grove Riparian Complex GDE, Fillmore Basin Tributary Riparian GDE, and Sespe Creek Riparian. None of these deals directly with aquatic habitats. Also, the Draft Memorandum does not recognize or provide any consideration or discussion of Hopper Creek. As noted above, the surface flows at the confluence of Pole Creek are important for maintaining surface hydrologic connectivity for steelhead (but also other native aquatic species) attempting to migrate between this tributary and the middle reaches of the Santa Clara River. Interrupting the timing, magnitude, and duration of these flows as a result of groundwater extraction can be deleterious to juvenile O. mykiss. This potential effect should be addressed in the revised Draft Memorandum.	NMFS	Assess impacts on in-stream habitat	We have adapted the text to clarify that three of the areas (Del Valle, Cienega, and the East Grove) have interconnected surface water. Pole Creek does not appear to be interconnected within the Fillmore and Piru Basins and currently has both passage and barriers. Nevertheless we do discuss the potential for O. mykis habitat in Pole Creek.
GDE_068	Page 86 The Draft Memorandum asserts, "As an overview, the future groundwater levels forecast with assumed climate change factors (2070CF [climate change factor]) are not materially different from those recorded during the historical record. There is no suggestion of long-term chronic declines in groundwater levels." The basis for this statement is unclear, and appears to conflict with general predictions for a drying climate in southern California, with consequent reduction in rainfall, runoff, and groundwater recharge. The reduction in surface water supplies stored in reservoirs, has frequently led to increased extraction of groundwater basins, with consequent reductions in base flows of rivers and streams, like the Santa Clara River and its tributaries that are interconnected groundwater-surface water systems. Ensuring groundwater recharge (and control of groundwater extraction for out-of-stream uses) can be an important mechanism for protecting base flows that are critical for the rearing phase of juvenile steelhead (as well as other native aquatic resources). Maintaining groundwater levels can serve as a buffer against projected climate change effects on stream flow. For a recent assessment of the effects of climate change on mean and extreme river flows, and effects of over pumping of groundwater basins on stream flow, see Burke et al. (2021), Gudmundsson et al. (2021), Jasechko (2021).	NMFS	Climate change	The analysis of climate change was based on the model used for the GSP and recommendations from DWR.
GDE_069	Page 86 As noted above, there is no recognition or discussion of Hopper Creek. This omission should be addressed in the revised Draft Memorandum.	NMFS	Interconnected surface water	Hopper Creek has been added to the tributary riparian section.
GDE_070	Page 89 Ecological Value: The Draft Memorandum concludes, "Although the Santa Clara River in the Unit provides migration habitat for Southern California steelhead and Pacific lamprey, the migration habitat has low vulnerability to groundwater reduction because most fish migration occurs during seasonal high surface water flow periods." This assertion does not appear to be corroborated in any meaningful way in the Draft Memorandum. Also, be aware that while adult steelhead are more likely to migrate during higher flows during winter months, steelhead smolts can emigrate downstream through the late spring in the absence of winter flows. Groundwater extractions that decrease these base surface flows can therefore negatively affect the successful emigration of steelhead (and possibly Lamprey ammocoetes) out of the Santa Clara River to the ocean. This assertion should be revised in the Draft Memorandum to accurately reflect what is known about the migratory behavior and ecology of steelhead and the expected impacts of groundwater withdrawals on habitat characteristics and condition for this species.	NMFS	Non-vegetation GDEs	We have added text to quantify flows from rising groundwater relative to upstream passage. We also clarified that for the Riparian shrubland, surface water flows are not connected with groundwater. United water releases water from Santa Felicia dam for outmigration of juveniles. Because this migration requires continuous surface flows, rising groundwater on its own is not sufficient to promote migration.
GDE_071	page 89 Ecological Condition: The Draft Memorandum concludes, "Groundwater provides little or no contribution to the ecological function and habitat value of the Santa Clara River in the Unit, which is intermittent and mainly supports seasonal migration habitat for anadromous fishes." The intermittent nature of a reach is not determinative of the contribution of groundwater to a GDE. Additionally, as noted above, steelhead smolts emigrate downstream through the late spring, among other times of the year, including during periods between elevated rain-induced discharge pulses. Groundwater extractions that decrease these base surface flows can therefore negatively affect the successful emigration of steelhead out of the Santa Clara River to the ocean (Booth 2016, 2020).	NMFS	Assess impacts on in-stream habitat	Comment noted. The role of groundwater in supplying downstream passage flows is not clear, but, where reaches are disconnected from groundwater, changes to pumping are unlikely. Booth 2020 also states that "Migration opportunities only result from storm events of sufficient magnitude and duration to generate extended surface flows." The degree to which groundwater extraction has altered surface flows in the Fillmore and Piru Basins is not clear, but the intermittent reaches betweeen the groundwater upwelling zones are currently dependent on surface water flows rather than rising groundwater.
GDE_072	Page 90 Susceptibility to Changing Groundwater Conditions: The Draft Memorandum concludes, "The Unit includes an intermittent reach of the mainstem Santa Clara River that does not provide perennial aquatic habitat or beneficial uses." While groundwater-influenced flows may not be sufficient to support perennial flows, they can nevertheless support seasonal use of this reach of the Santa Clara River for migratory or rearing purposes, depending on the amount and timing of annual rainfall and runoff and the groundwater elevation.	NMFS	Assess impacts on in-stream habitat	We do not see evidence that flow in the intermittent reaches is supported by groundwater within the basin.
GDE_073	Page 90 The Draft Memorandum concludes, "Modeling suggests that groundwater levels are likely to be stable in this reach. Moreover, the vegetation that makes up this unit may use groundwater when groundwater levels are high in the spring, but high groundwater levels are likely not persistent in this unit. The unit is therefore likely not strongly dependent upon groundwater and is comprised of sparse low water use species with relatively shallow rooting depths. Therefore, the potential for effects on this unit is low. " This conclusion, as much of the analysis, is based almost entirely on effects on vegetation, and ignores the potential effects on aquatic organisms that are dependent on surface flows (or ponding), and may make seasonal use of aquatic habitats, even though they are intermittent.	NMFS	Non-vegetation GDEs	We do not see evidence that flow in the intermittent reaches is supported by groundwater within the basin.

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Comment number	**Comment**	**Organization**	**Issue**	**Response**
GDE_074	Page 92 Susceptibility to Changing Groundwater Conditions: The Draft Memorandum concludes, "Piru Creek in this GDE unit has perennial flow due to releases from Santa Felicia Dam, but surface flow is not connected to groundwater. The lower portion of Piru Creek near the confluence with the Santa Clara River periodically lacks surface flow. As described previously, releases from Santa Felicia Dam likely raise groundwater levels and help maintain baseflows in Piru Creek." The construction of both Santa Felicia Dam and Pyramid Dam have significantly altered natural the flow patterns in Piru Creek, including those below the current site of Santa Felicia Dam (see, for example, NMFS 2008b). The language of this section incorrectly implies that but for the releases from Santa Felicia Dam, lower Piru Creek would naturally exhibit an intermittent, or ephemeral flow regime.	NMFS	anthropogenic effects on groundwater levels	Added under current conditions to clarify that currently releases from Santa Felicia help maintain baseflow.
GDE_075	page 92. Also, the claim that the "surface flow is not connected to groundwater" is contradicted by the assertion that "releases from Santa Felicia Dam likely raise groundwater levels and help maintain baseflows in Piru Creek".	NMFS	Interconnected surface water	The conceptual model of this reach is that releases from Santa Felicia infiltrate into the subsurface while also maintaining baseflows. Clarified that baseflows over some portion of the length of Piru Creek are maintained by releases.
GDE_076	Page 92 The Draft Memorandum notes, "Available data are insufficient to discern a clear effect on GDEs related to groundwater management in the Piru Creek Riparian Complex GDE Unit." The GSP should identify and include monitoring provisions that would enable the effects of groundwater extractions or recharge activities on this GDE to be determined.	NMFS	Sparse monitoring network	Clarified that under current conditions it is disconnected. It is unknown if Piru Creek was connected under historical conditions.
GDE_077	Page 92 Groundwater Dependence: The Draft Memorandum notes, "There are no shallow groundwater measurements in this unit." The GSP should identify and include monitoring provisions that would enable the effects of groundwater extractions or recharge activities on this GDE to be determined.	NMFS	Sparse monitoring network	The monitoring plan has gained access to a privately owned well to monitor groundwater levels in Piru Creek.
GDE_078	Tributary Riparian Unit Ecological Value: The Draft Memorandum concludes, "The species and ecological communities in the Unit have low vulnerability to changes in groundwater levels. The tributary streams in this GDE Unit are considered ephemeral and are not connected to groundwater, thus they provide little habitat value for fish and other aquatic species. They do, however, support valuable riparian habitat and likely movement corridors for a variety of native wildlife species." This Tributary Riparian GDE includes Hopper Creek, which is not ephemeral. Hopper Creek is not recognized or discussed. This omission should be addressed in the revised Draft Memorandum. See comments above regarding Hopper Creek.	NMFS	Assess impacts on in-stream habitat	See above. Hopper Creek has been added.
GDE_079	Tributary Riparian Unit Ecological Condition: The Draft Memorandum concludes, "Groundwater likely provides little or no contribution to the ecological function and habitat value of the ephemeral tributaries in the Unit, which support vegetation but have little habitat value for fish or other aquatic species." See comments above regarding Hopper Creek.	NMFS	Assess impacts on in-stream habitat	See above. Hopper Creek has been added.
GDE_080	Tributary Riparian Unit Susceptibility to Changing Groundwater Conditions: The Draft Memorandum concludes, "Streams within the Unit includes [sic] are ephemeral and do not provide perennial aquatic habitat or beneficial uses." This Tributary Riparian GDE includes Hopper Creek, which is not ephemeral. Hopper Creek is not recognized or discussed. This omission should be addressed in the revised Draft Memorandum. See comments above regarding Hopper.	NMFS	Assess impacts on in-stream habitat	See above. Hopper Creek has been added.
GDE_081	Tributary Riparian Unit Potential Effects The Draft Memorandum concludes, "Based on the position of this GDE unit in the watershed it is unlikely that groundwater management will affect the health of the GDE. Model results suggest that the groundwater levels will remain constant in the Fillmore and Piru Basins under climate change (DBS&A 2021). If groundwater pumping were to increase in this GDE unit, monitoring of groundwater levels and GDE health (using remote sensing) would be necessary. GDEs in the unit likely have low susceptibility to future changes in groundwater conditions and the synergistic effects of climate change." As noted above, the basis for this statement regarding climate change is unclear, and appears to conflict with general predictions for a drying climate in southern California, with consequent reduction in rainfall, runoff, and groundwater recharge. The reduction in surface water supplies stored in reservoirs has frequently led to increased extraction of groundwater basins, with consequent reductions in baseflows of rivers and streams, like the Santa Clara River and its tributaries, which are interconnected groundwater-surface water systems. Ensuring groundwater recharge (and control of groundwater extraction for out-of-stream uses) can be an important mechanism for protecting base flows that are critical for the rearing phase of juvenile steelhead (as well as other native aquatic resources). Maintaining groundwater levels can serve as a buffer against projected climate change effects on streamflow. For a recent assessment of the effects of climate change of mean and extreme river flows, and effects of over pumping of groundwater basins on stream flow, see Burke et al. (2021), Gudmundsson et al. (2021), Jasechko (2021).	NMFS	Climate change	The assessment of climate change on hydrology in the Santa Clara River was completed following DWR guidelines and is the best information we currently have for the basin.
GDE_082	Page 94 As noted above, there is no recognition or discussion of Pole Creek. This omission should be addressed in the revised Draft Memorandum.	NMFS	Interconnected surface water	Pole Creek included.
GDE_083	SCR riparian shrubland Groundwater Dependence: The Draft Memorandum notes, "There are few shallow groundwater measurements in this unit. Spring 2019 water contours provided by United water showed groundwater levels within 5-10 feet of the ground surface in parts of the unit." But nevertheless concludes, "Surface water flows are not interconnected with groundwater." The conclusion is questionable for a for at least two reasons: First, though the data provided in the Spring of 2019 followed an above average wet year it was proceed by a pronounced drought that lasted six years, depressing groundwater levels. Second, the number of wells were limited (and screened below shallow groundwater depths) and not likely to provide a complete picture of the groundwater conditions throughout the GDE. The GSP should identify and include monitoring provisions that would enable the effects of groundwater extractions or recharge activities on this GDE to be determined.	NMFS	Interconnected surface water	We added a discussion about the uncertainty of the contours in this reach. The lack of surface flows suggest surface water is not connected to groundwater in this reach.
GDE_084	page 94 SCR riparian shrubland Ecological Value: The Draft Memorandum note, "Although the Santa Clara River in the Unit provides migration habitat for Southern California steelhead and Pacific lamprey, the migration habitat has low vulnerability to groundwater reduction because most fish migration occurs during seasonal high surface water flow periods." While adult steelhead are more likely to migrate during higher flows during winter months, steelhead smolts emigrate downstream through the late spring, among other times of the year, including between periods of elevated flows. Groundwater extractions that decrease this base surface flow can therefore negatively affect the successful emigration of steelhead (and possibly ammocoetes) out of the Santa Clara River to the ocean (Reid and Goodman 2016).	NMFS	Assess impacts on in-stream habitat	There is no evidence that surface flows are interconnected with groundwater, and the intermittent nature of the reach suggests the flows are disconnected and not dependent on groundwater. United currently releases water to support outmigration of juvenilles.
GDE_085	page 94 SCR riparian shrubland Ecological Conditions: The Draft Memorandum concludes, "Because surface water in this reach is largely disconnected from groundwater, groundwater provides little or no contribution to the ecological function and habitat value of the Santa Clara River in the Unit, which is intermittent and mainly supports seasonal migration habitat for anadromous fishes." It is not clear what is meant by "largely disconnected". Also, this assertion appears to be contradicted by the assessment of susceptibility to changing groundwater conditions (see below). This should be addressed in the revised Draft Memorandum.	NMFS	Interconnected surface water	"largely" was deleted.

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Comment number	Comment	Organization	Issue	Response
GDE_086	page 94 Susceptibility to Changing Groundwater Conditions: "The Draft Memorandum notes, "Future changes in groundwater conditions in the Unit related to increased groundwater production or climate change could cause groundwater levels to fall below the baseline range and result in mortality to vegetation that comprises the GDE."(emphasis added). Additionally, the Draft Memorandum notes, "Projections of climate change and groundwater pumping in the future suggest that changes in groundwater elevation are unlikely. However, based on widespread tree mortality during the 2012–2016 drought, future changes in the frequency or duration of droughts similar to 2012–2016 could have a deleterious effect on the GDE, particularly at the downstream margin of the unit." These two statements appear to contradict each other, and should clarified in the revised Draft Memorandum	NMFS	Climate change	Added "climate changes that differ from modeled predictions "
GDE_087	Page 94 Also, "The Unit includes an intermittent reach of the mainstem Santa Clara River that does not provide perennial aquatic habitat or beneficial uses." As noted previously, while groundwater-influenced flows may not be sufficient to support perennial flows, they can nevertheless support seasonal use of this reach of the Santa Clara River for migratory or rearing purposes, depending on the amount and timing of annual rainfall and runoff and the groundwater elevation.	NMFS	Assess impacts on in-stream habitat	Our understanding of this reach is that groundwater is never shallow enough to connect with surface water (i.e., even during wet years this is a losing reach).
GDE_088	Page 95 The Draft Memorandum notes, "Modeling suggests that groundwater levels near the Santa Clara River Riparian Shrubland GDE unit are unlikely to change due to climate change or modest changes to groundwater pumping. However, GDEs in the Unit are moderately susceptible to future changes in groundwater conditions and the synergistic effects of climate change, which in combination could cause groundwater levels to fall below the baseline range and result in potential effects on GDEs." Again, these two statements appear contradictory. See comments above regarding climate change.	NMFS	Climate change	Clarifed that climate change effects could influence groudnwater levels if the models are incorrect.
GDE_089	Page 97 Groundwater Dependence: The Draft Memorandum notes, "There are no shallow groundwater measurements in this unit. Based on the position in the landscape a connection to the regional aquifer is unlikely." The GSP should identify and include monitoring provisions that would enable the effects of groundwater extractions or recharge activities on this GDE to be determined. Also, we note that this Tributary Riparian Unit include Pole Creek, which was omitted from the investigation. See comments above.	NMFS	Sparse monitoring network	A sentence discussing Pole Creek has been added. We propose monitoring the GDEs rather than groundwater in this reach because there is little pumping in the tributaries and the resources to install new wells were focused in higher priority areas more susceptible to groundwater management.
GDE_090	Page 98 Ecological Value: The Draft Memorandum concludes, "The species and ecological communities in the Unit have low vulnerability to changes in groundwater levels. The tributary streams in this GDE Unit are considered ephemeral and are not connected to groundwater, thus they provide little habitat value for fish and other aquatic species. They do, however, support valuable riparian habitat and likely movement corridors for a variety of native wildlife species." This Tributary Riparian Unit includes Pole Creek, which was omitted from the investigation. See comments above.	NMFS	Interconnected surface water	Pole creek has been added to the discussion here.
GDE_091	Page 98 Ecological Condition: The Draft Memorandum concludes, "Groundwater provides little or no contribution to the ecological function and habitat value of the ephemeral tributaries in the Unit, which support vegetation but have little habitat value for fish or other aquatic species." This Tributary Riparian Unit includes Pole Creek, which was omitted from the investigation. See comments above.	NMFS	Interconnected surface water	Pole creek has been added to the discussion here.
GDE_092	page 98 The Draft Memorandum concludes, "Based on the position of this GDE unit in the watershed it is unlikely that groundwater management will affect the health of the GDE. If groundwater pumping were to increase in this GDE unit monitoring of groundwater levels and GDE health (using remote sensing) would be necessary. GDEs in the Unit likely have low susceptibility to future changes in groundwater conditions and the synergistic effects of climate change." See the above comments regarding the potential effects of climate change.	NMFS	Climate change	Clarified the climate change effects on groundwater levels are unlikely.
GDE_093	Page 99 Groundwater Conditions: The Draft Memorandum notes, "Surface water flows are perennial for the upper portions of the reach and intermittent downstream. The connection to groundwater in the upper portion is unknown but unlikely." The GSP should identify and include monitoring provisions that would enable a determination of connectivity, and any potential effects of groundwater extractions or recharge activities on this GDE to be determined.	NMFS	Interconnected surface water	See below for additional monitoring well.
GDE_094	Page 99 Susceptibility to Changing Groundwater Condition: The Draft Memorandum notes, "Sespe Creek's connection to groundwater is undetermined" The GSP should identify and include monitoring provisions that would enable a determination of connectivity, and any potential effects of groundwater extractions or recharge activities on this GDE to be determined.	NMFS	Interconnected surface water	Modifications to an existing shallow well are planned for one site in Sespe Creek.
GDE_095	Page 99 The Draft Methodology concludes, "The GSP should identify and include monitoring provisions that would enable the effects of groundwater extractions or recharge activities on this GDE to be determined." See comments above regarding the potential effects of climate change.	NMFS	Climate change	Clarified uncertainty on Sespe Creek.
GDE_096	Page 100 The following additional GDE should be added to the list of GDE to be included in the GSP analyses for the development of "Sustainable Management Criteria": lower reaches of Sespe Creek, Pole Creek, Hopper Creek, and Piru Creek. As noted above, each of these contains either or/both designated critical habitat or intrinsic potential habitats for the federally listed endangered southern California steelhead DPS.	NMFS	Additional GDE	It is not clear that these reaches have interconnected surface water and hence may not be GDEs. O. mykiss was considered when setting SMCs.
GDE_097	Page 11 principal aquifer. This is an important distinction.	TNC (MMR inline)	GDE determination	Changed "regional" to "principal".
GDE_098	Page 11 with no connection to a principal aquifer	TNC (MMR inline)	GDE determination	Changed "regional" to "principal".
GDE_099	Page 14 Thank you for doing this!	TNC (MMR inline)	GDE determination	Noted.
GDE_100	Page 30 I highly recommend using the well data and a digital elevation model to estimate depth to groundwater under GDEs. Most wells exist at higher elevation than GDEs. See Best Practice #5 in this TNC document: https://groundwaterresourcehub.org/public/uploads/pdfs/TNC_NCdataset_BestPracticesGuide_2019.pdf	TNC (MMR inline)	Updated Nature Conservancy guidance on depth to water	Added description of GDE elevation transects to Section 3.1. Added max/min GDE elevations to depth to water plots and discussion.
GDE_101	Page 89 If you corrected for land surface elevation at the GDE, does the groundwater surface get within mulefat rooting depths?	TNC (MMR inline)	Updated Nature Conservancy guidance on depth to water	Text updated to clarify use of depth to water surface.
GDE_102	Page 91 But, groundwater levels must also be restored to pre-drought conditions to promote riparian succession of cottonwoods/willows and avoid establishment of arundo.	TNC (MMR inline)	Cienega riparian complex	Noted.
GDE_103	Page 91 Is this still true if you correct for land surface elevation at the GDE using a DEM?	TNC (MMR inline)	Updated Nature Conservancy guidance on depth to water	Text updated to clarify use of depth to water surface.
GDE_104	Page 96 I'd say the ecological condition is "Poor" given the widespread mortality that occurred here.	TNC (MMR inline)	Cienega riparian complex	Agreed and changed.
GDE_105	Page 97 And increased ET losses from arundo in the basin water budget... Also, reduced habitat for two federally listed species.	TNC (MMR inline)	Cienega riparian complex	Noted.
GDE_106	Page 99 Low or uncertain? How do you know the model output is correct if there are no shallow monitoring wells in the vicinity?	TNC (MMR inline)	Sespe Creek Riparian Complex	Changed to undetermined, likely low.
GDE_107	Page 100 GDEs Important to Consider When Establishing Sustainable Management Criteria.	TNC (MMR inline)	Text	Changed text.
GDE_108	Page 100 i	TNC (MMR inline)	Text	Typo fixed.
GDE_109	Page C-1 Why is this species not considered a GDE?	TNC (MMR inline)	Blue oak	Blue Oak occurs outside of the aquifer on the ridges and noses of the uplands and is not likley affected by pumping.