Technical Peer Review Meeting July 9, 2020

Comment Tracking Table

Commenter Name	Commenter Organization	Comment Received	Subject	Line #s or Figure #	Comment
					found in the San Pasqual Valley Groundwater Basin Salt and Nutrient Management Plan of 2014 also produced by CH2MHill. https://www.sandiego.gov/sites/default/files/final_snmp_may_2014.pdf As a Member of the Advisory Committee that helped author this document, I am very familiar with the background information that went into the Basin Update. I would like to correct the record for not only Andrei, but also for everyone else that was present. Andrei suggested that manure from animals (and I do believe that he was inferring to my dairy cows specifically) contributed to 90 percent of the total nitrogen contribution to the basin. The actual language in the original report (found on page 3-18 and attached to this email) reads as follows, "With over 90 percent of the total nitrogen contributions to the Basin coming from fertilizer and manure use….." Had Andrei read the first sentence of that same paragraph, he would have come to a different conclusion and better understood the facts. The first sentence reads "The single largest contributing source of nitrogen is commercial crop fertilizer use at 56% of the Basin total followed by landscape fertilizer use at 14 percent." By further delving into the document, Andrei would have found on page 3-11 the following statement. "The largest source of nitrogen contribution from fertilizer use was from avocado production due to the large area in production on hillsides surrounding the Basin but within the study area subcatchment."
Frank Konyn	Frank Konyn Dairy, Inc.	7/9/2020	Follow up to the "Smoking Gun" comment		I clearly understand that water has a value and that is why people fight over it. Here is the important part: The largest land use overlying this basin is agriculture. When anyone points a finger, you are pointing three fingers back at you at the same moment. Let that really sink in. We are all in agriculture and there are enough outside forces tearing us down that we do not need to tear each other down. Unfortunately, personal agendas will only cloud our ability to look at the actual facts that go into the Groundwater Sustainability Plan. Hopefully, we can set our personal differences aside, and come together on a plan that is great for the Valley; not one sided for one party. Thank you for allowing me to clear the air. I specifically request that these corrections be included into the minutes of this afternoon's meeting.
Matt Wiedlin	Weidlin Assoc.	7/22/2020	GW Depth to Water Map, GW Dependent Ecosystems	Pg 54 of Power Pt. Presentation	Does this map represent high gw conditions or low? What data set was used?
Matt Wiedlin	Weidlin Assoc.	7/22/2020	GW Depth to Water Map, GW Dependent Ecosystems	Pgs 50-54	See notations I provided on page 51 & 54 of the Power Pt. Presentation. Groundwater depth in the tributary drainage in the NW boundary of the basin can be from 0-10 feet and probably greater than 20 feet in dry conditions. Phreatophytes in the drainage. This was an area that was inspected during the field visit.
Matt Wiedlin	Weidlin Assoc.	7/22/2020	SMC; Potential Minimum Thresholds	Pgs 36-37 of Power Pt. Presentation.	Considering the limited information we will inevitably be constrained by, the proposed approach seems reasonable. As discussed and acknowledged by John a more thorough review of theWCRs are appropriate to help make the SMC for DTW most practical.
Matt Wiedlin	Weidlin Assoc.	7/22/2020	GDEs		I have measured groundwater depths at several hand dug wells in this area and have prepared groundwater elevation and groundwater depth maps, based on topography. Under summer conditions following unremarkable winters, the depth to water in the drainage is likely 15 to 20 feet. Following an above average winter, the depth to groundwater in the drainage is likely 5 to 10 feet, or higher. There are phreatophytes in the drainage and surface water flow from a small watershed less than 1 sq mile. **W&C Note: This comment was made on a GDEs map of the Basin provided on slide 50 of the meeting presentation. A PDF of the map and comment is saved in the comment folder in the pdf called "gw dependent areas mpw notes-7-22-20.pdf"
Rikki Schroeder	Advisory Committee	7/21/2020	Response to Frank Konyn email		Dear Members of the Advisory Committee: I am responding to the email sent out by member Frank Konyn on July 9. There are technical inaccuracies and omissions in that email that I would like to correct. In the interests of being completely accurate, it would have been more appropriate for Mr. Konyn to have included all information, including the fact that the Salt and Nutrient Management Plan (SNMP 2014) stated that Konyn Dairy contributes 12% of the nitrogen load and 1% of salt load to basin. The record should include the entire study referenced, not just the excerpts attached to his email.
Rikki Schroeder	Advisory Committee	7/21/2020	Response to Frank Konyn email		It is also important to remember that the SNMP is forward looking and aims to mitigate future loading. It does not seek to directly improve historical impacts. Section 3.1.1 of the Plan states as much: "The approach taken in this SNMP was to evaluate a recent baseline land use condition that could be supported with available data and to develop a plan for managing the Basin moving forward."
Rikki Schroeder	Advisory Committee	7/21/2020	Response to Frank Konyn email		The problem is that legacy contributions of nitrogen and TDS continue to haunt the basin. The SNMP is not addressing that issue. For example, the plan mentions the former Verger dairy that ceased operations in 2011, but does not include the historical, cumulative impact associated with the Verger or Konyn operations. The Verger operation could have generated approximately 270,000 lbs N per year, but that does not get included in the

Technical Peer Review Meeting July 9, 2020

Comment Tracking Table

Commenter Name	Commenter Organization	Comment Received	Subject	Line #s or Figure #	Comment
					SNMP as an issue to be mitigated even though there is a historical, cumulative impact. Legacy contributions from other diaries in the Basin are not mitigated. Avocado and citrus fertilization are assigned approximately 37.5% of the N loading in the SNMP. Again, this ignores historical contributions. When those are taken into account, the dairy loading goes up to 29.8% and the avocado and citrus loading goes down to 21.1%.
Rikki Schroeder	Advisory Committee	7/21/2020	Response to Frank Konyn email		While groundwater quality is the purview of the Regional Water Quality Control Board (RWQCB), it is also the responsibility of the Groundwater Sustainability Agency (GSA). The GSP must also meet the requirements of state law. Currently there are at least two major lawsuits involving cities in San Diego County and in Kings County where nitrate contamination of groundwater alleged to be caused by dairies are being litigated. The cases are about current and legacy contributions of nitrogen and phosphorous from dairy operations. The potential for millions of dollars in damages awards should be alarming to all stakeholders in the San Pasqual Basin as well as the taxpayers in the City of San Diego. An appropriate, lawful GSP can help avoid that kind of outcome.
Rikki Schroeder	Advisory Committee	7/21/2020	Response to Frank Konyn email		If the City is to make Mr. Konyn's requested corrections as part of the minutes of the Advisory Committee meeting of July 9, then they should include the information above, as well as the entire 2014 SNMP and its supporting documents. For the record, we request that they do so. There have been many accusations against various members of the Advisory Committee regarding release of information and transparency that are at best, not helpful to this effort, and at worst, simply wrong and meant to sow distrust. Rancho Guejito has indicated many times and reiterate again that we support a SGMA Groundwater Sustainability Plan (GSP) that complies with State law, does not over-regulate the Basin, and that recognizes the uses and needs of ALL members of the Advisory Committee.
Rikki Schroeder	Advisory Committee	7/21/2020	Response to Frank Konyn email		We also respectfully request that the staff and facilitator maintain order in the Technical and Advisory meetings. Public comments should be limited to 3 minutes and be limited to facts regarding studies and policy direction that have been requested by the Core Team. There should be no back and forth discussions. The eventual GSP must be a document based on fact, not argument. It should be transparent and fair to all. Basic ground rules will help make sure that is what happens. We reiterate again that we support a GSP which complies with State law, does not over-regulate the Basin, and recognizes the uses and needs of ALL members of the Advisory Committee.
Will Halligan	LSCE	7/16/2020	Attachment 2		If possible, I would recommend that the "grapevine" classificaon and mapping be further segregated into Table Grapes or Vineyards. The reason is that table grapes often have a much higher water demand than grapes grown for either bulk or varietal wine purposes. It seems as if the local landowners or your own site visits should easily be able to segregate the types of grapevines.
Will Halligan	LSCE	7/16/2020	Attachment 2		Your last bullet point on page 2 (and it was mentioned in the meeting last week as well) you are requesting feedback on when crops in the 2005 land use may have changed to 2018 or when 2018 crops first appeared prior to 2018. The perception I got from this is that you think that there is generally a 2005 footprint that at some point after 2005 changes to 2018. How do you know that there is not a different land use variant that is a transition between 2005 and 2018 data? Or have you generally received information from local farmers that crops generally have not changed much since 2005 except for some subtle variations?
Will Halligan	LSCE	7/16/2020	Attachment 2		On the Well to Parcel memo and map I am concerned that you may have situations where you have a well that serves a very small parcel (and hence a likely low discharge simulated by MFOWHM) to wells that end up serving a large area/parcel(s) which will likely result in a very large pumping rate by the numerical model. I realize that metered pumping was only recently implemented, however, are there historical utility pump efficiency tests that include useful well yield data that are available to cross check this well to parcel approach and related pumping amounts that the model will eventually simulate?
Will Halligan	LSCE	7/24/2020	Handout 3	Fig WF4-1	What is the rationale for having both SP070 and SP071 in the netowrk when they are so close to each other and at the margin of the basin boundary. Also, is the well construction of the wells different because the gw level data for each is very different. I have a concern that the use of both of these wells for annual report gw level contouring may be challenging.
Will Halligan	LSCE	7/24/2020	Handout 3	Fig WF4-1	Why include all three Rockwood monitoring wells when they each show simialr historical gw levels and variability and are all very close to each other?
Will Halligan	LSCE	7/24/2020	Handout 3	Slide 32	Temporary surplus should be considered in the development of SMCs. The western half of the basin exhibits gw levels that are relatively shallow with little variation seasonally or due to climate variations. This conditions conveys that the western half of the basin has not been fully developed to allow for the capture of recharge due to the lack of vacated storage space (temporary surplus) that allows recharge to be captured witout significant and unreasonable undesirable results. Per SGMA, temporary surplus should be accounted for in devleopment of SMCs. The current methodology in essence will results in an underprediction of sustable yield potentially and devleopment of MTs that may be overly restrictive in allowing future development of gw resources, expecially in the western half of the basin.
Will Halligan	LSCE	7/24/2020	Handout 3	Slide 32	Having well construction information for the selected monitoring wells is very important in well selection, especially for SP070 and SP071.

Technical Peer Review Meeting July 9, 2020

Comment Tracking Table

Commenter Name	Commenter Organization	Comment Received	Subject	Line #s or Figure #	Comment
Will Halligan	LSCE	7/24/2020	Handout 3	Slide 32	The considerations for GW Elevation undesirable reuslts should remove no. "c" "need to deepen or construct new wells" since that is a project or management action, not an undesirable result. In essence, the remaining Urs that are listed are essentially impacts to benefical uses of all types. No. "a" is somewhat vague as to what is meant by "viability of ag"? Under MT considerations, I would suggest including temporary surplus as a consideration.
Will Halligan	LSCE	7/24/2020	Handout 3	Slide 34	I would suggest that you focus on the WCRs that are dated over the last 30 years as being most indicative of which wellls may currently be in service if you lack local information/verification. Wells older than that, especially ag wells may either be out of service or on thier last legs. You could also go back a bit further in time as well.
Will Halligan	LSCE	7/24/2020	Presentation	Slide 9	Under comment 1, I am concerned that some parties may interpret the basin boundary and bottom of basin approach/definition as also meaning that the technical analysis is not going to consider or evaluate the influence pumping stresses (from fractured bedrock) may have on groundwater conditions in the "defined" basin. We had this discussion earlier this year and I get the sense that some lay people do not understand the difference still.
Will Halligan	LSCE	7/24/2020	Presentation	Slide 14	Which version of One Water is being used?Version 1 is full of bugs so hopefully you have access to the most recent version released in April 2020 by Boyce et al. (MF-OWHM2).
Will Halligan	LSCE	7/24/2020	Presentation	Slide 16	As mentioned in the meeting, plesae account for any water demands/applications that are not related to ET. This is important since the Farm Process functions primarily on water demands associated with ET only and not other farming cultural practices.. Also when you show us land surface and groundwater budgets let us know if you have the Farm Process "magic water" activiated or not. I am hoping that you will provide historical land and gw budgets for review at some point to the TPR.
Will Halligan	LSCE	7/24/2020	Presentation	Slide 18	As mentioned in my comments on Handout 2, grapevines needs to be evaluated and segrated further as some grapevine water demands are much higher than others. Also, an understanding of defict irrigation practices (someone else mentioned this in the meeting) needs to be accounted for in the Farm Process.
Will Halligan	LSCE	7/24/2020	Presentation	Slide 21	If you will be transitioning from 2005 to 2018 land use between the 2010 and 2011 water year, are you expecting a large difference in water demands in some areas of the basin that is supported by observations of changes in gw elevations? Or is the gw elevation data not of high enouth spatial resolution in teh basin to get a sense of whether transitioning between the two land uses for modeling purposes is supported by observed changes in gw elevations?
Will Halligan	LSCE	7/24/2020	Presentation	Slide 22	The root water uptake aspact of the Farm Process can have a large influence on what may be needed from groundwater pumping. Please provide crop rooting depths that you will be using in the Farm Process. This is an important component especially in the western half of the basin where gw levels are often shallow and close to the land surface at times. Rooting depth values may be a sensitive parameter and it may be helpful to get a sense of the sensitivity of that parameter if that is in your budget/scope.
Will Halligan	LSCE	7/24/2020	Presentation	Slide 24	Could you remind me what gw quality parameters you will be monitoring for?
Will Halligan	LSCE	7/24/2020	Presentation	Slide 24	Which wells are you planning to use to assess depletion of interconnected surface water? Are you going to couple the monitoring for this SI with any surface water flow monitoring?
Will Halligan	LSCE	7/24/2020	Presentation	Slide 30	See comments above on Handout 3. Temporary surplus should be a consideration for setting Mos and MTs, especially in the western half of the basin where historic gw development has not depleted aquifer storage to avoid recharge being rejected.
Will Halligan	LSCE	7/24/2020	Presentation	Slide 30	Not sure I am a fan of using the percentile approach throughout the basin as it does not work well in the western half of the basin. Need to come up with an additional factor which accounts for temporary surplus which may be more approriate in the western half of the basin versus the eastern half.
Will Halligan	LSCE	7/24/2020	Presentation	Slide 36	The concept of operatoinal flexibility sort of includes elements of temporary surplus, however, it should also be used to set the MO as well as the "buffer" between the MT and MO. The MO could be lower in some areas if temporary surplus was partially or fully removed which would result in a lower gw elevation fo rthe MO in relation to historical gw levels.
Will Halligan	LSCE	7/24/2020	Presentation	Slides 36 through 39	The selection of 5 years of storage works only in those areas that have had a decline in historical gw levels and storage (removal of temporary surplus) on the path to sustainable gw elevations. However, in many parts of the basin, this approach does not work since gw elevations and storage have been very stable historically. I would suggest that the historical water budget and specifically the recharge terms be evaluated to gain an understanding of how much "recharge" is rejected and leaves teh basin. Then a calculation of how much gw storage would need to be removed (temporary surplus) and resultant gw elevations should be extimated. At this point you can then establish MOs, a sustainable yield to maintain stable gw elevations at lower eelevations, introduce the concept of "operational flexibility" and the 5 years of storage and then establishment of MTs. I hope that does not sound too confusing. This approach can then be used with equal effect throughout the basin.

Technical Peer Review Meeting July 9, 2020

Comment Tracking Table

Commenter Name	Commenter Organization	Comment Received	Subject	Line #s or Figure #	Comment
Will Halligan	LSCE	7/24/2020	Presentation	Slide 43	When comparing the 2005 throuhg 2019 or 2020 period (slides 42 and 43 are confusing as I am not sure if you are calibrating 2005 to 2020 or 2005 to 2019 for your historical water budget period), the use of water year types foes not always balance out and can provide an appearance of a long term annual average condition over that period. The cumulative departure plot indicates that the selected period is generally dry due to the overall downward sloope to the curve. This is important when devleoping a sustainable yield or evaluating gw conditions over that time frame as the resutls will be impacted by the overly dry conditions during this 2005 to 2019 period.
Will Halligan	LSCE	7/24/2020	Presentation	Slides 49 to 53	This information and effort is interesting, however, is there going to be interest by environmental groups to expand the monitorig network and criteria (gw levels) for interconnected sfc water and GDEs to include field surveys as part of future monitoring for GSP implmentation. Why didn't you just use the existing TNC potential GDE maps/tools and cross reference with local depth to water measurements usign the 30 foot criteria?
Will Halligan	LSCE	7/24/2020	Presentation	Slide 56	Suggest not over thinking how vegetation reportedly identified as GDEs in areas wherer the water table is greater than 30 feet in depth obtain water. That is not a GSP requirement. I would also avoid the use of including the word "aquifer" when refering to perched water conditions. Perched water is not an aquifer and is excluded from being considered for the interconnected surface water SI.
Peter Quinlan	Dudek, Rancho Guejito		Modeling approach	pages 13-15 of the 7/9/2020 TRP meeting power point presentation	Jacobs proposes using BCM to compute stream and groundwater inflows to GSP flow model domain from watershed areas tributary to GSP flow model domain. This area is approximately 4 to 5 times larger than the One-Water/MODFLOW domain. Stream gauge data are available for about 80% of the area that BCM is proposed for. It would be reasonable to just use the gauge data to estimate surface water inflow to the basin. The BCM does not calculate stream flow. The “runoff” calculated by BCM is the water balance remaining after estimated evapotranspiration, soil moisture deficit (based uncertain soil thicknesses), and estimated infiltration into bedrock (based on uncertain bedrock permeability) are subtracted from precipitation. The authors wrote the following in *Fine-scale hydrologic modeling for regional landscape applications: the California Basin Characterization Model development and performance*, Flint et al. 2013. (underline emphasis added). “A highly valuable application of the BCM beyond the estimates of spatially distributed recharge and runoff would be to estimate basin discharge for ungaged basins. We attempted to correlate equation coefficients (scaling factors and exponents in Equations 1 to 7) developed in gaged basins to landscape variables such as geology, soil properties, slope, basin area, or aridity to provide an empirical basis for estimating discharge in ungaged basins. <u>This endeavor was unsuccessful on a statistically significant basis across all calibration basins, possibly due to potential errors in the soils or geology maps, or in the PRISM climate data, or due to human activities that are affecting basin hydrology at the watershed scale.”</u> <u>“The estimate of spatially distributed runoff does not equal basin discharge as measured at a streamgage without post-processing to determine the components of runoff and recharge that contribute to stream channel gains and losses, which must be done using some measured data for a given basin.</u> The resultant parameters corresponding to the gains and losses generally reflect climatic conditions and geologic setting, but at the scale of California have not been determined to a degree that allows for the direct extrapolation of basin discharge to all ungaged basins.” For example the total water flowing by the Guejito Creek gauge in 2005 was 2,648 AF. “Runoff” from the BCM for the Guejito Creek watershed calculated by BCM was approximately 9,710 AF. All of the BCM runoff occurred in January and February, whereas there was flow at the gauge all months except July, August, and September. Extensive post-processing including applying a routing package to the entire model grid and accounting for subsurface lateral flow will be necessary to modify/calibrate the BCM output. Application of the BCM model is unlikely to reduce uncertainty regarding surface water inflows to the basin. Given how much of the watershed is covered by actual gauge data, I question whether the effort is worthwhile.
Peter Quinlan	Dudek, Rancho Guejito		Modeling approach	pages 13-15 of the 7/9/2020 TRP meeting power point presentation	Recharge in the BCM is also uncertain and may also be overstated. For precipitation that fell in January and February 2005, the BCM partitioned 65% of the available water to runoff and recharge. Recharge for the Guejito Creek watershed is based on an assumed hydraulic conductivity of 1.5 mm/d (1.7E-06 cm/s) for the granite. The BCM output for recharge in the Guejito watershed for 2011 was a mean of 42.6 mm per cell or 2,000 AF. Water levels in observation wells completed in the granite on Rancho Guejito located 5 to 7 miles north of the SPB only rose approximately 8 feet in response to rainfall between November 2010 and March 2011. Dividing 42.6 mm (0.14 ft) by 8 feet yields an estimated specific storage coefficient of 0.0175. This is well outside the expected 2.1e-05 to 1e-06 range for jointed rock (Batu, V., 1998. *Aquifer Hydraulics: A Comprehensive Guide to Hydrogeologic Data Analysis*, John Wiley & Sons, New York, 727p.). This example indicates that the BCM likely overestimates recharge to bedrock in the vicinity of the San Pasqual Basin. Again, application of the BCM to estimate recharge to granitic bedrock outside the domain of the MODFLOW model is not likely to reduce uncertainty regarding groundwater inflow into the model domain. As is the case for runoff, BCM calculated recharge also does not represent subsurface discharge from a watershed. Relying on the BCM for recharge to the granite does not decrease uncertainty regarding subsurface inflow to the basin. Finally, the BCM output that we have located on line only extends through 2016.

Technical Peer Review Meeting July 9, 2020

Comment Tracking Table

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Peter Quinlan	Dudek, Rancho Guejito		Modeling approach	pages 13-15 of the 7/9/2020 TRP meeting power point presentation	As is the case for runoff, BCM calculated recharge also does not represent subsurface discharge from a watershed. Relying on the BCM for recharge to the granite does not decrease uncertainty regarding subsurface inflow to the basin.
Peter Quinlan	Dudek, Rancho Guejito		Modeling approach	pages 13-15 of the 7/9/2020 TRP meeting power point presentation	Using OWHM may not reduce uncertainty about surface water inflows either. In Guidance for determining applicability of the USGS GSFLOW and OWHM models for hydrologic simulation and analysis, the USGS describes the capabilities of One Water Hydrologic Model (OWHM) for estimating surface runoff. The ability of OWHM to do this is limited (again, highlighted emphasis added): "Both models have limitations in how they simulate real-world hydrologic systems, but the watershed-simulation processes and daily time-step discretization available in GSFLOW make it possible to simulate hydrologic processes such as overland runoff, snowpack dynamics, soil-zone processes, recharge, surface-depression storage, and streamflow more comprehensively and in a more physically-based manner than those available in OWHM. Because of this, GSFLOW is more appropriate for application to environmental-flow, streamflow-generation, and other watershed-process issues than is OWHM. • Both codes have been applied to field settings. GSFLOW has been applied to several types of hydrologic-process and water-management studies, including irrigated agriculture, in a range of climate and hydrogeologic settings. A benefit of GSFLOW is that both headwater and valley settings can be simulated simultaneously, so that flows throughout a watershed can be simulated comprehensively. OWHM also has been applied to a similar range of climate and hydrogeologic settings, but more typically in the lower watershed areas of arid to semi-arid settings where agricultural processes associated with alluvial-aquifer systems are relatively important and natural rates of runoff and snowmelt are small or nonexistent. Flows from headwaters to the lower valleys can be simulated externally from OWHM…."

Technical Peer Review Meeting October 8, 2020

Comment Tracking Table

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Peter Quinlan	Dudek, Rancho Guejito	10/23/2020	Meeting		The change in format for the public comment at the end of each meeting seemed to work well. The increased oversight by the meeting facilitator kept the meeting on track. The last TPR meeting finished ahead of schedule and with full participation and input from the TPR members and other participants.
Peter Quinlan	Dudek, Rancho Guejito	10/23/2020	Comments		All written comments submitted by TPR members should be provided to the other members when they are submitted rather than being summarized 3 months later. Documents and data used by the GSA in conjunction with development of the GSP are public record and should be made available to the TPR. It would be helpful, for example, if the time series of future precipitation were available in an excel file rather than simply presented in as a graph in the PDF of the Powerpoint presentation.
Peter Quinlan	Dudek, Rancho Guejito	10/23/2020	Future Climate Scenarios	Handout 2	The precipitation and other climate change projections used in the modeling predict that there will be prolonged drought in the basin. The projections do not reflect past climate patterns or precipitation and have been characterized as unlikely to occur. Using them could result in unnecessary restrictions on groundwater use. Being conservative does not require using scenarios that are characterized as unlikely to occur. From: CLIMATE, DROUGHT, AND SEA LEVEL RISE SCENARIOS FOR CALIFORNIA'S FOURTH CLIMATE CHANGE ASSESSMENT Page 1 "One requirement of the climate simulations and scenarios provided to the Fourth Assessment is to enable investigation of extreme, highly damaging climate changes that are possible but unlikely— e.g., low probability, high consequence outcomes. Two examples are provided, exploring extreme drought and high sea level rise. To explore extreme drought in a warmer future, two 20-year drought scenarios were produced from the downscaled meteorological and hydrological simulations: one for the earlier part of the 21st century, and one for the latter part." No decisions about management actions or potential projects should be made based on the results of model simulations without factoring in how unlikely it is that the theoretical results will occur. Management actions and projects will have actual costs. They should be based on observed data, not model simulations of unlikely future conditions.
Peter Quinlan	Dudek, Rancho Guejito	10/23/2020	Calibration	Power Point page 15	The quantitative calibration should include the vertical gradients. Nate Brown indicated that water levels in the alluvium will be quantified using standard statistics, but that the vertical gradients among the alluvium, residuum, and non-weathered granitic rock (as measured in the 3 USGS observation well clusters) will only be used as a qualitative check on model calibration. Under this approach, it will not be possible to draw

Technical Peer Review Meeting October 8, 2020
Comment Tracking Table

Commenter Name	Commenter Organization	Comment Received	Subject	Line #s or Figure #	Comment
					conclusions about the degree of hydraulic connection if the model development does include quantitative assessment of model error in reproducing the vertical gradient observed in the nested observation wells with.
Peter Quinlan	Dudek, Rancho Guejito	10/23/2020	Model	Power Point page 29	It is unclear whether Jacobs intends to simulate pumping from the layers of the model that represent the un-weathered granitic rock. The table showed parcel 42 as irrigated by water from Rancho Guejito wells 3, 4, and 5 which extract water from the granite beneath the basin, but showed parcel 43 as not irrigated although it is irrigated by wells extracting water from the granite laterally outside the basin boundaries, but within the model domain. If pumping from the un-weathered granitic rocks is simulated, all pumping within the domain must be simulated for the result to be valid.
Peter Quinlan	Dudek, Rancho Guejito	10/23/2020	Model		I am concerned about the proposed use of the external boundary of the model as a no flow boundary. During the meeting, Nate Brown stated that the external boundary of the model domain would be treated as a no flow boundary. This is likely to cause the model to generate unreliable results if pumping from the non-weathered granitic rock is simulated in the calibration period and future scenarios.
Peter Quinlan	Dudek, Rancho Guejito	10/23/2020			The fractures in the non-weathered granitic rock occur within and outside of the model domain. Fractures connected to areas outside the domain provide recharge to the non-weathered granitic rock within the domain. It is not clear whether Jacobs intends to simulate pumping outside of the DWR Bulletin 118 basin boundaries in the model layers representing the non-weathered granitic rock. If Jacobs does simulate pumping from the non-weathered granitic rock, they must do it for all wells within the model domain in order for the model results to be valid.
Will Halligan	LSCE	11/6/2020	Handout No. 2		From reading the title on this handout, I was expecting to see a summary of the comments received on the TPR No. 4 Handouts and Presnetation. What was presented appears to be incomplete and does not include my comments on Handout no. 3 and the Presentation.
Will Halligan	LSCE	11/6/2020	Handout 3	Pages 1 and 2	The climaate change memo is somewhat confusing as it does not mention the DWR climate chage guidance document and does not differentiate between the transient approach and the DWR historical period approach in the background portion of the memo. Is this memo planned on being included as an Appendix to the GSP? If so, then it needs to summarize the DWR approach and tool versus the approach recommended by Jacobs. The projected time frame of 2020 through 2069 seems more appropriate for a GSP submittal in January 2020 versus this one which is Januaryt 2022. Why sin't the projected water budget through 2072? Most critically overdrafted basins GSPs have projected water budgets through 2070. The memo does not clearly articulate why the preferred approach is better than the DWR approach, even with hteh pros and cons summarized in teh Table later in teh memo. The memo does not describe how the preferred method incorporates variations in climate change (2030 and 2070 DWR approaches) that is in the DWR BMP. The DWR BMP has a 2030 climate change model and three different 2070 models. Are these the same four GCMs that the Jacobs preferred approach is using? If so then is seems as if you are comparig apples to organges by commingling the 2030 climate change model with the three 2070 GCMs.
Will Halligan	LSCE	11/6/2020	Handout 3	Table 1	The table conveys that DWR will ensorse the recommended approach. Has the local DWR representaive been informed of this approach and have they provided a preliminary "endorsement"? In my experience, it is very difficult to get any DWR representative to provide such an endorsement for an approach which is not consistent with DWR best management practices. The decision not to develop a 50 year historical period of record to be used in the projection based on the fact that there is not 50 years worth of data should not present a large hurdle or a lot of extra work. Many basins have this same issue and have developed a 50 year record using a repeat of wet, dry, and average years during the time frame data is available in which to populate the years where data is not available.
Will Halligan	LSCE	11/6/2020	Handout 4	map	This map is titled "Management Areas". Is it the intent to formally define and describe management areas in the GSP? Is the basis for that decision solely based on areas of the basin which are in the City's or County's jurisdiction rather than on whether there is a need to have PMAs located in those particular managment areas? I would recommend not formally defining managment areas in the GSP.
Will Halligan	LSCE	11/6/2020	Handout 4a	PDF Page 3 and Table 1 on PDF Page 4	I had assumed from the text on page 3 that the ratios were developed for each month of the simulation period, however, you used a single ratio value for every January, the same ratio value for every February, etc. How much variability is there within the same month (different years) and does this approach produce its own bias? This approach also seems to mute the highs and lows that may occur during wet and dry periods, therebyinfluencing the groundwater model's ability to simulate wet period gw level highs and drought period gw level lows. There are not that many months in the simulation period. Why not have a ratio caluculated for each month in the entire simulation period versus using the average approach?
Will Halligan	LSCE	11/6/2020	Handout 4a	PDF Page 3 and Table 2	The water year adjustment factor (step 2) is somewhat confusing and the text would benefit from a better explanation of why this is necessary. Rather, the hreader is left to interpret the numbers on Table 2 to get a sense of the fact that the BCM does not represent critical year types well at all. I am assuming that there is likely little to no flow in these streams in critical years (which his why the factors are close to zero). The factors for teh other year types seem to result in most year types (except for above normal) to need to have increased amounts of runoff to be representative of observed flows. All of this need for a two step process to manipulate the BCM output casts doubt on why use that tool in the first place versus developing relationships in observed runoff between different watersheds in order to fill in months and years where there is a lack of observed data in some of the streams.

Technical Peer Review Meeting October 8, 2020

Comment Tracking Table

Commenter Name	Commenter Organization	Comment Received	Subject	Line #s or Figure #	Comment
Will Halligan	LSCE	11/6/2020	Handout 4a	Exhibit 2	What is the explanation for why you are using calendar years and water years intermixed in Exhibits 2, 3, and 4? Also, what is the explanation of why the "final" adjusted value and the observed values for the "wet" years of 2005 and 2011 being different. As in one wet year has the observed being higher than the final and the other wet year shows teh opposite relationship. This does not show up on the other two streams. Also, the portion of the three exhibits that show the monthly relationship is onfusing in that it does not explain what year type is being shown, nor is there an explanation of the year in which the observed data is obtained from (unless the observed data is a monthly average?). It wouild be more informative to see monthly results for all year types for each stream to see how well this approach works in all year types in the three watersheds shown.
Will Halligan	LSCE	11/6/2020	Handout 5	Well Parcel Map	Very busy map. I was not able to locate parcel no. 35 as it may be hidden behind other labels. Does this include ALL wells that supply water to lands within the basin? Regardless of whether those wells penetrate the fractured bedrock or bedrock. I want to make sure because if the wells that are represented do not represent the soucrce of all water used in the basin then that discrepancy impacts how the basin is currently (or historically) operated. For those half dozen or so parcels classified as "not irrigated", does that mean just in the "current" time (2020) or historicallyy as well?
Will Halligan	LSCE	11/6/2020	Handout 5	Land Use Maps	Is that large parcel bordering the east boundary of the basin near Guejito an avocado land use? If so, does the model simulate that land use and the sources of water that are used to irrigate it? I did not see that parcel in the well/parcel map. Does the existence of that irrigated parcel influence groundwater and surface water conditions within the basin?
Will Halligan	LSCE	11/6/2020	Presentation	Slide 10 (Page 5?)	There are often two numbers on the slides, one at the lower right and the other on the lower left so I am not sure which one to reference in these comments. Regardless, this is the slide that summaried the comments received on TPR Meeting no. 4. As I mentioned in the TPR Meeting no. 5, this slide did not seem to present or address any of the comments I submitted . I know that there can often be a level of effort involved to address all the comments you received, ohwever, it seems as if the comments received from teh TPr members should at least be noted/recognized or something so that a TPR member feels like there is some purpose to having a TPR process in the first place.
Will Halligan	LSCE	11/6/2020	Presentaiton	Slide 13	As mentioned in the meeting, the vertical exageration conveyed with the model layering in this figure gives the impression that the actual model layering has very steep slopes which can result in numerical convergence and other issues. This cross section figure couild benefit from showing the model domain extent and how the domain boundary is simulated (no flow boundary?) I know that may be a sensitive topic, however,it will be a comment that will likely be provided at some point in teh GSP review process.
Will Halligan	LSCE	11/6/2020	Presentation	Slide 15	The qualitative calibration part of the slide seems pretty quantitative to me if you are using observed heads from the multiple completion wells to evaluate vertical gradients. Is it qualititative bacause you are just going to "eye ball it" or are you going to actually calculate vertical gradienits from teh measured data and compare to the model data? Also, will there be any streamflow calibration to gages located in the basin? Seems as if that would be a good idea in order to dial in streamflow.
Will Halligan	LSCE	11/6/2020	Presentation	Slide 17	Is there a water budget component that covers surface water outflow from the basin? I do not see it on the "example" water budget chart. I am assuming these example charts include all the budget components you are planning to show in the GSP (correct?). I am not a fan of stacked bar charts in general because it can be challenging to get a sense of trends on individual budget omponents over time. However, if you do use them, it is helpful to have budget components that are adjacent to each other to have contrasting colors rather than use the rainbow approach that is being used.
Will Halligan	LSCE	11/6/2020	Presentation	Slide 21	If the historical water budget period is 2005 through 2019 water year, then what is your current water budget year: 2020? If it is 2020, then the land use used for the baseline projected water budget should be the current water budget land use not the last year of the histroical water budget. In any case, why have a different year for land use than for groiundwater pumping (2019 and 2020)? that does not make sense and is not explained as to the reason for that difference. Depending on the increase in consumptive use due to climate change in the future along with your "freezing" of the number of wells, how do you know that the existing footprint of wells can all handle the increase in discharge that is required to handle the increase in consumptive use? It will be interesting to see if you potential have a wetting/drying situation going on with the Farm Process with your wells needing to pump more and how that relates to teh well construction and model layer distribution.
Will Halligan	LSCE	11/6/2020	Presentation	Slide 24	by assigning Lake Hodges to the GHB, will you run into issues when reporting your land surface budget and/or surface water budgets? Or will you do a zone budget approach and parse out that data for water budget output purposes? An explanation of how the general head can simulate groundwater/surface water interaction on the sides and bottom of Lake Hodges is requested. I am curious as to how you will be able to have leakage from Lake Hodges in layer 1 to the underlying layer 2 using the GHB approach versus using the River package os imiilar surface water package where you can readily isolate the budget terms and prepsent gw/sw interaction on all sides.
Will Halligan	LSCE	11/6/2020	Presentation	Slide 27	The CU posted on the chart for the various crops seems pretty low in general. Will you be providing Kc and Etref values for review. I would have thought the CU for pasture grass should essentially equal Etref as the Kc should be close to 1. The majority of the crops are around 2 af/year which seems generally low .

Technical Peer Review Meeting October 8, 2020
Comment Tracking Table

Commenter Name	Commenter Organization	Comment Received	Subject	Line #s or Figure #	Comment
Will Halligan	LSCE	11/6/2020	Presentation	Slide 36	I support the concept of adaptive management, however, I think that the County and City should focus on "management actions" to address adaptive management as those actions are generally more nimble and can be implemented quickly as monitoirng data and analysis indicate. However, including projects as an adaptive management tool may be more difficult to implment at teh drop of a hat as is suggested. Projects take many years of planning, design, permitting, CEQA, and construction to implement and are not generally a go right off the bat. Once they are in place then that may be some flexibility depending on the paroject.
Will Halligan	LSCE	12/3/2020	Bedrock Wells	In response to Peter Quinlan's comment on 1/24/2020.	Page 2, Peter Quinlan, last comment on page: Peter uses the word “isolate” in reference to well construction features that “isolate” the well from pumping from the alluvium and rediduum. It is important to understand what well construction features he considers he is referencing that provides “isolation”. If the wells he is referencing are constructed with sanitary seals (cement type goruts) that extend from the ground surface downward through the alluvium and residuum at a minimum, then that would lead to some degree of isolation of the well pumping groundwater from the alluvium and residuum. However, if the well construction only includes the well casing that extends through the alluvium and residuum and the underlying perforations (well screen) spans a depth interval below the residuum, then that alone would not prevent that well from drawing water from the overlying alluvium and residuum, unless the sanitary seal extends through those overlying units. Bottom line is that it is important to understand more of the details of the well construction features than what Peter mentioned in his comment before concluding any sort of isolation.
Will Halligan	LSCE	12/3/2020	Land Use	In response to Matt Wiedlin's comment on 5/29/2020.	Page 4, first comment. With the revisions to land use that the modeling team had to conduct due to incompleteness and inaccuracies from published datasets, will those revised/updated land use datasets be provided for review at some point?
Will Halligan	LSCE	12/3/2020	Pumping Rates	In response to Will Halligan's comment on 7/16/2020.	Page 4, second comment. With the absence of pump test or pump efficiency testing data, anecdotal information from AC members, etc. can be used to get a sense of what pumping rates may be for large capacity wells in the basin. This information can be used to see if the discharge volumes expected from such wells that serve large parcels is sufficient to meet the parcels water demands. That could be a form of a cross check proposed by Matt that could be utilized by the modeling team.
Peter Quinlan	Dudek, Rancho Guejito	12/4/2020	No Flow Boundary	In response to Modeling Team responses to Peter Quinlan's comment on 10/23/2020.	The current model boundary does coincide with the location of reliable stream gauges. However, where the boundary aligns with the gauge locations, the boundary does not correspond with the watershed boundaries and associated groundwater divides. There are approximately 14,000 acres of watershed upstream of the gauge on Guejito Creek. The watershed divide is approximately 10 miles north of the gauge. None of this area will receive recharge through the FMP package in the model, nor will the recharge to the granitic rocks in this area be represented in the model because of the no-flow boundary located at the gauge. There is a much greater watershed (8 to 10 times the area of the Guejito Creek watershed) upstream of the gauge on Santa Isabel Creek that is similarly excluded from the model domain. Excluding this recharge to the layers of the model representing the granitic rock will impact the validity of model results. I am not suggesting that the model domain be extended to include these areas of the watershed, rather I suggest that some alternative to the no-flow boundary be adopted to incorporate the recharge to the granitic rock that occurs in these areas and migrates into the basin.
Peter Quinlan	Dudek, Rancho Guejito	12/4/2020	Uncertainty	In response to Modeling Team responses to Peter Quinlan's comment on 1/24/2020.	The modeling team has highlighted the fact that, in general, earth system models are inherently difficult or impossible to verify (Oreskes et al, 1994). In the context of groundwater modeling, this is largely due to the fact that the hydrogeological environment is of unknowable complexity and that natural and anthropogenic stresses interact non-linearly across the system. The modeling team’s assessment of calibration as a historical matching exercise is appropriate. However, incorporating the entire historical record into the calibration efforts can introduce systematic biases that may impact projections (e.g. Oreskes and Belitz, 2001; Hunt et al., 2019). The incorporation of a validation period provides a direct method of how the calibrated parameter distribution may bias predictions moving into the future. In addition to demonstrating an adequate match to historical observations over at least the last 10 years, I recommend that the modeling team assess and characterize how biases in the model calibration process may impact projected water levels and historical estimates of sustainable yield. The stochastic methods suggested by the modeling team to generate uncertainty bounds on estimates of sustainable yield are robust, but (as noted) expensive. I do not suggest that the modeling team pursues the development of dozens to hundreds of calibrated model realizations. Instead, the modeling team may consider using simpler methods, such as linear uncertainty propagation (e.g. see PEST ++) or stochastic methods that do not rely on calibrated models to generate an ensemble of sustainable yield estimates. Non-calibrated model results can be weighted using calibration statistics, such as RMSE, to assess confidence in the model’s estimates of groundwater storage change and predicted water levels. I believe that this uncertainty quantification effort supports the modeling team’s proposed sensitivity analyses that will identify the locations, processes, and parameters that are the dominant influence of model predictions.

Technical Peer Review Meeting December 10, 2020

Comment Tracking Table

Commenter Name	Commenter Organization	Comment Received	Subject	Line #s or Figure #	Comment
Peter Quinlan	Dudek, Rancho Guejito	12/22/2020	Model Documentation report		The GSP should include a report documenting the model development, calibration, and complete parameterization as an appendix. This report should the pumping assigned to each well through time. Zone budgets showing inflows and out flows from each model layer would be helpful in inderstanding the results of the model simulations.
Peter Quinlan	Dudek, Rancho Guejito	12/22/2020	No Flow Boundaries in Layers 3 and 4	Slide 18 from 17-Dec TPR Meeting	I would like to reiterate that the use of no flow boundaries in these layers eliminates subsurface groundwater inflow resulting from recharge to the granitic rock in large catchments upstream of the stream gauges on Santa Isabel, Guejito, and Santa Maria Creeks, and to a lesser extent catchments above the gauges on Sycamore and Cloverdale Creeks. By incorporating pumping in Layers 3 and 4, but cutting off horizontal inflows from the larger catchments, the model construction will force all the water pumped in layers 3 and 4 to be recharged from Layer 1. As a result the model will not be suitable for evaluating vertical flow in the basin.
Peter Quinlan	Dudek, Rancho Guejito	12/22/2020	No Flow Boundaries in Layers 3 and 4	Slide 18 from 17-Dec TPR Meeting	Rather than addressing this subsurface flow in a sensitivity analysis, I urge the team to try to incorporate subsurface inflow as a specified flux based on the recharge calculated by the Basin Characterization Model (BCM) during calibration.
Peter Quinlan	Dudek, Rancho Guejito	12/22/2020	Parameterization	Slide 41 from 17-Dec TPR Meeting	The hydraulic conductivity assigned to the residuum 10E-03 cm/sec seems high given the amount of pedogenic clay that was reported as being encopuntered in the residuum in logs from Rockwood Canyon.
Peter Quinlan	Dudek, Rancho Guejito	12/22/2020	Layers	Slide 51 from 17-Dec TPR Meeting	The stratigraphic column indicating that within the SPV Basin boundaries model Layers 1 and 2 are within the basin and that model Layers 3 and 4 is a helpful reminder that The Bulleting 118 basin does not include the rock underlying the Residuum. This clarification should be made in future presentations of the model to avoid confusion about the extent of the Basin, the location of Basin boundaries and the purpose of this analysis.
Peter Quinlan	Dudek, Rancho Guejito	12/22/2020		Slides 26-32 from 17-Dec TPR Meeting	The presentation on the 17th included a number of statements about the relationship between head differentials, groundwater flow and pumping from wells screened in granite underlying the Basin. There is insufficient evidence at this point to draw any conclusions about the volume of water flowing between the Basin and the underlying formations and/or the cause of such flow. Additional review and comparison of USGS work on regional flow through granite in the San Diego region may be helpful to this analysis, as would additional research into the relationship to water levels in Lake Hodges.

Technical Peer Review Meeting January 14, 2021

Comment Tracking Table

Commenter Name	Commenter Organization	Comment Received	Subject	Line #s or Figure #	Comment
Peter Quinlan	Dudek, Rancho Guejito	1/24/2020 email	Numerical Model Discussion	Slides 7-10	SGMA Emergency Regulations repeatedly call for addressing uncertainty. In the context of minimum thresholds , they raise the issue of uncertainty including model uncertainty:"§ 354.28. Minimum Thresholds (a) Each Agency in its Plan shall establish minimum thresholds that quantify groundwater conditions for each applicable sustainability indicator at each monitoring site or representative monitoring site established pursuant to Section 354.36. The numeric value used to define minimum thresholds shall represent a point in the basin that, if exceeded, may cause undesirable results as described in Section 354.26. (b) The description of minimum thresholds shall include the following: (1) The information and criteria relied upon to establish and justify the minimum thresholds for each sustainability indicator. The justification for the minimum threshold shall be supported by information provided in the basin setting, and other data or models as appropriate, and qualified by uncertainty in the understanding of the basin setting." Quantifying uncertainty in model predictions is important for providing context to management decisions. If the model-estimated sustainable yield that avoids undesirable results is less than current groundwater production, it may require unnecessary reductions in pumping and have negative economic consequences for groundwater users. The GSA should be aware of the confidence interval bounding the estimated sustainable yield before acting to limit production beyond what I necessary, so as to avoid unnecessary economic disruption. Uncertainty associated with numerical models can be addressed a number of ways. ASTM D5447-04 (2010) specifies validation or verification against historical observations held back from the data used for calibration: "6.6.5 Calibration of a groundwater flow model to a single set of field measurements does not guarantee a unique solution. In order to reduce the problem of nonuniqueness, the model calculations may be compared to another set of field observations that represent a different set of boundary conditions or stresses. This process is referred to in the groundwater modeling literature as either validation (1) or verification (14, 15). The term verification is adopted in this guide. In model verification, the calibrated model is used to simulate a different set of aquifer stresses for which field measurements have been made. The model results are then compared to the field measurements to assess the degree of correspondence. If the comparison is not favorable, additional calibration or data collection is required.

Technical Peer Review Meeting January 14, 2021

Comment Tracking Table

Commenter Name	Commenter Organization	Comment Received	Subject	Line #s or Figure #	Comment
					Successful verification of the groundwater flow model results in a higher degree of confidence in model predictions." Verification enables quantitative assessment of model error / uncertainty. Uncertainty can also be characterized qualitatively through sensitivity analyses. Again from ASTM D5447-04 (2010): "A calibrated but unverified model may still be used to perform predictive simulations when coupled with a careful sensitivity analysis (15). 6.7 Sensitivity analysis is a quantitative method of determining the effect of parameter variation on model results. The purpose of a sensitivity analysis is to quantify the uncertainty in the calibrated model caused by uncertainty in the estimates of aquifer parameters, stresses, and boundary conditions (6). It is a means to identify the model inputs that have the most influence on model calibration and predictions (1). Perform sensitivity analysis to provide users with an understanding of the level of confidence in model results and to identify data deficiencies (16). 6.7.1 Sensitivity analysis is performed during model calibration and during predictive analyses. Model sensitivity provides a means of determining the key parameters and boundary conditions to be adjusted during model calibration. Sensitivity analysis is used in conjunction with predictive simulations to assess the effect of parameter uncertainty on model results."
Matt Witman	Stakeholder	1/26/2021	Thresholds- general comment		I would like to see the adaptive management threshold criteria changed so that the adaptive threshold would be reached sooner (at higher groundwater levels) than was presented in the last meetings. My logic is for water users to have more time to adapt and potentially make management decisions over how best to adapt to lower levels to delay potential restrictions on water use. This extra time also gives the Core Team more time to decide on what is the best way to modify use if use restrictions become necessary, and potentially find Adaptive measures that might delay any future restrictions. (Comment is also for the AC)
Will Halligan	LSCE	1/28/2021	Handout No. 1	Page 2	Text that is highlighted should read "casing" rather than "caging".
Will Halligan	LSCE	1/28/2021	Handout 1	Page 5	Yellow highlighted text should be changed to "conductivity" rather than "connectivity".
Will Halligan	LSCE	1/28/2021	Handout 3	Hydrographs	For most wells the Mos are slightly higher than 2015 levels, however, for Rockwood MW2, SP093, the Mos significantly higher than any recorded measurements. This seems contrary to the approach to others and will likely result in these wells never being able to have gw levels that will reach MO levels. That may not be a concern if the forcus is primarily in the adaptive management and MT levels but if SGMA and stakeholder actions change in teh future to focus on achievement of MOs, then those particular wells/areas will likely fall short of reaching that level based on historical patterns.
Will Halligan	LSCE	1/29/2021	Handout 3	TDS Chemographs	I have a concern about the selection of the measurable objective at 1,000 mg/L, when it is obvious that in many areas of the basin that threshold will not be met and some groups may point to that as a reason for implementing P/MAs. It seems as if the MO could be much higher in many of the selected wells to be consistent with 2015 (baseline) conditinos. In a couple of the wells, the trends indicate that PMAs may likely be needed. Seems like municipal beneficial uses were the primary criteria for setting teh MO at a drinking water standard. Were other beneficial uses considered in the MO criteria?
Will Halligan	LSCE	1/28/2021	Handout 3	Management Areas map	This map is titled "Management Areas". Is it the intent to formally define and describe management areas in the GSP? Is the basis for that decision solely based on areas of the basin which are in the City's or County's jurisdiction rather than on whether there is a need to have PMAs located in those particular managment areas? I would recommend not formally defining managment areas in the GSP.
Will Halligan	LSCE	1/28/2021	Handout 5	PDF page 10	At the monitoring well 129 site, I would recommend that the uppermost monitoring well completed in the weatehred bedrock be designated as 129B rather than 129A. This will avoid confusion in the future when using groundwater level data for contouring purposes as data from "129A" should be paired with 128B and not 128A. I also wonder whether a third monitoring well in the alluvium at the 129 location should have been constructed since conditions may change over time with groundwater levels in the alluvium at this location, whereby having a "sahllow" well in that unit may be beneficial.
Will Halligan	LSCE	1/28/2021	Presentation	Global Comment	It seems to me that there is a focus more on establishing the MT and adaptive management levels thatn there is on the long term implications of the basin potentially not being viewed as "sustainable" because the Mos are set too high. I agree with the approach on adaptive management adn the MT levels, however, I believe the current approach in establishing MOs will result in the basin not being "sustainable" by 2040. I would suggest utuilizing the 2015 baseline allowed by SGMa and the GSP regulations as a MO target.
Will Halligan	LSCE	1/28/2021	Presentation	Slide 21	I am still unclear as to why the MO needs to be at a level that provides 5 years of "drought storage". Applying that to some fo the areas of basin establishes a criteria that will not be met unless PMAs are implmented. Currently, the approach is to use adaptive managment and MT levels as a trigger for PMAs. The GSP team has not provided an explanation of how the GSA will achieve MOs iwth teh criteria shown on this slide if those conditinos do not currently exist and will require PMAs to achieve. Again, I believe the MO approach is setting the bar at a level that the GSA and landowners will not be able to achieve.
Will Halligan	LSCE	1/28/2021	Presentation	Slide 25	The discussion/presentation of the SMCs for storage lacked any quantative values that are provided for the other SMCs. Using groundwater levels as a proxy is fine, however, you will need to provide change in storage values for the Mos, and MTs in the GSP. You need to use groundwater levels to do that which is obvious, however, it would be helpful to see what the values are for the basin and at each monitoring location. Based on the selection

Technical Peer Review Meeting January 14, 2021

Comment Tracking Table

Commenter Name	Commenter Organization	Comment Received	Subject	Line #s or Figure #	Comment
					of MOs and MTs for gw levels in some of the wells, the associated storage SMCs will look like you will always have negative storage changes when reporting that SMC in teh annual GSP monitoring reports (see Rockwood Canyon area as an example).
Peter Quinlan	Dudek, Rancho Guejito	1/28/2021	TPR Handout #3	Slide 21	There is a discernable increasing trend in TDS in well 67 that is not associated with the Cloverdale Creek watershed. The GSP should address the sources of TDS in this well and land uses on adjacent properties that may be the cause of the rising TDS levels.
Peter Quinlan	Dudek, Rancho Guejito	1/28/2021	TPR Handout #4		The inclusion of lateral groundwater inflow in Layers 3 and 4 is an improvement. When the model is updated and recalibrated, varying lateral groundwater inflow by catchment rather than uniformly for all catchments should be included. During recalibration, all other calibration parameters should also be varied. The model underpredicts heads in the eastern end of the basin and overpredicts them in the western end. Additional inflow in the east, lower horizontal hydraulic conductivity assignments and increased outflow in the west might improve the match between simulated and observed water levels.
Peter Quinlan	Dudek, Rancho Guejito	1/28/2021	TPR Handout #3	Slide 3	Adaptive Management Thresholds. As was discussed adaptive management thresholds are not mentioned in SGMA. In the course of the presentation the concept was described as a yellow or warning light that water levels were approaching Minimum Thresholds (required by SGMA). But in further discussion it seemed that adaptive management thresholds might be a trigger for management actions. The inclusion of adaptive management thresholds to start assessment and planning for potential management actions should the minimum thresholds be exceeded in a sufficient number of wells for a period of time seems appropriate, but they should not be used as a trigger management actions. SGMA guidance anticipates that some minimum thresholds may be exceeded in some wells in a basin without constituting an undesirable results unless the exceedances are widespread and prolonged.
Wiedlin	Wiedlin & Associates	2/16/2021	TPR Handout #3	Page 2	Two of the hydrograph locations presented in handout #3 are not shown on the GWL Representative Network map; 330320117024706 & SP-107. Also SP014 is identified in two different locations, I think the northern one should be SP-107.
Wiedlin	Wiedlin & Associates	2/16/2021	TPR Handout #3	Page 8	The measurable objective at Rockwood MW-2 is about 45' higher than recorded gw elevations. Other measurable objectives at other wells fall within the 2015-2019 measured water level depths. This MO should be rechecked or the rationale for this well presented within the plan. Based the elevated gradient depicted on the Spring 2018 GW Elevation map, and the confluence of Rockwood Canyon and related parcels to the main basin, this area is likely a groundwater pumping center.
Wiedlin	Wiedlin & Associates	2/16/2021	TPR Handout #3	Page 2	15 wells are presented as the GWL Network map. Eight hydrographs showing sustainability criteria are presented. Besides the Rockwood MW-02 well, SPV GSP-169, SPV GSP-22 (SP-107), & SPV GSP-36 (SP-093) have measurable objectives that either have never been met in their recorded history or are set at near peak gw elevations. Including MW-02, that's four of the eight wells presented. What is the rationale for those measurable objectives? Will this standard not be exceedingly difficult to meet? The GSP needs only to set the measurable objective to groundwater lows measured between 2015 and 2020.
Wiedlin	Wiedlin & Associates	2/16/2021	TPR Handout #4	Pages 6-10	The sensitivity analysed results suggest the model tends to underestimate heads (about 20 feet) in what is likely the primary gw recharge area of the basin where Santa Ysabel Creek discharges into SP Valley. But the model also tends to underestimate heads where Rockwood Canyon joins SP Valley and just to the west at SDSY (about 7 to 18 feet), even though these two locations are very close to each other. The head residuals for these two areas are large relative to the rest of SP Valley and in and in opposite directions relatiave to each other. Transmissivity should be partially constrained based on the SP Academy aquifer test result located nearby, if not, that should be revisited. If the model error in opposite directions in areas immediately adjacent to each other does not improve when BCM recharge, as subsurface inflow, is added to the model, a priority for managing the basin should be to improve pumping estimates and groundwater recharge estimates in the upgradient area of San Pasqual. Variation in model outcome based on the various climate assumptions is much less than the model residuals. This suggests that pumping, recharge, storage, and hydraulic conductivity in the upgradient area of the basin are probably greater unknowns than climate uncertainty and may need to be adjusted. Again, if not already done, I suggest you look at Izbicki's transmissivity contour map, based on specific capacity measurements along with the San Pasqual Academy constant discharge test to help constrain the model with respect to transmissivity.
Wiedlin	Wiedlin & Associates	2/16/2021	TPR Handout #4	10	While the measurable objective for gw elevation at the most upgradient monitoring well along Santa Ysabel Creek is above measured highs going back to 2005, the minimum threshold is et at the alluvium-bedrock contact, 100 feet bgs and approximately 25 feet below recorded gw elevation lows. I would suggest establishing either the adaptive management threshold or the minimum threshold at the historic gw elevation low. This would lift the criteria up 15 to 25 feet higher. While groundwater elevations in this area of the aquifer may be strongly affected by the rate of gw recharge from creek surface water flow, a process gw management has little control of, I would also expect that gw heads where the creek enters SP Valley also play an important role and this is a condition that gw management can influence. In the long run, allowing the full dewatering of the alluviual aquifer at the upgradient end of the basin will probably not be the most effective means of managing the gw resources of the basin.

Public Review Draft GSP—
Comment and Response Matrix

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San Pasqual Valley Groundwater Sustainability Plan
Public Comment and Response Matrix

#	Commenter Name	Commenter Organization	Comment	Response
1	Matt Witman	N/A	Page ES-5-It seems to me that the well inventory is misplaced, it should be in Tier 0, and in fact is mostly done. The well inventory in necessary to study and make the decisions on the other Tier 1 actions. To not have this in Tier 0 will cause delays in carrying out Tier 1 actions. This will then cause delays in Tier 2 actions. It is imperative in the case of an undesirable result that management actions that can affect change happen in a timely manner. The well inventory in itself will not affect change in water use, only an understanding of what should be the next step in the process, hence Tier 0.	Comment noted. Tier assignments for projects and management actions were chosen by the GSA Core Team, after significant discussion and deliberation. Due in part of current conditions in the Basin, and the strategies used to set the measurable objectives, planning thresholds, and minimum thresholds, the Core Team believes that a thorough and comprehensive well inventory (*Management Action 9 – Well Inventory*) will establish the list of wells addressed in other Tier 1 and 2 management actions.
2	Matt Witman	N/A	Page ES-6-Add the word plan in the Tier 2 box-"implement pumping restriction and enforcement plan"	*Management Action 11 – Pumping Reduction Plan* is a Tier 1 management action. Figure ES-3 reflects this.
3	Matt Witman	N/A	Page 2-15 paragraph 2.1.3-What is the relevance of the "historical San Ysabel creek riparian rights". Does there need to any study to see if the court decision is still relevant to the SGMA plan? Just the statement and figure 2-2 are meaningless without some additional study or explanation why it does not affect SGMA. Some of the area is in the county and some is in the city, does this make a difference.	There is an existing court order (Trussell v. City of San Diego (1959)) that pre-dates the state legislature's enactment of SGMA. As a GSA participant, the City takes into account the interests of all stakeholders in the Basin when complying with SGMA. As a Tier 0 management action, the City will evaluate the feasibility of surface water recharge (*Management Action 7 – Initial Surface Water Recharge Evaluation)*. Section 9.8.7 of the GSP describes *Management Action 7 – Initial Surface Water Recharge Evaluation*. The purpose of the preliminary feasibility analysis study in *Management Action 7* is to identify proposed surface water recharge projects that may be implemented by the GSA, and will evaluate whether surface water releases from the Sutherland Reservoir could adequately recharge the Basin. The analysis will also identify potential benefits such as raising groundwater levels to support GDEs and other related habitat. • The public outreach process for *Management Action 7* will provide opportunities for input during the development of the study's scope of work, will include quarterly updates (with opportunities for input at key milestones) and posted notices, email announcements, and public workshops/meetings to engage stakeholders in the investigation of surface water recharge options. • The preliminary feasibility analysis study will be posted for public review/comment for a minimum of 45 days. Public comments and responses to public comments shall be publicly posted for a minimum of 30 days before a public workshop is held.
4	Matt Witman	N/A	Paragraph 3.6.3. The interaction between the bedrock and Quaternary deposits and residuum. If we don't know about this interaction then it needs to be studied. There are monitoring wells that were installed specifically to study this interaction. This needs to be done. This is another recommendation for Tier 0 actions. The city has installed the wells, the study of the interaction should begin.	Noted. These wells have been installed, and future data interpretation and analysis is the responsibility of the City. As a Tier 1 management action, the GSA may also include studies to help determine which wells may be subject to pumping restrictions (*Management Action 9 – Well Inventory*). In addition to the City monitoring wells, DWR has announced medium and high priority basins will be aerial electromagnetic (AEM) surveys conducted. Results from this survey will provide additional information about the geological structure of the Basin.
5	Matt Witman	N/A	Paragraph 3.8 –same as above . Groundwater Interaction between the crystalline rock and the alluvium needs to be studied as part of Tier 0 actions.	See Response #4.
6	Matt Witman	N/A	Paragraph 7.6.8-Replacement of the existing City monitoring wells should be a priority. Many of these wells are old and the casings compromised and do not reach the bottom of the alluvium. The data that is currently being used is suspect. New monitoring wells need to be found or drilled. This should be a Tier 0 action as well.	Noted. As part of GSP implementation (see Section 10.2), the Core Team may pursue grant funding for replacement of damaged monitoring wells.
7	Matt Witman	N/A	Section 9 projects and management actions.-As I stated many times during the AC meetings, I believe that the groundwater users will have to be enacting their own water reductions prior to Tier 2 actions. Somehow when examining how to reduce pumping in Tier 2, management actions by the water users prior to the mandatory pumping restrictions need to be considered. These type of short or long term water reductions that could be done would be fallowing ground, orchard or vineyard removal to change varieties, or a change in crops. If a water user takes these actions preemptively, the reduced water use should not be used as their baseline when calculating the restrictions planned for Tier 2 actions.	Noted. Future potential pumping restrictions will include outreach and communication with stakeholders, and specific methodologies for determining potential future restrictions has not yet been discussed or determined at this time.

San Pasqual Valley Groundwater Sustainability Plan
Public Comment and Response Matrix

#	Commenter Name	Commenter Organization	Comment	Response
8	Matt Witman	N/A	Section 9 planning projects should also include as mentioned above, finishing the well inventory as part of Tier 0. Also under Tier 0 should be beginning the study of the alluvium, residuum, and crystalline deposits using the city installed monitoring wells that are already present in the valley.	See Responses #1 and #4.
9	N/A	TNC, Audubon, LGC, UCS, CWF	Disadvantaged Communities and Drinking Water Users The identification of Disadvantaged Communities (DACs) and drinking water users is insufficient. The DWR DAC mapping tool indicates that there are no DACs in the basin, however this is not stated in the GSP. We commend the GSA for including a map of the density of domestic wells in the basin (Figure 2-8). The GSP should be further improved by including a map of individual domestic well locations and by indicating the population dependent on groundwater for their source of drinking water. Recommendations • State definitively that there are no DACs in the basin, instead of being silent on the subject. Indicate what source was used to make the determination (e.g., the DWR DAC mapping tool). • Include a map of individual domestic well locations and a table of well data showing screen depths. Indicate the population dependent on groundwater for their source of drinking water. • Describe the occurrence of tribal lands in the basin. The GSP states that there are no tribal lands in the basin, but includes a tribe member from the San Pasqual Tribe on the Advisory Committee. If the San Pasqual Tribe has interests in the basin, describe them in detail.	New Section 2.1.2 will be added to summarize Basin demographics and indicate that there are No DACs or tribal reservation lands in the Basin. Specific well locations will be identified as part of *Management Action 9 – Well Inventory*. New Table 8.2 will be added to Section 8.2 comparing domestic well depths to minimum thresholds, to document that thresholds are protective of domestic wells. Refer to Figure 3-26 of Attachment J (which shows the locations of households). The SPV GSP Model estimates Basin population at less than 70 residents.
10	N/A	TNC, Audubon, LGC, UCS, CWF	Interconnected Surface Waters The identification of Interconnected Surface Waters (ISWs) is insufficient. The GSP uses a numerical model to analyze surface water and groundwater interactions. A short description of the ISW analysis is provided in the GSP, but very little detail or background on the approach is given. For example, the location and spatial resolution of groundwater elevation data (e.g., how close the wells are to the streams) behind the numerical model is not provided. Additionally, the temporal resolution of groundwater elevation data (e.g., number of years and seasonality) that parameterizes the numerical model is also unclear. The GSP states that reaches identified as disconnected are in portions of the basin where depth to groundwater has been greater than 30 feet since 2015. The GSP does not, however, provide justification for the 30 feet criteria provided in the text. Recommendations • Overlay the figure of stream surface water depletion (Figure 4-33) with depth-to-groundwater contour maps to illustrate the groundwater depths and groundwater gradient near the stream reaches. Show the location of groundwater wells used in the analysis. Use depth to groundwater data from multiple seasons and water year types (e.g., wet, dry, average, drought) to determine the range of depth and capture the variability in environmental conditions inherent in California's climate. • 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 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. • Describe data gaps for the ISW analysis. Discuss and reconcile these data gaps with specific measures (shallow monitoring wells, stream gauges, and nested/clustered wells) along surface water features in the Monitoring Network section of the GSP.	While the GSP was developed with the best available science, the GSA recognizes the limitations of any model given the various input parameters that could be used. As such, thresholds and sustainability are based on actual water levels rather than modeled values and the model will be updated with new data over time. Section 4.7 in the GSP summarizes the approach for addressing GDEs and refers to Appendix J, which describes in detail the desktop analysis and follow-up field assessment of GDEs. The SPV GSP Model was also used to intersect the modeled stream bottoms with the average monthly, modeled water table from Water Years 2005 through 2019. This modeling exercise was done to assess the general pattern of where the depth to groundwater along modeled streams was within 30 feet of land surface during any average month of the historical period. The 30-foot rule was used based on The Nature Conservancy's Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act (TNC, 2018). Areas with potential GDEs in Figure 4-35 are reasonably consistent with interconnected streams depicted in Figure 4-33 and the areas where the water table were generally within 30 feet of modeled land surface and stream bottoms. The modeled land surface is based on 10-meter DEM data. New Planning Thresholds will be added (Section 8.7) to initiate *Management Action 8 – Study GDEs* to evaluate GDEs in more detail. The GSAs may implement this study prior to the 5-Year Update even if the Planning Thresholds aren't reached.
11	N/A	TNC, Audubon, LGC, UCS, CWF	Groundwater Dependent Ecosystems The identification of Groundwater Dependent Ecosystems (GDEs) is incomplete. The GSP took initial steps to identify and map GDEs using the Natural Communities Commonly Associated with Groundwater dataset (NC dataset). We commend the GSA for including a comprehensive list of the state and federally threatened and endangered species in the basin (Table 1 of Appendix J). However, we found that some mapped features in the NC dataset were improperly disregarded, as described below. • GDEs were incorrectly removed based on groundwater levels that were greater than 30-ft in 2015, a single point in time. This is a technically incorrect approach since groundwater levels fluctuate over seasonal and interannual time scales due to California's Mediterranean climate and intensifying flood and drought events due to climate change. Justifying the removal of	See Response #10. The GDE assessment recognizes that there are seasonal fluctuations in groundwater and that GDEs can be affected by those changes. Aerial imagery (current and historic), in combination with other geospatial datasets, was the best available way to review surficial ecological communities, land use modifications, and disturbances. New Planning Thresholds will be added (Section 8.7) to initiate *Management Action 8 – Study GDEs* to evaluate GDEs in more detail. The GSAs may implement this study prior to the 5-Year Update even if the Planning Thresholds aren't reached.

#	Commenter Name	Commenter Organization	Comment	Response
			NC dataset polygons solely based on this criterion does not acknowledge that groundwater levels temporally vary and the fact that many plant species within GDEs can access groundwater depths beyond 30-feet or have adapted water stress strategies to deal with intermittent periods of deep groundwater levels. Using this methodology disregards groundwater fluctuations and may result in the omission of ecosystems that are groundwater dependent. • GDEs were disregarded based on the presence or proximity of surface water. However, partial reliance on surface water does not necessarily prove that the plants and animals do not access groundwater. Many GDEs often simultaneously rely on multiple sources of water (i.e., both groundwater and surface water), or shift their reliance on different sources on an interannual or inter-seasonal basis. Additionally, adverse impacts can occur to GDEs due to pumping that further separates groundwater from surface water. • The GDE identification process utilized aerial imagery in an incorrect manner. The GSP relied on aerial imagery to detect surface water, and then made the assumption that only GDEs present in inundated or saturated areas were connected to groundwater. This approach is incorrect for two reasons: 1) not all surface water is connected to groundwater, and 2) visually inspecting aerial imagery cannot detect groundwater occurring near the ground surface. GDEs can rely on groundwater for some or all its water requirements, whether or not surface water is present. In California, GDE reliance on groundwater often vary by season, and depend on the availability of alternative water sources (e.g., precipitation, river water, reservoir water, soil moisture in the vadose zone, groundwater, applied water, treated wastewater effluent, urban stormwater, irrigated return flow).	
12	N/A	TNC, Audubon, LGC, UCS, CWF	(continued from row above) Recommendations • Provide depth-to-groundwater contour maps, noting 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 DEM to estimate depth-to-groundwater contours across the landscape. • Use depth to groundwater data from multiple seasons and water year types (e.g., wet, dry, average, drought) to determine the range of depth to groundwater around NC dataset polygons. We recommend that a baseline period (10 years from 2005 to 2015) be established to characterize groundwater conditions over multiple water year types. Refer to Attachment D of this letter for best practices for using local groundwater data to verify whether polygons in the NC Dataset are supported by groundwater in an aquifer. • If insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons as "Potential GDEs" in the GSP until data gaps are reconciled in the monitoring network. While the GSP acknowledges that some locations that may be GDEs are not confirmed as GDEs (and their status is uncertain), they are mapped as non-GDEs. These should be mapped as potential GDEs.	See Response #10. Depth-to-water data was a primary tool used for assessment of potential GDEs in SPV Basin.
13	N/A	TNC, Audubon, LGC, UCS, CWF	Native Vegetation and Managed Wetlands Native vegetation and managed wetlands are water use sectors that are required to be included into the water budget. The integration of these ecosystems into the water budget is insufficient. The water budget did not include the current, historical, and projected demands of native vegetation and managed wetlands. The omission of explicit water demands for native vegetation and managed wetlands is problematic because key environmental uses of groundwater are not being accounted for as water supply decisions are made using this budget, nor will they likely be considered in project and management actions. Recommendations • Quantify and present all water use sector demands in the historical, current, and projected water budgets with individual line items for each water use sector, including native vegetation and managed wetlands.	Native vegetation (that is, native shrubs plus riparian vegetation) water demand is met through precipitation and shallow groundwater uptake. The ET of native vegetation is a portion of the sum of the ET of precipitation and the ET of shallow groundwater in Table 5-3 of the GSP. The ET of native vegetation alone within the Basin averages 2,328 to 2,556 AFY during the averaging periods indicated. This information will be incorporated into Table 5-3 in the GSP and in the associated subsections of Appendix I.
14	N/A	TNC, Audubon, LGC, UCS, CWF	Stakeholder Engagement during GSP development Stakeholder engagement during GSP development is incomplete. SGMA's requirement for public notice and engagement of stakeholders is not fully met by the description in the Notice and Communication section of the GSP (Section 1.4). We note the following deficiencies with the overall stakeholder engagement process. • The opportunities for public involvement and engagement are described in very general terms. They include attendance at public meetings, stakeholder email list, and updates to the San Pasqual Valley GSP website. • Very little information was provided on the level of engagement of the Advisory Committee and the Technical Peer Review Group. While the members of the Advisory Committee are provided in Table 1-2, the members of the Technical Peer Review Group are not listed.	Section 1.5 will be expanded with more detail about the SPV Advisory Committee. Additional details regarding stakeholder involvement are included in Appendix E of the GSP.

#	Commenter Name	Commenter Organization	Comment	Response
			Recommendations • Include a robust Stakeholder Communication and Engagement Plan. • Conduct active and targeted outreach to engage domestic well owners, environmental stakeholders, and tribal 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. • Describe the occurrence of tribal lands in the basin. Explain the inclusion of a tribe member from the San Pasqual Tribe on the Advisory Committee. The GSP states that there are no tribal lands in the basin, but includes a tribe member from the San Pasqual Tribe on the Advisory Committee. If the San Pasqual Tribe has interests in the basin, describe them in detail.	
15	N/A	TNC, Audubon, LGC, UCS, CWF	Considering Beneficial Uses and Users When Establishing Sustainable Management Criteria and Analyzing Impacts on Beneficial Uses and Users The consideration of beneficial uses and users when establishing sustainable management criteria (SMC) is insufficient. The consideration of potential impacts on all beneficial users of groundwater in the basin are required when defining undesirable results 4 and establishing minimum thresholds Disadvantaged Communities and Drinking Water Users There are no DACs in the basin, according to the DWR DAC mapping tool. The GSP has taken initial steps to define SMC for domestic wells owners. The GSP analyzes direct or indirect impacts on domestic wells when defining undesirable results for chronic lowering of groundwater levels and degraded water quality by describing impacts to potable supply of drinking water for domestic well users. However, the SMC developed for domestic well owners can be improved with the following recommendations. Recommendations • Chronic Lowering of Groudnwater Levels o Further describe the impact of passing the minimum threshold for domestic well owners. For example, provide the number of domestic wells that would be de-watered at the minimum threshold. • Degraded Water Quality o Evaluate the cumulative or indirect impacts of proposed minimum thresholds for TDS and nitrate on domestic water users.	Section 8.2 will be revised to better explain how the minimum thresholds are protective of known domestic wells. New Table 8.2 will be added to demonstrate that the proposed minimum thresholds are protective of known domestic wells.
16	N/A	TNC, Audubon, LGC, UCS, CWF	Groundwater Dependent Ecosystems and Interconnected Surface Waters Minimum thresholds for chronic lowering of groundwater levels are set to historical low groundwater elevations in proximity to potential GDEs, and are allowed to fall to 50% of the historical range below historical minimums where potential GDEs are not present. Based on the GSP's assessment that historic levels have been sustainable, the GSP states that using these levels as a minimum threshold should not pose a harmful impact to GDEs. However, the true impacts to ecosystems under this scenario are not discussed. If minimum thresholds are set to historic low groundwater levels and the basin is allowed to operate just above or close to those levels over many years, there is a risk of causing catastrophic damage to ecosystems that are more adverse than what was occurring in 2015, at the height of the 2012-2016 drought. This is because California ecosystems, which are adapted to our Mediterranean climate, have some drought strategies that they can utilize to deal with short-term water stress. However, if the drought conditions are prolonged, the ecosystem can collapse. While ecosystems may have been only water stressed in 2015, they can be inadvertently destroyed if groundwater conditions are maintained just above those 2015 levels in the long-term, since the basin would be permitted to sustain extreme dry conditions over multiple seasons and years. Recommendations • When defining undesirable results for chronic lowering of groundwater levels, water quality, and depletions of interconnected surface waters, provide specifics on what biological responses (e.g., extent of habitat, growth, recruitment rates) would best characterize a significant and unreasonable impact to GDEs. Undesirable results to environmental users occur when 'significant and unreasonable' effects on beneficial users are caused by one of the sustainability indicators (i.e., chronic lowering of groundwater levels, degraded water quality, or depletion of interconnected surface water). Thus, potential impacts on environmental beneficial uses and users need to be considered when defining undesirable results in the basin. Defining undesirable results is the crucial first step before the minimum thresholds can be determined. • For the interconnected surface water SMC, the undesirable results should include a description of potential impacts on	Undesirable results for GDEs will be clarified in Section 6.3.6. New Planning Thresholds will be added (Section 8.7) to initiate *Management Action 8 – Study GDEs* to evaluate GDEs in more detail. The GSAs may implement this study prior to the 5-Year Update even if the Planning Thresholds aren't reached. The GDEs Study will include a phased approach to investigation, starting with a desktop study.

#	Commenter Name	Commenter Organization	Comment	Response
			instream habitats within ISWs when defining minimum thresholds in the basin 9. The GSP should confirm that minimum thresholds for ISWs avoid adverse impacts to environmental beneficial users of interconnected surface waters as these environmental users could be left unprotected by the GSP. These recommendations apply especially to environmental beneficial users that are already protected under pre-existing state or federal law.	
17	N/A	TNC, Audubon, LGC, UCS, CWF	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 a climate transient analysis. However, the GSP did not consider multiple climate scenarios (e.g., the 2070 wet and 2070 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 included climate change into key inputs (precipitation, evapotranspiration, and surface water flow) of the projected water budget. However, the GSP does not calculate a sustainable yield based on the projected water budget with climate change incorporated, and in fact does not present a sustainable yield for any time period. If the water budgets are incomplete, including the omission of extremely wet and dry scenarios, and sustainable yield is not calculated, 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 and domestic well owners. Recommendations • 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. • Calculate sustainable yield based on the projected water budget with climate change incorporated. • Incorporate climate change scenarios into projects and management actions.	Noted. Climate change was considered in the groundwater modeling. The GSP presents a range of SY estimates based on current and historical water budgets. Appendix I explains the rationale for selecting the climate change scenarios analyzed and presents the sensitivity to the water budget terms and safe yield associated with these scenarios. Sections 3.5.1 (see the "Future Period" subsection) and 5.1.1 of Appendix I describe how climate change has been incorporated into the projection simulations. The HadGEM2-ES RCP8.5 climate scenario was incorporated into the future baseline projection simulation and used to develop the projected water budgets. DWR's 2070 Drier/Extreme-Warming (DEW) scenario is based on the HadGEM2-ES RCP8.5 climate scenario that was analyzed as part of the SPV GSP. The GSP did consider the 2070 extremely dry climate scenario. Because the GSP is a planning document focused on projects and management actions that could potentially be needed during times of water scarcity, it was deemed unnecessary to include projection simulations under extreme wet conditions. A second climate scenario was also simulated based on the CanESM2 RCP 8.5 climate scenario as a sensitivity analysis to support GSP development. This particular GCM was selected because it is generally in the mid-range of the four GCMs evaluated (Figure 3-14 of Appendix I), but exhibits a more favorable sequence of future hydrology than the HadGEM2-ES GCM. Water budgets associated with this second climate change scenario are provided in Section 5.5 of Appendix I. The GSP did consider multiple climate scenarios. Because sustainable yield is highly dependent on the sequence of hydrologic/climate conditions and because future climate conditions are uncertain, the GSP based the initial estimate of the sustainable yield range on groundwater pumping rates estimated for the historical period including WYs 2005 through 2019. This historical range of groundwater pumping of 4,740 to 6,741 AFY serves as an initial estimate of the sustainable yield, as described in Section 4.4.5.
18	N/A	TNC, Audubon, LGC, UCS, CWF	Data Gaps The consideration of beneficial users when establishing monitoring networks is insufficient. Our comments above note data gaps in the monitoring networks for GDEs and ISWs. The lack of monitoring wells and/or the lack of plans for future monitoring threatens GDEs, aquatic habitats, and surface water users. Appropriate monitoring is necessary so that groundwater conditions within GDEs and ISWs are characterized and surface-shallow groundwater interactions are fully integrated into the GSP. GDEs and ISWs will remain unprotected by the GSP without adequate monitoring and identification of data gaps. The Plan therefore fails to meet SGMA's requirements for the monitoring network. Recommendations • Provide maps that overlay monitoring well locations with the locations of domestic wells to clearly identify potentially impacted areas. • Include plans to reconcile data gaps for GDEs and ISWs in the GSP now, instead of leaving this for a future project to be implemented when a groundwater level trigger is reached. Evaluate how the gathered data will be used to identify and map GDEs and ISWs. • Determine what ecological monitoring can be used to assess the potential for significant and unreasonable impacts to GDEs or ISWs due to groundwater conditions in the subbasin.	According to 23 CCR 351, '"Data gap" refers to 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.' New Planning Thresholds will be added (Section 8.7) to initiate *Management Action 8 – Study GDEs* to evaluate GDEs in more detail. The GSA does not believe that establishing this as a Tier 1 PMA will significantly affect the GSAs ability to sustainably manage the Basin.

#	Commenter Name	Commenter Organization	Comment	Response
19	N/A	TNC, Audubon, LGC, UCS, CWF	Addressing Beneficial Users and Projects and Management Actions The consideration of beneficial users when developing projects and management actions is insufficient. The GSP states that because the basin is sustainable, project and management actions will only be implemented as necessary in the future. However, groundwater sustainability under SGMA is defined not just by sustainable yield, but by the avoidance of undesirable results for all beneficial users. Environmental beneficial users such as GDEs, aquatic habitats, and surface water users were not sufficiently identified in the GSP. Therefore, potential project and management actions to be implemented sometime in the future may not protect these beneficial users. The GSP presents tiers for the projects and management actions in Figure 9-2. Tier 0 projects and management actions are to be implemented by the GSA during GSP implementation. Future tiers are triggered by increasingly severe minimum threshold exceedances. The GDE study is proposed as a Tier 1 Project and Management Action. Because of the data gaps noted for GDEs above, this study should be included in the GSP now, not set aside for future implementation. Recommendations • For GDEs and ISWs, 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". • For domestic well owners, include discussion of 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. • For 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. • Develop management actions that incorporate climate and water delivery uncertainties to address future water demand and prevent future undesirable results.	See Response #18. *Management Action 5 – Education and Outreach for TDS and Nitrate* will be expanded to better articulate that it incudes conducting education/outreach to domestic well users on water quality testing. Thank you for sending Attachment B - we have used this information to improve *Management Action 5*. Also, new *Management Action 6 – Coordinate with City on Hodges Watershed Improvement Project* will be added to the Plan (see Section 9.8.6).
20	Frank Konyn	Konyn Dairy	"Where is the definition of the bottom of the basin in Section 2.1?"	The bottom of the basin statement in Section 3.6.3 will be included in Section 2.1 .
21	Frank Konyn	Konyn Dairy	3rd paragraph typ. "a will" a "a well"	Edit will be incorporated.
22	Frank Konyn	Konyn Dairy	Section 5.1 typo "approach" is correct spelling	Edit will be incorporated.
23	Frank Konyn	Konyn Dairy	Add abbreviation for TAF to abbreviation list in the introduction	Edit will be incorporated.
24	Frank Konyn	Konyn Dairy	Two new nested wells need be discussed as well as investigating the relationship between the residuum and the bedrock.	The 2 new nested wells will be added to the GSP (Table 7-2 and new Table 7-3). DWR's Bulletin 118 definition is included in Section 2.1. The GSAs are managing to the SPV basin as defined in Bulletin 118.
25	Frank Konyn	Konyn Dairy	All County land needs to be shown in the figure. It appears that not all County land is shown in the figure, mainly near Santa	Figure will be revised.
26	Lisa Peterson	San Diego Zoo Wildlife Alliance	a. "The single largest contributing source of nitrogen is commercial crop fertilizer use, at 56 percent of the Basin total, followed by landscape fertilizer use at 14 percent. Nitrogen, managed through in-Basin manure applications at Frank Konyn Dairy Inc. and the San Diego Zoo Safari Park, represents a combined 21 percent of the Basin total, with other nonregulated small animal facilities comprising 2 percent of the Basin total." (p. 4-16.) b. What is the source of this information? We use minimal amounts of fertilizer and it is contained in our greenhouses and not in any of our habitats.	Section 4.1.6 summarizes the findings of the San Pasqual Valley Groundwater Basin SNMP about nitrate loading.
27	Andre Monette	Best Best & Krieger LLP on behalf of Rancho Guejito Corporation	Comment 1 1. CITY'S SELF-DEALING IN DEVELOPMENT OF THE GSP VIOLATES SGMA AND DUE PROCESS OF LAW The GSP fails as a management plan for the Basin because it is so blatantly biased in favor of the City's interests that adoption would violate not only SGMA, but the basic Constitutional requirements of Due Process of Law. This bias was built into the plan by the City to promote the City's water rights over those of other land owners in the Basin, and to protect the City's unlawful diversion of 50% of the natural recharge to the Basin. The City cannot move forward with adoption of the GSP without major revisions to the plan that address these issues in a fair and equitable manner.	This comment consists entirely of legal argument and does not address specific elements of the draft GSP to which the GSA can meaningfully respond.

#	Commenter Name	Commenter Organization	Comment	Response
28	Andre Monette	Best Best & Krieger LLP on behalf of Rancho Guejito Corporation	Comment 1A A. The City's activities in the Basin create an unmitigable conflict of interest The City's interests in this Basin are readily apparent. The City owns more than 90% of the land in the Basin. The City leases its property in the Basin to sod farmers, citrus farmers, and dairy operators, and takes a percentage of the profit of each operation. The City's self interest in the Basin is therefore tied directly to the viability of the agricultural operations on its lands. By virtue of these contracts, the City is operating farms in the Basin. Notably, the City's agricultural operations in the Basin are extremely water intensive. Most recently, the City has been investing in sod farms that use significant volumes of water and essentially export it out of the Basin. The City's other operations are likewise detrimental to the health of the Basin. Specifically, the City leases land to dairy farms and manure sales operations that have caused major damage to water quality in the Basin over the past 50 years. The City has made no effort to clean up the damage caused by these operations. As described more fully below, the GSP utterly fails to manage this issue. More importantly, the City owns and operates the Sutherland Reservoir 8 miles upstream of the Basin and the Hodges Reservoir directly downstream of the Basin. These reservoirs are of far greater value to the City than the agricultural operations in the Basin. They are, in fact, the only reason the City owns property in the Basin. The City constructed Sutherland in the 1950s. The reservoir captures surface water upstream of the Basin for use elsewhere in the City of San Diego. By blocking surface flows downstream, the reservoir diverts 50% of the natural recharge to the Basin. Pursuant to court order, the City is prohibited from storing water in Sutherland Reservoir if water levels on certain properties in the Basin are lower than 20 feet below the ground surface. As of the date of this letter, water levels are much lower than this threshold throughout the Basin. The City appears to be operating Sutherland Reservoir is violation of a lawful court order. To avoid complying with this requirement, the City began acquiring properties in the Basin. The City was successful in acquiring most of the real estate in the San Pasqual Valley, but did not acquire properties now owned by the County, Rancho Guejito and several other small land owners. The City has tried to use its position as a GSA to protect its interests in the Basin and elevate its appropriative water rights over the overlying and riparian rights of the remaining landowners.	There is an existing court order (Trussell v. City of San Diego (1959)) that pre-dates the state legislature's enactment of SGMA. As a GSA participant, the City takes into account the interests of all stakeholders in the Basin when complying with SGMA. The Court case and adjudicated area are disclosed in Section 2.1 of the GSP. As a Tier 0 management action, the City will evaluate the feasibility of surface water recharge (*Management Action 7 – Initial Surface Water Recharge Evaluation*). Section 9.8.7 of the GSP describes *Management Action 7 – Initial Surface Water Recharge Evaluation*. The purpose of the preliminary feasibility analysis study in *Management Action 7* is to identify proposed surface water recharge projects that may be implemented by the GSA, and will evaluate whether surface water releases from the Sutherland Reservoir could adequately recharge the Basin. The analysis will also identify potential benefits such as raising groundwater levels to support GDEs and other related habitat. • The public outreach process for *Management Action 7* will provide opportunities for input during the development of the study's scope of work, will include quarterly updates (with opportunities for input at key milestones) and posted notices, email announcements, and public workshops/meetings to engage stakeholders in the investigation of surface water recharge options. • The preliminary feasibility analysis study will be posted for public review/comment for a minimum of 45 days. Public comments and responses to public comments shall be publicly posted for a minimum of 30 days before a public workshop is held.
29	Andre Monette	Best Best & Krieger LLP on behalf of Rancho Guejito Corporation	Comment 1B B. City control over the GSP contract allowed it to hijack the process for its own benefit The City used its position as the GSA for the majority of the Basin to take on the role of primary author of the GSP. The City hired and directed the consultants that drafted the Plan. The City ran the technical and public advisory group meetings that provided input on the plan and acted as gatekeeper for all aspects of the plan. The City refused to allow those not directly affiliated with the City (including Rancho Guejito) to have direct contact with the City's consultants. At the same time, the City gave open access to its tenants, going as far as to direct the consultants to contact to the City's tenants to receive input and answer questions regarding the GSP. These same tenants engaged in gift-giving with City staff to ensure continued access. So not only did the City ensure that its interests would dominate the development of the GSP, but individual staff members with authority over the consultants accepted gifts from interested parties and in turn provided those parties with preferred access to the consultants who were developing the plan. The City's self-dealing resulted in actual harm to other landowners in the Basin. Specifically, the City refused to provide equal access to the consultants, and ensured that the consultants drafted the plan in a manner that benefits the City's interests in the Basin.	Stakeholders had access to consulting team during Advisory Committee (AC) and Technical Peer Review (TPR) meetings. Consultant staff followed up as needed after AC and/or TPR meetings, as documented in meeting minutes. Stakeholder outreach effort, including the AC and TPR meetings, is described in Section 1.5 of the GSP. The AC Charter and meeting summaries are in Appendix E and available on the project website: https://www.sandiegocounty.gov/content/sdc/pds/SGMA/san-pasqual-valley.html.
30	Andre Monette	Best Best & Krieger LLP on behalf of Rancho Guejito Corporation	Comment 1Ci C. The City developed a plan that elevates its interests over the rights of other land owners in the Basin The City has drafted a plan that would require landowners such as Rancho Guejito to cease pumping and face economic hardship so that the City can continue to deprive the Basin of 50% of the natural recharge, and mismanage the remaining groundwater assets. This is an untenable proposition. Pursuant to the Court of Appeals decision in Trussell v. City of San Diego, the City is prohibited from impounding water in Sutherland Reservoir if groundwater levels fall lower than 20 feet below the ground surface on key parcels in the eastern portion of the Basin. The case defined the Basin for purposes of future regulation and in a manner that is consistent with the definition provided by DWR in Bulletin 118. The case, in conjunction with DWR's definition of the Basin, defines the City's obligations in the Basin and the limits of the City's authority. At every opportunity, the City sought to undermine these	See Response #28. The draft GSP concludes that the Basin is sustainable and will be managed with no restrictions on wells at this time. If established Planning Thresholds within the GSP are ever exceeded, Tier 1 *Management Action 9 – Well Inventory* would be completed and then if needed, Tier 1 *Management Action 11 – Pumping Reduction Plan* could be developed. The Pumping Reduction Plan could be considered an amendment to the GSP and may require Board and City Council approval. The process would be public and the appropriate time to dialogue regarding which wells would be subject to management in accordance with SGMA. The TPR Group was intentionally collaborative, so that stakeholders could participate in development of model inputs and assumptions. In the SPV GSP model, the adjustments to

#	Commenter Name	Commenter Organization	Comment	Response
			parameters. Such behavior would be expected in an adversarial setting, but not when the City has taken on the role of regulator.	hydraulic conductivity values in Rockwood Canyon were made in an attempt to better match measured groundwater levels at the four calibration target wells located therein. It is acknowledged that alternate conceptual models are also possible. Additional aquifer testing in Rockwood Canyon would provide the opportunity to refine the conceptual model and reduce uncertainty.
31	Andre Monette	Best Best & Krieger LLP on behalf of Rancho Guejito Corporation	Comment 1Cii - Figure for comment text above The City used its position managing the consultants to corrupt the groundwater model produced for the GSP. The City is now using that model to both justify future expansion of the Basin boundaries and deny its obligation to release water from Sutherland Reservoir ifgroundwater levels in the Basin decline. The City's consultants bent over backwards to accommodate this false reality. Rancho Guejito's specific concerns about the GSP are detailed below and in the attachments to this letter. However, one example that is particularly egregious and demonstrates the unlawful bias the City has incorporated into the GSP is shown on page 684 of the appendix to the GSP. In order to obtain the desired outcome for model simulations, the City's consultants found it necessary to imagine a new kind of geology for Rancho Guejito only: The illustration assumes that only one small portion of the Basin – the section owned by Rancho Guejito Corporation – would have connectivity with the underlying bedrock at levels that are 50 to 100 times higher than the rest of the Basin. There is no rational basis for treating this portion of the Basin differently. The City engaged in an outcome oriented analysis that it hoped would justify its efforts to expand regulatory control over neighboring lands and continue to avoid releasing water from Sutherland Reservoir.	See Response #30. The SPV Model is the best available tool and represents the best available science for modeling the SPV Basin. The model was used in the 2007 *San Pasqual Groundwater Management Plan* and the 2015 *San Pasqual Valley Groundwater Basin Salt and Nutrient Management Plan* (SNMP), and updated and calibrated for the GSP. The U.S. Geological Survey (USGS), who has an internationally recognized reputation for model development, developed the modeling code for the two models that were used - MODFLOW and BCM. Refer to Section 5 and Appendix I. Additionally, a robust peer review process was undertaken with the TPR reviewing the model over the course of seven meetings and included a Rancho Guejito representative.
32	Andre Monette	Best Best & Krieger LLP on behalf of Rancho Guejito Corporation	Comment 1D D. Adopting the GSP in its current form would Violate SGMA and the Due Process requirements of the California and United States Constitutions As described in greater detail below, the bias and other flaws that have been built into the GSP violate SGMA and the DWR regulations developed to implement the Act. Because of the City's conflict of interest, adoption would also violate Due Process requirements in the California Constitutions. When, an administrative agency such as a GSA conducts adjudicative proceedings, the constitutional guarantee of due process of law requires a fair tribunal. A fair tribunal is one in which the judge or other decision maker is free of bias for or against a party." "Of all the types of bias that can affect adjudication, pecuniary interest has long received the most unequivocal condemnation and the least forgiving scrutiny." The state and federal Constitutions forbid the deprivation of property by a judge with a " 'direct, personal, substantial, pecuniary interest in reaching a conclusion against' " a party. Here the City's interest is pecuniary and then some. The value of water in the arid west cannot be understated. An acre-foot of water is currently valued in the range of $1,000 dollars, That value extends into perpetuity for the renewable, local resource with the value increasing over time. The City has impounded tens of thousands of acre feet of water in Sutherland Reservoir and its tenants pump vast amounts from the Basin every year. The value of the water in the Basin is in the millions of dollars on an annual basis. The City has been unable to avoid imposing its bias into the GSP. As the GSA adopting the GSP, the City is subject to Constitutional requirements of due process of law. Landowners in the Basin such as Rancho Guejito are entitled to an unbiased plan and an unbiased tribunal. The City cannot move forward with the GSP in its current form without violating these principles.	Water Code §10723(a) provides that any local agency overlying a groundwater basin may decide to become a GSA for that basin. In 2017, the City and County applied for status as GSAs and received approval by DWR. SGMA provides that "[n]othing in this part, or in any groundwater management plan adopted pursuant to this part, determines or alters surface water rights or groundwater rights under common law…." (Water Code §10720.5(b).) Thus, a GSA has no authority to act in an adjudicative capacity, and adoption and implementation of a GSP cannot constitute adjudicative proceedings."

#	Commenter Name	Commenter Organization	Comment	Response
33	Andre Monette	Best Best & Krieger LLP on behalf of Rancho Guejito Corporation	Comment 2 - part 1 2. THE CITY HAS ATTEMPTED TO SIDESTEP THE BASIN BOUNDARIES SET BY THE CALIFORNIA COURT OF APPEALS AND DWR The City has sought for decades to control water resources in the Basin and its tributary watersheds, and has made no secret about its willingness to use any legal means necessary to assert control over the water and land use on private property adjacent to the Basin. Rancho Guejito has been on the receiving end of these efforts on multiple occasions. The City has made it clear that it intends to use the GSP process to take expand its jurisdictional reach via SGMA. This is despite the fact that the Basin has been defined by DWR and court order affirmed by the California Court of Appeals. DWR, the trial court in the Trussell case, and the Court of Appeals in the Trussell case all found that the Basin is the water bearing gravel and alluvium underlying the San Pasqual Valley; and that it is bounded on the sides and below by the granitic rocks that make up the hills and mountains surrounding the Basin. The City has sought to undermine that definition by including multiple statements in the GSP about the potential hydrologic connection between the Basin and the underlying granitic rocks and/or outright ignoring the Basin boundary and by incorporating imagined flow between the granite and the Basin into the hydrologic conceptual model and numerical groundwater model used in the GSP.	The Basin is defined in Bulletin 118 and includes Quaternary alluvium and residuum. Implementation of the GSP and management for SGMA will be in accordance with Bulletin 118. Stating that there is a potential hydrologic connection between the Basin and granitic rock is not ignoring the Basin boundary, it is simply recognizing an inflow to the Basin. Also, a GSA may conduct investigations for the purposes of determining the need for groundwater management. (Water Code §10725.4(a)(1).) So, the GSA has the authority to evaluate the connection between the alluvium and granitic rock. These types of investigations may also be appropriate for supporting a basin boundary modification, which SGMA authorizes a GSA to pursue. (Water Code §10722.2(a).) Such studies may be conducted as part of Tier 1 *Management Action 9 – Well Inventory* when planning thresholds for water levels are exceeded. The nature and locations of hydraulic interactions between the Basin and adjacent bedrock are not well understood with the available data. Implementing a modeling approach that ignores the bedrock would be too rigid and inappropriate because such a model configuration would not allow an objective assessment of the potential exchange of groundwater between the Basin and adjacent rock. The GSP modeling team acknowledged the uncertainty of this exchange term by including model layers representing the bedrock and assigning low hydraulic conductivity values therein. In doing so, the model can provide insights and starting estimates for the potential exchange of groundwater between the Basin and adjacent rock. In other words, incorporating low-permeability bedrock layers in the model allows it to simulate the physics of groundwater flow between zones with different resistances to flow based on the input parameter values. This approach is more objective and scientific, as compared with forcing a conceptual model in which it is not even possible for the model to simulate any exchange of groundwater between the Basin and adjacent rock. Additionally, as a result of input from TPR members during the development of the SPV GSP Model, the modeling team changed no-flow boundary conditions that had been assigned around the perimeter of the model domain to allow for some bedrock groundwater flow into the model domain. It would be inconsistent to insist on some groundwater flow in bedrock across catchment divides at the model perimeter, while at the same time insisting on no-flow conditions between the Basin and underlying bedrock. The water budgets presented in the GSP provide estimates for various water-budget components, including the potential exchange of groundwater between the Basin and adjacent bedrock. These values should not be viewed as hard conclusions or proof; just estimates using the best available tool. If stakeholders and the GSA wish to reduce uncertainty in these estimates during GSP implementation, then investigations that seek to reduce the uncertainty could be considered in the future.

#	Commenter Name	Commenter Organization	Comment	Response
			Comment 2 - part 2 For example, Figures 2-8 through 2-10 in the GSP purport to show the location of all wells in the Basin. However, the figures include wells that are screened only in fractured bedrock underlying the Basin. Similarly, the GSP relies on data from a series of wells drilled by the United States Geologic Survey to claim that there is significant flow between the Basin and the underlying granite but without hard evidence to support the conclusion. There is no flow observed between the alluvium and the bedrock at other wells in the Basin, suggesting that if there were a connection between the bedrock and the alluvium at the USGS well location, little to no vertical flow is actually occurring. Moreover, the granite immediately underlying the Basin has consistently acted as an aquitard not yielded economic quantities of groundwater. Past studies document the way in which the bedrock acts as a barrier to flow between the Basin and anything beneath it. The GSP is rife with similar efforts to misconstrue the Basin boundaries. More than that, in an effort to prove a strong connection, the City has incorporated imaginary characteristics into the numerical groundwater model that would demonstrate large volumes of recharge from the granite underlying the Basin. As noted above, the model assumes that in the small portion of the Basin owned by Rancho Guejito, the volume of water flow between the underlying granite and the Basin is 50 to 100 times greater than elsewhere in the Basin., even though the observed rocks in the area are virtually identical. This kind of assumption is absurd and exposes the outcome oriented approach taken by the City.	Figures 2-8 through 2-10 will be updated to acknowledge that all wells within and adjacent to the San Pasqual Valley are included, some of which may be outside of the Bulletin 118 defined Basin. Refer to Response #33. Tier 1 *Management Action 9 – Well Inventory* will identify wells located in/out of the Basin.
34	Andre Monette	Best Best & Krieger LLP on behalf of Rancho Guejito Corporation	Comment 3 3. THE NUMERICAL GROUNDWATER MODEL IS FUNDAMENTALLY FLAWED. IT CANNOT BE USED TO SUPPORT THE GSP, OR ANY OF THE MANAGEMENT MEASURES IN THE GSP, OR ANY FUTURE ITERATION OF THE GSP DWR Regulations at Title 23 California Code of Regulations section 354.14(a) requires every GSP to "include a descriptive hydrogeologic conceptual model of the basin based on technical studies and qualified maps that characterizes the physical components and interaction of the surface water and groundwater systems in the basin." There are two fundamental flaws in the numerical groundwater model constructed to represent the hydrogeologic conceptual model in the GSP that appear to have been introduced to protect the City's interests in the Basin – the model assumes an absurdly high level of connectivity between the Basin and the underlying and adjacent granitic rock; and it assumes that most of the recharge to the Basin does not come from surface flows. These assumptions represent the core of the model and have no basis in reality. In fact, they run counter to the known characteristics of the Basin and the rocks surrounding it. The deviation from known hydrologic conditions documented in technical studies and qualified maps is so great that it represents a violation of Section 354.14. There is a reason why the City would choose to manipulate the model in this fashion. The outcome of the modeling allows the City to downplay the impact that Sutherland Reservoir has on recharge to the Basin, while at the same time making an argument for regulating groundwater extractions outside the Basin. It is biased and unfit for use as a regulatory tool.	Refer to Response #31. Model layer construction and connectivity was discussed with the TPR Group on December 10, 2020 (see Appendix E). While the GSP was developed with the best available science, the GSA recognizes the limitations of any model given the various input parameters that could be used. As such, thresholds and sustainability are based on actual water levels rather than modeled values and the model will be updated and refined with new data over time.
35	Andre Monette	Best Best & Krieger LLP on behalf of Rancho Guejito Corporation	Comment 3A A. The Model's Assumption that recharge does not come from surface flows is counter to known conditions in the Basin and creates a fundamental flaw in the Model Even a lay person would know that the primary source of recharge is from stream flow and precipitation. What is easily observable to the average person has been confirmed routinely in scientific papers – "[a] large fraction of ground water stored in the alluvial aquifers in the Southwest is recharged by water that percolates through ephemeral stream-channel deposits."USGS' 1983 Report by on the Basin (conducted in conjunction with the County and DWR) confirmed that this is the case on the local level, finding "[r]echarge to the alluvial aquifer originates primarily outside the hydrologic subarea as flow in Santa Ysabel, Guejito, and Santa Maria Creeks." Nonetheless, the GSP uses estimates of hydrologic conductivity for stream beds that grossly constrained the ability of the aquifer to obtain recharge from surface flow. The difference was in orders of magnitude from what would be expected based on past reports on the Basin and the easily observed conditions in the creek beds in the Basin. Treating the streambeds as having low conductivity (and the resulting limited infiltration) ripples through the model and impacts estimated horizontal and vertical conductivity in all 4 layers of the model.	There is no available data to support that modeled streambed hydraulic conductivity values are 100 times too low. As streamflow recession occurs between periodic rainfall events, the energy decreases and finer sediments are the last to be deposited. So although much of the valley fill is made up of coarser sediments, that does not necessarily mean that the streambed permeability will be as permeable as the underlying subsurface sediments. The streambed hydraulic conductivity values used in the SPV GSP Model can neither be confirmed nor refuted based on the available data.

#	Commenter Name	Commenter Organization	Comment	Response
36	Andre Monette	Best Best & Krieger LLP on behalf of Rancho Guejito Corporation	Comment 3B B. Limited Recharge from Surface Flow Biased the Model in favor of the City's Interests In order to match observed conditions in the Basin, and keep the assumption that surface water recharge was minimal, the model needed to assume that hydraulic conductivity was 100 times higher than what is generally accepted for the rocks in the Basin, and the assumptions were made in specific locations to create the desired result. Thus, the figure shown above, which alleged that the vertical hydraulic conductivity was 100 times higher than what would be expected based on the rocks present in the aquifer, and only in the portions of the Basin owned by Rancho Guejito. The assumptions are absurd the resulting simulation is all too convenient an outcome for the City. The model is fundamentally flawed and cannot be used as a management tool in the GSP or for any other purpose unless and until these assumptions are revised.	See Response #35.
37	Andre Monette	Best Best & Krieger LLP on behalf of Rancho Guejito Corporation	Comment 4 4. THE GSP'S WATER QUALITY MANAGEMENT MEASURES ARE DEFICIENT Degraded water quality is a major limitation on full use of the Basin. The GSP does almost nothing to address the high TDS and Nitrogen levels that have been present in the Basin for decades. This is a violation of SGMA, which requires the GSP to monitor and manage groundwater quality in the Basin. DWR Regulations expressly require the GSP to include minimum thresholds to manage for water quality: The minimum threshold for degraded water quality shall be the degradation of water quality, including the migration of contaminant plumes that impair water supplies or other indicator of water quality as determined by the Agency that may lead to undesirable results. The minimum threshold shall be based on the number of supply wells, a volume of water, or a location of an isocontour that exceeds concentrations of constituents determined by the Agency to be of concern for the basin. In setting minimum thresholds for degraded water quality, the Agency shall consider local, state, and federal water quality standards applicable to the basin. The levels of total dissolved solids ("TDS") and nitrogen in the western portions of the Basin exceed applicable Basin Plan standards promulgated by the San Diego Regional Water Quality Control Board. The levels are high enough to impair the use of groundwater in large portions of the Basin. In these areas, the water is unfit for human consumption. The GSP makes no effort to correct this condition. This is not consistent with the requirements of SGMA or the DWR regulations. The primary source of nitrogen and TDS in the Basin is unclear, but prior investigations determined that dairy operations, nitrogen fertilizer and soil storage are all major contributors.	A GSP may, but is not required to, address undesirable results that occurred before and have not been corrected by January 1, 2015. (Wat. Code 10727.2(b)(4.) Because TDS and nitrate issues have been present for decades, SGMA does not require the GSA to address these issues. The GSA is conducting the following activities: (1) Tier 0 *Management Action 5 – Education and Outreach for TDS and Nitrate* which addresses education/outreach for water quality and a new Tier 0 *Management Action 6 – Coordinate with City on Hodges Watershed Improvement Project* has been added and is being implemented by City.
38	Andre Monette	Best Best & Krieger LLP on behalf of Rancho Guejito Corporation	Comment 4 continued The GSP attemPlanning Thresholds to blame surface flow contributions for the presence of high TDS and Nitrogen. But that does not explain the high levels in portions of the Basin that are not near surface streams such as at well SP043. The GSP nonetheless states that Undesirable Results for water quality are not occurring in the Basin currently (even though TDS and Nitrogen exceed Basin Plan standards) because: For degraded water quality to be characterized as an undesirable result, it must be associated with groundwater-management activities and the impacts those activities have on water quality. If those activities cause a significant and unreasonable reduction in the long-term viability of domestic, agricultural, municipal, or environmental uses over the planning and implementation horizon of this GSP; that would be considered an undesirable result for degraded water quality. This direct relationship underscores that undesirable results for water quality must be associated with groundwater pumping and other groundwater-related activities. Water quality impacts caused by land use practices, naturally occurring water quality issues, or other issues not associated with groundwater pumping would not be considered an undesirable result for degraded water quality since those would be outside of GSA authorities. This statement totally ignores the fact that the City has full control over the land use activities of its tenants, and could very easily impose water quality based restrictions on their operations. More importantly, there is reduced recharge and flow through the Basin caused by the construction of the Sutherland Reservoir. One of the best ways to improve water quality and reduce the TDS and Nitrogen levels in the Basin would be to increase the flow into the Basin of water with low levels of both constituents – e.g. to release water from Sutherland Reservoir and allow it to recharge the Basin. The GSP does not consider this option to correct water quality conditions and it is a fatal flaw in the plan. Undesirable Results are occurring now, and the City has full authority to alleviate the condition. The City has created all of the negative conditions in the Basin through operation of Sutherland Reservoir and mismanagement of its agricultural leases. The City is	Noted. Revisions will be incorporated into Section 6 and 8 to better define undesirable results and thresholds for water quality.

#	Commenter Name	Commenter Organization	Comment	Response
			trying to use the GSP to force the remaining land owners in the Basin to live with the ramifications. That is not fair or equitable and in the case of water quality it is a violation of SGMA. The GSP needs to be revised.	
39	Andre Monette	Best Best & Krieger LLP on behalf of Rancho Guejito Corporation	Comment 5 5. MANAGEMENT MEASURES ARE INADEQUATE IN LIGHT OF COURT ORDER DIRECTING CITY TO RELEASE WATER FROM SUTHERLAND RESERVOIR The primary management measure proposed in the GSP is the reduction of groundwater extractions by users in the Basin. The City of San Diego is under a court order that prohibits it from impounding water in Sutherland Reservoir if water levels in the Basin fall lower than 20 feet below the ground surface elevation in the eastern portion of the Basin. There is no reason why the remaining land owners in the Basin should be asked to subsidize the City's water use by cutting back on their own groundwater use. The City is required to ensure the ongoing health of the Basin and this should be reflected in the GSP. The GSP needs to be revised to remove pumping reductions as the primary management measure. No property owner in the Basin should be asked to reduce their groundwater use until the City has replenished the Basin as required by the court's decision in Trussell v. City of San Diego.	See Response #28. There is an existing court order (Trussell v. City of San Diego (1959)) that pre-dates the state legislature's enactment of SGMA. As a GSA participant, the City takes into account the interests of all stakeholders in the Basin when complying with SGMA. As a Tier 0 management action, the City will evaluate the feasibility of surface water recharge (*Management Action 7 – Initial Surface Water Recharge Evaluation*). Section 9.8.7 of the GSP describes *Management Action 7 – Initial Surface Water Recharge Evaluation*. The purpose of the preliminary feasibility analysis study in *Management Action 7* is to identify proposed surface water recharge projects that may be implemented by the GSA, and will evaluate whether surface water releases from the Sutherland Reservoir could adequately recharge the Basin. The analysis will also identify potential benefits such as raising groundwater levels to support GDEs and other related habitat. • The public outreach process for *Management Action 7* will provide opportunities for input during the development of the study's scope of work, will include quarterly updates (with opportunities for input at key milestones) and posted notices, email announcements, and public workshops/meetings to engage stakeholders in the investigation of surface water recharge options. • The preliminary feasibility analysis study will be posted for public review/comment for a minimum of 45 days. Public comments and responses to public comments shall be publicly posted for a minimum of 30 days before a public workshop is held.
40	Andre Monette	Best Best & Krieger LLP on behalf of Rancho Guejito Corporation	Comment 6 6. FAULTY ANALYSIS OF REPLENISHMENT OPPORTUNITIES The GSP includes an appendix that purports to analyze the feasibility of recharging the Basin with surface water from Sutherland Reservoir. Unsurprisingly, the analysis is incomplete and biased in favor of the City's interests. And equally unsurprisingly, it showed the releases from Sutherland would not improve groundwater conditions in the Basin. The feasibility analysis is yet another example of the City attempting to use the GSP to avoid its obligation in the Basin. The following aspects of the analysis demonstrate this bias: • Additional water releases from Sutherland Dam of 300 AFY were "simulated" for the March to September timeframe. This timeframe includes the warmest months of the year and will simulate conditions under the highest Evapotransportation rates. There is no need to assume that surface water releases would have to occur during this timeframe because this management action would be undertaken during times that the Basin water levels are low, and could use recharge even during the winter months. "Simulating" releases during the winter months would reduce [Evapotransportation] losses, and would also reduce stream losses that would occur between Sutherland and the Basin. • Exactly what model was used to "simulate" releases is not clear, and the details of the simulations are not provided in the memo. • Of the 2,100 AFY that reached the Basin, only 187 AFY infiltrated through the alluvial sediments of Santa Ysabel Creek, while the remainder continued flowing in the creek to Lake Hodges, even though historical groundwater levels in the Basin respond rapidly to wet winter conditions. This suggests a fundamental disconnect between the model response and the observed hydrogeologic response in the Basin, which in turn suggests that the model does not accurately represent the Basin and needs substantial revision before it can be used to assess the efficacy of projects and management actions.	There seems to be confusion related to the preliminary water budget values presented in Appendix N, Screening Analysis Results. Appendix N will be revised to better explain that the simulation assumed Sutherland Dam releases in summer months to avoid a majority of surface discharge to Hodges Reservoir. The information included in Appendix N was a preliminary/high level analysis. More detailed analysis to be completed in *Management Action 7 – Initial Surface Water Recharge Evaluation*. Section 9.8.7 of the GSP describes *Management Action 7 – Initial Surface Water Recharge Evaluation*. The purpose of the preliminary feasibility analysis study in *Management Action 7* is to identify proposed surface water recharge projects that may be implemented by the GSA, and will evaluate whether surface water releases from the Sutherland Reservoir could adequately recharge the Basin. The analysis will also identify potential benefits such as raising groundwater levels to support GDEs and other related habitat. • The public outreach process for *Management Action 7* will provide opportunities for input during the development of the study's scope of work, will include quarterly updates (with opportunities for input at key milestones) and posted notices, email announcements, and public workshops/meetings to engage stakeholders in the investigation of surface water recharge options. • The preliminary feasibility analysis study will be posted for public review/comment for a minimum of 45 days. Public comments and responses to public comments shall be publicly posted for a minimum of 30 days before a public workshop is held.

#	Commenter Name	Commenter Organization	Comment	Response
41	Andre Monette	Best Best & Krieger LLP on behalf of Rancho Guejito Corporation	Comment 6 continued • The memo states that only 7% of the "simulated" releases from Sutherland Dam would contribute to groundwater storage while the remainder would "be lost to ET or outflow." This number is misleading as it could equally be much higher if the model simulated higher stream bed infiltration rates or higher if releases weresimulated during the winter months, and the water that flows through the model to Lake Hodges was not included as being "lost." Use of a meaningless low percentage of water retained in the Basin is there to bias the reader into assuming that the releases of water are not helpful. This has not been demonstrated by the memo. • A review of surface water releases from Sutherland Dam that includes reasonable release parameters, a revised numerical model that reflects observed groundwater responses in the Basin, and a detailed explanation of the work conducted is needed. It is anticipated that such a study would indicate the efficacy of surface water releases from Sutherland Dam at providing recharge to the Basin and that this management action should have a higher priority in the GSP. • On multiple occasions, the City stated that the hydrologic conceptual model would not be used for developing management measures for the Basin. The feasibility analysis states that flows from Sutherland were modeled, presumably using the conceptual model developed for the GSP. The same bias that is built into that model infected the Sutherland analysis and renders it inadequate and incomplete.	See Response #40.
42	Jill Weinberger, Kayvan Ilkhanipour	Dudek	Cloverdale Creek is not included in the list of creeks that drain the Basin.	Edit will be incorporated.
43	Jill Weinberger, Kayvan Ilkhanipour	Dudek	Is the last sentence a statement confirming the DWR Basin boundary and a separation of the Basin from the bedrock below	Noted. DWR Bulletin 118 basin description does not include bedrock.
44	Jill Weinberger, Kayvan Ilkhanipour	Dudek	Figure 2-1 description is strange without an inset map to show relative location to downtown San Diego. Figure also doesn't show relative portions of City jurisdiction vs County jurisdiction. Suggest deleting first 2 sentences of description or modify figure to show the features described in the 1st 2 sentences.	Edit will be incorporated.
45	Jill Weinberger, Kayvan Ilkhanipour	Dudek	Figure 2-3 description includes "South Coast Hydrologic Region" and "San Dieguito Drainage Basin" neither of which are shown on Figure 2-3.	Figure will be revised.
46	Jill Weinberger, Kayvan Ilkhanipour	Dudek	Figure 2-4 does not show City boundary, so description: "Much of the Basin is in the northern portion of the City" is unclear.	Figure will be revised.
47	Jill Weinberger, Kayvan Ilkhanipour	Dudek	Figures 2-6 and 2-7 text states "primary land uses in the Basin are native vegetation and agriculture." This should be clarified to "riparian vegetation" as the figures show the broader watershed and include large portions of "native shrub" which is limited within the Basin.	Edit will be incorporated.
48	Jill Weinberger, Kayvan Ilkhanipour	Dudek	The text explaining Figures 2-8 through 2-10 is insufficient and the figures themselves are misleading. Ideally the well maps should only show wells screened within the alluvium and residuum, as these are the only wells located in the Basin. In the absence of that, however, the text should explain explicitly that the well density maps include wells screened solely in the bedrock underlying the Basin, and therefore well densities shown on the maps are higher than the actual well densities in the Basin. The text for Figure 2-8 hints at this discrepancy but does not make a clear distinction for the average reader to understand. The text for Figures 2-9 and 2-10 is incorrect. The maps do not show wells "in the Basin" but include all wells in the DWR database. The text should be corrected. Additionally, a note should be added to the figures themselves to clarify that the well densities displayed include wells screened solely in the bedrock underlying the basin and the densities shown are higher than the actual well densities in the Basin. These figures and the associated text are misleading and require correction.	Noted. Text will be revised to explain that the density of wells include wells screened in the alluvium and bedrock

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49	Jill Weinberger, Kayvan Ilkhanipour	Dudek	States replenishment of groundwater extractions is not included. Reasoning is that economically viable replenishment has not been "discovered." Need to relate to releases from Sutherland Dam and provide basis for Basin replenishment via releases.	The SPV GSP modeling did not include replenishment via dam releases. See Response #41.
50	Jill Weinberger, Kayvan Ilkhanipour	Dudek	States impacts to groundwater dependent ecosystems are discussed in Section 2. There is no reference to GDEs in Section 2.	Cross-reference will be corrected.
51	Jill Weinberger, Kayvan Ilkhanipour	Dudek	1st paragraph - Discussion of imported water doesn't belong in the introduction to the topography, surface water bodies, and recharge section. This discussion, which seems focused on areas outside of the Basin, should focus on recharge to the Basin from imported water, should be to be moved to relevant section of the GSP, and needs proofreading.	Noted. Text will be reviewed.
52	Jill Weinberger, Kayvan Ilkhanipour	Dudek	First paragraph states groundwater flow from bedrock contributes unknown amount of recharge into Basin. What is the basis for the underlying assumption that there is groundwater flow into the basin from the bedrock, as opposed to groundwater flow out of the basin, or a distinct separation between the bedrock and the residuum? The statement in the first paragraph should be removed or revised to say, "the nature of the interaction between the underlying bedrock and the base of the residuum is not currently understood."	Noted. Subsequent chapters on groundwater model explain why GSA believes there is recharge from bedrock.
53	Jill Weinberger, Kayvan Ilkhanipour	Dudek	These figures only show data through 2016. Data is available for 2017 through 2020 for Guejito Creek and Santa Maria Creek. These data would show the creek flows during above average water years in 2017 and 2019.	Data were not provided during GSP development. Please send to the GSA and it will be incorporated into the first Annual Report.
54	Jill Weinberger, Kayvan Ilkhanipour	Dudek	These sections should be reviewed by a geologist for accuracy. 1st sentence paragraph 1 should read "The crystalline rocks that surround and underlie the Basin were formed during the Cretaceous Period …" the current wording is inaccurate and misleading. There are multiple additional inaccuracies in the discussion of the geologic formations and use of "stratigraphy" in the context of the San Pasqual Valley Basin.	Noted. Text will be reviewed.
55	Jill Weinberger, Kayvan Ilkhanipour	Dudek	This figure appears to disagree with figure 3-11, which is illegible in the document, but available online. Figure 3-10 and Table 3-1 identify older alluvial river deposits and colluvial deposits as being the same as residuum. Residuum is weathered in place, while alluvium and colluvium are deposits that have been transported away from their source material. These – by definition – cannot also be residuum. This is an important distinction because the hydrologic properties of the residuum and older alluvium are very different, with residuum typically being far less transmissive than alluvium. This conflation of older alluvium with residuum shows a fundamental misunderstanding of the hydrogeologic conceptual model for this basin and needs to be corrected.	Noted. Text will be reviewed.
56	Jill Weinberger, Kayvan Ilkhanipour	Dudek	The figures are illegible, rendering the keys provided in figures 3-12 through 3-15 useless. The geologic unit abbreviations should be clearly legible on the map.	Noted. This was our best attempt to provide USGS geology maps for readers.
57	Jill Weinberger, Kayvan Ilkhanipour	Dudek	Some of well locations appear to be misrepresented in the plan view and cross section D-D'. Location of LWELL5915 (prev. Well 5) needs to be shifted ~900 feet to the NNW. Location of Rockwood Well 6 needs to be shifted ~650 feet to the NW. Also, LWELL5915 (Well 5) has been destroyed as of Fall 2020. Unsure what well is represented by LWELL5246 in figures.	Noted. Figure will be reviewed.
58	Jill Weinberger, Kayvan Ilkhanipour	Dudek	The Basin boundary is clearly defined in the first sentence. However, three sentences later there is an ambiguous statement regarding the interaction of groundwater in fractured bedrock with the overlying residuum and alluvium. This statement indicates a bias that was brought into the hydrogeologic conceptual model and carried through the numerical groundwater model, but is not supported by the water level discussion in section 4 and does not belong in the discussion of the basin boundary. It should be deleted.	Noted. See Response #33.
59	Jill Weinberger, Kayvan Ilkhanipour	Dudek	As above comment: "The amount of water contributed to the Quaternary Deposits and Residuum from Crystalline Rock near the Basin is not known and may be investigated further by the GSA." This statement is not supported by the water level discussion in Section 4 and does not belong in the discussion of the principal aquifers. A statement regarding the interaction between the bedrock and the alluvial aquifers could be added to a discussion of the data gaps.	Noted. See Response #33.

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60	Jill Weinberger, Kayvan Ilkhanipour	Dudek	States that the depth to crystalline rock is unknown, however, the cross sections in Figures 3-18 and 3-19 suggest otherwise, and there are a number of wells that have been drilled into bedrock, by both private landowners and the USGS. This should be clarified in the discussion and specific areas should be named where additional data could improve the hydrogeologic understanding of the basin.	Noted. Text will be reviewed.
61	Jill Weinberger, Kayvan Ilkhanipour	Dudek	Last bullet in this section needs proofreading.	Edit will be incorporated.
62	Jill Weinberger, Kayvan Ilkhanipour	Dudek	1st sentence is missing a word: “groundwater _____?_____ and groundwater quality in the Basin.”	Edit will be incorporated.
63	Jill Weinberger, Kayvan Ilkhanipour	Dudek	The lowermost intervals for the USGS nested wells: SDSY (screened from 280 ft to 340 ft below land surface) and SDLH (170 to 270 ft bgs) are within the bedrock at their respective locations. There is no vertical gradient observed between the alluvium and the bedrock at well SDSY, close to the mouth of Rockwood Canyon, suggesting that if there were a connection between the bedrock and the alluvium at this location, little to no vertical flow would occur. However, it should be emphasized that the granite immediately underlying the Basin has consistently not yielded economic quantities of groundwater and acts as a barrier to flow between the Basin and anything beneath it. At well SDLH, in the western part of the Basin the observed vertical gradient is directed downward suggesting that if there were a connection between the bedrock and the alluvium in that location, the alluvium would recharge the bedrock. As above, the presence of a vertical gradient does not mean that there is flow between the alluvium and the bedrock, but suggests that the statements in section 3 regarding contribution from the granite to the alluvium are not based on the data that should have been used to develop the hydrogeologic conceptual model of the Basin.	DWR's Bulletin 118 definition is included in Section 2.1. The GSAs are managing to the SPV basin as defined in Bulletin 118. Figure 4-6 in Appendix I shows the vertical head difference hydrographs at the three USGS well clusters. These figures show that most of the time between 2011 and 2020, there are vertical head differences that mostly indicate downward vertical hydraulic gradients at these particular locations. Vertical hydraulic gradients alone do not directly indicate the amount of vertical groundwater flow that might be occurring. This is because vertical groundwater flow would also be affected by the vertical resistance to groundwater flow. The nature of the vertical flow patterns between the Basin and underlying bedrock is not well understood due to the limited available data on the vertical hydraulic conductivity of the lower alluvium, residuum, and upper bedrock. Thus, the degree to which the residuum and upper bedrock acts as a barrier to groundwater flow is not known with certainty. However, because groundwater-level fluctuations through time in the different depth intervals at some of the USGS cluster mimic each other (see Figure 4-4 in Appendix I), this would suggest there is some degree of hydraulic connection between the alluvium, residuum, and bedrock at some locations in the Basin.
64	Jill Weinberger, Kayvan Ilkhanipour	Dudek	Typo in heading	Edit will be incorporated.
65	Jill Weinberger, Kayvan Ilkhanipour	Dudek	Figure 4-22 is missing a legend explaining the colors of each bar.	Figure will be revised.
66	Jill Weinberger, Kayvan Ilkhanipour	Dudek	Table 4-1 shows the average annual depletions due to groundwater pumping over the 2005–2019 period. How do they determine the AF depletions listed in the Table? Particularly from creeks listed as disconnected from the regional aquifer, like Guejito Creek. The work done to create this table is not well enough explained.	Noted. Clarification will be added.
67	Jill Weinberger, Kayvan Ilkhanipour	Dudek	The statement that the interaction between DWR defined Basin and bedrock may need improvement because it’s not well understood, along with the discussion of aquifer testing should be removed. This statement isn’t justified by the data and does not belong in a discussion of the historical groundwater conditions. At the same time there is no discussion of data gaps regarding GDE monitoring sites, or groundwater quality data. This should be added to the areas of potential improvement, based on the data discussed.	See Response #33. The GSA will implement Tier 1 *Management Action 8 – Study GDEs*. Groundwater quality monitoring is proposed in Section 7.9.

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68	Jill Weinberger, Kayvan Ilkhanipour	Dudek	Under the heading "Identification of Undesirable Results", the GSP defines the undesirable result for chronic lowering of groundwater levels: "The undesirable result for the chronic lowering of groundwater levels is considered to occur during GSP implementation when 30% of representative monitoring wells (i.e., 5 of 15 wells) fall below their minimum groundwater elevation thresholds for two consecutive years." This undesirable result language doesn't take into account geographic variation in water levels in this Basin, and appears to be tied to the undesirable results established for the Cuyama Basin which states "This result is considered to occur during GSP implementation when 30% of representative monitoring wells (i.e., 18 of 60 wells) fall below their minimum groundwater elevation thresholds for two consecutive years." (Cuyama GSP, Section 3.2.1 Chronic Lowering of Groundwater Levels - Identification of Undesirable Results). The Cuyama Basin and the San Pasqual Valley Basin are very different basins and undesirable results need to be defined locally, based on the historical data and modeling conducted for the San Pasqual Valley Basin, and taking into account significant and unreasonable impacts to beneficial users and uses of groundwater. In the San Pasqual Valley Basin, 5 representative monitoring wells in the western part of the Basin could be below the minimum threshold, while water levels in the eastern part of the Basin are above the minimum thresholds, yet everyone in the Basin would be subject to implementation of projects and management actions. Local hydrogeology and local understanding of the beneficial uses and users of groundwater in the San Pasqual Valley Basin should be used to develop Basin specific undesirable results. This is a fundamental tenant of SGMA and has not been followed in the development of this GSP.	Noted. The GSP will be revised to include further description of and rationale for undesirable results (see Section 6.3.1).
69	Jill Weinberger, Kayvan Ilkhanipour	Dudek	Rate of land subsidence referenced here (0.028 inches per year) disagrees with rate of land subsidence referenced in section 4 (0.05 feet per year). These should be reconciled.	Edit will be incorporated.
70	Jill Weinberger, Kayvan Ilkhanipour	Dudek	Management Actions 2, 10, and 11 state that "Reducing groundwater pumping will help alleviate groundwater degradation associated with lowering of groundwater levels." The GSP has not established an association between groundwater levels and groundwater quality. This statement appears to have been copied from Table 7-2 in the Cuyama GSP, where groundwater elevations may be linked to lower quality groundwater. Unless a similar link is established locally for the San Pasqual Valley Basin, these statements need to be removed from Table 9-3. Groundwater producers in the San Pasqual Valley Basin should not be subject to management actions that have not been demonstrated to produce the desired impact described in the table.	Noted. The GSP will be revised to include further description of and rationale for undesirable results (see Section 6.3.4).
71	Jill Weinberger, Kayvan Ilkhanipour	Dudek	The assessment of the viability of additional surface water recharge via releases of water from Sutherland Dam is unclear, and appears biased in several ways: (1) Additional water releases from Sutherland Dam of 300 AFY were "simulated" for the March to September timeframe. This timeframe includes the warmest months of the year and will simulate conditions under the highest ET rates. There is no need to assume that surface water releases would have to occur during this timeframe because this management action would be undertaken during times that the Basin water levels are low, and could use recharge even during the winter months. "Simulating" releases during the winter months would reduce ET losses, and would also reduce stream losses that would occur between Sutherland and the Basin. (2) Exactly what model was used to "simulate" releases is not clear, and the details of the simulations are not provided in the memo. (3) Of the 2,100 AFY that reached the Basin, only 187 AFY infiltrated through the alluvial sediments of Santa Ysabel Creek, while the remainder continued flowing in the creek to Lake Hodges, even though historical groundwater levels in the Basin respond rapidly to wet winter conditions. This suggests a fundamental disconnect between the model response and the observed hydrogeologic response in the Basin, which in turn suggests that the model does not accurately represent the Basin and needs substantial revision before it can be used to assess the efficacy of projects and management actions. (4) The memo states that only 7% of the "simulated" releases from Sutherland Dam would contribute to groundwater storage while the remainder would "be lost to ET or outflow." This number is misleading as it could equally be much smaller if the model simulated higher releases or much higher if releases were simulated during the winter months, and the water that flows through the model to Lake Hodges was not included as being "lost." Use of a meaningless low percentage of water retained in the Basin is there to bias the reader into assuming that the releases of water are not helpful. This has not been demonstrated by the memo.	See Response #40.

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			A review of surface water releases from Sutherland Dam that includes reasonable release parameters, a revised numerical model that reflects observed groundwater responses in the Basin, and a detailed explanation of the work conducted is needed. It is anticipated that such a study would indicate the efficacy of surface water releases from Sutherland Dam at providing recharge to the Basin and that this management action should have a higher priority in the GSP.	
72	Peter Quinlan	Peter Quinlan LLC	The low Kz assigned to the stream bed is a function of the model computational constraints, not the observed conditions. A result of this modeling compromise, a small fraction of the average surface water inflow (13,907 AFY per Table 4-7) recharges groundwater. The simulated average groundwater recharge from streams is that only 2276 AFY (16%) of model estimated surface water inflow during the historical period. In contrast, the model simulates that 36% of the total of: 1) precipitation falling within the model, 2) the water applied for irrigation, and 3) septic discharges end up recharging the groundwater. The total annual average precipitation and applied irrigation water amount to 8543 AFY which is much less than the stream inflow at 13,907 AFY, yet in the model it provides more groundwater recharge (3052 AFY versus 2276 AFY). The surface sediments outside of the stream beds are finer-grained and should have a lower Kz than the stream beds, but in this model these finer-grained sediments have assigned Kz values roughly 100 times greater than the stream beds. If the model code could computationally handle values of Kz for the stream beds more in keeping with the observed sediments, groundwater recharge in the model from stream beds would increase. Other aspects of the model would change as a result. The assignment of the low Kz to the stream beds and the resulting limited infiltration ripples through the model affecting calibration modifications to Kh and Kz in all 4 layers of the model and the estimated subsurface inflows. The model also underestimates cumulative surface water inflow from Guejito Creek during the 15-year historical period by 10,000 AF (Figure 3-20) which is half of the observed discharge. This also serves to underestimate potential recharge from surface water flows. As with most models, this one is under-determined; that is, there are insufficient data to constrain assumptions about model parameters, inflows, and outflows. To better understand the water balance of the SPV Basin, it is critical that two new stream gauges be installed along Santa Ysabel Creek, one just upstream of the confluence with Santa Maria Creek and another at the downstream end of the basin. These gauges would improve the understanding of the contributions of the stream flow to groundwater recharge. Additional stream flow monitoring gauges were not identified as a data gap in the draft GSP.	Alternative conceptual models that provide adequate fits to calibration targets are certainly possible. The conceptual model inherent in the SPV GS Model is one of several plausible models. The modeling team is not aware of such hydraulic conductivity data for the streambeds. As streamflow recession occurs between periodic rainfall events, the energy decreases and finer sediments are the last to be deposited. So although much of the valley fill is made up of coarser sediments, that does not necessarily mean that the streambed permeability will be as permeable as the underlying subsurface sediments. The streambed hydraulic conductivity values used in the SPV GSP Model can neither be confirmed nor refuted based on the available data. If stakeholders and the GSA wish to reduce uncertainty in the estimates of streambed hydraulic conductivity, then investigations that seek to reduce that uncertainty could be considered in the future. Additionally, the footprints of stream channels relative to the much larger footprint outside of stream channels is a consideration when reviewing the contributions from different water sources. The larger area outside of stream channels provides more opportunity for areal groundwater recharge to occur, whereas a creek channel is limited to its wetted perimeter, which is a much smaller area for recharge to occur when ephemeral flows occur. Although Figure 3-20 indicates that the streamflow bias-correction process under-estimates stream projected inflows from Guejito Creek to the SPV GSP Model domain, actual measured streamflow values are simulated for the historical simulation period. The intent of the bias-correction process is to remove potential biases in the Basin Characterization Model (BCM) for ungaged watersheds and for development of projected hydrologic stream inflows. So, the historical model does not underestimate Guejito Creek inflows, because they are based on actual streamflow data at the Guejito Creek stream gage.
73	Peter Quinlan	Peter Quinlan LLC	As discussed in sections 4.3.2 and 4.3.6, in order to reproduce the vertical head differences in the east and simulated pumping from the granitic rock, the vertical hydraulic conductivity (Kz) had to be increased in the granitic rock. Indeed, it was increased to be 100 times greater than horizontal conductivity (Kh). Typically the ratio of Kh:Kz is expected to be on the order of 10:1 in alluvium (or 1:1 in lower permeability formations like clay and crystalline rock like granite). While the GSP states that this highly unusual ratio is possible in fractured rock, that implies vertical fracturing and no evidence is cited to justify this unusually high Kz. It is also odd that Kz in the granitic rock was selectively increased on only a few isolated areas surrounding the USGS monitor wells where there were historical water levels used in calibration. This appears to be an arbitrary localized tweak to match historical water levels. In Rockwood Canyon this highly unusual Kh:Kz ratio of 1:100 was applied to the residuum which is weathered granite having a granular texture and abundant fines in the silt to clay range and unlikely to fracture. The application of this highly unusual Kh:Kz ratio to the residuum is inappropriate. Furthermore, this highly unusual ratio of 1:100 for Kh:Kz was not assigned to the granitic rock in the layers beneath the residuum. The granitic rock is precisely where fracturing could be expected to occur. This clearly looks to be an artifact of calibration rather than the reflection of a well-conceived conceptual model of the basin and surrounding granitic rock. It also makes drawing conclusions about the hydrologic interaction of the alluvial sediments and residuum based on model results highly dubious	The SPV GSP Model utilized calculated vertical head difference values at the three USGS monitoring wells to constrain hydraulic parameters in the vicinity of these wells. Vertical head differences at the USGS wells indicate the potential for downward groundwater flow from the Basin into the underlying bedrock. Groundwater-level fluctuations through time observed at the SDSY and SDCD wells in each zone (alluvium, residuum, and bedrock) mimic each other across all three zones, suggesting direct hydraulic connection between the alluvium, residuum, and bedrock. The modeling team aimed to honor the measured water level trends observed at the USGS wells during model calibration, and in order to do so, the conceptual model of hydraulic connection between the Basin and the underlying bedrock was incorporated. However, it is acknowledged that the nature, extent, and characterization of hydraulic connection between the Basin and the underlying bedrock is not well understood and could be further investigated during GSP implementation in an attempt to reduce uncertainty. We disagree with the assertion that the Kh:Kv ratio should be limited to the range of 1:1 to 100:1. In addition to fracturing, which can cause Kh:Kv ratios to be less than one, differential weathering could result in areas with Kv values that are higher than Kh values. As stated in the comment, residuum is weathered rock with a granular texture and abundant fines in the silt to clay range. It is possible to have complex arrangements of weathering and grain sizes within the residuum to result in less resistance to vertical flow, as compared with horizontal flow. The mismatch between

#	Commenter Name	Commenter Organization	Comment	Response
				modeled and target heads in some areas was reduced by having Kh:Kv ratios less than one. If the stakeholders and GSA wish to reduce uncertainty on this topic, targeted aquifer testing could be explored in an attempt to reduce the associated uncertainty.
74	Peter Quinlan	Peter Quinlan LLC	It is not clear, but it appears that the model was used to evaluate the feasibility of releasing water from Sutherland Reservoir to provide recharge to the basin. Predictably the model as constructed with the unrealistically low Kz assigned to the stream beds predicted that only a small percentage of the released water would recharge the basin. If the model more accurately reflected the sandy sediments in the stream beds, more water would have infiltrated. This analysis also estimated that 772 AFY would be lost to evapotranspiration during releases from May to September. However, the draft GSP fails to mention that there would be losses to evaporation from the reservoir even if no water were released to recharge the San Pasqual Valley Basin. The average annual evaporation from Sutherland Reservoir is 52.77 inches /year (4.4 ft/yr). Most of that occurs between May and October, when the analysis indicated that the releases would occur. Sutherland Reservoir has an area of 557 acres when full. If full the annual loss to evaporation would be 2449 AF.	See Response #73.
75	David Mayer	CDFW	Comment 1 Assessment of Interconnected Streams and Groundwater Dependent Ecosystems (GDEs). (SPV-GSP Volume 1 Section 4.6, SPV-GSP Volume 2 Appendices J and L, page 4-42) Issue: The SPV-GSP conclusion that streams and wetlands in the eastern portion of the Basin (eastern Basin) are disconnected from the Basin's aquifer (i.e., not GDEs) is not fully supported by the data provided in the SPV-GSP or in Appendices J and L. Readily available scientific data indicates that the riparian and wetland vegetation in the eastern Basin likely maintain some connectivity to groundwater and should still be considered GDEs. Under SGMA, a GSP is required to avoid unreasonable adverse impacts on the beneficial uses of interconnected surface waters, defined as, "surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer, and the overlying surface water is not completely depleted" (Water Code §§ 10721(x)(6) and 10727.2(b); 23 CCR § 351(o).). Concern: The SPV-GSP's reliance on the 2015 to 2019 baseline analysis to identify disconnected portions of the Basin and eliminate potential GDEs with a depth to groundwater greater than 30 feet is not representative of current climate conditions. The 2015 to 2019 baseline analysis begins several years into a historic drought when groundwater levels throughout the Basin were trending lower than usual due to reduced surface water availability. As such, this period of groundwater elevations does not account for GDEs that can survive a finite period without groundwater access (Naumburg et al. 2005). The following are additional factors which support the need to further analyze GDEs and groundwater levels: a. The distance to groundwater within the riparian/wetland habitat may be less than the distance to groundwater at the well location, given that riparian and wetlands are located intopographical depressions compared to adjacent well locations; therefore, calculations for GDE's should be corrected for actual ground surface elevation (The Nature Conservancy 2019). The corrected distance to groundwater elevation should be used in the GDE analysis. b. As shown in Appendix L, some hydrographs in the eastern Basin show measurement at or around 30 feet in 2019, yet the SPV-GSP categorized streams in the eastern Basin as disconnected due to depth to groundwater being greater than 30 feet since 2015. Wells in the eastern reaches show recent connection to groundwater and should be considered GDEs. c. Appendix J notes that, "[t]he major drainages in the San Pasqual Valley have significant riparian or wetland vegetative communities with an abundance of woody phreatophytes such as willows (Salix spp.), salt cedar (Tamarisk ramosissima), Fremont cottonwood (Populus fremontii), California sycamore (Platanus racemosa), and California fan palm (Washingtonia filifera)" (pg. 14). Some of these trees, such salt cedar, can have a rooting depth up to 70 feet (Gries et al. 2003). These species, while not native to southern California, provide habitat for the California Endangered Species Act (CESA)-listed least Bell's vireo (Vireo bellii pusillus).	New Planning Thresholds will be added (Section 8.7) to initiate Tier 1 *Management Action 8 – Study GDEs* to evaluate GDEs in more detail. The GSAs may implement this study prior to the 5-Year Update even if the Planning Thresholds aren't reached.

#	Commenter Name	Commenter Organization	Comment	Response
76	David Mayer	CDFW	Comment 1 - Continued from previous Comment d. Riparian areas in the eastern Basin remain functional without perennial surface flow and were able to persist through drought conditions; for these reasons, they are likely connected to groundwater. The GDE Pulse tool by The Nature Conservancy (TNC) also identifies the eastern Basin's riparian and wetland habitats as GDEs (Klausmeyer et al. 2019). 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 (bgs), due to these fluctuating groundwater elevations. Figure 3-25 shows that the Santa Ysabel catchment, which is in the watershed furthest east, provided more than 20 acre-feet of groundwater recharge even at the height of the drought in 2014. This surface to groundwater connection sustains the riparian vegetation that is habitat for various endangered species, such as the CESA-listed least Bell's vireo and CESA-listed tricolored blackbird (Agelaius tricolor). This should be identified as a beneficial use. e. Riparian areas that are considered gaining reaches may be considered GDEs even if groundwater levels are greater than 30 feet bgs. Further guidance on riparian vegetation as GDEs can be found in Groundwater Dependent Ecosystems Under the Sustainable Groundwater Management Act Guidance for Preparing Groundwater Sustainability Plans and Identifying GDEs Under SGMA Best Practices for Using the NC Dataset. (The Nature Conservancy 2018 and 2019 respectively). Recommendation: The SPV GSA should clarify depth to groundwater for GDEs in the eastern Basin and conduct additional studies as recommended in Appendix J. CDFW also recommends including areas classified as wetland and riparian habitats as GDEs. This includes areas where groundwater depth is greater than 30 feet bgs but habitat is still sustained by groundwater. CDFW suggests these habitat areas be identified as GDEs in the final GDE map in the SPV-GSP.	See Response #75. The GSP includes a Tier 1 *Management Action 8 – Study GDEs* to better understand how GDEs access water supply.
77	David Mayer	CDFW	Comment 2 Water Budgets and Projected Deficits and Sustainability Goals (SPV-GSP Section 5.5.3, page 5-15) Issue: Figure 5-5 of Appendix H shows that project groundwater surface levels at the representative wells in the eastern Basin will hit their planning or minimum threshold by 2035, which is prior to the sustainable planning horizon of 2040 required under SGMA. Additionally, the SPV-GSP already has identified a small deficit in groundwater storage. The model seems to indicate that diminishing groundwater storages may be a long-term trend based on projected data. Concern: The SPV-GSP fails to identify specific actions which will determine if the deficit is a trend, and potential management actions which will be implemented if the deficit is determined to be a trend. Recommendation: Thresholds should be revised to provide an earlier indicator of undesirable reductions in groundwater storage. Management actions may need to be implemented to prevent undesirable results both for chronic lowering of groundwater storage and potential impacts to interconnected surface waters and GDEs.	The GSP includes a Tier 2 *Management Action 12 – Pumping Restrictions and Enforcement* to address any long-term trend in declining storage/groundwater levels, if observed through monitoring. The 5-Year Update will also reevaluate the thresholds established for the Basin.

#	Commenter Name	Commenter Organization	Comment	Response
78	David Mayer	CDFW	Comment 3 Water Budgets and Impacts to GDEs (GSP Section 5.5.3, page 5-15) Issue: The Average Annual Surface Water System Water Budget (Table 5-4) shows that during SPV-GSP implementation, groundwater discharge to streams will decrease significantly, while stream inflow from adjacent areas will double due to a few large storms. Fay et al. (2000) found that, "[a]boveground net primary productivity, soil carbon dioxide flux, and flowering duration were reduced by the increased inter rainfall intervals and were mostly unaffected by reduced rainfall quantity" (pg. 308). It is unclear in the SPV-GSP how the change in water timing and type will affect beneficial uses in the stream, such as vegetative growth and blooming periods, especially during drought conditions. Concern: Changes in water inputs that may impact GDE health should be monitored as part of the SPV-GSP. This monitoring data will help to inform future water budgets. Recommendation: Annual monitoring of GDE health, the use of Normalized Derived Vegetation Index (NDVI) which estimates greenness, and Normalized Derived Moisture Index (NDMI) which estimates vegetation moisture, should be used as metrics for interconnected surface water and GDE impacts.	The GSA has no control over changes in rainfall patterns. The groundwater modeling simulated future precipitation under climate change conditions. The GSA will consider the recommended tools in completion of the Tier 1 *Management Action 8 – Study GDEs* - see revisions to Section 9.8.8.
79	David Mayer	CDFW	Comment 4 Groundwater Level as a Proxy for Interconnected Surface Waters and GDE's. (SPV-GSP Section 6.3.6, page 6-7) Issue: Although groundwater levels are a simple proxy for many sustainability indicators, it is not sensitive to changes in ecosystem health and noticeable changes to groundwater levels as representative wells may lag real time impacts to GDEs due to relative location to the groundwater surface. Concern: Current sustainability indicators will not detect changes, which will affect other beneficial uses and GDEs. Recommendation: NDVI and NDMI should be used as early indicators of water stress on GDEs. NDVI and NDMI are remotely sensed color data that can be used as a refined proxy for vegetation health in the Basin. The TNC GDE Pulse tool provides both a web viewer and access to the raw data to analyze these metrics over different periods of time (Klausmeyer et al. 2019)	See Response #78.
80	David Mayer	CDFW	Comment 5 Degraded Water Quality (SPV-GSP Section ES, 4.1.6, 6.3.4, pages ES-4, 4-16,6-5) Issue: Water quality within the Basin is being impacted by land use practices adjacent to the Basin. Concern: The SPV-GSP notes that the SPV GSA only has authority over issues related to groundwater pumping in the Basin. Although nitrogen and Total Dissolved Solids sources are outside of the Basin, CDFW is concerned that there are downstream impacts to water quality in the Basin that could be addressed by managing entities outside of the MOU for the SPV GSA. Recommendation: Although the SPV GSA only has authority over issues pertaining to groundwater pumping, both the City and the County have planery authority and can address water quality issues within their management areas, including upstream watersheds. CDFW recommends that the SPV GSA coordinate with relevant municipal jurisdictions and landowners on potential water quality projects to ameliorate the water quality issues upstream of the Basin.	Noted. The GSP includes multiple projects and management actions directing the GSA to coordinate with the City, County, and MS4 Copermittees on implementation of water quality projects.
81	David Mayer	CDFW	Comment 6: Minimum Thresholds Are Set Lower Than Historic Baseline (SPV-GSP Section 8.2.1, page 8-2) Issue: Minimum thresholds are set well below historic minimums and are not protective of beneficial uses. Setting minimum and planning thresholds at 50 to 100 percent lower than historic minimums does not account for how current conditions may already be trending towards a groundwater storage deficit (Comment #3). Additionally, the future range of groundwater levels	Noted. Sections 6 and 8 will be revised to better articulate rationale for undesirable results and minimum thresholds for GDEs and interconnected surface waters.

#	Commenter Name	Commenter Organization	Comment	Response
			may fall within or near the historic range, which also included severe drought conditions. Concern: Setting the minimum and planning thresholds below the historic range may not be enough to allow for protection against undesirable results. Furthermore, as presented in the SPV-GSP, the planning threshold for wells adjacent to GDEs is less protective than the threshold set for wells that are further from GDEs. Given CDFW's concern that riparian and wetland vegetation in the eastern Basin may also be GDEs, the absence of established protective thresholds is of particular concern. Although the SPV GSA is not currently experiencing an overdraft, trends of overdraft conditions, if they persist, may cause undesirable results prior to reaching either the proposed planning or minimum threshold. Recommendation: CDFW recommends following TNC's guidance by setting minimum thresholds at levels that prevent adverse impacts to GDEs (TNC 2018). The planning and minimum thresholds for wells closer to GDEs should also be more protective of the GDEs thanwells that are further, and the planning threshold should be closer to the measurable objective rather than the minimum threshold in areas adjacent to GDEs.	
82	David Mayer	CDFW	Comment 7: Monitor GDEs Should Be A Tier 0 Project (SPV-GSP Figure 9-2, page 9-3) Issue: Section 9 of the SPV-GSP includes monitoring of GDEs as a Tier 1 project that would be implemented once the planning threshold is reached. Concern: Given CDFW's many concerns pertaining to interconnected surface waters and GDEs for the Basin, we are concerned that undesirable results may occur well before Tier 1 projects are implemented, particularly given that planning and minimum thresholds set for the representative wells is not protective of GDEs and beneficial uses. Recommendation: Additional studies and monitoring pertaining to GDE's should be implemented, as identified in Appendix J, as a Tier 0 project that can be implemented at any time after plan adoption. Again, NDVI and NDMI should be used to assess habitat health 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.	New Planning Thresholds will be added (Section 8.7) to initiate Tier 1 *Management Action 8 – Study GDEs* to evaluate GDEs in more detail. The GSAs may implement this study prior to the 5-Year Update even if the Planning Thresholds aren't reached.
83	David Mayer	CDFW	Comment 8: Use of CNDDB Data to Presume Absence (SPV-GSP Volume 2 Appendix J Groundwater Dependent Ecosystems Technical Memo Table 1, page 6) Issue: Appendix J notes that presence and/or absence of sensitive species is based on California Natural Diversity Database (CNDDB) occurrence data. CNDDB only provides positive occurrence data where studies have been conducted and cannot be relied upon to presume absence due to lack of data in a specific location. Concern: Species-specific studies conducted in suitable habitat according to species-specific protocols are required to determine species absence from a particular area. Only presence can be assumed and should be assumed in suitable habitat where species-specific surveys have not been conducted. Recommendation: In the absence of species-specific protocol surveys, the GSP should assume presence for sensitive species in areas where suitable habitat exists.	Noted. CNDDB was best available data for species presence.

#	Commenter Name	Commenter Organization	Comment	Response
84	David Mayer	CDFW	Comment 9: Species Dependence on Groundwater and Mischaracterization as Not Applicable (SPV-GSP Volume 2 Appendix J Groundwater Dependent Ecosystems Technical Memo Table 1, page 6) Issue: Table 1 of Appendix J states that the reliance of many of the sensitive plants and invertebrates on groundwater is Not Applicable (NA) based on omission from the Critical Species LookBook (Rohde et al. 2019). The Critical Species LookBook Appendix I Other Threatened or Endangered Species Relevant to SGMA includes many of the species noted as NA. Although groundwater relationships may be less apparent and not fully discussed in the LookBook, groundwater relationships between plants and vernal pool habitats do exist and have been described in the scientific literature. In one study in the Central Valley, "[p]erched groundwater discharge accounted for 30–60% of the inflow to the vernal pools during and immediately following storm events. (Rains et al. 2006, pg. 1157). Endangered plants such as the threadleaf brodiaea (Brodiaea filifolia) which CNDDB notes as potentially present in the eastern Basin may also be impacted by changes to groundwater. Concern: Although these groundwater relationships are not well understood for the Basin, CDFW is concerned that additional monitoring of known sensitive populations have not been included in the SPV-GSP. Recommendation: Sensitive plants and invertebrates should be included in Appendix I of the Critical Species LookBook as having a potential reliance on groundwater rather than 'NA.' The SPV GSA should also coordinate with the City and County to include periodic monitoring of sensitive species populations within the Basin, beginning with baseline studies where suitable habitat exists.	Noted. LookBook was best available data for species groundwater dependance.
85	David Mayer	CDFW	Comment 10: Pictures Were Not Provided for Eastern Field Data Points That Were Determined to Not Be GDEs (GSP Volume 2 Appendix J Groundwater Dependent Ecosystems Technical Memo Attachment 1) Issue: Appendix J does not include representative photos of field surveys in the eastern Basin. The SPV-GSP makes the conclusion that the riparian and wetland habitat in the eastern portion are not GDEs due to the depth of groundwater being greater than 30 feet. Concern: Pictographic evidence regarding GDEs was not included to support the GDE analysis provided. Recommendation: Representative photographs of the field surveys conducted in the eastern Basin should be included in Appendix J. The Final SPV-GSP should contain updated analysis in Appendix J to addressed issues discussed in this letter.	The photo log in Appendix J included photographs of locations from the eastern part of the basin (sites 11, 12, 13, and 16) and will be revised to clarify that these locations were classified as wetland and riparian vegetation areas.
86	Alicia Appel	City of Escondido	Update map or add footnote to denote errors on this map. Santa Ysabel should be named San Dieguito and San Dieguito River should read Cloverdale Creek. The map on the next page is correct.	Figure will be revised.
87	Alicia Appel	City of Escondido	Approach (sp)	Edit will be incorporated.
88	Alicia Appel	City of Escondido	Is there a different term that can be used rather than "exceedance"? Exceedance is going "over" a limit but in the case of groundwater levels it would be falling below a threshold. This term is often used in stormwater compliance. It would make sense for the water quality metrics (e.g. nitrate and TDS)	Noted. Text will be reviewed.
89	Alicia Appel	City of Escondido	Delete repeated table reference (9-2)	Edit will be incorporated.
90	Alicia Appel	City of Escondido	Water District Source map does not match the Escondido Water boundaries. See attached map and contact me if you want the GIS layer.	Figure will be revised.

Public Review Draft GSP—
Public Comment Letters

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Matt Whitman SPV GSP Public Draft Comments, Received 7/26/2021

Comment
Page ES-5-It seems to me that the well inventory is misplaced, it should be in Tier 0, and in fact is mostly done. The well inventory in necessary to study and make the decisions on the other Tier 1 actions. To not have this in Tier 0 will cause delays in carrying out Tier 1 actions. This will then cause delays in Tier 2 actions. It is imperative in the case of an undesirable result that management actions that can affect change happen in a timely manner. The well inventory in itself will not affect change in water use, only an understanding of what should be the next step in the process, hence Tier 0.
Page ES-6-Add the word plan in the Tier 2 box-"implement pumping restriction and enforcement plan"
Page 2-15 paragraph 2.1.3-What is the relevance of the "historical San Ysabel creek riparian rights". Does there need to any study to see if the court decision is still relevant to the SGMA plan? Just the statement and figure 2-2 are meaningless without some additional study or explanation why it does not affect SGMA. Some of the area is in the county and some is in the city, does this make a difference.
Paragraph 3.6.3. The interaction between the bedrock and Quaternary deposits and residuum. If we don't know about this interaction then it needs to be studied. There are monitoring wells that were installed specifically to study this interaction. This needs to be done. This is another recommendation for Tier 0 actions. The city has installed the wells, the study of the interaction should begin.
Paragraph 3.8 –same as above . Groundwater Interaction between the crystalline rock and the alluvium needs to be studied as part of Tier 0 actions.
Paragraph 7.6.8-Replacement of the existing City monitoring wells should be a priority. Many of these wells are old and the casings compromised and do not reach the bottom of the alluvium. The data that is currently being used is suspect. New monitoring wells need to be found or drilled. This should be a Tier 0 action as well.
Section 9 projects and management actions.-As I stated many times during the AC meetings, I believe that the groundwater users will have to be enacting their own water reductions prior to Tier 2 actions. Somehow when examining how to reduce pumping in Tier 2, management actions by the water users prior to the mandatory pumping restrictions need to be considered. These type of short or long term water reductions that could be done would be fallowing ground, orchard or vineyard removal to change varieties, or a change in crops. If a water user takes these actions preemptively, the reduced water use should not be used as their baseline when calculating the restrictions planned for Tier 2 actions.
Section 9 planning projects should also include as mentioned above, finishing the well inventory as part of Tier 0. Also under Tier 0 should be beginning the study of the alluvium, residuum, and crystalline deposits using the city installed monitoring wells that are already present in the valley.

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August 10, 2021

San Pasqual Valley Groundwater Sustainability Agency
1600 Pacific Highway
San Diego, CA 92101

Submitted via email: KDanek@sandiego.gov

Re: Public Comment Letter for the San Pasqual Valley Groundwater Basin Draft GSP

Dear Karina Danek,

On behalf of the above-listed organizations, we appreciate the opportunity to comment on the Draft Groundwater Sustainability Plan (GSP) for the San Pasqual Valley Groundwater Basin being prepared under the Sustainable Groundwater Management Act (SGMA). Our organizations are deeply engaged in and committed to the successful implementation of SGMA because we understand that groundwater is critical for the resilience of California's water portfolio, particularly in light of changing climate. Under the requirements of SGMA, Groundwater Sustainability Agencies (GSAs) must consider the interests of all beneficial uses and users of groundwater, such as domestic well owners, environmental users, surface water users, federal government, California Native American tribes and disadvantaged communities (Water Code 10723.2).

As stakeholder representatives for beneficial users of groundwater, our GSP review focuses on how well disadvantaged communities, tribes, climate change, and the environment were addressed in the GSP. While we appreciate that some basins have consulted us directly via focus groups, workshops, and working groups, we are providing public comment letters to all GSAs as a means to engage in the development of 2022 GSPs across the state. Recognizing that GSPs are complicated and resource intensive to develop, the intention of this letter is to provide constructive stakeholder feedback that can improve the GSP prior to submission to the State.

Based on our review, we have significant concerns regarding the treatment of key beneficial users in the Draft GSP and consider the GSP to be **insufficient** under SGMA. We highlight the following findings:

1. Beneficial uses and users **are not sufficiently** considered in GSP development.
    a. Human Right to Water considerations **are not sufficiently** incorporated.
    b. Public trust resources **are not sufficiently** considered.
    c. Impacts of Minimum Thresholds, Measurable Objectives and Undesirable Results on beneficial uses and users **are not sufficiently** analyzed.
2. Climate change **is not sufficiently** considered.
3. Data gaps **are not sufficiently** identified and the GSP **does not have a plan** to eliminate them.

4. Projects and Management Actions **do not sufficiently consider** potential impacts or benefits to beneficial uses and users.

Our specific comments related to the deficiencies of the San Pasqual Valley Groundwater Basin Draft GSP along with recommendations on how to reconcile them, are provided in detail in **Attachment A.**

Please refer to the enclosed list of attachments for additional technical recommendations:

Attachment A	GSP Specific Comments
Attachment B	SGMA Tools to address DAC, drinking water, and environmental beneficial uses and users
Attachment C	Freshwater species located in the basin
Attachment D	The Nature Conservancy's "Identifying GDEs under SGMA: Best Practices for using the NC Dataset"

Thank you for fully considering our comments as you finalize your GSP.

Best Regards,

Ngodoo Atume
Water Policy Analyst
Clean Water Action/Clean Water Fund

J. Pablo Ortiz-Partida, Ph.D.
Western States Climate and Water Scientist
Union of Concerned Scientists

Samantha Arthur
Working Lands Program Director
Audubon California

Danielle V. Dolan
Water Program Director
Local Government Commission

E.J. Remson
Senior Project Director, California Water Program
The Nature Conservancy

Melissa M. Rohde
Groundwater Scientist
The Nature Conservancy

Attachment A

Specific Comments on the San Pasqual Valley Groundwater Basin Draft Groundwater Sustainability Plan

1. Consideration of Beneficial Uses and Users in GSP development

Consideration of beneficial uses and users in GSP development is contingent upon adequate identification and engagement of the appropriate stakeholders. The (A) identification, (B) engagement, and (C) consideration of disadvantaged communities, drinking water users, tribes, groundwater dependent ecosystems, streams, wetlands, and freshwater species are essential for ensuring the GSP integrates existing state policies on the Human Right to Water and the Public Trust Doctrine.

A. Identification of Key Beneficial Uses and Users

Disadvantaged Communities and Drinking Water Users

The identification of Disadvantaged Communities (DACs) and drinking water users is **insufficient**. The DWR DAC mapping tool indicates that there are no DACs in the basin, however this is not stated in the GSP. We commend the GSA for including a map of the density of domestic wells in the basin (Figure 2-8). The GSP should be further improved by including a map of individual domestic well locations and by indicating the population dependent on groundwater for their source of drinking water.

RECOMMENDATIONS

- State definitively that there are no DACs in the basin, instead of being silent on the subject. Indicate what source was used to make the determination (e.g., the DWR DAC mapping tool).
- Include a map of individual domestic well locations and a table of well data showing screen depths. Indicate the population dependent on groundwater for their source of drinking water.
- Describe the occurrence of tribal lands in the basin. The GSP states that there are no tribal lands in the basin, but includes a tribe member from the San Pasqual Tribe on the Advisory Committee. If the San Pasqual Tribe has interests in the basin, describe them in detail.

Interconnected Surface Waters

The identification of Interconnected Surface Waters (ISWs) is **insufficient**. The GSP uses a numerical model to analyze surface water and groundwater interactions. A short description of the ISW analysis is provided in the GSP, but very little detail or background on the approach is given. For example, the location and spatial resolution of groundwater elevation data (e.g., how close the wells are to the streams) behind the numerical model is not provided. Additionally, the temporal resolution of groundwater elevation data (e.g., number of years and seasonality) that parameterizes the numerical model is also unclear.

The GSP states that reaches identified as disconnected are in portions of the basin where depth to groundwater has been greater than 30 feet since 2015. The GSP does not, however, provide justification for the 30 feet criteria provided in the text.

RECOMMENDATIONS

- Overlay the figure of stream surface water depletion (Figure 4-33) with depth-to-groundwater contour maps to illustrate the groundwater depths and groundwater gradient near the stream reaches. Show the location of groundwater wells used in the analysis. Use depth to groundwater data from multiple seasons and water year types (e.g., wet, dry, average, drought) to determine the range of depth and capture the variability in environmental conditions inherent in California's climate.
- 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 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.
- Describe data gaps for the ISW analysis. Discuss and reconcile these data gaps with specific measures (shallow monitoring wells, stream gauges, and nested/clustered wells) along surface water features in the Monitoring Network section of the GSP.

Groundwater Dependent Ecosystems

The identification of Groundwater Dependent Ecosystems (GDEs) is **incomplete**. The GSP took initial steps to identify and map GDEs using the Natural Communities Commonly Associated with Groundwater dataset (NC dataset). We commend the GSA for including a comprehensive list of the state and federally threatened and endangered species in the basin (Table 1 of Appendix J). However, we found that some mapped features in the NC dataset were improperly disregarded, as described below.

- GDEs were incorrectly removed based on groundwater levels that were greater than 30-ft in 2015, a single point in time. This is a technically incorrect approach since groundwater levels fluctuate over seasonal and interannual time scales due to California's Mediterranean climate and intensifying flood and drought events due to climate change. Justifying the removal of NC dataset polygons solely based on this criterion does not acknowledge that groundwater levels temporally vary and the fact that many plant species within GDEs can access groundwater depths beyond 30-feet or have adapted water stress strategies to deal with intermittent periods of deep groundwater levels. Using this methodology disregards groundwater fluctuations and may result in the omission of ecosystems that are groundwater dependent.
- GDEs were disregarded based on the presence or proximity of surface water. However, partial reliance on surface water does not necessarily prove that the plants and animals do not access groundwater. Many GDEs often simultaneously rely on multiple sources of water (i.e., both groundwater and surface water), or shift their reliance on different sources on an interannual or inter-seasonal basis. Additionally, adverse impacts can occur to GDEs due to pumping that further separates groundwater from surface water.

- The GDE identification process utilized aerial imagery in an incorrect manner. The GSP relied on aerial imagery to detect surface water, and then made the assumption that only GDEs present in inundated or saturated areas were connected to groundwater. This approach is incorrect for two reasons: 1) not all surface water is connected to groundwater, and 2) visually inspecting aerial imagery cannot detect groundwater occurring near the ground surface. GDEs can rely on groundwater for some or all its water requirements, whether or not surface water is present. In California, GDE reliance on groundwater often vary by season, and depend on the availability of alternative water sources (e.g., precipitation, river water, reservoir water, soil moisture in the vadose zone, groundwater, applied water, treated wastewater effluent, urban stormwater, irrigated return flow).

RECOMMENDATIONS

- Provide depth-to-groundwater contour maps, noting 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 DEM to estimate depth-to-groundwater contours across the landscape.
- Use depth to groundwater data from multiple seasons and water year types (e.g., wet, dry, average, drought) to determine the range of depth to groundwater around NC dataset polygons. We recommend that a baseline period (10 years from 2005 to 2015) be established to characterize groundwater conditions over multiple water year types. Refer to Attachment D of this letter for best practices for using local groundwater data to verify whether polygons in the NC Dataset are supported by groundwater in an aquifer.
- If insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons as "Potential GDEs" in the GSP until data gaps are reconciled in the monitoring network. While the GSP acknowledges that some locations that may be GDEs are not confirmed as GDEs (and their status is uncertain), they are mapped as non-GDEs. These should be mapped as potential GDEs.

Native Vegetation and Managed Wetlands

Native vegetation and managed wetlands are water use sectors that are required[1,2] to be included into the water budget. The integration of these ecosystems into the water budget is **insufficient**. The water budget did not include the current, historical, and projected demands of native vegetation and managed wetlands. The omission of explicit water demands for native vegetation and managed wetlands is problematic because key environmental uses of groundwater are not being accounted for as water supply decisions are made using this budget, nor will they likely be considered in project and management actions.

[1] "'Water use sector' refers to categories of water demand based on the general land uses to which the water is applied, including urban, industrial, agricultural, managed wetlands, managed recharge, and native vegetation." [23 CCR §351(al)]

[2] "The water budget shall quantify the following, either through direct measurements or estimates based on data: (3) Outflows from the groundwater system by water use sector, including evapotranspiration, groundwater extraction, groundwater discharge to surface water sources, and subsurface groundwater outflow." [23 CCR §354.18]

RECOMMENDATION

- Quantify and present all water use sector demands in the historical, current, and projected water budgets with individual line items for each water use sector, including native vegetation and managed wetlands.

B. Engaging Stakeholders

Stakeholder Engagement during GSP development

Stakeholder engagement during GSP development is **incomplete**. SGMA's requirement for public notice and engagement of stakeholders[3] is not fully met by the description in the Notice and Communication section of the GSP (Section 1.4). We note the following deficiencies with the overall stakeholder engagement process.

- The opportunities for public involvement and engagement are described in very general terms. They include attendance at public meetings, stakeholder email list, and updates to the San Pasqual Valley GSP website.
- Very little information was provided on the level of engagement of the Advisory Committee and the Technical Peer Review Group. While the members of the Advisory Committee are provided in Table 1-2, the members of the Technical Peer Review Group are not listed.

RECOMMENDATIONS

- Include a robust Stakeholder Communication and Engagement Plan.
- Conduct active and targeted outreach to engage domestic well owners, environmental stakeholders, and tribal 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.
- Describe the occurrence of tribal lands in the basin. Explain the inclusion of a tribe member from the San Pasqual Tribe on the Advisory Committee. The GSP states that there are no tribal lands in the basin, but includes a tribe member from the San Pasqual Tribe on the Advisory Committee. If the San Pasqual Tribe has interests in the basin, describe them in detail.

[3] "A communication section of the Plan shall include a requirement that the GSP identify how it encourages the active involvement of diverse social, cultural, and economic elements of the population within the basin." [23 CCR §354.10(d)(3)]

C. Considering Beneficial Uses and Users When Establishing Sustainable Management Criteria and Analyzing Impacts on Beneficial Uses and Users

The consideration of beneficial uses and users when establishing sustainable management criteria (SMC) is **insufficient**. The consideration of potential impacts on all beneficial users of groundwater in the basin are required when defining undesirable results[4] and establishing minimum thresholds[5,6]

Disadvantaged Communities and Drinking Water Users

There are no DACs in the basin, according to the DWR DAC mapping tool. The GSP has taken initial steps to define SMC for domestic wells owners. The GSP analyzes direct or indirect impacts on domestic wells when defining undesirable results for chronic lowering of groundwater levels and degraded water quality by describing impacts to potable supply of drinking water for domestic well users. However, the SMC developed for domestic well owners can be improved with the following recommendations.

RECOMMENDATIONS

Chronic Lowering of Groundwater Levels

- Further describe the impact of passing the minimum threshold for domestic well owners. For example, provide the number of domestic wells that would be de-watered at the minimum threshold.

Degraded Water Quality

- Evaluate the cumulative or indirect impacts of proposed minimum thresholds for TDS and nitrate on domestic water users.

Groundwater Dependent Ecosystems and Interconnected Surface Waters

Minimum thresholds for chronic lowering of groundwater levels are set to historical low groundwater elevations in proximity to potential GDEs, and are allowed to fall to 50% of the historical range below historical minimums where potential GDEs are not present. Based on the GSP's assessment that historic levels have been sustainable, the GSP states that using these levels as a minimum threshold should not pose a harmful impact to GDEs.

However, the true impacts to ecosystems under this scenario are not discussed. If minimum thresholds are set to historic low groundwater levels and the basin is allowed to operate just above or close to those levels over many years, there is a risk of causing catastrophic damage to ecosystems that are more adverse than what was occurring in 2015, at the height of the 2012-2016 drought. This is because California ecosystems, which are adapted to our Mediterranean climate, have some drought strategies that they can utilize to deal with short-term water stress. However, if the drought conditions are prolonged, the ecosystem can collapse.

[4] "The description of undesirable results shall include [...] potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results." [23 CCR §354.26(b)(3)]
[5] "The description of minimum thresholds shall include [...] how minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests." [23 CCR §354.28(b)(4)]
[6] "The description of minimum thresholds shall include [...] how state, federal, or local standards relate to the relevant sustainability indicator. If the minimum threshold differs from other regulatory standards, the agency shall explain the nature of and the basis for the difference." [23 CCR §354.28(b)(5)]

While ecosystems may have been only water stressed in 2015, they can be inadvertently destroyed if groundwater conditions are maintained just above those 2015 levels in the long-term, since the basin would be permitted to sustain extreme dry conditions over multiple seasons and years.

RECOMMENDATIONS

- When defining undesirable results for chronic lowering of groundwater levels, water quality, and depletions of interconnected surface waters, provide specifics on what biological responses (e.g., extent of habitat, growth, recruitment rates) would best characterize a significant and unreasonable impact to GDEs. Undesirable results to environmental users occur when 'significant and unreasonable' effects on beneficial users are caused by one of the sustainability indicators (i.e., chronic lowering of groundwater levels, degraded water quality, or depletion of interconnected surface water). Thus, potential impacts on environmental beneficial uses and users need to be considered when defining undesirable results[7] in the basin. Defining undesirable results is the crucial first step before the minimum thresholds[8] can be determined.

- For the interconnected surface water SMC, the undesirable results should include a description of potential impacts on instream habitats within ISWs when defining minimum thresholds in the basin[9]. The GSP should confirm that minimum thresholds for ISWs avoid adverse impacts to environmental beneficial users of interconnected surface waters as these environmental users could be left unprotected by the GSP. These recommendations apply especially to environmental beneficial users that are already protected under pre-existing state or federal law[6,10].

2. 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[11] 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.

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[7] "The description of undesirable results shall include [...] potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results". [23 CCR §354.26(b)(3)]

[8] The description of minimum thresholds shall include [...] how minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests." [23 CCR §354.28(b)(4)]

[9] "The minimum threshold for depletions of interconnected surface water shall be the rate or volume of surface water depletions caused by groundwater use that has adverse impacts on beneficial uses of the surface water and may lead to undesirable results." [23 CCR §354.28(c)(6)]

[10] Rohde MM, Seapy B, Rogers R, Castañeda X, editors. 2019. Critical Species LookBook: A compendium of California's threatened and endangered species for sustainable groundwater management. The Nature Conservancy, San Francisco, California. Available at: https://groundwaterresourcehub.org/public/uploads/pdfs/Critical_Species_LookBook_91819.pdf

[11] "Each Plan shall rely on the best available information and best available science to quantify the water budget for the basin in order to provide an understanding of historical and projected hydrology, water demand, water supply, land use, population, climate change, sea level rise, groundwater and surface water interaction, and subsurface groundwater flow." [23 CCR §354.18(e)]

The integration of climate change into the projected water budget is **insufficient**. The GSP does incorporate climate change into the projected water budget using a climate transient analysis. However, the GSP did not consider multiple climate scenarios (e.g., the 2070 wet and 2070 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 included climate change into key inputs (precipitation, evapotranspiration, and surface water flow) of the projected water budget. However, the GSP does not calculate a sustainable yield based on the projected water budget with climate change incorporated, and in fact does not present a sustainable yield for any time period. If the water budgets are incomplete, including the omission of extremely wet and dry scenarios, and sustainable yield is not calculated, 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 and domestic well owners.

RECOMMENDATIONS

- 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.
- Calculate sustainable yield based on the projected water budget with climate change incorporated.
- Incorporate climate change scenarios into projects and management actions.

3. Data Gaps

The consideration of beneficial users when establishing monitoring networks is **insufficient**. Our comments above note data gaps in the monitoring networks for GDEs and ISWs. The lack of monitoring wells and/or the lack of plans for future monitoring threatens GDEs, aquatic habitats, and surface water users. Appropriate monitoring is necessary so that groundwater conditions within GDEs and ISWs are characterized and surface-shallow groundwater interactions are fully integrated into the GSP. GDEs and ISWs will remain unprotected by the GSP without adequate monitoring and identification of data gaps. The Plan therefore fails to meet SGMA's requirements for the monitoring network[12].

[12] "The monitoring network objectives shall be implemented to accomplish the following: [...] (2) Monitor impacts to the beneficial uses or users of groundwater." [23 CCR §354.34(b)(2)]

RECOMMENDATIONS

- Provide maps that overlay monitoring well locations with the locations of domestic wells to clearly identify potentially impacted areas.
- Include plans to reconcile data gaps for GDEs and ISWs in the GSP now, instead of leaving this for a future project to be implemented when a groundwater level trigger is reached. Evaluate how the gathered data will be used to identify and map GDEs and ISWs.
- Determine what ecological monitoring can be used to assess the potential for significant and unreasonable impacts to GDEs or ISWs due to groundwater conditions in the subbasin.

4. Addressing Beneficial Users in Projects and Management Actions

The consideration of beneficial users when developing projects and management actions is **insufficient**.

The GSP states that because the basin is sustainable, project and management actions will only be implemented as necessary in the future. However, groundwater sustainability under SGMA is defined not just by sustainable yield, but by the avoidance of undesirable results for all beneficial users. Environmental beneficial users such as GDEs, aquatic habitats, and surface water users were not sufficiently identified in the GSP. Therefore, potential project and management actions to be implemented sometime in the future may not protect these beneficial users.

The GSP presents tiers for the projects and management actions in Figure 9-2. Tier 0 projects and management actions are to be implemented by the GSA during GSP implementation. Future tiers are triggered by increasingly severe minimum threshold exceedances. The GDE study is proposed as a Tier 1 Project and Management Action. Because of the data gaps noted for GDEs above, this study should be included in the GSP now, not set aside for future implementation.

RECOMMENDATIONS

- For GDEs and ISWs, 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"[13].

[13] The Nature Conservancy. 2021. Multi-Benefit Recharge Project Methodology for Inclusion in Groundwater Sustainability Plans. Sacramento. Available at: https://groundwaterresourcehub.org/sgma-tools/multi-benefit-recharge-project-methodology-guidance/

- For domestic well owners, include discussion of 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.

- For 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.

- Develop management actions that incorporate climate and water delivery uncertainties to address future water demand and prevent future undesirable results.

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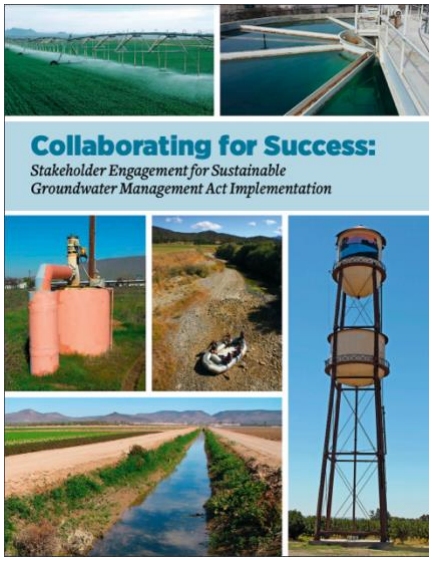
Attachment B

SGMA Tools to address DAC, drinking water, and environmental beneficial uses and users

Stakeholder Engagement and Outreach



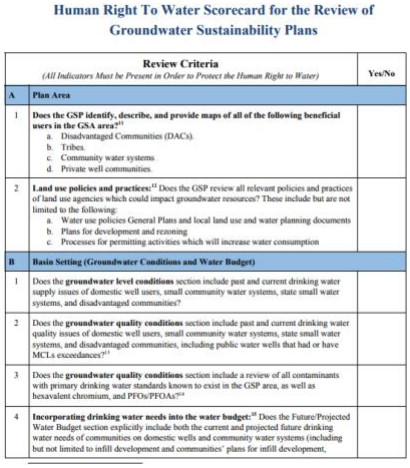
Clean Water Action, Community Water Center and Union of Concerned Scientists developed a guidance document called Collaborating for success: Stakeholder engagement for Sustainable Groundwater Management Act Implementation. It provides details on how to conduct targeted and broad outreach and engagement during Groundwater Sustainability Plan (GSP) development and implementation. Conducting a targeted outreach involves:

- Developing a robust Stakeholder Communication and Engagement plan that includes outreach at frequented locations (schools, farmers markets, religious settings, events) across the plan area to increase the involvement and participation of disadvantaged communities, drinking water users and the environmental stakeholders.

- Providing translation services during meetings and technical assistance to enable easy participation for non-English speaking stakeholders.

- GSP should adequately describe the process for requesting input from beneficial users and provide details on how input is incorporated into the GSP.

The Human Right to Water

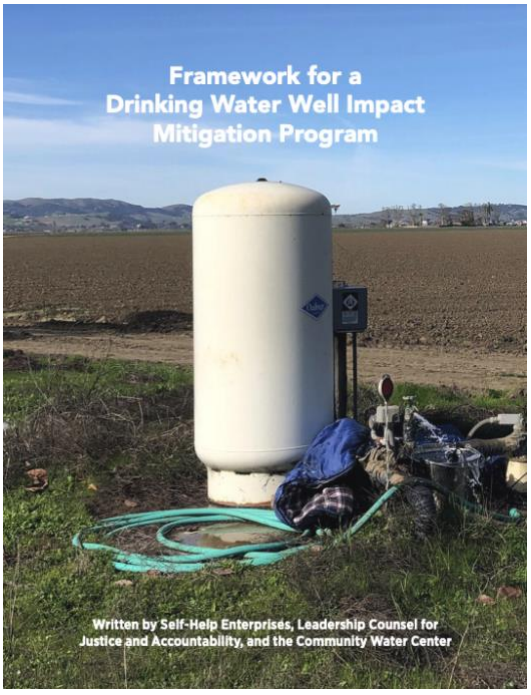


Human Right To Water Scorecard for the Review of Groundwater Sustainability Plans

	Review Criteria *(All Indicators Must be Present in Order to Protect the Human Right to Water)*	Yes/No
A	**Plan Area**	
1	**Does the GSP identify, describe, and provide maps of all of the following beneficial users in the GSA area?**[43] a. Disadvantaged Communities (DACs). b. Tribes. c. Community water systems. d. Private well communities.	
2	**Land use policies and practices:**[44] Does the GSP review all relevant policies and practices of land use agencies which could impact groundwater resources? These include but are not limited to the following: a. Water use policies General Plans and local land use and water planning documents b. Plans for development and rezoning c. Processes for permitting activities which will increase water consumption	
B	**Basin Setting (Groundwater Conditions and Water Budget)**	
1	Does the **groundwater level conditions** section include past and current drinking water supply issues of domestic well users, small community water systems, state small water systems, and disadvantaged communities?	
2	Does the **groundwater quality conditions** section include past and current drinking water quality issues of domestic well users, small community water systems, state small water systems, and disadvantaged communities, including public water wells that had or have MCLs exceedances?[45]	
3	Does the **groundwater quality conditions** section include a review of all contaminants with primary drinking water standards known to exist in the GSP area, as well as hexavalent chromium, and PFOs/PFOAs?[46]	
4	**Incorporating drinking water needs into the water budget:**[48] Does the Future/Projected Water Budget section explicitly include both the current and projected future drinking water needs of communities on domestic wells and community water systems (including but not limited to infill development and communities' plans for infill development,	

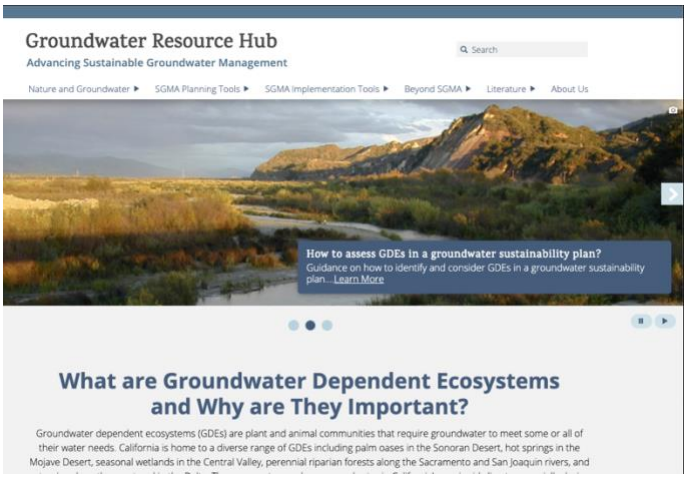
The Human Right to Water Scorecard was developed by Community Water Center, Leadership Counsel for Justice and Accountability and Self Help Enterprises to aid Groundwater Sustainability Agencies (GSAs) in prioritizing drinking water needs in SGMA. The scorecard identifies elements that must exist in GSPs to adequately protect the Human Right to Drinking water.

Drinking Water Well Impact Mitigation Framework



The Drinking Water Well Impact Mitigation Framework was developed by Community Water Center, Leadership Counsel for Justice and Accountability and Self Help Enterprises to aid GSAs in the development and implementation of their GSPs. The framework provides a clear roadmap for how a GSA can best structure its data gathering, monitoring network and management actions to proactively monitor and protect drinking water wells and mitigate impacts should they occur.

Groundwater Resource Hub



The Nature Conservancy has developed a suite of tools based on best available science to help GSAs, consultants, and stakeholders efficiently incorporate nature into GSPs. These tools and resources are available online at GroundwaterResourceHub.org. The Nature Conservancy's tools and resources are intended to reduce costs, shorten timelines, and increase benefits for both people and nature.

Rooting Depth Database

The Plant Rooting Depth Database provides information that can help assess whether groundwater-dependent vegetation are accessing groundwater. Actual rooting depths will depend on the plant species and site-specific conditions, such as soil type and

availability of other water sources. Site-specific knowledge of depth to groundwater combined with rooting depths will help provide an understanding of the potential groundwater levels are needed to sustain GDEs.

How to use the database

The maximum rooting depth information in the Plant Rooting Depth Database is useful when verifying whether vegetation in the Natural Communities Commonly Associated with Groundwater (NC Dataset) are connected to groundwater. A 30 ft depth-to-groundwater threshold, which is based on averaged global rooting depth data for phreatophytes[1], is relevant for most plants identified in the NC Dataset since most plants have a max rooting depth of less than 30 feet. However, it is important to note that deeper thresholds are necessary for other plants that have reported maximum root depths that exceed the averaged 30 feet threshold, such as valley oak (*Quercus lobata*), Euphrates poplar (*Populus euphratica*), salt cedar (*Tamarix spp.*), and shadescale (*Atriplex confertifolia*). The Nature Conservancy advises that the reported max rooting depth for these deeper-rooted plants be used. For example, a depth-to groundwater threshold of 80 feet should be used instead of the 30 ft threshold, when verifying whether valley oak polygons from the NC Dataset are connected to groundwater. It is important to re-emphasize that actual rooting depth data are limited and will depend on the plant species and site-specific conditions such as soil and aquifer types, and availability to other water sources.

The Plant Rooting Depth Database is an Excel workbook composed of four worksheets:

1. California phreatophyte rooting depth data (included in the NC Dataset)
2. Global phreatophyte rooting depth data
3. Metadata
4. References

How the database was compiled

The Plant Rooting Depth Database is a compilation of rooting depth information for the groundwater-dependent plant species identified in the NC Dataset. Rooting depth data were compiled from published scientific literature and expert opinion through a crowdsourcing campaign. As more information becomes available, the database of rooting depths will be updated. Please Contact Us if you have additional rooting depth data for California phreatophytes.

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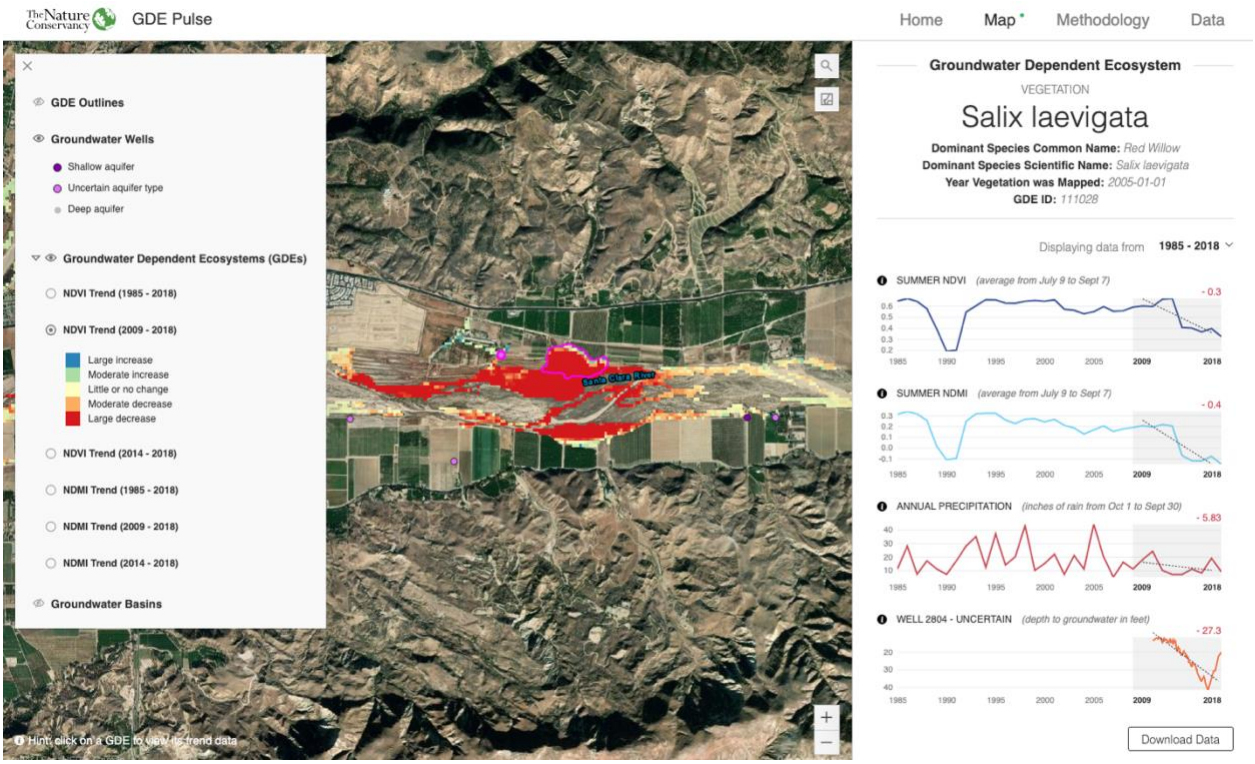
[1] Canadell, J., Jackson, R.B., Ehleringer, J.B. et al. 1996. Maximum rooting depth of vegetation types at the global scale. Oecologia 108, 583–595. https://doi.org/10.1007/BF00329030

GDE Pulse



GDE Pulse is a free online tool that allows Groundwater Sustainability Agencies to assess changes in groundwater dependent ecosystem (GDE) health using satellite, rainfall, and groundwater data. Remote sensing data from satellites has been used to monitor the health of vegetation all over the planet. GDE pulse has compiled 35 years of satellite imagery from NASA's Landsat mission for every polygon in the Natural Communities Commonly Associated with Groundwater Dataset. The following datasets are available for downloading:

Normalized Difference Vegetation Index (NDVI) is a satellite-derived index that represents the greenness of vegetation. Healthy green vegetation tends to have a higher NDVI, while dead leaves have a lower NDVI. We calculated the average NDVI during the driest part of the year (July - Sept) to estimate vegetation health when the plants are most likely dependent on groundwater.

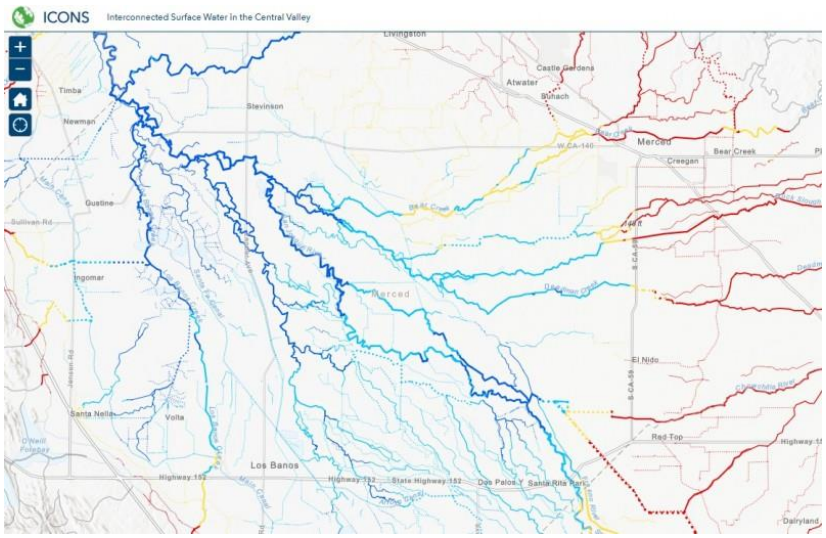
Normalized Difference Moisture Index (NDMI) is a satellite-derived index that represents water content in vegetation. NDMI is derived from the Near-Infrared (NIR) and Short-Wave Infrared (SWIR) channels. Vegetation with adequate access to water tends to have higher NDMI, while vegetation that is water stressed tends to have lower NDMI. We calculated the average NDVI during the driest part of the year (July–September) to estimate vegetation health when the plants are most likely dependent on groundwater.

Annual Precipitation is the total precipitation for the water year (October 1st – September 30th) from the PRISM dataset. The amount of local precipitation can affect vegetation with more precipitation generally leading to higher NDVI and NDMI.

Depth to Groundwater measurements provide an indication of the groundwater levels and changes over time for the surrounding area. We used groundwater well measurements from nearby (<1km) wells to estimate the depth to groundwater below the GDE based on the average elevation of the GDE (using a digital elevation model) minus the measured groundwater surface elevation.

ICONOS Mapper

Interconnected Surface Water in the Central Valley



ICONS maps the likely presence of interconnected surface water (ISW) in the Central Valley using depth to groundwater data. Using data from 2011-2018, the ISW dataset represents the likely connection between surface water and groundwater for rivers and streams in California's Central Valley. It includes information on the mean, maximum, and minimum depth to groundwater for each stream segment over the years with available data, as well as the likely presence of ISW based on the minimum depth to groundwater. The Nature Conservancy developed this database, with guidance and input from expert academics, consultants, and state agencies.

We developed this dataset using groundwater elevation data available online from the California Department of Water Resources (DWR). DWR only provides this data for the Central Valley. For GSAs outside of the valley, who have groundwater well measurements, we recommend following our methods to determine likely ISW in your region. The Nature Conservancy's ISW dataset should be used as a first step in reviewing ISW and should be supplemented with local or more recent groundwater depth data.

Attachment C

Freshwater Species Located in the San Pasqual Valley Basin

To assist in identifying the beneficial users of surface water necessary to assess the undesirable result "depletion of interconnected surface waters", Attachment C provides a list of freshwater species located in the San Pasqual Valley Basin. To produce the freshwater species list, we used ArcGIS to select features within the California Freshwater Species Database version 2.0.9 within the basin boundary. This database contains information on ~4,000 vertebrates, macroinvertebrates and vascular plants that depend on fresh water for at least one stage of their life cycle. The methods used to compile the California Freshwater Species Database can be found in Howard et al. 2015[1]. The spatial database contains locality observations and/or distribution information from ~400 data sources. The database is housed in the California Department of Fish and Wildlife's BIOS[2] as well as on The Nature Conservancy's science website[3].

Scientific Name	Common Name	Legal Protected Status		
		Federal	State	Other
BIRDS				
Vireo bellii pusillus	Least Bell's Vireo	Endangered	Endangered	
Agelaius tricolor	Tricolored Blackbird	Bird of Conservation Concern	Special Concern	BSSC - First priority
Aix sponsa	Wood Duck			
Anas acuta	Northern Pintail			
Anas americana	American Wigeon			
Anas clypeata	Northern Shoveler			
Anas crecca	Green-winged Teal			
Anas cyanoptera	Cinnamon Teal			
Anas discors	Blue-winged Teal			
Anas platyrhynchos	Mallard			
Anas strepera	Gadwall			
Anser albifrons	Greater White-fronted Goose			
Ardea alba	Great Egret			
Ardea herodias	Great Blue Heron			
Aythya collaris	Ring-necked Duck			
Aythya valisineria	Canvasback		Special	
Butorides virescens	Green Heron			
Chen caerulescens	Snow Goose			
Chen rossii	Ross's Goose			
Egretta thula	Snowy Egret			
Fulica americana	American Coot			
Gallinago delicata	Wilson's Snipe			

[1] Howard, J.K. et al. 2015. Patterns of Freshwater Species Richness, Endemism, and Vulnerability in California. PLoSONE, 11(7). Available at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0130710

[2] California Department of Fish and Wildlife BIOS: https://www.wildlife.ca.gov/data/BIOS

[3] Science for Conservation: https://www.scienceforconservation.org/products/california-freshwater-species-database

Haliaeetus leucocephalus	Bald Eagle	Bird of Conservation Concern	Endangered	
Himantopus mexicanus	Black-necked Stilt			
Icteria virens	Yellow-breasted Chat		Special Concern	BSSC - Third priority
Nycticorax nycticorax	Black-crowned Night-Heron			
Oxyura jamaicensis	Ruddy Duck			
Pelecanus erythrorhynchos	American White Pelican		Special Concern	BSSC - First priority
Phalacrocorax auritus	Double-crested Cormorant			
Plegadis chihi	White-faced Ibis		Watch list	
Rallus limicola	Virginia Rail			
Recurvirostra americana	American Avocet			
Setophaga petechia	Yellow Warbler			BSSC - Second priority
Tachycineta bicolor	Tree Swallow			
Tringa melanoleuca	Greater Yellowlegs			
Vireo bellii	Bell's Vireo			
Xanthocephalus xanthocephalus	Yellow-headed Blackbird		Special Concern	BSSC - Third priority
HERPS				
Actinemys marmorata marmorata	Western Pond Turtle		Special Concern	ARSSC
Anaxyrus boreas boreas	Boreal Toad			
Anaxyrus californicus	Arroyo Toad	Endangered	Special Concern	ARSSC
Pseudacris cadaverina	California Treefrog			ARSSC
Rana draytonii	California Red-legged Frog	Threatened	Special Concern	ARSSC
Spea hammondii	Western Spadefoot	Under Review in the Candidate or Petition Process	Special Concern	ARSSC
Thamnophis hammondii hammondii	Two-striped Gartersnake		Special Concern	ARSSC
Thamnophis sirtalis sirtalis	Common Gartersnake			
INSECTS & OTHER INVERTS				
Libellula saturata	Flame Skimmer			
Pachydiplax longipennis	Blue Dasher			
Perithemis intensa	Mexican Amberwing			

Rhionaeschna multicolor	Blue-eyed Darner			
Tramea lacerata	Black Saddlebags			
PLANTS				
Lemna turionifera	Turion Duckweed			
Salix laevigata	Polished Willow			

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Attachment D

The Nature Conservancy

July 2019

IDENTIFYING GDEs UNDER SGMA

Best Practices for using the NC Dataset

The Sustainable Groundwater Management Act (SGMA) requires that groundwater dependent ecosystems (GDEs) be identified in Groundwater Sustainability Plans (GSPs). As a starting point, the Department of Water Resources (DWR) is providing the Natural Communities Commonly Associated with Groundwater Dataset (NC Dataset) online[1] to help Groundwater Sustainability Agencies (GSAs), consultants, and stakeholders identify GDEs within individual groundwater basins. To apply information from the NC Dataset to local areas, GSAs should combine it with the best available science on local hydrology, geology, and groundwater levels to verify whether polygons in the NC dataset are likely supported by groundwater in an aquifer (Figure 1)[2]. This document highlights six best practices for using local groundwater data to confirm whether mapped features in the NC dataset are supported by groundwater.

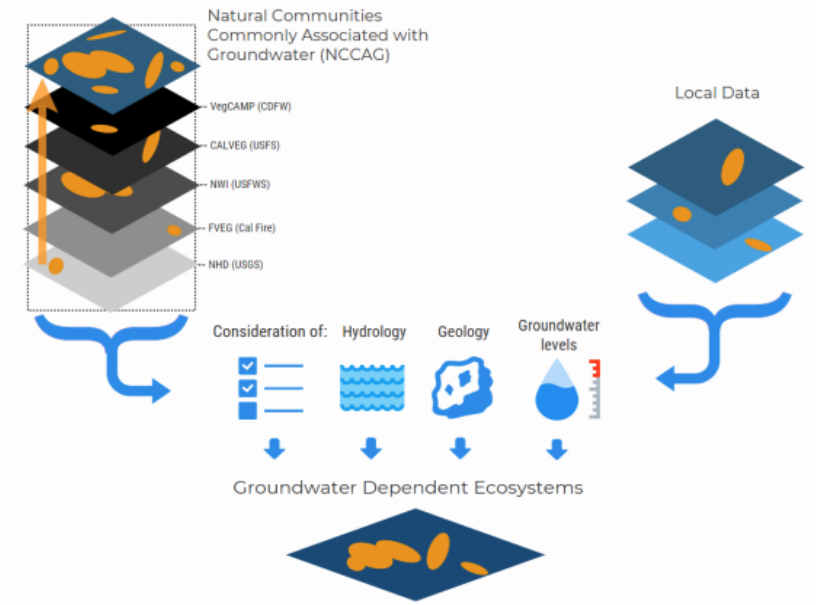

Figure 1. Considerations for GDE identification.
Source: DWR[2]

[1] NC Dataset Online Viewer: https://gis.water.ca.gov/app/NCDatasetViewer/
[2] California Department of Water Resources (DWR). 2018. Summary of the "Natural Communities Commonly Associated with Groundwater" Dataset and Online Web Viewer. Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Data-and-Tools/Files/Statewide-Reports/Natural-Communities-Dataset-Summary-Document.pdf

The NC Dataset identifies vegetation and wetland features that are good indicators of a GDE. The dataset is comprised of 48 publicly available state and federal datasets that map vegetation, wetlands, springs, and seeps commonly associated with groundwater in California[3]. It was developed through a collaboration between DWR, the Department of Fish and Wildlife, and The Nature Conservancy (TNC). TNC has also provided detailed guidance on identifying GDEs from the NC dataset[4] on the Groundwater Resource Hub[5], a website dedicated to GDEs.

BEST PRACTICE #1. Establishing a Connection to Groundwater

Groundwater basins can be comprised of one continuous aquifer (Figure 2a) or multiple aquifers stacked on top of each other (Figure 2b). In unconfined aquifers (Figure 2a), using the depth-to-groundwater and the rooting depth of the vegetation is a reasonable method to infer groundwater dependence for GDEs. If groundwater is well below the rooting (and capillary) zone of the plants and any wetland features, the ecosystem is considered disconnected and groundwater management is not likely to affect the ecosystem (Figure 2d). However, it is important to consider local conditions (e.g., soil type, groundwater flow gradients, and aquifer parameters) and to review groundwater depth data from multiple seasons and water year types (wet and dry) because intermittent periods of high groundwater levels can replenish perched clay lenses that serve as the water source for GDEs (Figure 2c). Maintaining these natural groundwater fluctuations are important to sustaining GDE health.

Basins with a stacked series of aquifers (Figure 2b) may have varying levels of pumping across aquifers in the basin, depending on the production capacity or water quality associated with each aquifer. 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. The goal of SGMA is to sustainably manage groundwater resources for current and future social, economic, and environmental benefits. While groundwater pumping may not be currently occurring in a shallower aquifer, use of this water may become more appealing and economically viable in future years as pumping restrictions are placed on the deeper production aquifers in the basin to meet the sustainable yield and criteria. Thus, identifying GDEs in the basin should done irrespective to the amount of current pumping occurring in a particular aquifer, so that future impacts on GDEs due to new production can be avoided. A good rule of thumb to follow is: *if groundwater can be pumped from a well - it's an aquifer*.

[3] For more details on the mapping methods, refer to: Klausmeyer, K., J. Howard, T. Keeler-Wolf, K. Davis-Fadtke, R. Hull, A. Lyons. 2018. Mapping Indicators of Groundwater Dependent Ecosystems in California: Methods Report. San Francisco, California. Available at: https://groundwaterresourcehub.org/public/uploads/pdfs/iGDE_data_paper_20180423.pdf
[4] "Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act: Guidance for Preparing Groundwater Sustainability Plans" is available at: https://groundwaterresourcehub.org/gde-tools/gsp-guidance-document/
[5] The Groundwater Resource Hub: www.GroundwaterResourceHub.org

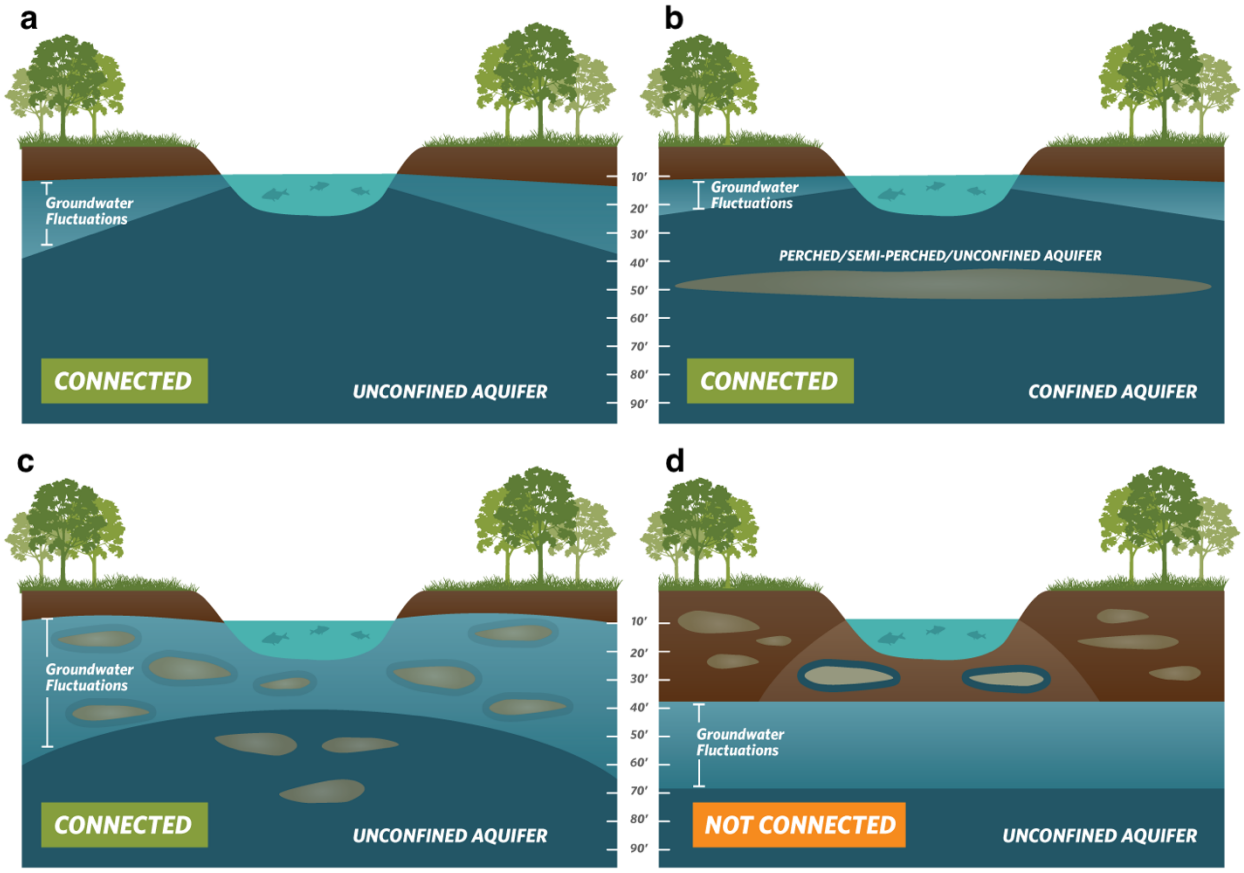

Figure 2. Confirming whether an ecosystem is connected to groundwater. Top: (a) Under the ecosystem is an unconfined aquifer with depth-to-groundwater fluctuating seasonally and interannually within 30 feet from land surface. **(b)** Depth-to-groundwater in the shallow aquifer is connected to overlying ecosystem. Pumping predominately occurs in the confined aquifer, but pumping is possible in the shallow aquifer. **Bottom: (c)** Depth-to-groundwater fluctuations are seasonally and interannually large, however, clay layers in the near surface prolong the ecosystem's connection to groundwater. **(d)** Groundwater is disconnected from surface water, and any water in the vadose (unsaturated) zone is due to direct recharge from precipitation and indirect recharge under the surface water feature. These areas are not connected to groundwater and typically support species that do not require access to groundwater to survive.

BEST PRACTICE #2. Characterize Seasonal and Interannual Groundwater Conditions

SGMA requires GSAs to describe current and historical groundwater conditions when identifying GDEs [23 CCR §354.16(g)]. Relying solely on the SGMA benchmark date (January 1, 2015) or any other single point in time to characterize groundwater conditions (e.g., depth-to-groundwater) is inadequate because managing groundwater conditions with data from one time point fails to capture the seasonal and interannual variability typical of California's climate. DWR's Best Management Practices document on water budgets[6] recommends using 10 years of water supply and water budget information to describe how historical conditions have impacted the operation of the basin within sustainable yield, implying that a baseline[7] could be determined based on data between 2005 and 2015. Using this or a similar time period, depending on data availability, is recommended for determining the depth-to-groundwater.

GDEs depend on groundwater levels being close enough to the land surface to interconnect with surface water systems or plant rooting networks. The most practical approach[8] for a GSA to assess whether polygons in the NC dataset are connected to groundwater is to rely on groundwater elevation data. As detailed in TNC's GDE guidance document[4], one of the key factors to consider when mapping GDEs is to contour depth-to-groundwater in the aquifer that is supporting the ecosystem (see Best Practice #5).

Groundwater levels fluctuate over time and space due to California's Mediterranean climate (dry summers and wet winters), climate change (flood and drought years), and subsurface heterogeneity in the subsurface (Figure 3). Many of California's GDEs have adapted to dealing with intermittent periods of water stress, however if these groundwater conditions are prolonged, adverse impacts to GDEs can result. While depth-to-groundwater levels within 30 feet[4] of the land surface are generally accepted as being a proxy for confirming that polygons in the NC dataset are supported by groundwater, it is highly advised that fluctuations in the groundwater regime be characterized to understand the seasonal and interannual groundwater variability in GDEs. Utilizing groundwater data from one point in time can misrepresent groundwater levels required by GDEs, and inadvertently result in adverse impacts to the GDEs. Time series data on groundwater elevations and depths are available on the SGMA Data Viewer[9]. However, if insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons in the GSP until data gaps are reconciled in the monitoring network (see Best Practice #6).

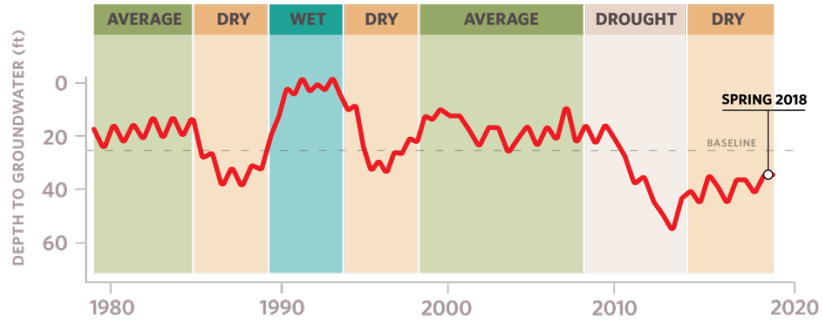

Figure 3. Example seasonality and interannual variability in depth-to-groundwater over time. Selecting one point in time, such as Spring 2018, to characterize groundwater conditions in GDEs fails to capture what groundwater conditions are necessary to maintain the ecosystem status into the future so adverse impacts are avoided.

[6] DWR. 2016. Water Budget Best Management Practice. Available at: https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/BMP_Water_Budget_Final_2016-12-23.pdf

[7] Baseline is defined under the GSP regulations as "historic information used to project future conditions for hydrology, water demand, and availability of surface water and to evaluate potential sustainable management practices of a basin." [23 CCR §351(e)]

[8] Groundwater reliance can also be confirmed via stable isotope analysis and geophysical surveys. For more information see The GDE Assessment Toolbox (Appendix IV, GDE Guidance Document for GSPs[4]).

[9] SGMA Data Viewer: https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer

BEST PRACTICE #3. Ecosystems Often Rely on Both Groundwater and Surface Water

GDEs are plants and animals that rely on groundwater for all or some of its water needs, and thus can be supported by multiple water sources. The presence of non-groundwater sources (e.g., surface water, soil moisture in the vadose zone, applied water, treated wastewater effluent, urban stormwater, irrigated return flow) within and around a GDE does not preclude the possibility that it is supported by groundwater, too. SGMA defines GDEs as "ecological communities and species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface" [23 CCR §351(m)]. Hence, depth-to-groundwater data should be used to identify whether NC polygons are supported by groundwater and should be considered GDEs. In addition, SGMA requires that significant and undesirable adverse impacts to beneficial users of surface water be avoided. Beneficial users of surface water include environmental users such as plants or animals[10], which therefore must be considered when developing minimum thresholds for depletions of interconnected surface water.

GSAs are only responsible for impacts to GDEs resulting from groundwater conditions in the basin, so if adverse impacts to GDEs result from the diversion of applied water, treated wastewater, or irrigation return flow away from the GDE, then those impacts will be evaluated by other permitting requirements (e.g., CEQA) and may not be the responsibility of the GSA. However, if adverse impacts occur to the GDE due to changing groundwater conditions resulting from pumping or groundwater management activities, then the GSA would be responsible (Figure 4).

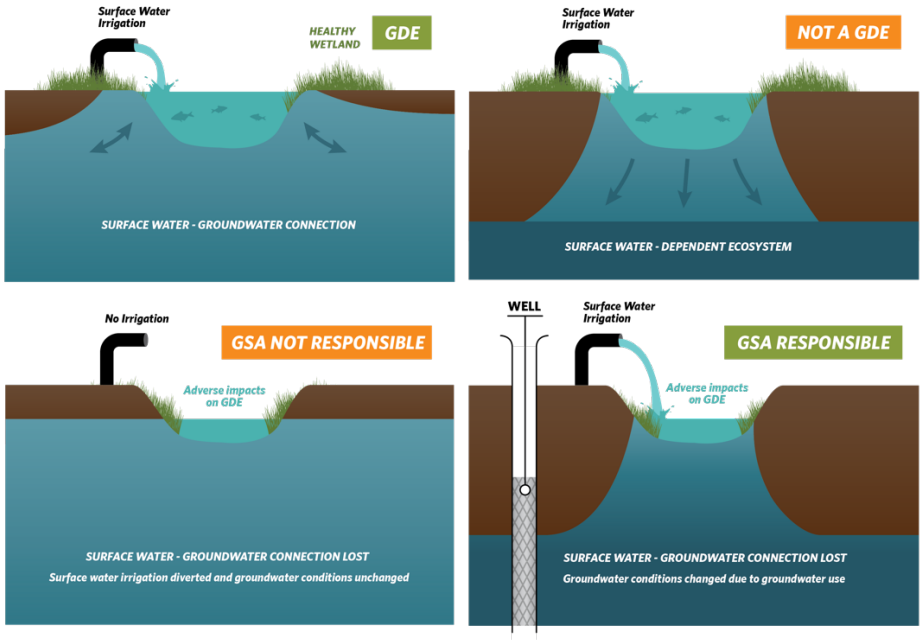

Figure 4. Ecosystems often depend on multiple sources of water. Top: (Left) Surface water and groundwater are interconnected, meaning that the GDE is supported by both groundwater and surface water. **(Right)** Ecosystems that are only reliant on non-groundwater sources are not groundwater-dependent. **Bottom: (Left)** An ecosystem that was once dependent on an interconnected surface water, but loses access to groundwater solely due to surface water diversions may not be the GSA's responsibility. **(Right)** Groundwater dependent ecosystems once dependent on an interconnected surface water system, but loses that access due to groundwater pumping is the GSA's responsibility.

[10] For a list of environmental beneficial users of surface water by basin, visit: https://groundwaterresourcehub.org/gde-tools/environmental-surface-water-beneficiaries/

BEST PRACTICE #4. Select Representative Groundwater Wells

Identifying GDEs in a basin requires that groundwater conditions are characterized to confirm whether polygons in the NC dataset are supported by the underlying aquifer. To do this, proximate groundwater wells should be identified to characterize groundwater conditions (Figure 5). When selecting representative wells, it is particularly important to consider the subsurface heterogeneity around NC polygons, especially near surface water features where groundwater and surface water interactions occur around heterogeneous stratigraphic units or aquitards formed by fluvial deposits. The following selection criteria can help ensure groundwater levels are representative of conditions within the GDE area:

- Choose wells that are within 5 kilometers (3.1 miles) of each NC Dataset polygons because they are more likely to reflect the local conditions relevant to the ecosystem. If there are no wells within 5km of the center of a NC dataset polygon, then there is insufficient information to remove the polygon based on groundwater depth. Instead, it should be retained as a potential GDE until there are sufficient data to determine whether or not the NC Dataset polygon is supported by groundwater.

- Choose wells that are screened within the surficial unconfined aquifer and capable of measuring the true water table.

- Avoid relying on wells that have insufficient information on the screened well depth interval for excluding GDEs because they could be providing data on the wrong aquifer. This type of well data should not be used to remove any NC polygons.

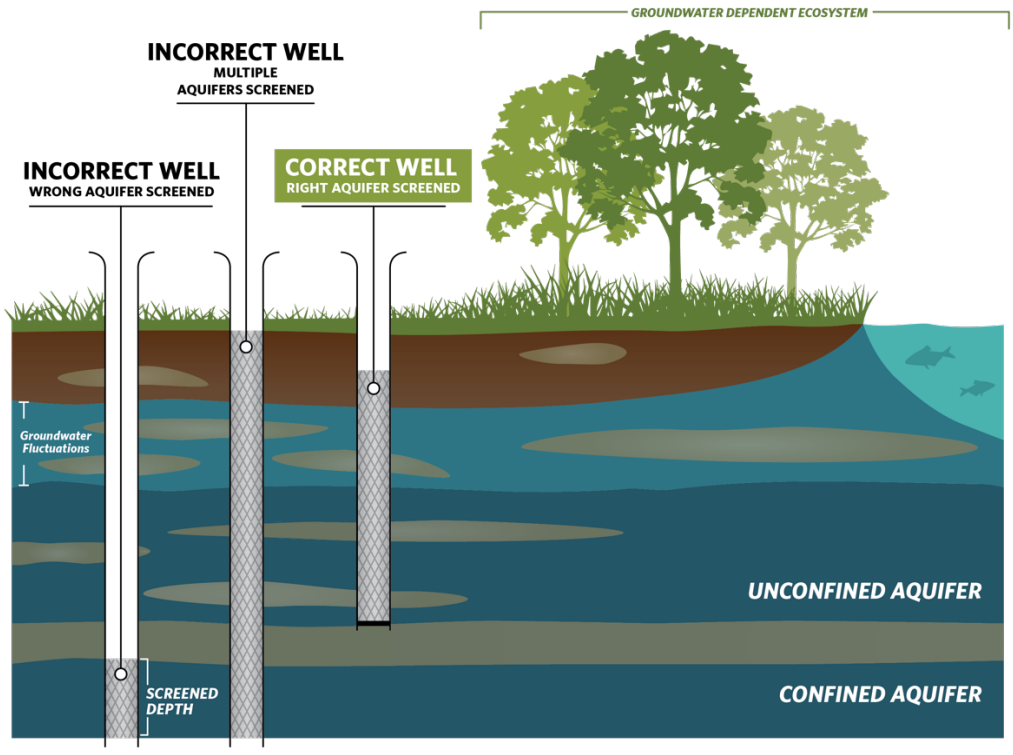

Figure 5. Selecting representative wells to characterize groundwater conditions near GDEs.

BEST PRACTICE #5. Contouring Groundwater Elevations

The common practice to contour depth-to-groundwater over a large area by interpolating measurements at monitoring wells is unsuitable for assessing whether an ecosystem is supported by groundwater. This practice causes errors when the land surface contains features like stream and wetland depressions because it assumes the land surface is constant across the landscape and depth-to-groundwater is constant below these low-lying areas (Figure 6a). A more accurate approach is to interpolate **groundwater elevations** at monitoring wells to get groundwater elevation contours across the landscape. This layer can then be subtracted from land surface elevations from a Digital Elevation Model (DEM)[11] to estimate depth-to-groundwater contours across the landscape (Figure b; Figure 7). This will provide a much more accurate contours of depth-to-groundwater along streams and other land surface depressions where GDEs are commonly found.

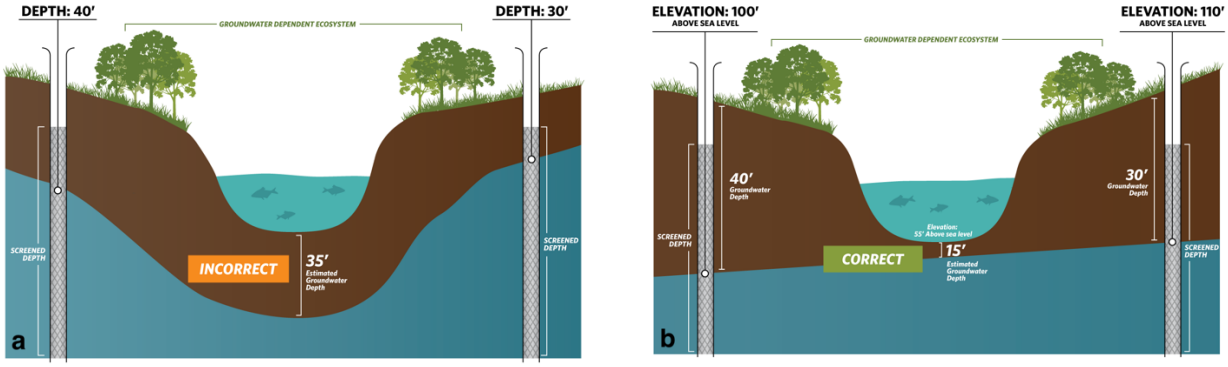

Figure 6. Contouring depth-to-groundwater around surface water features and GDEs. (a) Groundwater level interpolation using depth-to-groundwater data from monitoring wells. **(b)** Groundwater level interpolation using groundwater elevation data from monitoring wells and DEM data.

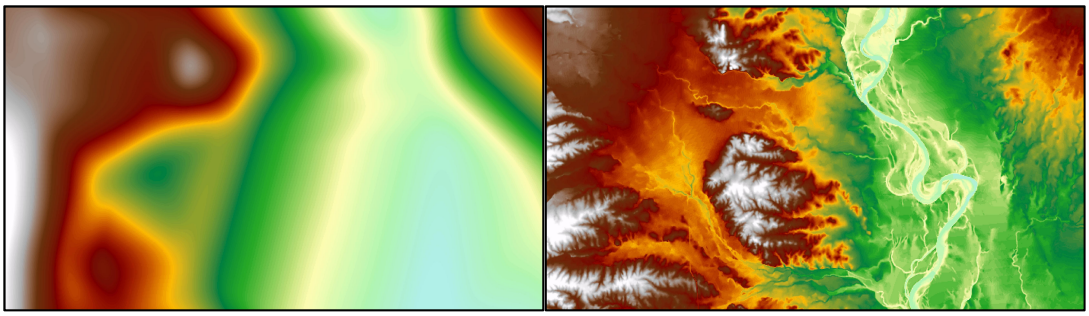

Figure 7. Depth-to-groundwater contours in Northern California. (Left) Contours were interpolated using depth-to-groundwater measurements determined at each well. **(Right)** Contours were determined by interpolating groundwater elevation measurements at each well and superimposing ground surface elevation from DEM spatial data to generate depth-to-groundwater contours. The image on the right shows a more accurate depth-to-groundwater estimate because it takes the local topography and elevation changes into account.

[11] USGS Digital Elevation Model data products are described at: https://www.usgs.gov/core-science-systems/ngp/3dep/about-3dep-products-services and can be downloaded at: https://iewer.nationalmap.gov/basic/

BEST PRACTICE #6. Best Available Science

Adaptive management is embedded within SGMA and provides a process to work toward sustainability over time by beginning with the best available information to make initial decisions, monitoring the results of those decisions, and using the data collected through monitoring programs to revise decisions in the future. In many situations, the hydrologic connection of NC dataset polygons will not initially be clearly understood if site-specific groundwater monitoring data are not available. If sufficient data are not available in time for the 2020/2022 plan, **The Nature Conservancy strongly advises that questionable polygons from the NC dataset be included in the GSP until data gaps are reconciled in the monitoring network.** Erring on the side of caution will help minimize inadvertent impacts to GDEs as a result of groundwater use and management actions during SGMA implementation.

KEY DEFINITIONS

Groundwater basin is an aquifer or stacked series of aquifers with reasonably well-defined boundaries in a lateral direction, based on features that significantly impede groundwater flow, and a definable bottom. *23 CCR §341(g)(1)*

Groundwater dependent ecosystem (GDE) are ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface. *23 CCR §351(m)*

Interconnected surface water (ISW) surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted. *23 CCR §351(o)*

Principal aquifers are aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems. *23 CCR §351(aa)*

ABOUT US

The Nature Conservancy is a science-based nonprofit organization whose mission is *to conserve the lands and waters on which all life depends*. To support successful SGMA implementation that meets the future needs of people, the economy, and the environment, TNC has developed tools and resources (www.groundwaterresourcehub.org) intended to reduce costs, shorten timelines, and increase benefits for both people and nature.

San Pasqual Valley Groundwater Sustainability Plan Comment Tracking Table

Commenter Name	Commenter Organization	Comment Received	Subject	Page # or Figure #	Comment	Date of Core Team response	Brief Description of Response
Frank Konyn	Konyn Dairy	7/8/2021	Basin Definition	GSP Section 2.1	"Where is the definition of the bottom of the basin in section 2.1?"	7/8/2021 via phone, then email to Karina	Suggested response is "The correction will be to copy the definition in section 3.6.3 into section 2.1. It is currently missing from section 2.1."
Frank Konyn	Konyn Dairy	7/8/2021	N/a	p. 110	3rd paragraph typo. "a will" to "a well"		
Frank Konyn	Konyn Dairy	7/8/2021	N/a	p. 140	Section 5.1 typo "approach" is correct spelling		
Frank Konyn	Konyn Dairy	7/8/2021	N/a	p. 148, Fig.	Add abbreviation for TAF to abbreviation list in introduction		
Frank Konyn	Konyn Dairy	7/8/2021	Monitoring Network	p. 110	Two new nested wells need be discussed as well as investigating the relationship between the residuum and the bedrock.		
Frank Konyn	Konyn Dairy	7/8/2021	Jurisdictional Boundary	Fig. 2-5	All County land needs to be shown in the figure. It appears that not all County land is shown in the figure, mainly near Santa		

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From: Lisa Peterson <LPeterson@sdzwa.org>
Sent: Wednesday, August 11, 2021 8:10 AM
To: Danek, Karina <KDanek@sandiego.gov>
Subject: [EXTERNAL] Sna Pasqual GSP
Importance: High

Hi Karina,

I wanted to follow up on two things:

1. I do not have any public comments to share.
2. I have included an excerpt from the draft that I would like some clarification on:
    a. "The single largest contributing source of nitrogen is commercial crop fertilizer use, at 56 percent of the Basin total, followed by landscape fertilizer use at 14 percent. Nitrogen, managed through in-Basin manure applications at Frank Konyn Dairy Inc. and the San Diego Zoo Safari Park, represents a combined 21 percent of the Basin total, with other nonregulated small animal facilities comprising 2 percent of the Basin total." (p. 4-16.)
    b. What is the source of this information? We use minimal amounts of fertilizer and it is contained in our greenhouses and not in any of our habitats.

Thanks,
Lisa

Lisa Peterson (she.her.hers)

Executive Director, Safari Park

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August 12, 2021

Via E-Mail

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RE: Comments on San Pasqual Valley GSP

Dear Ms. Lorance and Ms. Flannery:

I am submitting this letter to provide comments[1] on the draft Groundwater Sustainability Plan for the San Pasqual Valley ("GSP") on behalf of the Rancho Guejito Corporation. As you know, the City of San Diego ("City") and the County of San Diego ("County") entered into a memorandum of understanding ("MOU")[2] to implement the California Sustainable Groundwater Management Act ("SGMA") in the San Pasqual Valley Groundwater Basin ("Basin").

Pursuant to the MOU, the County and the City will act as the Groundwater Sustainability Agency for those portions of the Basin that are within their respective jurisdictions. Unfortunately, despite the split function in the MOU, the City has acted as the lead agency in developing the GSP, and the City's financial interests in the Basin have prevented it from drafting a plan that is fair or

[1] In addition to the comments included in this cover letter, Rancho Guejito has retained the services of two hydrogeology experts to provide peer review of the GSP. Their comments are included as Exhibits 1 and 2 to this letter. They are Dudek, Memorandum re San Pasqual Groundwater Basin GSP Peer Review and Comments, July 21, 2021 (hereinafter "Dudek Memorandum") – attached hereto as Exhibit 1; and Quinlan, Peter, Comments on the Numerical Groundwater Presented in the Draft Groundwater Sustainability Plan for the San Pasqual Valley Basin, August 10, 2021 (hereinafter "Quinlan Memorandum") – attached hereto as Exhibit 2.

[2] Memorandum of Understanding, Development of a Groundwater Sustainability Plan for the San Pasqual Valley Groundwater Basin, June 29, 2017 – attached hereto as Exhibit 3.

equitable to the other landowners. The City has drafted a plan that is so flawed, and so obviously biased in favor of its own interests, that it fails as a management tool.

Based on the deficiencies in the GSP, and the City's clear conflict of interest, we request that the City seek additional time from the California Department of Water Resources ("DWR") to finalize the GSP, and use that time to have the County manage the consulting team to revise the plan in the manner set forth in this letter and its attachments.

The City cannot move forward with the current iteration of the GSP.

1. CITY'S SELF-DEALING IN DEVELOPMENT OF THE GSP VIOLATES SGMA AND DUE PROCESS OF LAW

The GSP fails as a management plan for the Basin because it is so blatantly biased in favor of the City's interests that adoption would violate not only SGMA, but the basic Constitutional requirements of Due Process of Law. This bias was built into the plan by the City to promote the City's water rights over those of other land owners in the Basin, and to protect the City's unlawful diversion of 50% of the natural recharge to the Basin.

The City cannot move forward with adoption of the GSP without major revisions to the plan that address these issues in a fair and equitable manner.

A. *The City's activities in the Basin create an unmitigable conflict of interest*

The City's interests in this Basin are readily apparent. The City owns more than 90% of the land in the Basin. The City leases its property in the Basin to sod farmers, citrus farmers, and dairy operators, and takes a percentage of the profit of each operation.[3] The City's self interest in the Basin is therefore tied directly to the viability of the agricultural operations on its lands. By virtue of these contracts, the City is operating farms in the Basin.

Notably, the City's agricultural operations in the Basin are extremely water intensive. Most recently, the City has been investing in sod farms that use significant volumes of water and essentially export it out of the Basin.[4] The City's other operations are likewise detrimental to the health of the Basin. Specifically, the City leases land to dairy farms and manure sales operations that have caused major damage to water quality in the Basin over the past 50 years. The City has made no effort to clean up the damage caused by these operations. As described more fully below, the GSP utterly fails to manage this issue.

[3] Union Tribune article on agricultural contract with City s– Exhibit 4, attached hereto.

[4] Id.

More importantly, the City owns and operates the Sutherland Reservoir 8 miles upstream of the Basin and the Hodges Reservoir directly downstream of the Basin. These reservoirs are of far greater value to the City than the agricultural operations in the Basin. They are, in fact, the only reason the City owns property in the Basin.

The City constructed Sutherland in the 1950s. The reservoir captures surface water upstream of the Basin for use elsewhere in the City of San Diego. By blocking surface flows downstream, the reservoir diverts 50% of the natural recharge to the Basin.[5] Pursuant to court order, the City is prohibited from storing water in Sutherland Reservoir if water levels on certain properties in the Basin are lower than 20 feet below the ground surface.[6]

As of the date of this letter, water levels are much lower than this threshold throughout the Basin.[7] The City appears to be operating Sutherland Reservoir is violation of a lawful court order.[8] To avoid complying with this requirement, the City began acquiring properties in the Basin. The City was successful in acquiring most of the real estate in the San Pasqual Valley, but did not acquire properties now owned by the County, Rancho Guejito and several other small land owners. The City has tried to use its position as a GSA to protect its interests in the Basin and elevate its appropriative water rights over the overlying and riparian rights of the remaining landowners.

B. *City control over the GSP contract allowed it to hijack the process for its own benefit*

The City used its position as the GSA for the majority of the Basin to take on the role of primary author of the GSP. The City hired and directed the consultants that drafted the Plan. The City ran the technical and public advisory group meetings that provided input on the plan and acted as gatekeeper for all aspects of the plan.[9]

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[5] *Trussell v. City of San Diego* (1959) 172 Cal. App. 2d 597, 599 (hereinafter "*Trussell*"). – Exhibit 5 attached hereto.

[6] Id. at 601 ["city is not entitled to withhold or store the natural flow of Santa Ysabel Creek when the average static water level under respondents' lands and in their wells falls below 20 feet below the surrounding ground surface"]

[7] Draft Groundwater Sustainability Plan for the San Pasqual Valley Groundwater Basin, June 2021 (hereinafter "GSP"), Figure 4-14

[8] *Trussell* at 599.

[9] Although the City entered into a memorandum of understanding with the County providing that the agencies would jointly develop the GSP, the City limited the County's access to the consultants and appears to have provided ultimate direction on all issues. See Exhibit 1.

The City refused to allow those not directly affiliated with the City (including Rancho Guejito) to have direct contact with the City's consultants.[10] At the same time, the City gave open access to its tenants, going as far as to direct the consultants to contact to the City's tenants to receive input and answer questions regarding the GSP.[11] These same tenants engaged in gift-giving with City staff to ensure continued access.[12] So not only did the City ensure that its interests would dominate the development of the GSP, but individual staff members with authority over the consultants accepted gifts from interested parties and in turn provided those parties with preferred access to the consultants who were developing the plan.

The City's self-dealing resulted in actual harm to other landowners in the Basin. Specifically, the City refused to provide equal access to the consultants, and ensured that the consultants drafted the plan in a manner that benefits the City's interests in the Basin.

C. *The City developed a plan that elevates its interests over the rights of other land owners in the Basin*

The City has drafted a plan that would require landowners such as Rancho Guejito to cease pumping and face economic hardship so that the City can continue to deprive the Basin of 50% of the natural recharge, and mismanage the remaining groundwater assets. This is an untenable proposition.

Pursuant to the Court of Appeals decision in *Trussell v. City of San Diego*, the City is prohibited from impounding water in Sutherland Reservoir if groundwater levels fall lower than 20 feet below the ground surface on key parcels in the eastern portion of the Basin. The case defined the Basin for purposes of future regulation and in a manner that is consistent with the definition provided by DWR in Bulletin 118. The case, in conjunction with DWR's definition of the Basin, defines the City's obligations in the Basin and the limits of the City's authority. At every opportunity, the City sought to undermine these parameters. Such behavior would be expected in an adversarial setting, but not when the City has taken on the role of regulator.

The City used its position managing the consultants to corrupt the groundwater model produced for the GSP. The City is now using that model to both justify future expansion of the Basin boundaries and deny its obligation to release water from Sutherland Reservoir if

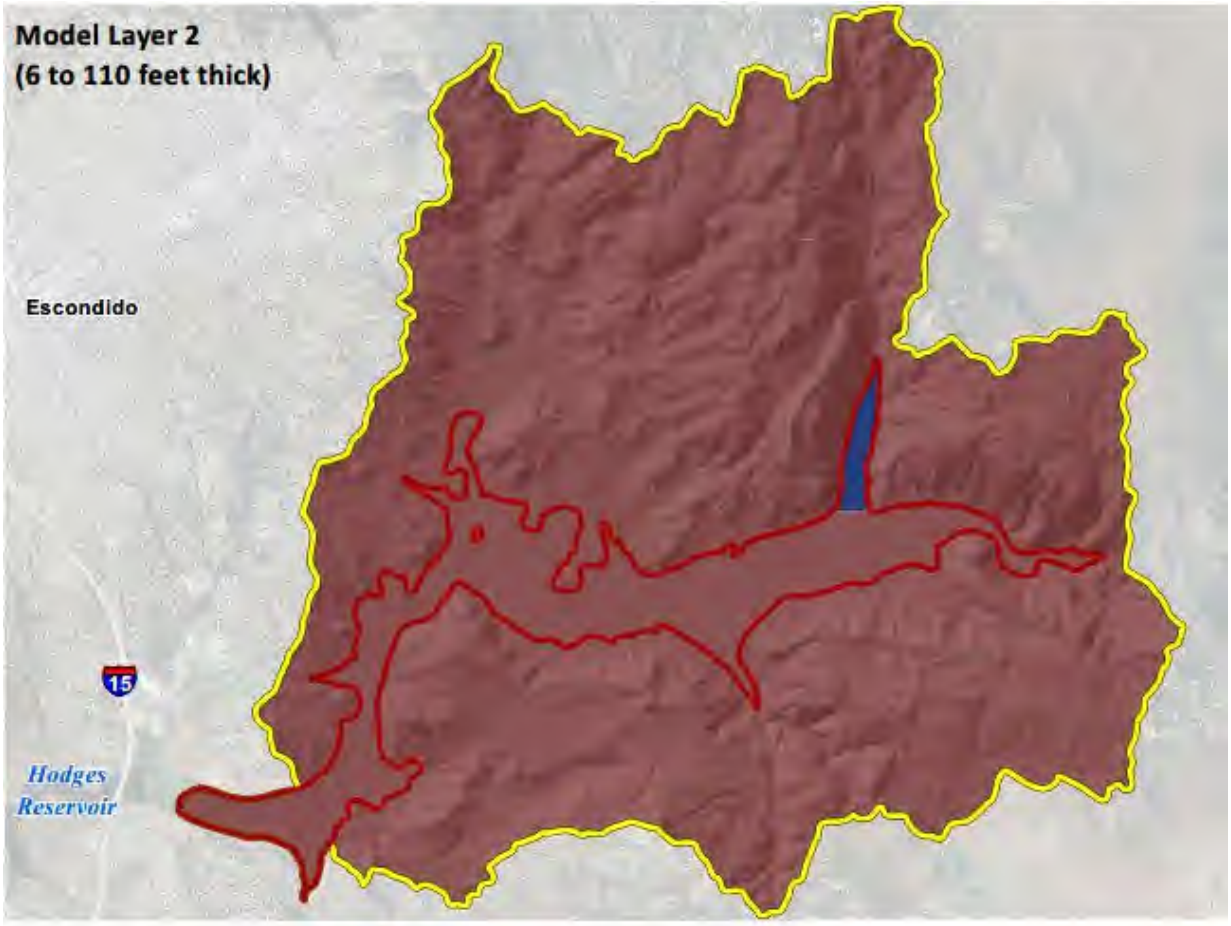
[10] Response from City of San Diego to Rancho Guejito's request to meet with City's consultant to discuss specific concerns with the GSP – exhibit 6 attached hereto.

[11] Email from Sandra Carlson to Woodard and Curren re contacting City lesee Frank Konyn – Exhibit 7 attached hereto.

[12] Email documenting gift from City lesee Frank Konyn to City of San Diego employee – Exhibit 8 attached hereto.

groundwater levels in the Basin decline. The City's consultants bent over backwards to accommodate this false reality.

Rancho Guejito's specific concerns about the GSP are detailed below and in the attachments to this letter. However, one example that is particularly egregious and demonstrates the unlawful bias the City has incorporated into the GSP is shown on page 684 of the appendix to the GSP. In order to obtain the desired outcome for model simulations, the City's consultants found it necessary to imagine a new kind of geology for Rancho Guejito only:



The illustration assumes that only one small portion of the Basin – the section owned by Rancho Guejito Corporation – would have connectivity with the underlying bedrock at levels that are 50 to 100 times higher than the rest of the Basin. There is no rational basis for treating this portion of the Basin differently. The City engaged in an outcome oriented analysis that it hoped would justify its efforts to expand regulatory control over neighboring lands and continue to avoid releasing water from Sutherland Reservoir.

D. *Adopting the GSP in its current form would Violate SGMA and the Due Process requirements of the California and United States Constitutions*

As described in greater detail below, the bias and other flaws that have been built into the GSP violate SGMA and the DWR regulations developed to implement the Act. Because of the City's conflict of interest, adoption would also violate Due Process requirements in the California Constitutions.

When, an administrative agency such as a GSA conducts adjudicative proceedings, the constitutional guarantee of due process of law requires a fair tribunal.[13] A fair tribunal is one in which the judge or other decision maker is free of bias for or against a party."[14] "Of all the types of bias that can affect adjudication, pecuniary interest has long received the most unequivocal condemnation and the least forgiving scrutiny."[15] The state and federal Constitutions forbid the deprivation of property by a judge with a " 'direct, personal, substantial, pecuniary interest in reaching a conclusion against' " a party.[16]

Here the City's interest is pecuniary and then some. The value of water in the arid west cannot be understated. An acre-foot of water is currently valued in the range of $1,000 dollars, That value extends into perpetuity for the renewable, local resource with the value increasing over time. The City has impounded tens of thousands of acre feet of water in Sutherland Reservoir and its tenants pump vast amounts from the Basin every year. The value of the water in the Basin is in the millions of dollars on an annual basis.

The City has been unable to avoid imposing its bias into the GSP. As the GSA adopting the GSP, the City is subject to Constitutional requirements of due process of law. Landowners in the Basin such as Rancho Guejito are entitled to an unbiased plan and an unbiased tribunal. The City cannot move forward with the GSP in its current form without violating these principles.

2. THE CITY HAS ATTEMPTED TO SIDESTEP THE BASIN BOUNDARIES SET BY THE CALIFORNIA COURT OF APPEALS AND DWR

The City has sought for decades to control water resources in the Basin and its tributary watersheds, and has made no secret about its willingness to use any legal means necessary to assert

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[13] *Morongo Band of Mission Indians v. State Water Resources Control Bd.*, (2009) 45 Cal.4th 731, 737. to be clear, adoption of a GSP is quasi-judicial action to which due process requirements attach – a hearing is required by statute, and the plan applies to the rights and interests of a discrete set of individuals. Cal Water Code 10728.4.

[14] Id.

[15] *Haas v. County of San Bernardino*, (2002) 27 Cal.4th 1017, 1025.

[16] Id. quoting *Tumey v. Ohio* (1927) 273 U.S. 510, 523.

control over the water and land use on private property adjacent to the Basin.[17] Rancho Guejito has been on the receiving end of these efforts on multiple occasions.[18]

The City has made it clear that it intends to use the GSP process to take expand its jurisdictional reach via SGMA.[19] This is despite the fact that the Basin has been defined by DWR and court order affirmed by the California Court of Appeals.[20] DWR, the trial court in the *Trussell* case, and the Court of Appeals in the *Trussell* case all found that the Basin is the water bearing gravel and alluvium underlying the San Pasqual Valley; and that it is bounded on the sides and below by the granitic rocks that make up the hills and mountains surrounding the Basin.[21]

The City has sought to undermine that definition by including multiple statements in the GSP about the potential hydrologic connection between the Basin and the underlying granitic rocks and/or outright ignoring the Basin boundary and by incorporating imagined flow between the granite and the Basin into the hydrologic conceptual model and numerical groundwater model used in the GSP.[22]

For example, Figures 2-8 through 2-10 in the GSP purport to show the location of all wells in the Basin. However, the figures include wells that are screened only in fractured bedrock underlying the Basin. Similarly, the GSP relies on data from a series of wells drilled by the United States Geologic Survey to claim that there is significant flow between the Basin and the underlying granite but without hard evidence to support the conclusion.

There is no flow observed between the alluvium and the bedrock at other wells in the Basin, suggesting that if there were a connection between the bedrock and the alluvium at the USGS well location, little to no vertical flow is actually occurring. Moreover, the granite immediately underlying the Basin has consistently acted as an aquitard not yielded economic quantities of groundwater. Past studies document the way in which the bedrock acts as a barrier to flow between

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[17] *See e.g. Trussell;* Comment letters from City on development of new groves on Rancho Guejito – Exhibit 9 and Exhibit 10, attached hereto.

[18] Id.

[19] GSP pp 2-24 [investigating the Basin Boundary Modification potential for the Basin]; 3-24 [describing intent to study connectivity to areas outside the Basin].

[20] DWR Bulletin 118 (2003 Update) p 9-010; excerpts attached as Exhibit 11 hereto; *Trussell* at 598-99.

[21] Id.

[22] See e.g. GSP p 3-24 ["The SPV Basin is defined in Bulletin-118 (Appendix F), and includes Quaternary Deposits and Residuum. Impermeable bedrock with lower water yielding capacity underlies the Residuum. The interaction of groundwater between fractured bedrock beneath the Quaternary Deposits and the Residuum is not well understood and represents an area of potential improvement that may be investigated by the GSA to further the understanding of the Basin and the interaction of groundwater pumping in and around the Basin."]

the Basin and anything beneath it.[23] The GSP is rife with similar efforts to misconstrue the Basin boundaries.[24]

More than that, in an effort to prove a strong connection, the City has incorporated imaginary characteristics into the numerical groundwater model that would demonstrate large volumes of recharge from the granite underlying the Basin.[25] As noted above, the model assumes that in the small portion of the Basin owned by Rancho Guejito, the volume of water flow between the underlying granite and the Basin is 50 to 100 times greater than elsewhere in the Basin., even though the observed rocks in the area are virtually identical.[26] This kind of assumption is absurd and exposes the outcome oriented approach taken by the City.

3. THE NUMERICAL GROUNDWATER MODEL IS FUNDAMENTALLY FLAWED. IT CANNOT BE USED TO SUPPORT THE GSP, OR ANY OF THE MANAGEMENT MEASURES IN THE GSP, OR ANY FUTURE ITERATION OF THE GSP

DWR Regulations at Title 23 California Code of Regulations section 354.14(a) requires every GSP to "include a descriptive hydrogeologic conceptual model of the basin based on technical studies and qualified maps that characterizes the physical components and interaction of the surface water and groundwater systems in the basin."

There are two fundamental flaws in the numerical groundwater model constructed to represent the hydrogeologic conceptual model in the GSP that appear to have been introduced to protect the City's interests in the Basin – the model assumes an absurdly high level of connectivity between the Basin and the underlying and adjacent granitic rock; and it assumes that most of the recharge to the Basin does not come from surface flows. These assumptions represent the core of the model and have no basis in reality. In fact, they run counter to the known characteristics of the Basin and the rocks surrounding it.[27] The deviation from known hydrologic conditions documented in technical studies and qualified maps is so great that it represents a violation of Section 354.14.[28]

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[23] Dudek, Memorandum p 5; see also USGS, Evaluation of the San Dieguito, San Eiljo and San Pasqual Hydrologic Subareas for Reclaimed Water Use, San Diego County, California, August 1983 (hereinafter "Izbicki") p 87 – attached hereto as Exhibit 12.

[24] See Dudek Memorandum pp 1-2, 4.

[25] Dudek Memorandum, p 1, 3-5, 7

[26] GSP Appendices p 638

[27] See Dudek Memorandum pp 3-5; Izbicki p 87.

[28] Portions of the GSP appear to be based on hydrologic conditions in the Cuyama Basin (Dudek Memorandum p 6). Conditions in the Cuyama Basin could not be more different than those in the Basin. Failure to use data and information relevant to the Basin is a violation of DWR regulations and SGMA.

There is a reason why the City would choose to manipulate the model in this fashion. The outcome of the modeling allows the City to downplay the impact that Sutherland Reservoir has on recharge to the Basin, while at the same time making an argument for regulating groundwater extractions outside the Basin. It is biased and unfit for use as a regulatory tool.

A. *The Model's Assumption that recharge does not come from surface flows is counter to known conditions in the Basin and creates a fundamental flaw in the Model*

Even a lay person would know that the primary source of recharge is from stream flow and precipitation. What is easily observable to the average person has been confirmed routinely in scientific papers – "[a] large fraction of ground water stored in the alluvial aquifers in the Southwest is recharged by water that percolates through ephemeral stream-channel deposits."[29]

USGS' 1983 Report by on the Basin (conducted in conjunction with the County and DWR) confirmed that this is the case on the local level, finding "[r]echarge to the alluvial aquifer originates primarily outside the hydrologic subarea as flow in Santa Ysabel, Guejito, and Santa Maria Creeks."[30]

Nonetheless, the GSP uses estimates of hydrologic conductivity for stream beds that grossly constrained the ability of the aquifer to obtain recharge from surface flow.[31] The difference was in orders of magnitude from what would be expected based on past reports on the Basin and the easily observed conditions in the creek beds in the Basin. Treating the streambeds as having low conductivity (and the resulting limited infiltration) ripples through the model and impacts estimated horizontal and vertical conductivity in all 4 layers of the model.

B. *Limited Recharge from Surface Flow Biased the Model in favor of the City's Interests*

In order to match observed conditions in the Basin, and keep the assumption that surface water recharge was minimal, the model needed to assume that hydraulic conductivity was 100 times higher than what is generally accepted for the rocks in the Basin, and the assumptions were made in specific locations to create the desired result.

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[29] Hoffman et al, USGS Professional Paper 1703, Estimated Infiltration, Percolation, and Recharge Rates at the Rillito Creek Focused Recharge Investigation Site, Pima County, Arizona (2000) – attached hereto as Exhibit 13.

[30] Izbicki, p 87.

[31] Quinlan Memorandum, p 2.

Thus, the figure shown above, which alleged that the vertical hydraulic conductivity was 100 times higher than what would be expected based on the rocks present in the aquifer, and only in the portions of the Basin owned by Rancho Guejito. The assumptions are absurd the resulting simulation is all too convenient an outcome for the City. The model is fundamentally flawed and cannot be used as a management tool in the GSP or for any other purpose unless and until these assumptions are revised.

4. THE GSP'S WATER QUALITY MANAGEMENT MEASURES ARE DEFICIENT

Degraded water quality is a major limitation on full use of the Basin. The GSP does almost nothing to address the high TDS and Nitrogen levels that have been present in the Basin for decades.[32] This is a violation of SGMA, which requires the GSP to monitor and manage groundwater quality in the Basin.[33] DWR Regulations expressly require the GSP to include minimum thresholds to manage for water quality:

> The minimum threshold for degraded water quality shall be the degradation of water quality, including the migration of contaminant plumes that impair water supplies or other indicator of water quality as determined by the Agency that may lead to undesirable results. The minimum threshold shall be based on the number of supply wells, a volume of water, or a location of an isocontour that exceeds concentrations of constituents determined by the Agency to be of concern for the basin. In setting minimum thresholds for degraded water quality, the Agency shall consider local, state, and federal water quality standards applicable to the basin.[34]

The levels of total dissolved solids ("TDS") and nitrogen in the western portions of the Basin exceed applicable Basin Plan standards promulgated by the San Diego Regional Water Quality Control Board. The levels are high enough to impair the use of groundwater in large portions of the Basin. In these areas, the water is unfit for human consumption.

The GSP makes no effort to correct this condition. This is not consistent with the requirements of SGMA or the DWR regulations. The primary source of nitrogen and TDS in the

[32] GSP p 4-16; Izbicky p 96.

[33] Cal Water Code §10727.2(d)(2).

[34] 23 Cal Code Regs §354.28(c)(4).

Basin is unclear, but prior investigations determined that dairy operations, nitrogen fertilizer and soil storage are all major contributors.[35]

The GSP attempts to blame surface flow contributions for the presence of high TDS and Nitrogen.[36] But that does not explain the high levels in portions of the Basin that are not near surface streams such as at well SP043.[37] The GSP nonetheless states that Undesirable Results for water quality are not occurring in the Basin currently (even though TDS and Nitrogen exceed Basin Plan standards) because:

> For degraded water quality to be characterized as an undesirable result, it must be associated with groundwater-management activities and the impacts those activities have on water quality. If those activities cause a significant and unreasonable reduction in the long-term viability of domestic, agricultural, municipal, or environmental uses over the planning and implementation horizon of this GSP; that would be considered an undesirable result for degraded water quality.
>
> This direct relationship underscores that undesirable results for water quality must be associated with groundwater pumping and other groundwater-related activities. Water quality impacts caused by land use practices, naturally occurring water quality issues, or other issues not associated with groundwater pumping would not be considered an undesirable result for degraded water quality since those would be outside of GSA authorities.[38]

This statement totally ignores the fact that the City has full control over the land use activities of its tenants, and could very easily impose water quality based restrictions on their operations.[39] More importantly, there is reduced recharge and flow through the Basin caused by

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[35] See City of San Diego, State of the Basin Report Update (Sept., 2015) p 2-6 – excerpts attached hereto as Exhibit 14.

[36] GSP p 4-28 through 30.

[37] GSP Figure 4-30.

[38] GSP p 6-4.

[39] GSP p 4-16 ["The single largest contributing source of nitrogen is commercial crop fertilizer use, at 56 percent of the Basin total, followed by landscape fertilizer use at 14 percent. Nitrogen, managed through in-Basin manure applications at Frank Konyn Dairy Inc. and the San Diego Zoo Safari Park, represents a combined 21 percent of the Basin total"]; see also Exhibit 14 p 2-6 ["with more than 90 percent of the total nitrogen (TN) contributions to the Basin coming from fertilizer and manure use, and given the historical elevated nitrate concentrations in groundwater, effective nutrient management across agricultural and urban landscapes has been identified as an

the construction of the Sutherland Reservoir.[40] One of the best ways to improve water quality and reduce the TDS and Nitrogen levels in the Basin would be to increase the flow into the Basin of water with low levels of both constituents – e.g. to release water from Sutherland Reservoir and allow it to recharge the Basin.

The GSP does not consider this option to correct water quality conditions and it is a fatal flaw in the plan. Undesirable Results are occurring now, and the City has full authority to alleviate the condition. The City has created all of the negative conditions in the Basin through operation of Sutherland Reservoir and mismanagement of its agricultural leases. The City is trying to use the GSP to force the remaining land owners in the Basin to live with the ramifications. That is not fair or equitable and in the case of water quality it is a violation of SGMA. The GSP needs to be revised.

5. MANAGEMENT MEASURES ARE INADEQUATE IN LIGHT OF COURT ORDER DIRECTING CITY TO RELEASE WATER FROM SUTHERLAND RESERVOIR

The primary management measure proposed in the GSP is the reduction of groundwater extractions by users in the Basin.[41] The City of San Diego is under a court order that prohibits it from impounding water in Sutherland Reservoir if water levels in the Basin fall lower than 20 feet below the ground surface elevation in the eastern portion of the Basin.[42] There is no reason why the remaining land owners in the Basin should be asked to subsidize the City's water use by cutting back on their own groundwater use. The City is required to ensure the ongoing health of the Basin and this should be reflected in the GSP.

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important component of Basin water quality management. TDS concentrations in the westernmost well (SP010) range from 604 to 1,050 milligrams per liter (mg/L), which indicates that groundwater is leaving the Basin with TDS concentrations that exceed the recommended secondary maximum contaminant level (MCL) of 500 mg/L and in some instances exceed the WQO of 1,000 mg/L. An analysis of existing historical data indicates that TDS concentrations in the western portion of the Basin have generally increased since 1950"].

[40] *Trusell* at 599 [50% of the recharge has been blocked by construction of the dam].

[41] GSP Figure 9-2. The GSP alleges that reductions in pumping will help improve water quality. Management Actions 2, 10, and 11 state that "Reducing groundwater pumping will help alleviate groundwater degradation associated with lowering of groundwater levels." The GSP has not established an association between groundwater levels and groundwater quality. This statement appears to have been copied from Table 7-2 in the Cuyama GSP, where groundwater elevations may be linked to lower quality groundwater. Unless a similar link is established locally for the San Pasqual Valley Basin, these statements need to be removed from Table 9-3. Groundwater producers in the San Pasqual Valley Basin should not be subject to management actions that have not been demonstrated to produce the desired impact described in the table.

[42] *Trussell* at 599-600.

The GSP needs to be revised to remove pumping reductions as the primary management measure. No property owner in the Basin should be asked to reduce their groundwater use until the City has replenished the Basin as required by the court's decision in *Trussell v. City of San Diego*.

6. FAULTY ANALYSIS OF REPLENISHMENT OPPORTUNITIES

The GSP includes an appendix that purports to analyze the feasibility of recharging the Basin with surface water from Sutherland Reservoir. Unsurprisingly, the analysis is incomplete and biased in favor of the City's interests. And equally unsurprisingly, it showed the releases from Sutherland would not improve groundwater conditions in the Basin.

The feasibility analysis is yet another example of the City attempting to use the GSP to avoid its obligation in the Basin. The following aspects of the analysis demonstrate this bias:

- Additional water releases from Sutherland Dam of 300 AFY were "simulated" for the March to September timeframe. This timeframe includes the warmest months of the year and will simulate conditions under the highest Evapotransportation rates. There is no need to assume that surface water releases would have to occur during this timeframe because this management action would be undertaken during times that the Basin water levels are low, and could use recharge even during the winter months. "Simulating" releases during the winter months would reduce [Evapotransportation] losses, and would also reduce stream losses that would occur between Sutherland and the Basin.

- Exactly what model was used to "simulate" releases is not clear, and the details of the simulations are not provided in the memo.

- Of the 2,100 AFY that reached the Basin, only 187 AFY infiltrated through the alluvial sediments of Santa Ysabel Creek, while the remainder continued flowing in the creek to Lake Hodges, *even though historical groundwater levels in the Basin respond rapidly to wet winter conditions*. This suggests a fundamental disconnect between the model response and the observed hydrogeologic response in the Basin, which in turn suggests that the model does not accurately represent the Basin and needs substantial revision before it can be used to assess the efficacy of projects and management actions.

- The memo states that only 7% of the "simulated" releases from Sutherland Dam would contribute to groundwater storage while the remainder would "be lost to ET or outflow." This number is misleading as it could equally be much higher if the model simulated higher stream bed infiltration rates or higher if releases were

simulated during the winter months, and the water that flows through the model to Lake Hodges was not included as being "lost." Use of a meaningless low percentage of water retained in the Basin is there to bias the reader into assuming that the releases of water are not helpful. This has not been demonstrated by the memo.

- A review of surface water releases from Sutherland Dam that includes reasonable release parameters, a revised numerical model that reflects observed groundwater responses in the Basin, and a detailed explanation of the work conducted is needed. It is anticipated that such a study would indicate the efficacy of surface water releases from Sutherland Dam at providing recharge to the Basin and that this management action should have a higher priority in the GSP.

- On multiple occasions, the City stated that the hydrologic conceptual model would not be used for developing management measures for the Basin. The feasibility analysis states that flows from Sutherland were modeled, presumably using the conceptual model developed for the GSP. The same bias that is built into that model infected the Sutherland analysis and renders it inadequate and incomplete.

Thank you for your attention to this matter. For the reasons set forth herein, we believe that the City and County cannot move forward with the GSP in its current form. The only viable course of action is for the City and County to seek additional time to revise the GSP in accordance with the comments in this letter and its attachments.

Sincerely,

Andre Monette
of BEST BEST & KRIEGER LLP

AM:DAG

Attachments

Table of Contents

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Exhibit 1

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MEMORANDUM

To:	Andre Monette, Best, Best and Krieger
From:	Jill Weinberger, Kayvan Ilkhanipour, Dudek
Subject:	San Pasqual Groundwater Basin GSP Peer Review and Comments
Date:	July 26, 2021
cc:	Hank Rupp, Rancho Guejito Corporation

This memorandum transmits the findings of a peer review of the *Groundwater Sustainability Plan* (GSP) for the San Pasqual Valley Groundwater Basin, prepared by Woodard and Curran, and Jacobs, June 2021. This peer review focuses on the GSP's adequacy to support analysis under SGMA. Individual comments are listed in the table below and are referenced to the chapter and section to which the comment applies.

This review identifies four primary areas of concern. First, the draft GSP has several inconsistencies between the hydrogeologic conceptual model of the Basin, which forms the underpinning of the remainder of the document, the numerical groundwater model, undesirable results, and projects and management actions. These inconsistencies must be reconciled before the GSP is submitted to DWR because they call into question the fundamental understanding of the Basin in this GSP. Second, the text of the GSP indicates a clear bias in the water budget assumptions that include large contributions of water from the granite underlying the basin to the alluvial sediments and residuum that compose the basin. This is not supported by the observed groundwater elevations in the Basin, but is brought up in multiple inappropriate sections of the draft GSP. Third, discussion of the undesirable results and projects and management actions in the San Pasqual Valley GSP appear to have language that has been taken from the GSP for the Cuyama Valley Groundwater Basin and has not been adapted to the local conditions. Local control is a central tenant of SGMA, yet local conditions appear to have been ignored in this GSP, which calls into question the efficacy and fairness of the sustainable management criteria and projects and management actions described in this GSP. Fourth, the GSP fails to clearly show and explain the work done to develop the sustainable management criteria and analyses of the projects and management actions. DWR and the stakeholders both expect to see how these critical components of the GSP were developed.

Section	Subsection	Comments
Executive Summary	Plan Area	Cloverdale Creek is not included in the list of creeks that drain the Basin.
Executive Summary	Hydrogeologic Conceptual Model	Is the last sentence a statement confirming the DWR Basin boundary and a separation of the Basin from the bedrock below.
Section 2. Plan Area	2.1.2 Plan Area Setting	Figure 2-1 description is strange without an inset map to show relative location to downtown San Diego. Figure also doesn't show relative portions of City jurisdiction vs County jurisdiction. Suggest deleting first 2 sentences of description or modify figure to show the features described in the 1st 2 sentences.
Section 2. Plan Area	2.1.2 Plan Area Setting	Figure 2-3 description includes "South Coast Hydrologic Region" and "San Dieguito Drainage Basin" neither of which are shown on Figure 2-3.
Section 2. Plan Area	2.1.2 Plan Area Setting	Figure 2-4 does not show City boundary, so description: "Much of the Basin is in the northern portion of the City" is unclear.
Section 2. Plan Area	2.1.2 Plan Area Setting	Figures 2-6 and 2-7 text states "primary land uses in the Basin are native vegetation and agriculture." This should be clarified to "riparian vegetation" as the figures show the broader watershed and include large portions of "native shrub" which is limited within the Basin.
Section 2. Plan Area	2.1.2 Plan Area Setting	The text explaining Figures 2-8 through 2-10 is insufficient and the figures themselves are misleading. Ideally the well maps should only show wells screened within the alluvium and residuum, as these are the only wells located *in the Basin*. In the absence of that, however, the text should explain explicitly that the well density maps include wells screened solely in the bedrock underlying the Basin, and therefore well densities shown on the maps are higher than the actual well densities in the Basin. The text for Figure 2-8 hints at this discrepancy but does not make a clear distinction for the average reader to understand. The text for Figures 2-9 and 2-10 is incorrect. The maps do not show wells "in the Basin" but include all wells in the DWR database. The text should be corrected. Additionally, a note should be added to the figures themselves to clarify that the well densities displayed include wells screened solely in the bedrock underlying the basin and the densities shown are higher than the actual well densities in the Basin. These figures and the associated text are misleading and require correction.
Section 2. Plan Area	Table 2-1. Plan Elements from CWC Section 10727.4	States replenishment of groundwater extractions is not included. Reasoning is that economically viable replenishment has not been "discovered." Need to relate to releases from Sutherland Dam and provide basis for Basin replenishment via releases.

Section	Subsection	Comments
Section 2. Plan Area	Table 2-1. Plan Elements from CWC Section 10727.4	States impacts to groundwater dependent ecosystems are discussed in Section 2. There is no reference to GDEs in Section 2.
Section 3. Hydrogeologic Conceptual Model	3.1 Topography, Surface water bodies, and Recharge	1st paragraph - Discussion of imported water doesn't belong in the introduction to the topography, surface water bodies, and recharge section. This discussion, which seems focused on areas outside of the Basin, should focus on recharge to the Basin from imported water, should be to be moved to relevant section of the GSP, and needs proofreading.
Section 3. Hydrogeologic Conceptual Model	3.1.3 Areas of Recharge, Potential Recharge, and Groundwater Discharge	First paragraph states groundwater flow from bedrock contributes unknown amount of recharge into Basin. What is the basis for the underlying assumption that there is groundwater flow into the basin from the bedrock, as opposed to groundwater flow out of the basin, or a distinct separation between the bedrock and the residuum? The statement in the first paragraph should be removed or revised to say, "the nature of the interaction between the underlying bedrock and the base of the residuum is not currently understood."
Section 3. Hydrogeologic Conceptual Model	Figure 3-3 and 3-4	These figures only show data through 2016. Data is available for 2017 through 2020 for Guejito Creek and Santa Maria Creek. These data would show the creek flows during above average water years in 2017 and 2019.
Section 3. Hydrogeologic Conceptual Model	Sections 3.2 and 3.3 Geologic History and Formations	These sections should be reviewed by a geologist for accuracy. 1st sentence paragraph 1 should read "The crystalline rocks that surround and underlie the Basin were formed during the Cretaceous Period …" the current wording is inaccurate and misleading. There are multiple additional inaccuracies in the discussion of the geologic formations and use of "stratigraphy" in the context of the San Pasqual Valley Basin.
Section 3. Hydrogeologic Conceptual Model	Figure 3-10 / Table 3-1	This figure appears to disagree with figure 3-11, which is illegible in the document, but available online. Figure 3-10 and Table 3-1 identify older alluvial river deposits and colluvial deposits as being the same as residuum. Residuum is weathered in place, while alluvium and colluvium are deposits that have been transported away from their source material. These – by definition – cannot also be residuum. This is an important distinction because the hydrologic properties of the residuum and older alluvium are very different, with residuum typically being far less transmissive than alluvium. This conflation of older alluvium with residuum shows a fundamental misunderstanding of the hydrogeologic conceptual model for this basin and needs to be corrected.
Section 3. Hydrogeologic Conceptual Model	Figure 3-11	The figures are illegible, rendering the keys provided in figures 3-12 through 3-15 useless. The geologic unit abbreviations should be clearly legible on the map.

Section	Subsection	Comments
Section 3. Hydrogeologic Conceptual Model	Figure 3-17 and Figure 3-19	Some of well locations appear to be misrepresented in the plan view and cross section D-D'. Location of LWELL5915 (prev. Well 5) needs to be shifted ~900 feet to the NNW. Location of Rockwood Well 6 needs to be shifted ~650 feet to the NW. Also, LWELL5915 (Well 5) has been destroyed as of Fall 2020. Unsure what well is represented by LWELL5246 in figures.
Section 3. Hydrogeologic Conceptual Model	3.6.3 Bottom of the Basin Boundary	The Basin boundary is clearly defined in the first sentence. However, three sentences later there is an ambiguous statement regarding the interaction of groundwater in fractured bedrock with the overlying residuum and alluvium. This statement indicates a bias that was brought into the hydrogeologic conceptual model and carried through the numerical groundwater model, but is not supported by the water level discussion in section 4 and does not belong in the discussion of the basin boundary. It should be deleted.
Section 3. Hydrogeologic Conceptual Model	3.7 Principal Aquifer	As above comment: *"The amount of water contributed to the Quaternary Deposits and Residuum from Crystalline Rock near the Basin is not known and may be investigated further by the GSA."* This statement is not supported by the water level discussion in Section 4 and does not belong in the discussion of the principal aquifers. A statement regarding the interaction between the bedrock and the alluvial aquifers could be added to a discussion of the data gaps.
Section 3. Hydrogeologic Conceptual Model	3.8 Areas of Potential Improvement	States that the depth to crystalline rock is unknown, however, the cross sections in Figures 3-18 and 3-19 suggest otherwise, and there are a number of wells that have been drilled into bedrock, by both private landowners and the USGS. This should be clarified in the discussion and specific areas should be named where additional data could improve the hydrogeologic understanding of the basin.
Section 4. Groundwater Conditions	4.1 Historical Groundwater Conditions	Last bullet in this section needs proofreading.
Section 4. Groundwater Conditions	4.1.1 Evaluation of the San Dieguito, San Elijo, and San Pasqual Hydrologic Subareas for Reclaimed Water Use, San Diego County, California, 1983	1st sentence is missing a word: "groundwater _____?_____ and groundwater quality in the Basin."

Section	Subsection	Comments
Section 4. Groundwater Conditions	4.2.2 Vertical Gradients	The lowermost intervals for the USGS nested wells: SDSY (screened from 280 ft to 340 ft below land surface) and SDLH (170 to 270 ft bgs) are within the bedrock at their respective locations. There is no vertical gradient observed between the alluvium and the bedrock at well SDSY, close to the mouth of Rockwood Canyon, suggesting that if there were a connection between the bedrock and the alluvium at this location, little to no vertical flow would occur. However, it should be emphasized that the granite immediately underlying the Basin has consistently not yielded economic quantities of groundwater and acts as a barrier to flow between the Basin and anything beneath it. At well SDLH, in the western part of the Basin the observed vertical gradient is directed *downward* suggesting that if there were a connection between the bedrock and the alluvium in that location, the alluvium would recharge the bedrock. As above, the presence of a vertical gradient does not mean that there is flow between the alluvium and the bedrock, but suggests that the statements in section 3 regarding contribution from the granite to the alluvium are not based on the data that should have been used to develop the hydrogeologic conceptual model of the Basin.
Section 4 Groundwater Conditions	4.2 Groundwater Movement and Occurrence	Typo in heading
Section 4. Groundwater Conditions	4.2.3 Change in Groundwater Storage	Figure 4-22 is missing a legend explaining the colors of each bar.
Section 4. Groundwater Conditions	4.6. Interconnected Surface Water Systems	Table 4-1 shows the average annual depletions due to groundwater pumping over the 2005–2019 period. How do they determine the AF depletions listed in the Table? Particularly from creeks listed as disconnected from the regional aquifer, like Guejito Creek. The work done to create this table is not well enough explained.
Section 4. Groundwater Conditions	4.9. Areas of Potential Improvement	The statement that the interaction between DWR defined Basin and bedrock may need improvement because it's not well understood, along with the discussion of aquifer testing should be removed. This statement isn't justified by the data and does not belong in a discussion of the historical groundwater conditions. At the same time there is no discussion of data gaps regarding GDE monitoring sites, or groundwater quality data. This should be added to the areas of potential improvement, based on the data discussed.

Section	Subsection	Comments
Section 6. Undesirable Results	6.3.1 Chronic Lowering of Groundwater Levels	Under the heading "Identification of Undesirable Results", the GSP defines the undesirable result for chronic lowering of groundwater levels: "The undesirable result for the chronic lowering of groundwater levels is considered to occur during GSP implementation when 30% of representative monitoring wells (i.e., 5 of 15 wells) fall below their minimum groundwater elevation thresholds for two consecutive years." This undesirable result language doesn't take into account geographic variation in water levels in this Basin, and appears to be tied to the undesirable results established for the Cuyama Basin which states "This result is considered to occur during GSP implementation when 30% of representative monitoring wells (i.e., 18 of 60 wells) fall below their minimum groundwater elevation thresholds for two consecutive years." (Cuyama GSP, Section 3.2.1 Chronic Lowering of Groundwater Levels - Identification of Undesirable Results). The Cuyama Basin and the San Pasqual Valley Basin are very different basins and undesirable results need to be defined locally, based on the historical data and modeling conducted for the San Pasqual Valley Basin, and taking into account significant and unreasonable impacts to beneficial users and uses of groundwater. In the San Pasqual Valley Basin, 5 representative monitoring wells in the western part of the Basin could be below the minimum threshold, while water levels in the eastern part of the Basin are above the minimum thresholds, yet everyone in the Basin would be subject to implementation of projects and management actions. Local hydrogeology and local understanding of the beneficial uses and users of groundwater in the San Pasqual Valley Basin should be used to develop Basin specific undesirable results. This is a fundamental tenant of SGMA and has not been followed in the development of this GSP.
Section 6. Undesirable Results	6.3.5 Land Subsidence	Rate of land subsidence referenced here (0.028 inches per year) disagrees with rate of land subsidence referenced in section 4 (0.05 *feet* per year). These should be reconciled.
Section 9. Projects and Management Actions	Table 9-3	Management Actions 2, 10, and 11 state that "Reducing groundwater pumping will help alleviate groundwater degradation associated with lowering of groundwater levels." The GSP has not established an association between groundwater levels and groundwater quality. This statement appears to have been copied from Table 7-2 in the Cuyama GSP, where groundwater elevations may be linked to lower quality groundwater. Unless a similar link is established locally for the San Pasqual Valley Basin, these statements need to be removed from Table 9-3. Groundwater producers in the San Pasqual Valley Basin should not be subject to management actions that have not been demonstrated to produce the desired impact described in the table.

Section	Subsection	Comments
Appendix O: Technical Memorandum Re: Projects and Management Actions Screening Process	2. Preliminary Evaluation of Surface Water Recharge	The assessment of the viability of additional surface water recharge via releases of water from Sutherland Dam is unclear, and appears biased in several ways: (1) Additional water releases from Sutherland Dam of 300 AFY were "simulated" for the March to September timeframe. This timeframe includes the warmest months of the year and will simulate conditions under the highest ET rates. There is no need to assume that surface water releases would have to occur during this timeframe because this management action would be undertaken during times that the Basin water levels are low, and could use recharge even during the winter months. "Simulating" releases during the winter months would reduce ET losses, and would also reduce stream losses that would occur between Sutherland and the Basin. (2) Exactly what model was used to "simulate" releases is not clear, and the details of the simulations are not provided in the memo. (3) Of the 2,100 AFY that reached the Basin, only 187 AFY infiltrated through the alluvial sediments of Santa Ysabel Creek, while the remainder continued flowing in the creek to Lake Hodges, *even though historical groundwater levels in the Basin respond rapidly to wet winter conditions*. This suggests a fundamental disconnect between the model response and the observed hydrogeologic response in the Basin, which in turn suggests that the model does not accurately represent the Basin and needs substantial revision before it can be used to assess the efficacy of projects and management actions. (4) The memo states that only 7% of the "simulated" releases from Sutherland Dam would contribute to groundwater storage while the remainder would "be lost to ET or outflow." This number is misleading as it could equally be much smaller if the model simulated higher releases or much higher if releases were simulated during the winter months, and the water that flows through the model to Lake Hodges was not included as being "lost." Use of a meaningless low percentage of water retained in the Basin is there to bias the reader into assuming that the releases of water are not helpful. This has not been demonstrated by the memo. A review of surface water releases from Sutherland Dam that includes reasonable release parameters, a revised numerical model that reflects observed groundwater responses in the Basin, and a detailed explanation of the work conducted is needed. It is anticipated that such a study would indicate the efficacy of surface water releases from Sutherland Dam at providing recharge to the Basin and that this management action should have a higher priority in the GSP.

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Exhibit 2

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PETER T QUINLAN
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760.415.9057

Memo
To: Andre Monette, Esq., Best, Best and Krieger
From: Peter Quinlan
August 10, 2021

Comments on the Numerical Groundwater Presented in the Draft Groundwater Sustainability Plan for the San Pasqual Valley Basin

Overview

In general, the reliability of numerical groundwater models is constrained by sparse data. The model constructed to represent the San Pasqual Valley Basin (SPVB) and presented in the Draft Groundwater Sustainability Plan is no different. In mathematical terms, a model based on a paucity of data is underdetermined and whatever model is constructed is characterized by great uncertainty and not uniquely correct. The greater the uncertainty associated with the model, the lower the ability to draw conclusions about how the basin works.

The parameters of vertical and horizontal conductivity and storage coefficient have to be defined for every cell in the numerical model. When no site-specific observed values for these parameters are available, assumed values are incorporated into the model. Very few site-specific observed values of these parameters were available for the alluvium and none for the residuum or granitic rock beneath the basin. In addition, the quantity of recharge to the basin from each source (rainfall, irrigation return flows, infiltration from streams, and subsurface inflows) must be estimated if no quantitative measurements exist. All these inflows had to be estimated in the SPVB numerical groundwater model. Similarly, surface and subsurface boundary outflows, discharge to streams and wells must be estimated if not measurements occur. Of these outflows, there was limited data for well discharge, but not for the other outflows in the SPVB. If a number of the inflows and outflows are well quantified, the model calculations of the remaining inflows and outflows may provide useful estimates. If there are almost no quantitative measurements of inflows and outflows, there can be no certainty about model calculated inflows and outflows on which to base conclusions on how the alluvium, residuum and underlying granitic rock interact.

Models are calibrated to observed historical data, most often observed water levels. The ability of a model with a particular set of assumed parameter values to reproduce observed historical water levels does make that model the uniquely correct representation of the actual basin, merely one of many possible models. Parameter values are typically varied, or tweaked, to get the model to reproduce historical water levels. If the parameters are tweaked in unrealistic

ways, confidence in the model the ability to draw conclusions about the interaction of the basin sediments with the surrounding granitic rock is diminished. Unfortunately, that appears to have occurred in the construction of the SPVB numerical groundwater model. As is discussed below in greater detail, exceptionally low values assumed for the vertical conductivity of the stream beds very likely result in underestimated recharge from streams. Additionally, during calibration, localized assignments of very unusually high vertical conductivity values appear to have been incorporated in very localized areas to create a match with observed water levels in the granitic rock beneath the alluvium and residuum and to accommodate estimated pumping from the granitic rocks underlying the SPVB. These questionable parameter values are not supported by site-specific observations.

The construction of a number of different models with varying assigned values for parameters and inflows and outflows (parameterizations or realizations) can be used to characterize the uncertainty/reliability of the model predictions of future hydrogeologic conditions. Only one realization was prepared for the SPVB, consequently the confidence that we can have in the model predictions is uncertain.

The draft GSP states that the model will not be used to make management decisions, but it is used to estimate the basin water balance and may unduly influence the GSA's conceptual understanding of how the basin works. Furthermore, the model appears to have been used to evaluate the feasibility of recharging the basin by releasing water from Sutherland Reservoir to Santa Ysabel Creek.

In summary, there are enough weaknesses in the current model that it should not be used to evaluate the feasibility of recharging the SPVB by mean of releases from Sutherland Reservoir or draw conclusions about the hydrologic interaction of the alluvium and residuum in the SPVB and the granitic rock outside of it.

Specific Comments

Recharge from Surface Water

The initial estimate of vertical hydraulic conductivity (Kz) for the creek beds was to have been 8.8 X 10e-3 cm/sec (Section 3.4.1, page 3-10), but numerical mass balance errors in the model necessitated reducing the Kz of the stream beds. This reflects a computational limitation of the code in the model rather than a limitation of the infiltration capacity of the stream beds at least in Santa Ysabel and Guejito Creeks. The final Kz of the stream beds was 3.5 X 10e-5 cm/sec which is characteristic of silt (Freeze and Cherry, *Groundwater*, 1979) and is at odds with the fine to coarse sand and gravel observed in the stream beds of Santa Ysabel Creek in the eastern portion of the basin and Guejito Creek. By comparison the Kz assigned to Layer 1 in much of the basin in the calibrated model ranged from 1.76E-03 to 3.53E-03 cm/sec (Figure 4-10), two orders of magnitude greater. The original value of 8.8 X 10e-3 cm/sec would be more appropriate as the Kz for these sediments.

The low Kz assigned to the stream bed is a function of the model computational constraints, not the observed conditions. A result of this modeling compromise, a small fraction of the average surface water inflow (13,907 AFY per Table 4-7) recharges groundwater. The simulated average groundwater recharge from streams is that only 2276 AFY (16%) of model estimated surface water inflow during the historical period.

In contrast, the model simulates that 36% of the total of: 1) precipitation falling within the model, 2) the water applied for irrigation, and 3) septic discharges end up recharging the groundwater. The total annual average precipitation and applied irrigation water amount to 8543 AFY which is much less than the stream inflow at 13,907 AFY, yet in the model it provides more groundwater recharge (3052 AFY versus 2276 AFY). The surface sediments outside of the stream beds are finer-grained and should have a lower Kz than the stream beds, but in this model these finer-grained sediments have assigned Kz values roughly 100 times greater than the stream beds.

If the model code could computationally handle values of Kz for the stream beds more in keeping with the observed sediments, groundwater recharge in the model from stream beds would increase. Other aspects of the model would change as a result. The assignment of the low Kz to the stream beds and the resulting limited infiltration ripples through the model affecting calibration modifications to Kh and Kz in all 4 layers of the model and the estimated subsurface inflows.

The model also underestimates cumulative surface water inflow from Guejito Creek during the 15-year historical period by 10,000 AF (Figure 3-20) which is half of the observed discharge. This also serves to underestimate potential recharge from surface water flows.

As with most models, this one is under-determined; that is, there are insufficient data to constrain assumptions about model parameters, inflows, and outflows. To better understand the water balance of the SPV Basin, it is critical that two new stream gauges be installed along Santa Ysabel Creek, one just upstream of the confluence with Santa Maria Creek and another at the downstream end of the basin. These gauges would improve the understanding of the contributions of the stream flow to groundwater recharge. Additional stream flow monitoring gauges were not identified as a data gap in the draft GSP.

<u>Vertical Hydraulic Conductivity in the Granitic Rock and Residuum</u>

As discussed in sections 4.3.2 and 4.3.6, in order to reproduce the vertical head differences in the east and simulated pumping from the granitic rock, the vertical hydraulic conductivity (Kz) had to be increased in the granitic rock. Indeed, it was increased to be 100 times greater than horizontal conductivity (Kh). Typically the ratio of Kh:Kz is expected to be on the order of 10:1 in alluvium (or 1:1 in lower permeability formations like clay and crystalline rock like granite). While the GSP states that this highly unusual ratio is possible in fractured rock, that implies vertical fracturing and no evidence is cited to justify this unusually high Kz. It is also odd that Kz

in the granitic rock was selectively increased on only a few isolated areas surrounding the USGS monitor wells where there were historical water levels used in calibration. This appears to be an arbitrary localized tweak to match historical water levels. In Rockwood Canyon this highly unusual Kh:Kz ratio of 1:100 was applied to the residuum which is weathered granite having a granular texture and abundant fines in the silt to clay range and unlikely to fracture. The application of this highly unusual Kh:Kz ratio to the residuum is inappropriate. Furthermore, this highly unusual ratio of 1:100 for Kh:Kz was not assigned to the granitic rock in the layers beneath the residuum. The granitic rock is precisely where fracturing could be expected to occur. This clearly looks to be an artifact of calibration rather than the reflection of a well-conceived conceptual model of the basin and surrounding granitic rock. It also makes drawing conclusions about the hydrologic interaction of the alluvial sediments and residuum based on model results highly dubious.

Appendix O Screening Analysis Results

It is not clear, but it appears that the model was used to evaluate the feasibility of releasing water from Sutherland Reservoir to provide recharge to the basin. Predictably the model as constructed with the unrealistically low Kz assigned to the stream beds predicted that only a small percentage of the released water would recharge the basin. If the model more accurately reflected the sandy sediments in the stream beds, more water would have infiltrated. This analysis also estimated that 772 AFY would be lost to evapotranspiration during releases from May to September. However, the draft GSP fails to mention that there would be losses to evaporation from the reservoir even if no water were released to recharge the San Pasqual Valley Basin. The average annual evaporation from Sutherland Reservoir is 52.77 inches /year (4.4 ft/yr). Most of that occurs between May and October, when the analysis indicated that the releases would occur. Sutherland Reservoir has an area of 557 acres when full. If full the annual loss to evaporation would be 2449 AF.

Exhibit 3

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MEMORANDUM OF UNDERSTANDING
DEVELOPMENT OF A GROUNDWATER SUSTAINABILITY PLAN
FOR THE SAN PASQUAL VALLEY GROUNDWATER BASIN

This Memorandum of Understanding for the Development of a Groundwater Sustainability Plan ("GSP") for the San Pasqual Valley Groundwater Basin ("MOU") is entered into and effective this 29 day of June, 2017 by and between the County of San Diego ("County") and the City of San Diego ("City"). The County and the City are each sometimes referred to herein as a "Party" and are collectively sometimes referred to herein as the "Parties."

RECITALS

WHEREAS, on September 16, 2014, Governor Jerry Brown signed into law Senate Bills 1168 and 1319 and Assembly Bill 1739, known collectively as the Sustainable Groundwater Management Act ("Act") found at California Water Code Section 10720, *et seq*;

WHEREAS, Act went into effect on January 1, 2015;

WHEREAS, Act seeks to provide sustainable management of groundwater basins, enhance local management of groundwater; establish minimum standards for sustainable groundwater management; and provide local groundwater agencies the authority and the technical and financial assistance necessary to sustainably manage groundwater;

WHEREAS, the Parties have each declared to be a Groundwater Sustainability Agency ("GSA") overlying portions of San Pasqual Valley Groundwater Basin ("San Pasqual Basin"), identified as Basin Number 9.10, a Bulletin 118 designated (medium-priority) basin;

WHEREAS, each Party has statutory authorities that are essential to groundwater management and Act compliance;

WHEREAS, Section 10720.7 of Act requires all basins designated as high- or medium-priority basins designated in Bulletin 118 be managed under a GSP or coordinated GSPs pursuant to Act;

WHEREAS, Section 10720.7 of Act requires that all basins designated high- or medium- priority basins designated in Bulletin 118 that are not critically overdrafted basins be managed under a GSP by January 31, 2022;

WHEREAS, the Parties intend to eliminate overlap of the Parties by forming a multi-agency GSA (San Pasqual Valley GSA) over the entire San Pasqual Basin (Attachment A) and collectively developing and implementing a single GSP to sustainably manage San Pasqual Basin pursuant to section 10727 *et seq.* of Act;

WHEREAS, the Parties wish to use the authorities granted to them pursuant to the Act and utilize this MOU to memorialize the roles and responsibilities for developing the GSP;

WHEREAS, it is the intent of the Parties to complete the GSP as expeditiously as possible in a manner consistent with Act and its implementing regulations;

WHEREAS, it is the intent of the Parties to cooperate in the successful implementation of the GSP not later than the date as required by the Act for the San Pasqual Basin;

WHEREAS, the Parties wish to memorialize their mutual understandings by means of this MOU; and

NOW, THEREFORE, in consideration of the promises, terms, conditions, and covenants contained herein, the County of San Diego and the City of San Diego hereby agree as follows:

I. Purposes and Authorities.

This MOU is entered into by the Parties for the purpose of establishing a cooperative effort to develop and implement a single GSP to sustainably manage the San Pasqual Basin that complies with the requirements set forth in the Act and its associated implementing regulations. The Parties recognize that the authorities afforded to a GSA pursuant to Section 10725 of the Act are in addition to and separate from the statutory authorities afforded to each Party individually. The Parties intend to memorialize roles and responsibilities for GSP implementation during preparation of the GSP.

II. Definitions.

As used in this Agreement, unless context requires otherwise, the meanings of the terms set forth below shall be as follows:

1. "Act" refers to the Sustainable Groundwater Management Act.
2. "Core Team" refers to the working group created in Section III of the MOU.
3. "Cost Recovery Plan" refers to a component of the Plan that includes an evaluation of fee recovery options and proposed fee recovery alternative(s) available to GSAs pursuant to Sections 10730 and 10730.2 of SGMA.
4. "City" refers to the City of San Diego, a Party to this MOU. The City has designated the Deputy Director for Long-Range Planning and Water Resources Division, Public Utilities Department or their designee(s), as the City department representative to carry out the terms of this MOU for the City.
5. "County" refers to the County of San Diego, a Party to this MOU. The County has designated the Director, Planning & Development Services, or his designee(s), as the County department representative to carry out the terms of this MOU for the County.
6. "DWR" refers to the California Department of Water Resources.
7. "Effective Date" means the date on which the last Party executes this Agreement.
8. "Executive Group" refers to the group created in Section III of the MOU.
9. "Governing Body" means the legislative body of each Party: the City Council and the County Board of Supervisors, respectively.
10. "Groundwater Sustainability Plan ("GSP")" is the basin plan for the San Pasqual Basin that the Parties to this MOU are seeking to develop and implement pursuant to the Act.
11. "Memorandum of Understanding ("MOU")" refers to this agreement.
12. "Party" or "Parties" refer to the City of San Diego and County of San Diego.

13. "GSP Schedule" includes all the tasks necessary to complete the GSP and the date scheduled for completion.

14. "State" means the State of California.

III. Agreement.

This section establishes the process for the San Pasqual Basin GSP Core Team, Executive Group and Stakeholder Engagement.

1. Core Team Structure

    a. Details of Core Team structure (number of members and interests represented) will be determined during GSP development.

    b. The Core Team will be coordinated by a City designated person. The City designated person will be responsible for developing the scope of work, schedule, and budget for GSP development for consideration by the Core Team's members.

2. Establishment and Responsibilities of the GSP Core Team ("Core Team").

    a. The Core Team will consist of representatives from each Party to this MOU working cooperatively together to achieve the objectives of the Act, and is coordinated by the City. Core Team members serve at the pleasure of their appointing Party and may be removed/changed by their appointing Party at any time. A Party must notify all other Parties to this MOU in writing if that Party removes or replaces Core Team members.

    b. The Core Team shall develop a coordinated GSP. The GSP shall include, but not be limited to, enforcement measures, a detailed breakdown of each Parties responsibilities for GSP implementation, anticipated costs of implementing the GSP, and cost recovery mechanisms (if necessary).

    c. The Core Team shall develop a stakeholder engagement plan (Engagement Plan), which shall detail outreach strategies to involve stakeholders and other interested parties in the preparation of the GSP.

    d. Each member of the Core Team shall be responsible for keeping his/her respective management and governing body informed of the progress towards the development of the GSP and for obtaining any necessary approvals from management/governing body. Each member of the Core Team shall keep the other members reasonably informed as to all material developments so as to allow for the efficient and timely completion of the GSP.

    e. Each Core Team member's compensation for their service on the Core Team is the responsibility of the appointing Party.

3. Establishment and Responsibilities of the Executive Group.

    a. The Executive Group shall consist of representatives, typically directors, general managers, or chief executives, from each Party.

    b. The Executive Group for San Pasqual discussions will be coordinated by a City

representative.

c. The Executive Group's primary responsibilities are to provide information and individual advice to the Core Team on matters such as: progress on meeting goals and objectives, progress on implementing actions undertaken pursuant to the MOU and resolving issues related to those actions, and formulating measures to increase efficiency in reaching the MOUs goals. Executive Group members also provide direction and oversight regarding activities that should be undertaken by their Party's representative(s) on the Core Team.

d. The Executive Group shall develop and approve a "Guiding Principles" document, which will provide a foundation for collaborative discussion, planning, operational values, and mutual understandings among members of the Core Team. Prior to beginning GSP preparation, the "Guiding Principles" will be prepared and included as part of this MOU through reference.

4. Core Team and Executive Group Meetings.

a. The Core Team will establish a meeting schedule and choice of locations for regular meetings to discuss GSP development and implementation activities, assignments, milestones and ongoing work progress.

b. The Core Team shall establish and schedule public meetings to coordinate development and implementation of the GSP.

c. Attendance at all Core Team meetings may be augmented to include staff or consultants to ensure that the appropriate expertise is available.

d. The Core Team agrees to host a minimum of one Executive Group Meeting per calendar year prior to Plan adoption. The purpose of such meetings will be to discuss, review, and resolve details and issues brought forward from the Core Team regarding the development of the Plan and other related activities.

IV. Interagency Communication.

1. To provide for consistent and effective communication between Parties, each Party agrees that a single member from each Party's Core Team will be their central point of contact on matters relating to this MOU. Additional representatives may be appointed to serve as points of contact on specific actions or issues.

2. The Core Team shall appoint a representative from the City to communicate actions conducted under this MOU to DWR and be the main point of contact with DWR. The appointee shall not communicate formal actions or decisions without prior written approval from the Core Team.

3. Informal communications between the Parties and DWR are acceptable.

V. Roles and Responsibilities of the Parties.

1. The Parties are responsible for developing a coordinated GSP that meets the requirements of the Act.

2. The Parties are each responsible for implementing the GSP in their respective

jurisdictional areas (see attached map of jurisdictional areas)

3. The Parties will jointly establish their roles and responsibilities for implementing a coordinated GSP for the San Pasqual Basin in accordance with the Act.
4. The Parties will jointly work in good faith and coordinate all activities to meet the objectives of SGMA compliance. The Parties shall cooperate with one another and work as efficiently as possible in the pursuit of all activities and decisions described in the MOU.
5. As part of the Engagement Plan, and prior to GSP preparation, the Parties agree to explore the option of an advisory committee comprised of diverse social, cultural, and economic elements of the population and area stakeholders within the San Pasqual Basin. If implemented, the advisory committee makeup and structure will be determined prior to GSP development with input from local stakeholders.
6. Each of the Parties will provide expertise, guidance, and data on those matters for which it has specific expertise or statutory authority, as needed to carry out the objectives of this MOU. Further development of roles and responsibilities of each Party will occur during GSP development.
7. After execution of this MOU as soon as reasonably possible, the Core Team shall develop a timeline that describes the anticipated tasks to be performed under this MOU and dates to complete each task ("GSP Schedule"); and scope(s) of work and estimated costs for GSP development. The GSP Schedule will allow for the preparation of a legally defensible GSP acceptable to the Parties and include allowances for public review and comment, and approval by Governing Bodies prior to deadlines required in the Act. The GSP Schedule will be determined at the beginning of GSP development and will be referred and amended as necessary to conform to developing information, permitting, and other requirements. Therefore, this GSP Schedule may be revised from time to time upon mutual agreement of the Core Team. Costs shall be funded and shared as outlined in Section VI.
8. The Core team shall be coordinated by the City and its Executive Group member. Core Team members will collaborate to meet sustainability objectives as defined in SGMA and apply the Guiding Principles developed by the Executive Group prior to developing the GSP.
9. The Core Team shall work in a manner that seeks to achieve full agreement (consensus) amongst the Parties. In the event that the Core Team has attempted, in good faith, to resolve the matter on its own and is unsuccessful, the Core Team agrees to seek resolution through Executive Group Meetings.

VI. Contracting and Funding for GSP Development.

1. The Parties shall mutually develop a scope of work, budget, and Cost Recovery Plan for the work to be undertaken pursuant to this MOU. The GSP Cost Recovery Plan shall be included and adopted in the final San Pasqual Basin GSP. The budget shall be determined prior to any financial expenditures or incurrence of any financial obligations related to consultant costs.
2. The City shall hire consultant(s) to complete required components of the GSP. The

contracting shall be subject to the City's competitive bid process.

3. The Parties agree that consultant costs for GSP development shall be proportionately based on the jurisdictional area of each Party in the San Pasqual Basin such that the City shall pay 90 percent of any consultant cost(s) to prepare a GSP for the San Pasqual Basin while the County shall pay the remaining 10 percent. Compensation for each member's representatives on the Core Team shall be borne by the Party. The Parties shall enter into a cost reimbursement agreement for the preparation of the Plan.
4. Specifically, to fulfill the requirements of the Act, the Core Team will collaboratively agree upon a scope of work for the consultants needed to prepare the GSP. The scope of work and budget shall include only what is required by the Act. In the event that one or more stakeholders requests a non-essential component or additional detail in the scope of work, the Parties will discuss the request, and if appropriate, any deviation from the 90/10 split will be agreed upon in writing prior to execution of that task.
5. The Parties agree that each Party will bear its own staff costs to develop the GSP.

VII. Approval.

1. The Parties agree to make best efforts to adhere to the required GSP Schedule and will forward a final San Pasqual Basin GSP to their respective Governing Body for approval and subsequent submission to DWR for evaluation as provided for in Act.
2. Approval and amendments will be obtained from the County Board of Supervisors prior to submission to the City Council.
3. Each Governing Body retains full authority to approve, amend, or reject the proposed GSP, provided the other Governing Body subsequently confirms any amendments. Both Parties also recognize that the failure to adopt and submit a GSP for the San Pasqual Basin to DWR by January 31, 2022, risks allowing for State intervention in managing the San Pasqual Basin.
4. The Parties agree that they will use good-faith efforts to resolve any issues that one or both Governing Bodies may have with the final proposed GSP for the San Pasqual Basin in a timely manner so as to avoid the possibility of State intervention. An amendment to this MOU is anticipated upon acceptance of the San Pasqual Basin GSP by both Governing Bodies.

VIII. Staffing.

Each Party agrees that it will devote sufficient staff time and other resources to actively participate in the development of the GSP for the San Pasqual Basin, as set forth in this MOU.

IX. Indemnification.

1. Claims Arising From Sole Acts or Omissions of City.
The City of San Diego ("City") hereby agrees to defend and indemnify the County, its agents, officers and employees (hereinafter collectively referred to in this paragraph as "County"), from any claim, action or proceeding against County,

arising solely out of the acts or omissions of City in the performance of this MOU. At its sole discretion, County may participate at its own expense in the defense of any claim, action or proceeding, but such participation shall not relieve City of any obligation imposed by this MOU. The County shall notify City promptly of any claim, action or proceeding and cooperate fully in the defense.

2. Claims Arising From Sole Acts or Omissions of the County.
The County hereby agrees to defend and indemnify the City of San Diego, its agents, officers and employees (hereafter collectively referred to in this paragraph as 'City') from any claim, action or proceeding against City, arising solely out of the acts or omissions of County in the performance of this MOU. At its sole discretion, City may participate at its own expense in the defense of any such claim, action or proceeding, but such participation shall not relieve the County of any obligation imposed by this MOU. City shall notify County promptly of any claim, action or proceeding and cooperate fully in the defense.

3. Claims Arising From Concurrent Acts or Omissions.
The City of San Diego ("City") hereby agrees to defend itself, and the County hereby agrees to defend itself, from any claim, action or proceeding arising out of the concurrent acts or omissions of City and County. In such cases, City and County agree to retain their own legal counsel, bear their own defense costs, and waive their right to seek reimbursement of such costs, except as provided in paragraph 5 below.

4. Joint Defense.
Notwithstanding paragraph 3 above, in cases where City and County agree in writing to a joint defense, City and County may appoint joint defense counsel to defend the claim, action or proceeding arising out of the concurrent acts or omissions of County and City. Joint defense counsel shall be selected by mutual agreement of City and County. City and County agree to share the costs of such joint defense and any agreed settlement in equal amounts, except as provided in paragraph 5 below. City and County further agree that neither Party may bind the other to a settlement agreement without the written consent of both City and County.

5. Reimbursement and/or Reallocation.
Where a trial verdict or arbitration award allocates or determines the comparative fault of the Parties, City and County may seek reimbursement and/or reallocation of defense costs, settlement payments, judgments and awards, consistent with such comparative fault.

X. Litigation.

In the event that any lawsuit is brought against, either Party based upon or arising out of the terms of this MOU by a third party, the Parties shall cooperate in the defense of the action. Each Party shall bear its own legal costs associated with such litigation.

XI. Books and Records.

Each Party shall have access to and the right to examine any of the other Party's pertinent books, documents, papers or other records (including, without limitation, records

contained on electronic media) relating to the performance of that Party's obligations pursuant to this MOU, *providing that* nothing in this paragraph shall be construed to operate as a waiver of any applicable privilege. The Parties shall keep the information exchanged pursuant to this section confidential to the greatest extent allowed by law.

XII. Notice.

All notices required by this MOU will be deemed to have been given when made in writing and delivered or mailed to the respective representatives of City and the County at their respective addresses as follows:

For the City:

Lan C. Wiborg
Deputy Director
Public Utilities Department
525 B Street, Suite 300
San Diego, CA 92101

With a copy to:

Raymond C. Palmucci
Deputy City Attorney, Civil Division
Office of the San Diego City Attorney
1200 Third Avenue, Suite 1100
San Diego, CA 92101

For the County:

San Diego County
Administrative Officer
San Diego County
1600 Pacific Highway
San Diego, CA 92101

With a copy to:

Justin Crumley, Senior Deputy
Office of County Counsel
1600 Pacific Highway, Rm 355
San Diego, CA 92101

Any Party may change the address or facsimile number to which such communications are to be given by providing the other Parties with written notice of such change at least fifteen (15) calendar days prior to the effective date of the change.

All notices will be effective upon receipt and will be deemed received through delivery if personally served or served using facsimile machines, or on the fifth (5^{th}) day following deposit in the mail if sent by first class mail.

XIII. Miscellaneous.

1. Term of MOU**.** This MOU shall remain in full force and effect until the date upon which the Parties have both executed a document terminating the provisions of this MOU.
2. No Third Party Beneficiaries. This MOU is not intended to, and will not be construed to, confer a benefit or create any right on a third party, or the power or right to bring an action to enforce any of its terms.
3. Amendments. This MOU may be amended only by written instrument duly signed and executed by the City and the County.
4. Compliance with Law. In performing their respective obligations under this MOU, the Parties shall comply with and conform to all applicable laws, rules, regulations and ordinances.

5. Jurisdiction and Venue. This MOU shall be governed by and construed in accordance with the laws of the State of California, except for its conflicts of law rules. Any suit, action, or proceeding brought under the scope of this MOU shall be brought and maintained to the extent allowed by law in the County of San Diego, California.

6. Waiver. The waiver by either Party or any of its officers, agents or employees, or the failure of either Party or its officers, agents or employees to take action with respect to any right conferred by, or any breach of any obligation or responsibility of this MOU, will not be deemed to be a waiver of such obligation or responsibility, or subsequent breach of same, or of any terms, covenants or conditions of this MOU, unless such waiver is expressly set forth in writing in a document signed and executed by the appropriate authority of the City and the County.

7. Authorized Representatives. The persons executing this MOU on behalf of the Parties hereto affirmatively represent that each has the requisite legal authority to enter into this MOU on behalf of their respective Party and to bind their respective Party to the terms and conditions of this MOU. The persons executing this MOU on behalf of their respective Party understand that both Parties are relying on these representations in entering into this MOU.

8. Successors in Interest. The terms of this MOU will be binding on all successors in interest of each Party.

9. Severability. The provisions of this MOU are severable, and the adjudicated invalidity of any provision or portion of this MOU shall not in and of itself affect the validity of any other provision or portion of this MOU, and the remaining provisions of the MOU shall remain in full force and effect, except to the extent that the invalidity of the severed provisions would result in a failure of consideration or would materially adversely affect either Party's benefit of its bargain. If a court of competent jurisdiction were to determine that a provision of this MOU is invalid or unenforceable and results in a failure of consideration or materially adversely affects either Party's benefit of its bargain, the Parties agree to promptly use good faith efforts to amend this MOU to reflect the original intent of the Parties in the changed circumstances.

10. Construction of MOU. This MOU shall be construed and enforced in accordance with the laws of the United States and the State of California.

11. Entire MOU**.**

    a. This MOU constitutes the entire agreement between the City and the County and supersedes all prior negotiations, representations, or other agreements, whether written or oral.

    b. In the event of a dispute between the Parties as to the language of this MOU or the construction or meaning of any term hereof, this MOU will be deemed to have been drafted by the Parties in equal parts so that no presumptions or inferences concerning its terms or interpretation may be construed against any Party to this MOU.

IN WITNESS WHEREOF, the Parties hereto have set their hand on the date first above written.

CITY OF SAN DIEGO

By: _____
Kristina Peralta
Director, Purchasing & Contracting

I HEREBY APPROVE the form of the foregoing Agreement on this 29 day of June, 2017.

MARA ELLIOTT, City Attorney

By: _____
Ray Palmucci
Deputy City Attorney

R-311212

COUNTY OF SAN DIEGO,
a political subdivision of
the State of California

By: _____
Clerk of the Board of Supervisors

DATE: 6/27/17

Approved and or authorized by the Board of Supervisors of the County of San Diego.
Meeting Date: 6/21/17 Minute Order No. 4
By: _____ Date: 6/27/17
Deputy Clerk of the Board Supervisors

APPROVED AS TO FORM AND LEGALITY
BY COUNTY COUNSEL

By: _____ 6/21/17
Senior Deputy

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San Pasqual Valley Groundwater Basin GSA Boundary

San Pasqual Groundwater Basin

San Pasqual Valley GSA Boundary

1 0.5 0 1 Miles

LUEG GIS Land Use & Environment Group Geographic Information Service

SanGIS

Path: P:\20151020_Borrego_Valley_basin\GSA_San_Pasqual_Valley_03292017.mxd – Date: 4/18/2017

San Pasqual Valley Groundwater Basin Jurisdictional Boundaries

San Pasqual Groundwater Basin
County of San Diego
City of San Diego

1 0.5 0 1 Miles

LUEG GIS Land Use & Environment Group Geographic Information Service

SanGIS

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WHEREAS, Section 10720.7 of Act requires all basins designated as high- or medium-priority basins designated in Bulletin 118 be managed under a GSP or coordinated GSPs pursuant to Act;

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3. "Cost Recovery Plan" refers to a component of the Plan that includes an evaluation of fee recovery options and proposed fee recovery alternative(s) available to GSAs pursuant to Sections 10730 and 10730.2 of SGMA.
4. "City" refers to the City of San Diego, a Party to this MOU. The City has designated the Deputy Director for Long-Range Planning and Water Resources Division, Public Utilities Department or their designee(s), as the City department representative to carry out the terms of this MOU for the City.
5. "County" refers to the County of San Diego, a Party to this MOU. The County has designated the Director, Planning & Development Services, or his designee(s), as the County department representative to carry out the terms of this MOU for the County.
6. "DWR" refers to the California Department of Water Resources.
7. "Effective Date" means the date on which the last Party executes this Agreement.
8. "Executive Group" refers to the group created in Section III of the MOU.
9. "Governing Body" means the legislative body of each Party: the City Council and the County Board of Supervisors, respectively.
10. "Groundwater Sustainability Plan ("GSP")" is the basin plan for the San Pasqual Basin that the Parties to this MOU are seeking to develop and implement pursuant to the Act.
11. "Memorandum of Understanding ("MOU")" refers to this agreement.
12. "Party" or "Parties" refer to the City of San Diego and County of San Diego.

13. "GSP Schedule" includes all the tasks necessary to complete the GSP and the date scheduled for completion.

14. "State" means the State of California.

III. Agreement.

This section establishes the process for the San Pasqual Basin GSP Core Team, Executive Group and Stakeholder Engagement.

1. Core Team Structure

    a. Details of Core Team structure (number of members and interests represented) will be determined during GSP development.

    b. The Core Team will be coordinated by a City designated person. The City designated person will be responsible for developing the scope of work, schedule, and budget for GSP development for consideration by the Core Team's members.

2. Establishment and Responsibilities of the GSP Core Team ("Core Team").

    a. The Core Team will consist of representatives from each Party to this MOU working cooperatively together to achieve the objectives of the Act, and is coordinated by the City. Core Team members serve at the pleasure of their appointing Party and may be removed/changed by their appointing Party at any time. A Party must notify all other Parties to this MOU in writing if that Party removes or replaces Core Team members.

    b. The Core Team shall develop a coordinated GSP. The GSP shall include, but not be limited to, enforcement measures, a detailed breakdown of each Parties responsibilities for GSP implementation, anticipated costs of implementing the GSP, and cost recovery mechanisms (if necessary).

    c. The Core Team shall develop a stakeholder engagement plan (Engagement Plan), which shall detail outreach strategies to involve stakeholders and other interested parties in the preparation of the GSP.

    d. Each member of the Core Team shall be responsible for keeping his/her respective management and governing body informed of the progress towards the development of the GSP and for obtaining any necessary approvals from management/governing body. Each member of the Core Team shall keep the other members reasonably informed as to all material developments so as to allow for the efficient and timely completion of the GSP.

    e. Each Core Team member's compensation for their service on the Core Team is the responsibility of the appointing Party.

3. Establishment and Responsibilities of the Executive Group.

    a. The Executive Group shall consist of representatives, typically directors, general managers, or chief executives, from each Party.

    b. The Executive Group for San Pasqual discussions will be coordinated by a City

representative.

c. The Executive Group's primary responsibilities are to provide information and individual advice to the Core Team on matters such as: progress on meeting goals and objectives, progress on implementing actions undertaken pursuant to the MOU and resolving issues related to those actions, and formulating measures to increase efficiency in reaching the MOUs goals. Executive Group members also provide direction and oversight regarding activities that should be undertaken by their Party's representative(s) on the Core Team.

d. The Executive Group shall develop and approve a "Guiding Principles" document, which will provide a foundation for collaborative discussion, planning, operational values, and mutual understandings among members of the Core Team. Prior to beginning GSP preparation, the "Guiding Principles" will be prepared and included as part of this MOU through reference.

4. Core Team and Executive Group Meetings.

a. The Core Team will establish a meeting schedule and choice of locations for regular meetings to discuss GSP development and implementation activities, assignments, milestones and ongoing work progress.

b. The Core Team shall establish and schedule public meetings to coordinate development and implementation of the GSP.

c. Attendance at all Core Team meetings may be augmented to include staff or consultants to ensure that the appropriate expertise is available.

d. The Core Team agrees to host a minimum of one Executive Group Meeting per calendar year prior to Plan adoption. The purpose of such meetings will be to discuss, review, and resolve details and issues brought forward from the Core Team regarding the development of the Plan and other related activities.

IV. Interagency Communication.

1. To provide for consistent and effective communication between Parties, each Party agrees that a single member from each Party's Core Team will be their central point of contact on matters relating to this MOU. Additional representatives may be appointed to serve as points of contact on specific actions or issues.

2. The Core Team shall appoint a representative from the City to communicate actions conducted under this MOU to DWR and be the main point of contact with DWR. The appointee shall not communicate formal actions or decisions without prior written approval from the Core Team.

3. Informal communications between the Parties and DWR are acceptable.

V. Roles and Responsibilities of the Parties.

1. The Parties are responsible for developing a coordinated GSP that meets the requirements of the Act.

2. The Parties are each responsible for implementing the GSP in their respective

jurisdictional areas (see attached map of jurisdictional areas)

3. The Parties will jointly establish their roles and responsibilities for implementing a coordinated GSP for the San Pasqual Basin in accordance with the Act.
4. The Parties will jointly work in good faith and coordinate all activities to meet the objectives of SGMA compliance. The Parties shall cooperate with one another and work as efficiently as possible in the pursuit of all activities and decisions described in the MOU.
5. As part of the Engagement Plan, and prior to GSP preparation, the Parties agree to explore the option of an advisory committee comprised of diverse social, cultural, and economic elements of the population and area stakeholders within the San Pasqual Basin. If implemented, the advisory committee makeup and structure will be determined prior to GSP development with input from local stakeholders.
6. Each of the Parties will provide expertise, guidance, and data on those matters for which it has specific expertise or statutory authority, as needed to carry out the objectives of this MOU. Further development of roles and responsibilities of each Party will occur during GSP development.
7. After execution of this MOU as soon as reasonably possible, the Core Team shall develop a timeline that describes the anticipated tasks to be performed under this MOU and dates to complete each task ("GSP Schedule"); and scope(s) of work and estimated costs for GSP development. The GSP Schedule will allow for the preparation of a legally defensible GSP acceptable to the Parties and include allowances for public review and comment, and approval by Governing Bodies prior to deadlines required in the Act. The GSP Schedule will be determined at the beginning of GSP development and will be referred and amended as necessary to conform to developing information, permitting, and other requirements. Therefore, this GSP Schedule may be revised from time to time upon mutual agreement of the Core Team. Costs shall be funded and shared as outlined in Section VI.
8. The Core team shall be coordinated by the City and its Executive Group member. Core Team members will collaborate to meet sustainability objectives as defined in SGMA and apply the Guiding Principles developed by the Executive Group prior to developing the GSP.
9. The Core Team shall work in a manner that seeks to achieve full agreement (consensus) amongst the Parties. In the event that the Core Team has attempted, in good faith, to resolve the matter on its own and is unsuccessful, the Core Team agrees to seek resolution through Executive Group Meetings.

VI. Contracting and Funding for GSP Development.

1. The Parties shall mutually develop a scope of work, budget, and Cost Recovery Plan for the work to be undertaken pursuant to this MOU. The GSP Cost Recovery Plan shall be included and adopted in the final San Pasqual Basin GSP. The budget shall be determined prior to any financial expenditures or incurrence of any financial obligations related to consultant costs.
2. The City shall hire consultant(s) to complete required components of the GSP. The

contracting shall be subject to the City's competitive bid process.

3. The Parties agree that consultant costs for GSP development shall be proportionately based on the jurisdictional area of each Party in the San Pasqual Basin such that the City shall pay 90 percent of any consultant cost(s) to prepare a GSP for the San Pasqual Basin while the County shall pay the remaining 10 percent. Compensation for each member's representatives on the Core Team shall be borne by the Party. The Parties shall enter into a cost reimbursement agreement for the preparation of the Plan.
4. Specifically, to fulfill the requirements of the Act, the Core Team will collaboratively agree upon a scope of work for the consultants needed to prepare the GSP. The scope of work and budget shall include only what is required by the Act. In the event that one or more stakeholders requests a non-essential component or additional detail in the scope of work, the Parties will discuss the request, and if appropriate, any deviation from the 90/10 split will be agreed upon in writing prior to execution of that task.
5. The Parties agree that each Party will bear its own staff costs to develop the GSP.

VII. Approval.

1. The Parties agree to make best efforts to adhere to the required GSP Schedule and will forward a final San Pasqual Basin GSP to their respective Governing Body for approval and subsequent submission to DWR for evaluation as provided for in Act.
2. Approval and amendments will be obtained from the County Board of Supervisors prior to submission to the City Council.
3. Each Governing Body retains full authority to approve, amend, or reject the proposed GSP, provided the other Governing Body subsequently confirms any amendments. Both Parties also recognize that the failure to adopt and submit a GSP for the San Pasqual Basin to DWR by January 31, 2022, risks allowing for State intervention in managing the San Pasqual Basin.
4. The Parties agree that they will use good-faith efforts to resolve any issues that one or both Governing Bodies may have with the final proposed GSP for the San Pasqual Basin in a timely manner so as to avoid the possibility of State intervention. An amendment to this MOU is anticipated upon acceptance of the San Pasqual Basin GSP by both Governing Bodies.

VIII. Staffing.

Each Party agrees that it will devote sufficient staff time and other resources to actively participate in the development of the GSP for the San Pasqual Basin, as set forth in this MOU.

IX. Indemnification.

1. Claims Arising From Sole Acts or Omissions of City.
The City of San Diego ("City") hereby agrees to defend and indemnify the County, its agents, officers and employees (hereinafter collectively referred to in this paragraph as "County"), from any claim, action or proceeding against County,

arising solely out of the acts or omissions of City in the performance of this MOU. At its sole discretion, County may participate at its own expense in the defense of any claim, action or proceeding, but such participation shall not relieve City of any obligation imposed by this MOU. The County shall notify City promptly of any claim, action or proceeding and cooperate fully in the defense.

2. Claims Arising From Sole Acts or Omissions of the County.
The County hereby agrees to defend and indemnify the City of San Diego, its agents, officers and employees (hereafter collectively referred to in this paragraph as 'City') from any claim, action or proceeding against City, arising solely out of the acts or omissions of County in the performance of this MOU. At its sole discretion, City may participate at its own expense in the defense of any such claim, action or proceeding, but such participation shall not relieve the County of any obligation imposed by this MOU. City shall notify County promptly of any claim, action or proceeding and cooperate fully in the defense.

3. Claims Arising From Concurrent Acts or Omissions.
The City of San Diego ("City") hereby agrees to defend itself, and the County hereby agrees to defend itself, from any claim, action or proceeding arising out of the concurrent acts or omissions of City and County. In such cases, City and County agree to retain their own legal counsel, bear their own defense costs, and waive their right to seek reimbursement of such costs, except as provided in paragraph 5 below.

4. Joint Defense.
Notwithstanding paragraph 3 above, in cases where City and County agree in writing to a joint defense, City and County may appoint joint defense counsel to defend the claim, action or proceeding arising out of the concurrent acts or omissions of County and City. Joint defense counsel shall be selected by mutual agreement of City and County. City and County agree to share the costs of such joint defense and any agreed settlement in equal amounts, except as provided in paragraph 5 below. City and County further agree that neither Party may bind the other to a settlement agreement without the written consent of both City and County.

5. Reimbursement and/or Reallocation.
Where a trial verdict or arbitration award allocates or determines the comparative fault of the Parties, City and County may seek reimbursement and/or reallocation of defense costs, settlement payments, judgments and awards, consistent with such comparative fault.

X. Litigation.

In the event that any lawsuit is brought against, either Party based upon or arising out of the terms of this MOU by a third party, the Parties shall cooperate in the defense of the action. Each Party shall bear its own legal costs associated with such litigation.

XI. Books and Records.

Each Party shall have access to and the right to examine any of the other Party's pertinent books, documents, papers or other records (including, without limitation, records

contained on electronic media) relating to the performance of that Party's obligations pursuant to this MOU, *providing that* nothing in this paragraph shall be construed to operate as a waiver of any applicable privilege. The Parties shall keep the information exchanged pursuant to this section confidential to the greatest extent allowed by law.

XII. Notice.

All notices required by this MOU will be deemed to have been given when made in writing and delivered or mailed to the respective representatives of City and the County at their respective addresses as follows:

For the City:

Lan C. Wiborg
Deputy Director
Public Utilities Department
525 B Street, Suite 300
San Diego, CA 92101

With a copy to:

Raymond C. Palmucci
Deputy City Attorney, Civil Division
Office of the San Diego City Attorney
1200 Third Avenue, Suite 1100
San Diego, CA 92101

For the County:

San Diego County
Administrative Officer
San Diego County
1600 Pacific Highway
San Diego, CA 92101

With a copy to:

Justin Crumley, Senior Deputy
Office of County Counsel
1600 Pacific Highway, Rm 355
San Diego, CA 92101

Any Party may change the address or facsimile number to which such communications are to be given by providing the other Parties with written notice of such change at least fifteen (15) calendar days prior to the effective date of the change.

All notices will be effective upon receipt and will be deemed received through delivery if personally served or served using facsimile machines, or on the fifth (5^{th}) day following deposit in the mail if sent by first class mail.

XIII. Miscellaneous.

1. Term of MOU**.** This MOU shall remain in full force and effect until the date upon which the Parties have both executed a document terminating the provisions of this MOU.
2. No Third Party Beneficiaries. This MOU is not intended to, and will not be construed to, confer a benefit or create any right on a third party, or the power or right to bring an action to enforce any of its terms.
3. Amendments. This MOU may be amended only by written instrument duly signed and executed by the City and the County.
4. Compliance with Law. In performing their respective obligations under this MOU, the Parties shall comply with and conform to all applicable laws, rules, regulations and ordinances.

5. Jurisdiction and Venue. This MOU shall be governed by and construed in accordance with the laws of the State of California, except for its conflicts of law rules. Any suit, action, or proceeding brought under the scope of this MOU shall be brought and maintained to the extent allowed by law in the County of San Diego, California.

6. Waiver. The waiver by either Party or any of its officers, agents or employees, or the failure of either Party or its officers, agents or employees to take action with respect to any right conferred by, or any breach of any obligation or responsibility of this MOU, will not be deemed to be a waiver of such obligation or responsibility, or subsequent breach of same, or of any terms, covenants or conditions of this MOU, unless such waiver is expressly set forth in writing in a document signed and executed by the appropriate authority of the City and the County.

7. Authorized Representatives. The persons executing this MOU on behalf of the Parties hereto affirmatively represent that each has the requisite legal authority to enter into this MOU on behalf of their respective Party and to bind their respective Party to the terms and conditions of this MOU. The persons executing this MOU on behalf of their respective Party understand that both Parties are relying on these representations in entering into this MOU.

8. Successors in Interest. The terms of this MOU will be binding on all successors in interest of each Party.

9. Severability. The provisions of this MOU are severable, and the adjudicated invalidity of any provision or portion of this MOU shall not in and of itself affect the validity of any other provision or portion of this MOU, and the remaining provisions of the MOU shall remain in full force and effect, except to the extent that the invalidity of the severed provisions would result in a failure of consideration or would materially adversely affect either Party's benefit of its bargain. If a court of competent jurisdiction were to determine that a provision of this MOU is invalid or unenforceable and results in a failure of consideration or materially adversely affects either Party's benefit of its bargain, the Parties agree to promptly use good faith efforts to amend this MOU to reflect the original intent of the Parties in the changed circumstances.

10. Construction of MOU. This MOU shall be construed and enforced in accordance with the laws of the United States and the State of California.

11. Entire MOU**.**

    a. This MOU constitutes the entire agreement between the City and the County and supersedes all prior negotiations, representations, or other agreements, whether written or oral.

    b. In the event of a dispute between the Parties as to the language of this MOU or the construction or meaning of any term hereof, this MOU will be deemed to have been drafted by the Parties in equal parts so that no presumptions or inferences concerning its terms or interpretation may be construed against any Party to this MOU.

IN WITNESS WHEREOF, the Parties hereto have set their hand on the date first above written.

CITY OF SAN DIEGO

By: _____
Kristina Peralta
Director, Purchasing & Contracting

I HEREBY APPROVE the form of the foregoing Agreement on this 29 day of June, 2017.

MARA ELLIOTT, City Attorney

By: _____
Ray Palmucci
Deputy City Attorney

R-311212

COUNTY OF SAN DIEGO,
a political subdivision of
the State of California

By: _____
Clerk of the Board of Supervisors

DATE: 6/27/17

Approved and or authorized by the Board of Supervisors of the County of San Diego.
Meeting Date: 6/21/17 Minute Order No. 4
By: _____ Date: 6/27/17
Deputy Clerk of the Board Supervisors

APPROVED AS TO FORM AND LEGALITY
BY COUNTY COUNSEL

By: _____ 6/21/17
Senior Deputy

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San Pasqual Valley Groundwater Basin GSA Boundary

San Pasqual Groundwater Basin

San Pasqual Valley GSA Boundary

1 0.5 0 1 Miles

LUEG GIS Land Use & Environment Group Geographic Information Service

SanGIS

Path: P:\20151020_Borrego_Valley_basin\GSA_San_Pasqual_Valley_03292017.mxd – Date: 4/18/2017

San Pasqual Valley Groundwater Basin Jurisdictional Boundaries

San Pasqual Groundwater Basin
County of San Diego
City of San Diego

1 0.5 0 1 Miles

LUEG GIS Land Use & Environment Group Geographic Information Service

SanGIS

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Exhibit 4

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Del Mar turf superintendent Leif Dickinson (left), Darrell Haire of the Jockeys Guild (center) and Tom Robbins, vice president of racing and industry relations, examine the course. (/ Ed Zieralski)

West Coast Turf will continue growing sod on 360 acres of city land in San Pasqual Valley

By DAVID GARRICK

APRIL 29, 2020 5 AM PT

SAN DIEGO — A company that supplies sod for Pebble Beach Golf Links and the field surfaces of most major stadiums on the West Coast will continue growing much of its product on hundreds of acres of city-owned land for the next 30 years.

The San Diego City Council recently approved a new lease with West Coast Turf that will include 507 city-owned acres in the San Pasqual Valley, where the company has been growing sod for sports fields, high schools and other uses since 1991.

In exchange for use of 362 acres of the land for sod growth, the company maintains 145 acres of adjacent and "unusable" open space in the valley, which also is home to the San Diego Zoo's Safari Park.

The new pact increases the size of the company's lease payments and gives the city a chance to receive more money based on the company's revenue.

The flat-rate, quarterly rent for the site has been $41,495. The new rent will be either $54,300 per quarter or 5 percent of West Coast Turf's gross income, whichever is higher.

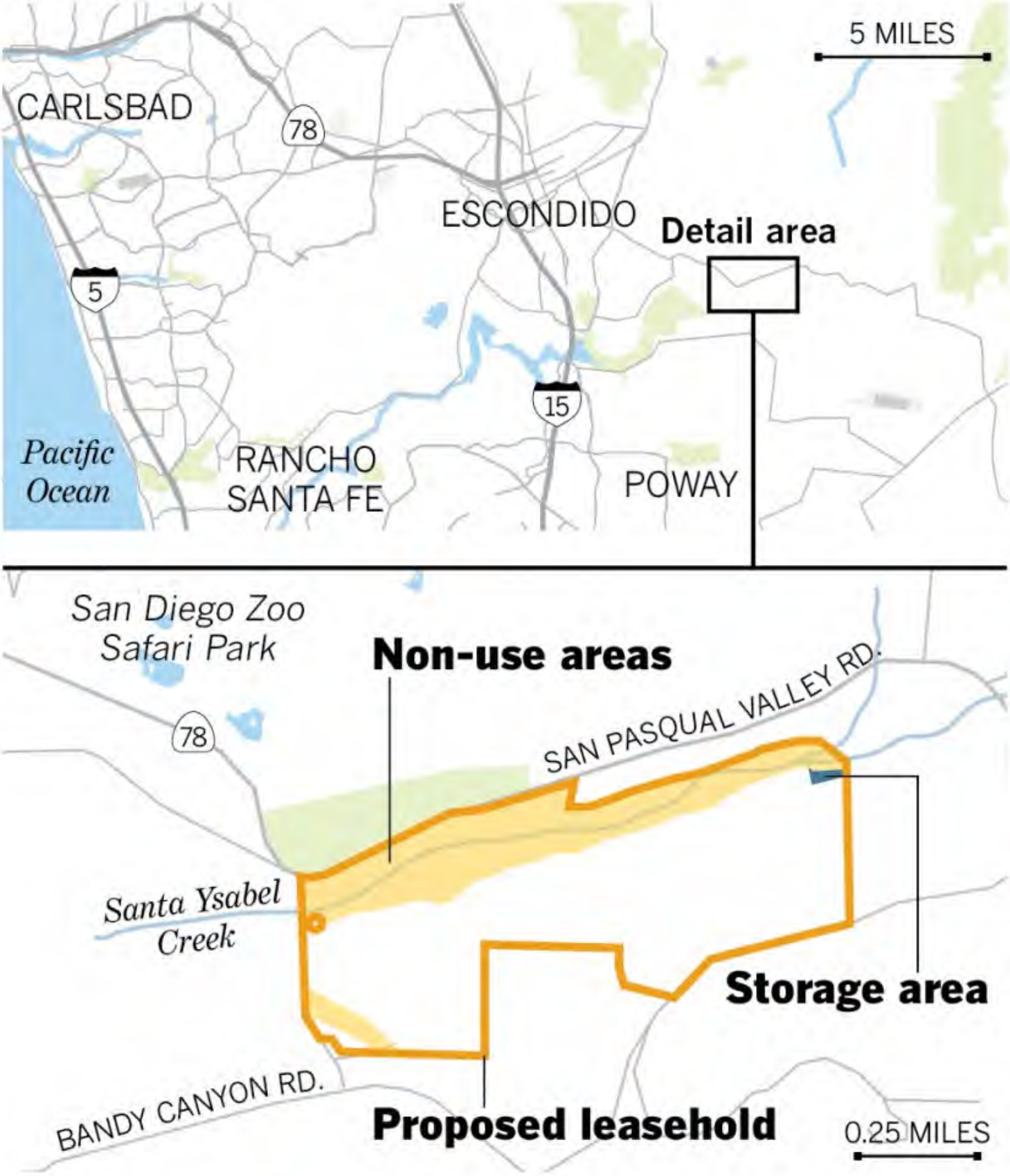
The company, which calls itself a leader in the turfgrass industry, has provided sod for Angel Stadium in Anaheim, Levi's Stadium in Santa Clara, Dodger Stadium, Oracle Park in San Francisco, Santa Anita and Del Mar racetracks, as well as Disneyland, the L.A. Coliseum and the Rose Bowl.

West Coast Turf also has provided sod for eight Super Bowl venues, according to the company's website, and it provides sod to many colleges, including UC San Diego, San Diego State, the University of San Diego, and some local school districts, including Carlsbad, San Marcos and Poway.

The minimum lease payment to the city is based on a recent appraisal that says market-rate annual rent for the land should be $600 per acre multiplied by the number of usable acres, or $217,000 per year.

San Diego extends turf lease

The city agrees to a 30-year lease with a turf company for 507 acres in San Pasqual Valley.



Sources: City of San Diego; Nextzen; OpenStreetMap

MICHELLE GUERRERO U-T

City officials say West Coast Turf has been a quality tenant, particularly with regard to the nearby environment and the Lake Hodges watershed.

“For over 25 years, West Coast Turf has responsibly maintained a clean and successful farming business in San Pasqual Valley,” a city staff report says. “They have demonstrated an understanding that the Lake Hodges watershed is an important asset of the community and that the upstream runoff is an important aspect.”

The company also focuses on water-saving varieties of sod, and its activities are monitored to make sure they aren’t impacting the aquifer in the area, city officials say.

The company sought a long-term lease extension because sod is a long-term perennial crop that typically takes several years to propagate.

West Coast Turf says on its website that using sod for grass fields is superior to seeding them.Sod is immediate while seed is often lost to wind and erosion. Seed also requires more water and takes several weeks to germinate, the company says.

The council approved the new lease in an 8-1 vote, with Councilwoman Vivian Moreno voting “no.” Her staff said there were concerns that the company has in the past produced dust clouds when farming some county-owned land near San Ysidro.

Calls to West Coast Turf seeking comment were not returned Tuesday.

POLITICS | BUSINESS | GROWTH & DEVELOPMENT | SAN DIEGO | TOP STORIES | LATEST | SPORTS

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Exhibit 5

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172 Cal.App.2d 593
District Court of Appeal, Fourth District, California.

Stanley TRUSSELL et al.,
Plaintiffs and Respondents,
v.
CITY OF SAN DIEGO, a Municipal Corporation, Defendant and Appellant.

Civ. 5876.
|
Aug. 5, 1959.
|
Rehearing Denied Aug. 28, 1959.
|
Hearing Denied Sept. 30, 1959.

Synopsis

Suit by owners of riparian, overlying and appropriative water rights against municipality which had constructed dam above point at which plaintiffs diverted water from stream. The Superior Court of San Diego County, Arthur L. Mundo, J., granted the relief sought, and defendant appealed. The District Court of Appeal, Haines, J. pro tem., held that issuance to defendant of permit which was, by its very terms, made subject to 'vested' rights, had not resulted in attachment of any public use to defendant's appropriation of water, except to extent that appropriation might be in excess of quantities required to be released in order to satisfy plaintiffs' rights, and held that even though plaintiffs had permitted completion of defendant's dam before asserting their rights, they were not estopped to seek injunctive relief, and that neither public use doctrine nor doctrine of laches was bar to relief.

Affirmed.

Attorneys and Law Firms

****66** ***596** J. F. DuPaul, City Atty., and Alan M. Firestone, Chief Deputy, San Diego, for appellant.

Swing, Scharnikow & Staniforth, by Phil D. Swing, and C. H. Scharnikow, San Diego, for respondents.

Opinion

HAINES, Justice pro tem.

Santa Ysabel Creek, also known as the San Bernardo River, rises on the westerly slope of Volcan Mountain, in San Diego County, at an elevation of upwards of 5,500 feet and flows in a direction generally southwesterly to its junction with Santa Maria Creek, coming in from the south, below which the combined stream is known as the San Dieguito River which thereafter pursues its course in the same general direction to the Pacific Ocean. This it reaches between Solano Beach and Del Mar at a point about a mile north of the latter. There are several other tributary creeks which join these waters at various points. The terrain through which these streams flow consists of a series of canyons and narrow valleys of which the most important are San Pasqual and San Dieguito. It is with the former that we are here concerned.

The original plaintiffs herein were Stanley Trussell, Lucille M. Trussell, Franklin Trussell, Jane L. Trussell, May Rhodes Trussell, Frank E. Judson, Velda C. Judson, Alice M. Judson Suhrie, Charles A. Judson, Rebecca T. Judson Rebecca P. Judson Dyer, Bernice J. Judson Morrisey, Fred A. Dyer, Erwin C. Georgeson, Lydia ****67** A. Georgeson, Harold W., Pfeiffer, Helen L. Pfeiffer, Southeastern California Association of Seventh-Day Adventists, a corporation, Ralph Cook and Jeanne V. Cook. They were, on May 1, 1956, the date of the commencement of this action, respectively owners of lands particularly described in the complaint, all within ***597** the San Pasqual Valley. They continue respectively to own, occupy and in part to cultivate the lands so described, except as some of them have since disposed of their properties to defendant and appellant City of San Diego, and withdrawn from the case; and except also as plaintiffs and respondents Stanley Trussell and Lucille M. Trussell, husband and wife, in addition to occupying and cultivating certain of their own lands have at various times leased and cultivated lands belonging to others of the plaintiffs; and except also as the plaintiffs Frank E. Judson and Velda C. Judson, in addition to occupying and cultivating certain of their own lands, have leased and cultivated the land owned by plaintiff Alice M. Judson Suhrie.

The San Pasqual Valley includes about 6,000 acres altogether, of which, at the commencement of the action the portions owned and farmed by the plaintiffs aggregated approximately 1,600 acres, forming the community known as East San Pasqual. Of the rest of the 6,000 acres the greater part have been acquired by appellant City of San Diego. These, for the most part, lie downstream from respondents' properties. According to respondents' engineer, Cromwell, about 360 acres of respondents' lands are in fact irrigated. These include

orchards and areas devoted to raising grain, corn and alfalfa. The evidence shows that respondent Stanley Trussell, on his property and that which he and his wife lease are conducting and for many years have conducted an extensive dairy business, requiring for its successful conduct large quantities of water. Other respondents are also maintaining dairies.

The valley and the respondents' lands are underlain by sands and gravels across which the river flows and which form an underground basin. The plaintiffs and respondents, except for such rain as falls on the valley floor, obtain their water supply from the river, which, at the locations of their lands, is not a perennial stream but flows irregularly from negligible discharge in some summer seasons to occasional torrential floods during protracted winter storms. Neither the river nor the creeks tributary to it, except in their upper reaches above the areas with which we are here concerned, flow, through the drier parts of the year, on the surface, but, so far as they continue at all, do so by percolating the sands and gravels which underlie their beds. The percolations of the river, however, in a state of nature, extended beyond the bed of the stream and sunk into the alluvium ***598** of the valley, filling the underlying sands and gravels to the full width of the valley and underlay all of the respondents' lands, all of which were found by the trial court to be riparian to the river itself and all of which were also found by the court to be lands overlying the impregnated basin. These lands are supplied by wells whenever surface flow from the river is not available.

Besides their riparian and overlying rights, respondents, except for the Cooks, are found by the trial court to each own a share in certain appropriative rights in the waters of Santa Ysabel Creek, initiated by their predecessor in interest in 1876 and perfected and put to beneficial use by their predecessors in interest long prior to the year 1913, and ever since exercised by the respondents (other than the Cooks) and their predecessors to the full extent of their requirements, on the said lands owned by them, whenever the water was available in the stream at their point of diversion, which was at the head of the San Pasqual Valley. It is found, however, that in recent years the diversion of water thus appropriated and used on respondents' lands has not, at any time, exceeded 12 cubic feet per second.

****68** According to the findings, defendant and appellant City of San Diego, pursuant to a state permit dated June 30, 1950, constructed the Sutherland Dam on Santa Ysabel Creek at a point some miles above the San Pasqual Valley and above the point at which plaintiffs and respondents divert the appropriated water. The record shows that this permit was made subject to all vested rights. The dam is built at an approximate stream bed elevation of 1,900 feet above sea level. It was commenced in 1952 and was substantially completed and its diversion outlet closed on December 30, 1953, although it is admitted in the pleadings that its full completion did not occur until June, 1954. This dam has impounded, stored and retained all water originating in the watershed above the same, amounting to 7,604 acre feet from January 1, 1954, to June 30, 1957, of which 4,757 acre feet was the inflow for the year 1953–54, 733 acre feet in 1954–55 and 910 acre feet in 1955–56. It is found that all of said water so stored was needed by plaintiffs and respondents to supply their reasonable needs on their lands and that there was not at any of said times any surplus available for appellant city to store or use. It is found that, in consequence of the withholding by appellant city of such stored water, the static water level in the wells of plaintiffs and respondents went down from ***599** approximately 10 feet below the ground surface before the construction of the dam to 44 feet after the dam was completed. It is found that the 10 foot static level referred to was due to an exceptionally wet year in 1952, but that the average static level in respondents' wells prior to construction of the Sutherland Dam ranged from 12 to 20 feet below ground level, and that this range is required to enable respondents to operate their wells as they have been accustomed to operate the same. It is further found that the withholding by defendant and appellant City of San Diego of such stored water has caused the water table beneath the lands of plaintiffs and respondents to fall below the root systems of their trees, orchards and alfalfa, thus requiring respondents to irrigate their trees, orchards and alfalfa more frequently than they otherwise would have had to do, thereby increasing their labor costs and pumping costs; also that the water from their wells was of poorer quality than the surface flow which they had previously obtained at the head of the valley in this, that such surface flow was warmer and carried silt which fertilized their lands. It is also found that by reason of the lowering of the water table respondents were unable to obtain their requirements from their respective wells without the expenditure of substantial sums for new wells and new equipment.

It is found that respondents have employed no unreasonable method of use or unreasonable method of diversion of water nor wasted any water.

The trial court further found that of the losses incurred, expenditures made and damages suffered by respondents in consequence of their impaired water supply, 50 per cent was due to causes unconnected with appellant city's operations,

principally the current severe and protracted drouth, but that the other 50 per cent was the direct and proximate result of appellant city's construction and operation of the Sutherland Dam and the withholding back of it of the waters of the Santa Ysabel Creek originating in the watershed of the latter.

Copies of claims seasonably filed by respondents with the City of San Diego for the damages resulting from the construction and operation of the Sutherland Dam are attached to the complaint and made part of the same as exhibits and the due receipt by the city of these claims is admitted.

The trial court found the amounts of many of the various classes of damages sustained by the several respondents and ***600** also found that appellant City of San Diego will, unless restrained, continue its present policy of withholding behind the Sutherland Dam all of the water of the ****69** Santa Ysabel Creek originating above the dam, to the continued injury and damage of respondents and their lands.

The record shows that the plaintiff and respondent Stanley Trussell in January, 1954, in behalf of himself and others interested, interviewed the city manager of the City of San Diego with a view to working out an arrangement whereby the landowners in the San Pasqual Valley might be assured that their water rights would be safeguarded when the Sutherland Dam should be completed and placed in operation and that a written communication was addressed to the city manager by Mr. Swing as a representative of such landowners under date February 25, 1954, seeking a conference to effect such arrangement, and that such conference was held on April 14, 19549 It further appears that on April 22, 1954, respondents' attorneys addressed a letter to the city manager complaining of the decreased flow then experienced by respondents at respondents' diversion ditch at the head of the San Pasqual Valley due to the obstruction of the runoff upstream resulting from construction work on the dam. This letter recites an inspection on the ground with a representative of the city and the exhibition to him of a photostat of the 1876 appropriation filing. The letter requests immediate restoration of the normal flow below the dam. The record further shows that on July 23, 1954, pursuant to the authority of a resolution adopted on the previous day by the San Diego City Council, the City of San Diego through its city attorney entered into a written stipulation with respondents' present counsel reciting the foregoing contracts and agreeing, *inter alia*, that 'The respective rights of said parties or any of them will not be in any way impaired, prejudiced or lost by lapse of time or delay subsequent to January 30, 1954, in commencing or instituting any legal action or proceeding in the filing of any claim for damages on account of or based upon or arising out of the storing by the City of San Diego of water behind the Sutherland Dam and/or the construction of said Sutherland Dam and/or the diversion of the water impounded by said dam out of the watershed above it'.

This stipulation recites that:

'The purpose of this agreement is to maintain the status quo of the rights enjoyed by the parties hereto as of January ***601** 30, 1954, while negotiating for an agreement of settlement or compromise'.

This stipulation is set up in the complaint and a copy attached as an exhibit thereto, and its existence is recited in the findings.

The trial court also found that the respondents at the time they filed their claims against the City of San Diego and at the time they filed their complaint herein 'had no actual notice or knowledge of the city's plans and intentions on what its policy would be with reference to limiting its storage of Santa Ysabel Creek water back of the Sutherland Dam, solely to the excess and surplus over and above plaintiffs' reasonable requirements, and for that reason they filed a second cause of action to their complaint alleging permanent damages. However, defendant city in its answer denied that it had appropriated to its own use, profit and enjoyment all the waters of Santa Ysabel Creek originating above said dam and denied any permanent injury or damage to plaintiffs or their respective lands. There was no evidence introduced by either party on the subject of permanent damages but the case was tried on the theory that permanent damages were not an issue before the court. Accordingly, no finding is necessary on the second cause of action set out in plaintiffs' complaint, and none will be made'.

The court found also that there was no diversion from the Sutherland reservoir until about March 26, 1954, 'when water from the Sutherland Dam was, for the first time, diverted through a tunnel into the San Vicente Reservoir of the City of San Diego, in order to test the newly constructed Sutherland tunnel and diversion works'.

As conclusions of law the trial court determined that the respondents (except Harold W. Pfeiffer and Helen L. Pfeiffer ****70** who *pendente lite* had disposed of their lands) were 'owners of rights in and to the waters of the Santa Ysabel Creek prior and paramount to the appropriative rights of the defendant City of San Diego'; that the respondents were

entitled to judgment for damages against the city as set out in the findings; that the respondents were entitled to have the water levels in the wells restored so as to range between 12 and 20 feet below the ground surface; that appellant city is not entitled to withhold or store the natural flow of Santa Ysabel Creek when the average static water level under respondents' lands and in their wells falls below 20 feet below the surrounding ground surface and that 'there has been no ***602** such public use made of any of the water stored in or diverted out of Sutherland reservoir to an extent sufficient to deter this court from granting appropriate injunctive relief; furthermore, even if some public use had been made of some of said waters, defendant would not be and is not entitled to assert a claim of public use because of the stipulation' aforesaid.

The trial court proceeded to enter judgment in accordance with its findings and conclusions of law awarding both damages and injunctive relief as therein contemplated. The city has appealed from the judgment.

Pending the appeal the respondents Frank E. Judson, Velda C. Judson and Alice M. Judson Suhrie have reached a settlement with appellant city and the appeal has as to them been dismissed. We have, then, to consider the merits of the appeal as between the remaining respondents and the appellant city.

Appellants claim (1) That the damages awarded the respondents are excessive; and (2) That the respondents should have been denied injunctive relief.

The trial court heard a mass of testimony relative to the monetary detriment suffered by the respective respondents for the years 1954, 1955 and 1956 from the impairment of their water supply, resolving such conflict as there was in the evidence on the subject in reaching its conclusion. The principal industry in the San Pasqual Valley is dairying. The care of cattle requires large quantities of water. To feed them, moreover, alfalfa and corn are grown in considerable quantities. The testimony of various respondents as to their individual efforts to obtain water through the sinking of additional wells and as to what their crops have been from year to year fills many pages of the voluminous transcript, but records were not kept of the exact acreages devoted by particular growers in particular years to particular crops. Although it is clear enough that there has been, during the years 1954, 1955 and 1956, large monetary damage in the valley from water shortage the matter of reducing it to definite figures is no simple task. Respondents' witness Cromwell, who qualified as an expert, not merely as an engineer but also in the practice of applying water to crops, made the estimate of crop damage and additional costs of producing crops, due to water shortage, on which in part the trial court based its damage awards. On direct examination he was allowed without specific objection to give his estimates of the damage suffered by each respondent. On cross-examination it developed ***603** that he reached his figures of crop damage by applying a uniform formula throughout the valley. Taking alfalfa as a typical crop he figured that, as compared to what would be expected had a sufficient water supply been available, there was for each acre of alfalfa land, a loss in 1954 of half a ton of alfalfa, for 1955 a loss of a ton of alfalfa, and for 1956 a loss of a ton and a half of alfalfa. He treated alfalfa through the period involved as worth $35 a ton. He assigned particular acreages to each of the respondents as the area irrigated in a given year by each and, treating the acreage assigned to each as though entirely devoted to alfalfa, he computed the crop damage of each respondent by applying the above formula. He testified that the figures for corn would be substantially the same as for alfalfa and attempted no particularization for other irrigated crops. He added for each ****71** respondent for 1954, $8 per irrigated acre, for 1955, $12 per irrigated acre and for 1956, $21 per irrigated acre as increased cost of labor, fuel, etc. involved in pumping by reason of the progressive lowering of the water table and the inability to get water from the ditch diversion. He also added any cost incurred in the case of the individual respondent for new equipment or well digging required by water conditions. His totals, thus arrived at, were adopted by the trial court in those instances in which the testimony given by individual respondents or other witnesses, did not, in the court's opinion, supply adequate data for fixing the amount of a particular respondent's damages, or where in its opinion Mr. Cromwell's estimate appeared to be the more reliable. The court, having reached its conclusion as to the total damages suffered by each of the several respondents proceeded to divide it by two on the theory that 50% of the damages was attributable to the prolonged drouth and the other 50% to appellant's withholding of water, and treated the result as, in the case of each respondent the loss suffered by him from appellant's operations. The resulting figures are the basis of the awards of damages determined in the findings and contained in the judgment.

Appellant complains of the whole basis on which Cromwell's estimates are made as speculative and unreliable. Particularly does it instance the award made to the Southeastern California Association of Seventh-Day Adventists. This religious corporation, between 1947 and 1950, according to the testimony of Mr. Ambs, a member of its governing

board, acquired lands, now amounting to 238 acres, in the San Pasqual ***604** Valley and established there an academy for young people for whom a rural atmosphere was desired, including incidentally training them in agricultural pursuits. The inducing motive in selecting this locality according to Ambs was the apparently abundant water supply. The witness Juler, who, from 1953 to 1956, served as a member of the school faculty and as its bookkeeper, testified that the academy maintains extensive plantings of lawns and shrubbery about its buildings. At the time he came there it had two orange groves, two or three acres in lemons and an avocado grove. There have been no other further plantings of fruit trees. The school maintains a dairy, not as a commercial enterprise but for its own use. From time to time the number of milk cows varies. It had 52 in 1953 and the same number in 1956, with 62 younger stock. The crops grown have been mainly devoted to feeding the cattle. In 1953 there were produced 256 tons of corn, 178 of green chop and 118 1/2 of dry hay; in 1954, 220 tons of corn, 466 1/2 of green chop and 13 of alfalfa hay; in 1955, 300 tons of corn, 736 1/2 of green chop; and in 1956, 237 tons of corn and 1,285 1/4 of green chop, but no hay. There has been, from time to time, some oats grown and some sudan grass. Juler has no record of the exact acreage from time to time devoted to each class of crop. The witness Weaver, principal of the academy, testified that generally through the period involved there has been some increase in the quantity of produce. He attributed it to increased fertilization. Both he and Ambs emphasized the increasing insufficiency of the water supply. Mr. Weaver testified to the uncertainty in planning for the continuance of the school or for increased enrollment in consequence of the shortage of water. According to respondents' engineer, Cromwell, 176 acres of the academy holdings are actually cultivated. The rest is arable but not irrigated. The item claimed in the complaint and allowed this respondent for diminished crops resulting from water shortage was computed by Cromwell. The diminution is not actual but a diminution in what he claims ought to have been expected. He testified that he took as a basis only 100 acres of the academy's total cultivated area, this being the part of the area susceptible of irrigation from the diversion ditch when in use. To this 100 acres Cromwell applied the formula above mentioned. According to appellant, there should have been no award for crop damage at all to this respondent, since during ****72** the period of drouth its crops have increased rather than diminished. It is apparent, however, that the above figures for crops taken ***605** off this land do not tell the whole story. According to Cromwell the greater part of its irrigated area is in alfalfa. Since only 13 tons of alfalfa hay appear to have been taken off of it in 1954 and none in the two following years it may be assumed that the alfalfa was grown for pasturage rather than to harvest it. The fact that an increase was had in the quantity of certain other crops, particularly green chop, would not necessarily negative a loss, as compared with what in normal conditions should have been expected in the alfalfa crop.

It must be conceded that the basis adopted by the trial court in computing respondent's damages leaves much to be desired in respect of exactitude but Mr. Cromwell's testimony went in practically without objection and appellant did not move to strike it out. It was, therefore, there to be weighed. The trial court, while recognizing the difficulties which it presented was in part guided by it.

Cromwell, *inter alia* stated that the watershed area behind the Sutherland Dam constituted approximately 50 per cent (actually 53%) of the total watershed area upstream from respondents' properties. This statement appellant in its opening brief concedes, so far as it concerns this watershed area, to be substantially correct.

Appellant's engineer, Crooker, who also testified at the trial, undertook to estimate the relative effects of the drouth and of the withholding of water in the Sutherland Dam upon respondents' water supply by a study of the effects of the drough on other lands not affected by the withholding of water at the dam, and concluded that only 16 per cent of the drop in the subsurface water level beneath respondents' lands was due to the withholding of water by the city. Whatever weight is to be given to Mr. Crooker's testimony, however, it must still be borne in mind that the respondents do not rely exclusively in their claim for damages on the lowering of the water table beneath their lands. They rely also on the circumstance that they can no longer for as long a season or in adequate quantities obtain water from their diversion ditch which formerly, for much of each year, furnished their most convenient and least expensive means of obtaining water and applying it to their lands. The trial judge recognized the difficulty of exactly apportioning the whole detriment to respondents between that caused by the city's action and that caused by the drouth. The evidence would not justify us in disregarding the trial court's conclusions on the subject nor in treating them as arbitrary nor in disturbing the portion ***606** of the judgment which fixes the amounts of the damages awarded against appellant city. The trial judge in his memorandum opinion pertinently noted the suggestion made in California Orange Co. v. Riverside Portland Cement

Co., 50 Cal.App. 522, 525, 195 P. 694, 695, quoting from Washburn v. Gilman, 64 Me. 163, that:
'The difficulty may be great of accurately proportioning and assessing the damages done by the defendant, but that difficulty the defendant could have avoided had he taken due care that no occasion should arise requiring such assessment of damages.'

We come, then, to the more serious question whether the injunctive relief granted respondents against appellant city can be sustained. The trial court found that all of the lands of the respondents are riparian to the stream and overlying the basin into which its waters spread. Appellant's counsel urge that the maps show that some of such lands do not abut the river. The point is not material, for even if some portions of them do not border the river bank, the evidence and the findings make it clear that all overlie the underground water-bearing basin, whence it follows that all have at least overlying rights, which, for all purposes with which we are here concerned, are the equivalent of riparian rights. Moreover, except for the respondents Cook, who acquired their ****73** holdings after the Sutherland Dam enterprise had been initiated, all of the respondents are successors in interest of appropriators whose rights, as such, date from 1876, and such appropriative rights have been, at least to the extent of 12 cubic feet per second of flow, exercised thence hitherto, whenever there was any sufficient surface flow in the river, except as their exercise had been interrupted by appellant. There can be no question that all of respondents' water rights, both riparian, overlying and appropriative are prior and paramount to the rights of appellant city. Now, not only have respondents' riparian and overlying uses of the river water been invaded, but respondents' appropriative use of such water has been, during parts of the former season of surface flow of the river, wholly suspended, and for the rest of such former season partially suspended by appellant's action.

In Tulare District v. Lindsay-Strathmore etc. District, 3 Cal.2d 489, 525, 45 P.2d 972, 986, it is said that:
'If the riparian is putting the water to any reasonable beneficial uses, it is now necessary for the trial court to find ***607** expressly the quantity so required and so used. A finding, such as that in the present case to the effect that the riparian requires a 'reasonable' amount for such uses, under the new doctrine, is clearly insufficient and a judgment based thereon must be reversed. The trial court, under the new doctrine, must fix the quantity required by each riparian for his actual reasonable beneficial uses, the same as it would do in the case of an appropriator. The new doctrine not only protects the actual reasonable beneficial uses of the riparian but also the prospective reasonable beneficial uses of the riparian. As to such future or prospective reasonable beneficial uses, it is quite obvious that the quantity of water so required for such uses cannot be fixed in amount until the need for such use arises. Therefore, as to such uses, the trial court in its findings and judgment, should declare such prospective uses paramount to any right of the appropriator.'

The appellant insists that for failure to define the extent of respondents' reasonable use of water as required by the rule thus laid down, the case must be reversed. Contrariwise, the trial judge in his opinion (Clerk's Trans. p. 88) stated that:
'Since the 1928 Amendment to the Constitution of California, our courts have been rejecting the idea that the decree should fix a definite amount of water measurable in second feet, acre feet or miner's inches to any particular parcel of land. * * * Instead of fixing definite amounts of water to be supplied, the courts have been requiring the party at fault to maintain the water level in the injured parties' wells at a certain point.'

The first sentence of this language is taken almost verbatim from the opinion of the United States District Court for the Southern District of California in Rank v. (Krug) United States, 142 F.Supp. 1, 166, where the court cites in support of it City of Lodi v. East Bay Municipal etc. District, 7 Cal.2d 316, 60 P.2d 439 and Stevinson Water District v. Roduner, 36 Cal.2d 264, 223 P.2d 209. These last two cited cases seem to us, however, rather remote in their bearing on the requirement laid down in the Lindsay-Strathmore case.

Curiously enough, though both the Federal Court in Rank v. (Krug) United States, and the trial court in the instant case, cited the Lindsay-Strathmore case in other connections, neither appears to have noted the above-quoted passage therefrom as respects the point now under discussion. We are unable to find that as respects the requirements laid down in ***608** the above quotation from the Lindsay-Strathmore case, that decision has ever been overruled or disapproved, where clearly applicable. We do find, however, that in the case of ****74** Corona Foothill Lemon Co. v. Lillibridge, 8 Cal.2d 522, 66 P.2d 443, the field of its applicability has been significantly restricted. The Supreme Court in the last mentioned case observed that there was not involved an action to quiet title to a water right. Neither, for that matter, is the case before us here an action to quiet title. The test, however, actually applied, though not fully expressed in the Lillibridge opinion, as to the applicability in a given instance of the

rule laid down in the Lindsay-Strathmore case seems to us to have been a more fundamental test, namely, whether or not the application of the rule of the Lindsay-Strathmore case, in a particular instance, would or would not be *useful*. In the Lillibridge case the court held it apparent from the outset that there was no surplus of water in the source of supply over the reasonable needs of the party having the prior right, for any subsequent appropriator. It held, therefore, an accurate measurement of such paramount needs would be useless and, therefore, not required. There could manifestly be no surplus to be appropriated and no measurement was there needed to so determine. In some cases we can see that the application of the Lindsay-Strathmore rule might well be useful and therefore mandatory as in the case of a perennial stream, where the question is merely one of dividing a fairly stable flow between one having a prior right, whose beneficial use of water tends to be much the same for a considerable period, and a subsequent appropriator. There, by ascertaining the quantum of the reasonable beneficial use of the party having the prior or paramount right, the part of the flow left for appropriation can, with reasonable approximation, be determined. On the other hand, it is evident from the opinion in the Lillibridge case that where the application of the Lindsay-Strathmore doctrine would be of no practical utility it will not be applied.

In the case at bar, so far as the appropriative rights of respondents are concerned, the trial court has already determined their extent, to wit, 12 cubic feet of flow per second whenever there is that much surface water in the stream. That quantity is obviously being devoted to reasonable beneficial uses and, as respondents share a single appropriation and a single diversion, the determination of their appropriative right *in solido* is the only quantitive determination practicable or useful. For the determination in the circumstances ***609** of this case, however, of the specific quantities of the reasonable current needs of each of the riparian or overlying owners, as such, who are respondents here, it is difficult to find any utility. On the other hand, such determination could hardly remain effective for any appreciable length of time, since, in the main, respondents are not merely irrigating only a fraction of their arable lands, but there is every probability that more and more of the same will come under cultivation as time goes on, if only there is enough water. On the other hand, there is no direct proportionate relation between any ascertainable quantity of water devoted by respondents at a given time to reasonable beneficial uses and the releases at Sutherland Dam necessary to meet their needs. The San Dieguito River is not a perennial stream. Its flows are subject to wide seasonal, annual and cyclic variations. The excess flows of one season for one year or one cycle have to be relied on to charge the strata from which respondents' wells are fed. It cannot be said that respondents' need for reasonable use on their lands aggregate a given quantity of water per annum and that all the rest that originates above them in the Santa Ysabel watershed is surplus over what needs to be released during any given period at Sutherland Dam. That would be a hopeless oversimplification of the problem. Required releases must have relation to long term needs. The situation is further complicated because there is the question of how much water may, at a given time, be available from tributaries of the San Dieguito other than Santa Ysabel Creek. Respondents are not only entitled to receive the amounts of their reasonable requirements but they are entitled ****75** to have the water table in the San Pasqual Valley maintained at such levels that they can get their water without unreasonable expense.

Our conclusion is that there do not exist in the instant case the conditions which would give the requirements laid down in the rule above quoted from the Lindsay-Strathmore case any useful application here and, therefore, that it was not error for the trial court to refrain from undertaking to find in acre feet or other units of measurement the exact reasonable requirement of each of respondents for the satisfaction of his riparian or overlying rights.

Since the amendment of 1928 by adding section 3 to Article XIV of the State Constitution, respondents' riparian and overlying rights have of course been, as their appropriative rights always were, subject to the requirement that their ***610** use be reasonable and also that the manner of their use be reasonable and not wasteful. The trial court has, in the instant case, found that these conditions have been complied with. As respects the respondents' use of riparian and overlying rights, whatever their exact measurement may be, we see no ground on which this finding can be attacked. There is no evidence that any respondent in exercising his *riparian* or *overlying* rights has ever pumped from wells more water than his reasonable needs have required and certainly the fact that he has to go ever deeper to get his water is not a circumstance to induce prodigality in its use. Nor has any decision been cited to us to the effect that the doctrine that a riparian or overlying owner must be confined to a reasonable use of water requires him, for the benefit of a new appropriator, to submit to the indefinite lowering of his water table and the consequent indefinite increase in his pumping costs. How high its level must be maintained to assure him the reasonable use of his riparian or overlying right without unreasonable cost is in each case a question of fact for the trial court. There is no evidence here, either, that

respondents, in the exercise of their *appropriative* rights, have been making substantially excessive or wasteful consumptive use of water. There is, indeed, some suggestion of weed growth in their open diversion ditch but that is a minor detail and a certain amount of that sort of thing would be unavoidable unless they were to go to large expense in completing the cementing of the ditch. The evidence does show that any loss from weed growth is largely minimized by cleaning the ditch each fall before the flow into it begins, as well as at other times, and also in that, down stream from diversion point, the water is ultimately carried into a pipe line. Both above and below its intake service laterals are run. The principal complaint with respect to respondents' diversions, however, is the inefficiency of their diversion dam. This is merely an obstruction supported at its river bank end by a wooden framework but in its outer portions consisting merely of earth and sand, built up by teams and scrapers, and in portions reinforced by sandbags. This obstruction is placed from time to time in the river bed, sometimes extending clear across the bed of the stream, but at other times merely part way across, to divert stream flow into the ditch. This dam or obstruction is from time to time washed out and as often replaced. Undoubtedly, the installation of a permanent structure would be a matter of great expense, possibly beyond respondents' ***611** means, as it would have to be heavy and would be dangerous unless carried to such a depth and so buttressed as to resist occasional floods. One point here to be noted, however, is that the washing out from time to time of respondents' dam results in no increase in the consumptive use of water. Any water thus released is simply carried down stream either to serve beneficial uses on the way or, except for minor losses in transmission, eventually to be impounded in appellant city's Lake Hodges Dam farther down the river. None of it flows into the ocean. ****76** There is nothing, therefore, in the use of the present diverting dam or structures like it, necessarily to contravene the State's water conservation policy. Appellant's contention in that behalf amounts to a claim that, by building the Sutherland Dam upstream from respondents' lands, appellant is entitled to compel respondents, on pain of not having enough water released from the Sutherland structure for their own diversion, to construct for themselves an otherwise needlessly expensive diversion system. There is no question of unnecessary consumptive use of water by respondents involved. In these circumstances the trial court has found that respondents' method of diversion of water is a reasonable one. The circumstance that appellant would prefer to retain, at the Sutherland Dam, water that might otherwise be released into the river at respondents' point of diversion when the dam there is occasionally washed out, rather than receive the same water again at the Lake Hodges Dam, while it might be a matter to be weighed by the trial court in determining the reasonableness of respondents' method of diverting water, furnishes no ground for upsetting the finding on the subject.

Unless prevented, then, by some devotion of the water supply impounded or to be impounded at the Sutherland Dam to a public use, and in the light of the trial court's finding here that both respondents' use of water and their method of using it are reasonable, it seems plain that they are entitled to such injunctive relief as to adequately protect them in the enjoyment of their rights.

As is said in Peabody v. City of Vallejo, 2 Cal.2d 351, 374–375, 40 P.2d 486, 494, a case in which the 1928 amendment to Article XIV of the Constitution is fully considered and applied:
'There is and should be no endeavor to take from a water right the protection to which it is justly entitled. The preferential and paramount rights of the riparian owner, the owner of an underground and percolating water right, and the prior ***612** appropriator are entitled to protection of the courts at law or in equity * * *.'

The Supreme Court, in that case, goes on to say that a new 'appropriator may use the stream surface or underground, or percolating water, so long as the land having the paramount right is not materially damaged', but that 'any use by an appropriator which causes substantial damage thereto, taking into consideration all of the present and reasonably prospective recognized uses, is an impairment of the right for which compensation must be made either in money or in kind, and in the event public use has not attached the owner of the paramount right is entitled to injunctive relief.'

It is true, as noted in this Peabody case (2 Cal.2d at page 376, 40 P.2d at page 496), quoting from Waterford Irr. Dist. v. Turlock Irr. Dist., 50 Cal.App. 213, 221, 194 P. 757, that:
'The mere inconvenience, or even the matter of extra expense, *within limits which are not unreasonable*, to which a prior user may be subjected, will not avail to prevent a subsequent appropriator from utilizing his right.'

The evidence and the findings in this case disclose, however, that appellant city's proceedings result in far more than mere inconvenience and reasonable expense to respondents. The city's proceedings amount, according to the testimony and

findings, to wholly depriving respondents of the use of all water of the San Dieguito River except that which comes into it from tributaries below the Sutherland Dam, thus eliminating the flow past respondents' lands by not less than one-half, which, combined with the effect of the present drouth, has, at least for the present, for the most part prevented respondents from using appropriated water to which they have prior and paramount rights, and by excessive lowering of the water table, made difficult and unreasonably **77 expensive respondents' use even of their riparian and overlying rights.

Respondents, therefore, have fully established their right to injunctive relief, unless as we have said, such relief is barred by the intervention of a public use and we are thus brought to consider that phase of the case. In view of the stipulation between appellant city and respondents' counsel, the rights of the parties in that respect are to be treated as they stood on January 30, 1954. Some years prior to that date the electors of the city had voted a bond issue to cover the cost of erecting the Sutherland Dam and acquiring the needed water rights in connection therewith. In 1950 the *613 State had issued its permit allowing appellant city to appropriate for storage there for the use of its inhabitants water from the Santa Ysabel Creek. There can be no doubt, therefore, that it was prior to January 30, 1954, a matter of public notoriety that the city intended to, and could of right, devote to public use, any water which it might be entitled to retain and impound from the flow of Santa Ysabel Creek.

In these circumstances appellant claims that a public use attached to the Sutherland enterprise either when the bond issue was voted or at least as early as the issuance of the state permit, since it, and the application for it, specifically state it to be 'for the purpose of serving the City of San Diego, having a present population of 363,000.'

Reliance, *inter alia*, is placed on the language of section 1 of Article XIV of the State Constitution to the effect that 'the use of all water now appropriated, or that may hereafter be appropriated, for sale, rental, or distribution, is hereby declared to be a public use * * *', and on the language of the Supreme Court in San Joaquin, etc., Irr. Co. v. Stevinson, 164 Cal. 221, 226, 128 P. 924, 926, which preceded the constitutional amendment to the effect that:

'It is settled that the use of water for sale, rental, and distribution to the public generally is a public use.'

Our attention is also called to language in the case of McCrary v. Beaudry, 67 Cal. 120, 121, 7 P. 264, 265, to the effect that 'water appropriated for distribution and sale is, *ipso facto*, devoted to a public use.'

It is further urged that respondents here, before acting in defense of their rights, allowed the city's construction of its dam to proceed to completion, and that, therefore, there should be applied the principle announced in Katz v. Walkinshaw, 141 Cal. 116, 136, 70 P. 663, 74 P. 766, 772, 64 L.R.A. 236, that:

'Where the complainant has stood by while the development was made for public use, and has suffered it to proceed at large expense to successful operation, having reasonable cause to believe it would affect his own water supply, the injunction should be refused, and the party left to his action for such damages as he can prove.'

This language, it may be pointed out, is not even by its terms applicable here, because, although the Sutherland Dam had been substantially completed a month before January 30, 1954, when respondents first moved to protect their rights, it had not yet proceeded to 'successful operation', and, *614 indeed, owing to the drough, has not even yet done so. However, appellant's argument overlooks one vital element in the situation, namely, that the state permit under which the city operates and under which it alone claims any right to appropriate water from the Santa Ysabel Creek, is by its very terms made subject to 'vested' rights, and, therefore, to all riparian, overlying or appropriative rights of respondents. In view, then, of the terms of the permit, respondents, until they had some sort of notice to the contrary, had every right to assume that appellant would observe its terms and refrain from withholding at the Sutherland Dam such waters **78 as respondents were reasonably entitled to have flow down to their lands. This right so to assume respondents continued to have until they observed the cessation of the major part of the flow of the San Dieguito River past their land in consequence of the closing on December 30, 1953, of the Sutherland Dam outlet as hereinbefore noted. On that date the dam was substantially though not fully complete. They were therefore guilty of no laches in permitting the completion of the dam before asserting their rights. In the very next month, with what the trial court must have believed to be reasonable diligence, they proceeded through their representatives to contact appellant city and assert their rights and in due course took measures to protect their interests. Not only, then, did the trial court properly conclude that they were not estopped to seek injunctive relief here, but it must also be held that the issuance to the city of its permit never did and does not now *ipso facto* result in the attachment of any public use to

appellant's appropriation of water, whether contemplated or actual, except to the extent that such appropriation may be in excess of the quantities required to be released in order to satisfy respondents' rights. To hold otherwise would be to hold inoperative the provision of the permit expressly making it subject to vested rights. If, therefore, as to any water *de facto* appropriated or which may hereafter be *de facto* appropriated by appellant from the flow of the Santa Ysabel Creek, except out of surplus over what respondents' needs require, such public use can only have attached in the past or attach in the future by a *de facto* devotion of such non-surplus water to such public use. Obviously, however, no such *de facto* devotion could have occurred before December 30, 1953, for practically no water had theretofore been impounded, and certainly none applied to any public use. Nor had any been so applied on or prior to January 30, ***615** 1954, as of which date, under the stipulation, respondents' rights are to be measured, for none was diverted from the Sutherland Dam until the following March. Neither can it with confidence be said that any *de facto* public use of such non-surplus water has even yet attached, since the only actual use, at least up to the date of the trial, of such water as the city had up to that time impounded, was for the mere purpose of testing the transmission tunnels between the Sutherland and San Vicente reservoirs. In view of all this and of the stipulation in evidence, it must be held that the trial court's conclusion that appellant has no ground for invoking the public use doctrine to bar respondents from injunctive relief was correct.

In this connection a singular situation with respect to the pleadings has developed. Respondents in framing their complaint set out two causes of action, the first asserting their claim for damages incurred for the years 1954 and 1955 from deprivation of water through appellant's operations and seeking judgment for the same and injunctive relief against appellant's continued withholding of water. By way of a second cause of action, respondents set out their claim for the permanent damage to their properties based on the supposition that appellant's withholding of water would continue. In other words, they set out what their claim would be in inverse condemnation. Appellant in answer not only denied the damage alleged in the first cause of action but in answering both causes of action made its denial so broad as to deny its intention to continue to withhold the water claimed by respondents. Accordingly, at the time of trial respondents, in view of that denial, announced that they would proceed only on their first cause of action and would offer no evidence on their second, and in its judgment the court expressly withheld any determination as to the latter. By supplemental complaint respondents asked damages claimed by them to have been incurred for the year 1956, the year in which the action was filed. The existing judgment, therefore, as we have seen, in its award of damages is inclusive then ****79** of the three years 1954, 1955 and 1956, in addition to which, it grants the injunctive relief sought.

Our determination that respondents are entitled to some injunctive relief still leaves for determination the question as to how far such relief should go. Considerable portions of respondents' remaining holdings are also arable and, as has been seen, have riparian or overlying rights or ***616** both. In the natural course of things these will to a greater or lesser extent be added to the areas now irrigated. Appellant makes several objections to the trial court's conclusion that respondents are entitled to have the range of the water table under their lands at from 12 to 20 feet below the surface restored and maintained. It is said in the first place that this would not allow for other land owners than respondents in the valley drawing off water for use on their lands, and, in particular, that it would prevent appellant itself from pumping water for its own lands in the valley which greatly exceed in area those owned by respondents. Mr. Cromwell, however, testified that in his opinion the use of pumped water on appellant's lands, since these lie downstream from those of respondents, would not materially affect the water table under the latter. Furthermore, the evidence shows that the substrata under respondents' lands are of very coarse material, whence it would seem to follow that any drawdown in the water table would be rapidly replaced if only there was adequate water available for spreading. It is further objected that, according to the findings, appellant's withholding of water is only one of the causes for the lowered water table under respondents' lands, the other cause being the present drouth, and that to require the maintenance of the water table at any given level would be to require appellant to insure respondents against a lowering of the water table either by reason of the present or any future drouth.

But it was said in Hillside Water Company v. Los Angeles, 10 Cal.2d 677, 686, 76 P.2d 681, 686, that:
'The law as announced in the case of Miller v. Bay Cities Water Company, supra, (157 Cal. 256, 107 P. 115, 27 L.R.A.,N.S., 772) to the effect that the right of an overlying land owner to the percolating water beneath his lands is analogous to the riparian right, has not been changed, and has been recognized in the subsequent cases declaring the new law. Thereunder these respondents have had, and still have, the right to the use of the underground waters in the Bishop cone as a supporting underground water supply available to and for the benefit of their farming operations.

It is readily seen that the use of this underground supply as an undersupport for irrigation or other surface uses would minimize the requirements of surface irrigation and result in benefit to the surface soil and crop conditions. *And it may not be rightly said that such use is not a beneficial use of the underground waters*.' (Italics ours.)

***617** In that case the judgment awarding plaintiffs injunctive relief against the City of Los Angeles was reversed for the sole reason that a public use was, in the circumstances there, held to have attached. The plaintiffs were there left, therefore, to seek their damages in inverse condemnation. Not so here. Counsel say that it was the duty of the trial court to find a physical solution, but it is not always that one can be found and the court did not find available any other than the injunctive relief granted. Until and unless some such solution is forthcoming there can apparently be no effective relief to respondents without requiring the reasonable restoration and maintenance of the water table. Even assuming it to be true that the present depression of that table is in part due to the drouth and only in part to appellant's withholding of water, we note that the injunction granted did not require appellant to maintain it at the top of the 12 to 20 foot range found to have prevailed before the Sutherland Dam was built, but merely forbade such impounding as would prevent ****80** its depression below the bottom of that range, i. e., 20 feet below the surface. We cannot say that this was an unreasonable requirement. The trial court has retained jurisdiction to grant appropriate relief to any party on a proper evidentiary showing of merit. This reservation is to be interpreted as admitting of modification of the injunctive feature of the judgment if and whenever any other suitable and sufficient physical solution can be devised; or if the particular level required to be maintained in the water table shall be found unworkable.

There is one other matter to be dealt with in the case. Appellant claims that mileage and witness fees allowed as costs by the trial court to the witnesses Ambs, Juler and Weaver, to whose connection with respondent Southeastern California Association of Seventh-Day Adventists we have already referred, should be disallowed. Admittedly, such fees and mileage are not allowable to parties to the action. No authorities, however, have been cited to the effect that they are to be denied to individuals not shown to have any private interest in the litigation, merely because they are directors or employees of a corporate party.

The judgment is affirmed.

MUSSELL, Acting P. J., and SHEPARD, J., concur.

On Denial of Rehearing

PER CURIAM.

***618** Counsel for appellant City of San Diego, in their petition for rehearing, *inter alia*, dispute the sufficiency of the resolution adopted by the city council of that city, a copy of which they set out in their petition, to authorize the city attorney to stipulate with counsel for the respondents that the rights of the latter should be treated as continuing as they stood on January 30, 1954, pending negotiations between the parties for a settlement of their differences. Without retracting anything from our view that in the circumstances respondents were entitled to rely on the stipulation as made, it may nevertheless be pertinent to observe that in order to show themselves entitled to the relief sought they are in fact under no necessity of invoking the protection of the stipulation nor of going back to January 30, 1954, as the date of which their rights are to be considered fixed.

Appellants place excessive emphasis on the trial court's finding that:
'The appropriation of water by the City of San Diego in Sutherland Dam, and the subsequent distribution and sale of a portion thereof was and is a public use.'

The appropriation of water referred to in this finding as a public use, being under a state permit which expressly made it subject to vested rights could apply only to surplus water, not to water required to satisfy respondents' reasonable needs, and as we pointed out in our opinion, there has not, so far as the record shows, even yet been actually any substantial service to the public of water from the Sutherland Dam.

We reiterate, therefore, that there is nothing in the claim of devotion of appropriated water to a public use to debar respondents from injunctive relief.

The other points made in the petition for rehearing have been sufficiently dealt with in the opinion as rendered.

Rehearing denied.

Hearing denied; TRAYNOR, J., dissenting.

343 P.2d 65

All Citations

172 Cal.App.2d 593, 343 P.2d 65

Exhibit 6

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From: Carlson, Sandra <CarlsonS@sandiego.gov>
Sent: Thursday, October 8, 2020 12:42 PM
To: Peter Quinlan <pquinlan@dudek.com>; Bennett, Jim <Jim.Bennett@sdcounty.ca.gov>
Cc: Danek, Karina <KDanek@sandiego.gov>
Subject: Re: Contacting Nate Brown

Peter,
Please email me your specific questions and I will forward to Nate to get them answered. It wouldn't be fair to the other AC members if we gave you free access to Nate and no one else got that. I'm sure you understand the sensitivity of the matter.
Thanks.

Sandra Carlson, P.E.

Associate Civil Engineer

Public Utilities Department

T (619) 533-4235

From: Peter Quinlan <pquinlan@dudek.com>
Sent: Thursday, October 8, 2020 12:35 PM
To: Carlson, Sandra <CarlsonS@sandiego.gov>; Bennett, Jim <Jim.Bennett@sdcounty.ca.gov>
Subject: [EXTERNAL] Contacting Nate Brown

Sandra and Jim,
Would it be possible for me to just call Nate to ask some clarifying questions about the model development? It appears the model will be complete before we have another TPR meeting.
Thanks,
Peter

Peter T. Quinlan
Vice President
DUDEK
pquinlan@dudek.com
760.479.4127

Exhibit 7

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From: Carlson, Sandra
To: Bolouri, Michael
Subject: Fw: Emails and Phone Conversations (Frank and Peter)
Date: Wednesday, May 20, 2020 4:51:10 PM
Attachments: Call with Frank Konyn - 5-19-20.pdf

---

please save

From: John Ayres <jwayres@woodardcurran.com>
Sent: Wednesday, May 20, 2020 9:36 AM
To: Carlson, Sandra <CarlsonS@sandiego.gov>; Rosalyn Prickett <rprickett@woodardcurran.com>
Subject: [EXTERNAL] Emails and Phone Conversations (Frank and Peter)

Sandra,

Please find attached the call log for my chat with Frank yesterday. I've included the attachments he sent me after the call as well. We're planning to use this information to refine the cross-section in his area.

Here's text for sending to Peter Quinlan.

Peter,

We'd like to work with you to select the representative monitoring network for groundwater levels in the SPV GSP. Specifically, we'd like to identify monitoring wells in the Rockwood Canyon area. We've included the five wells you've provided information for previously on the potential monitoring network map, and would like to refine those to just the dedicated monitoring wells, which I believe are MW-1, MW-2, and MW-3.

We'd also like to add that dry well in the northern portion of the canyon you mentioned as a possibility during the TPR meeting to the network, would you provide information on that well?

We're hoping for a monthly monitoring schedule on representative wells in the monitoring network, to match the existing monitoring frequency that is underway in the majority of wells monitored in the basin. Happy to discuss this in greater detail as needed.

John Ayres PG, CHG
Project Manager

Woodard & Curran
jwayres@woodardcurran.com
phone: 916.233.8352

From: Carlson, Sandra <CarlsonS@sandiego.gov>
Sent: Tuesday, May 19, 2020 10:27 AM
To: John Ayres <jwayres@woodardcurran.com>
Subject: reminders

Hi John-

A couple of things – on your call to Frank, please document in writing some minutes from the call and send to me so we cover ourselves for the next AC meeting. I would hate for Frank to say "well john told me …. During a phone call" and it lead to a call from the mayor. Not that he would but these are interesting times.

Also, per our meeting yesterday, just a reminder to send a draft email to me for Peter re: the dry deep well and one other issue that I can't remember.

Thanks. Have a great day.

Sandra

Exhibit 8

This page intentionally blank.

From: Frank Konyn
To: Carlson, Sandra
Subject: RE: Fabulous gift
Date: Thursday, December 19, 2019 5:16:25 AM

You are welcome! I appreciate the relationship we have. Best wishes for a great New Year.

Frank

From: Carlson, Sandra [mailto:CarlsonS@sandiego.gov]
Sent: Wednesday, December 18, 2019 9:49 PM
To: Frank Konyn <frank@konyndairy.com>
Subject: Fabulous gift

Frank- you are such a great marketer. Loved the entire gift from concept to theme to packaging. Excellent job and thank you so much. I'm so copying your idea next time I need a novel gift idea.
Stay creative.
Sandra Carlson

Get Outlook for iOS

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Exhibit 9

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THE CITY OF SAN DIEGO

September 22, 2015

Mr. Emmet Aquino, Environmental Planner
Planning and Development Services Department
County of San Diego
5510 Overland Avenue, Suite 310
San Diego, CA 92123

Dear Mr. Aquino:

Subject: Rancho Guejito Rockwood Village Major Grading Plan; PDS2015-LDGRMJ-30016

The City of San Diego recently provided comments regarding the County's "Intent to Adopt Findings" and associated Exemption for this Project (see attached letter dated September 8, 2015). Additional and overarching concerns about this project, and hence the reason for this supplemental letter, need to be addressed. These concerns are outlined below. The City's Public Utilities Department respectfully requests a meeting *as soon as possible* with the County to discuss these matters.

San Pasqual Groundwater Basin

The proposed Project (covers 279 acres) will obtain water from wells located on the east side of Rockwood Canyon. The wells would draw water from the San Pasqual Groundwater Basin. Section 9 (d), Page 23, of the Exemption Checklist states that "the project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there will be a net deficit in aquifer volume or a lowering of the local groundwater table." The City of San Diego strongly disagrees with this statement.

Rockwood Canyon is part of the San Pasqual Groundwater Basin (Figure 1). This Basin is already experiencing over-drafting of groundwater. Logically, implementation of the proposed Project could significantly and cumulatively exacerbate this problem. In addition, questions about Rancho Guejito's right to use water from this Basin for their purposes should also be addressed.

Public Utilities Department
525 B Street, Suite 300, MS 906 • San Diego, CA 92101-4409
Tel (619) 533-7595

Traffic

Access to the northern planting area will be from a private road and West Zoo Road/Rockwood Road. West Zoo Road is located on City-owned land; it follows the western boundary of one of the City's lessee's, Safari Park.

This is not a public road, and most of it is designated as a "Z" Road by the County of San Diego. This means it is an unimproved road that has no public road status and is not maintained by either the City or the County of San Diego. Several neighboring properties have an easement over City land to use this road. The Safari Park uses the road for employee access. No other access shall be granted.

Please contact George Adrian, Principal Water Resources Specialist, at (619) 533-4680 or GAdrian@sandiego.gov to arrange a meeting at your earliest convenience.

Sincerely,

Lan C. Wiborg
Deputy Director
Long-Range Planning & Water Resources Division

LW/vs

Enclosures: 1. Figure 1: San Pasqual Basin, Wells & City Leases
2. Letter dated September 8, 2015

cc: Ray Palmucci, Deputy City Attorney
Myra Herrmann, Senior Planner, Planning Department
Jeffery Pasek, Watershed Manager, Public Utilities Department, Long-Range Planning & Water Resources Division
George Adrian, Principal Water Specialist, Long-Range Planning & Water Resources Division
Tracy Irvin, Supervising Property Agent, Real Estate Assets Department

Exhibit 10

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Planning and Development Services Department
County of San Diego
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Sincerely,

Lan C. Wiborg
Deputy Director
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LW/vs

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2. Letter dated September 8, 2015

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Jeffery Pasek, Watershed Manager, Public Utilities Department, Long-Range Planning & Water Resources Division
George Adrian, Principal Water Specialist, Long-Range Planning & Water Resources Division
Tracy Irvin, Supervising Property Agent, Real Estate Assets Department

Exhibit 11

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San Pasqual Valley Groundwater Basin

- Groundwater Basin Number: 9-10
- County: San Diego
- Surface Area: 4,540 acres (7.1 square miles)

Basin Boundaries and Hydrology

This groundwater basin underlies San Pasqual Valley and Cloverdale, Rockwood, and Bandy Canyons in central San Diego County. The basin is bounded by Lake Hodges on the west and otherwise by nonwater-bearing rocks of the Peninsular Ranges (DWR 1959; Rogers 1965; Izbicki 1983). Average annual precipitation ranges from 11 to 15 inches. Santa Ysabel, Guejito, and Santa Maria Creeks drain the valley and converge to form the San Dieguito River, which flows into Lake Hodges.

Hydrogeologic Information

Water Bearing Formations

The water-bearing units of the San Pasqual Valley Groundwater Basin are alluvium and residuum. Groundwater in this basin is unconfined (DWR 1959; Izbicki 1983) and well yields range to 1,700 gpm (DWR 1959).

Alluvium. Quaternary alluvium in this basin ranges to greater than 200 feet thick. This unit consists of unconsolidated gravel, sand, silt, and clay, and the average specific yield is about 16 percent (Izbicki 1983).

Residuum. Residuum is typically Green Valley Tonalite that has been weathered in place, creating an arkose-like grus that can bear water, or weathering to clay with boulders (DWR 1993). This residuum is Quaternary or older in age and is wide-spread throughout the region (DWR 1967). This unit has a maximum thickness of 100 feet (DWR 1959) and an average specific yield of about 1 percent (Izbicki 1983).

Recharge Areas

Natural recharge of the basin is from infiltration of precipitation to the valley floor and percolation of ephemeral stream flow of the Santa Ysabel, Bach, Guejito, and Santa Maria Creeks. During typical years, no stream flow leaves the valley and all surface runoff becomes groundwater recharge (Izbicki 1983). Also, excess irrigation waters percolate and contribute to recharge (Izbicki 1983).

Groundwater Level Trends

In the western part of the basin, hydrographs show that groundwater levels declined about 30 feet during 1953 through about 1968, recovered about 20 feet in 1969, declined an additional 50 feet by about 1978 when the water table recovered to pre-1953 levels (Izbicki 1983). In the eastern part of the basin, the water table declined about 50 feet during 1960 through 1966, recovered by about 1972, then experienced a similar cycle and recovered to be to fill the basin in 1982 (Izbicki 1983). Water levels in 1991 were mostly

lower than in 1982 (DWR 1993). Groundwater generally moves westward through the basin (DWR 1993).

Groundwater Storage

Groundwater Storage Capacity. The estimated total storage capacity is about 73,000 af (DWR 1975). However, Izbicki (1983) calculated the storage capacity to be 58,000 af for the alluvium and greater than 5,000 af for the residuum, suggesting a total capacity of about 63,000 af.

Groundwater in Storage. Unknown.

Groundwater Budget (Type C)

Information is not available to construct a budget.

Groundwater Quality

Characterization. Groundwater in this basin is of mixed character (DWR 1993). In the eastern part of the valley, groundwater is mainly calcium bicarbonate character with TDS content mostly less than 500 mg/L (DWR 1993). In the western part of the valley, groundwater is dominantly sodium chloride in character with sulfate as a prominent minor anion (Izbicki 1983; DWR 1993). TDS concentration in the basin ranges from 350 to 1,790 mg/L (DWR 1993).

Impairments. Nitrate concentration ranges to 91.7 mg/L and elevated nitrate concentration is widespread (DWR 1993).

Well Characteristics

	Well yields (gal/min)	
Municipal/Irrigation	Range: to 1,700 (alluvium) (DWR 1959)	Average: 1,000 (Izbicki 1983) to 600 (residuum) (Izbicki 1983)
	Total depths (ft)	
Domestic	Range:	Average:
Municipal/Irrigation	Range:	Average:

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
Department of Health Services and cooperators	Title 22 water quality	2

Basin Management

Groundwater management:

Water agencies

Public	San Diego County Water Authority
Private	

References Cited

California Department of Water Resources (DWR). 1959. *San Dieguito River Investigation.* Bulletin 72. 174 p.

_____. 1967. *Ground Water Occurrence and Quality, San Diego Region.* Bulletin 106-2. 233 p.

_____. 1975. *California's ground water*. Bulletin 118. 135 p.

_____. 1993. *San Diego Region Ground Water Studies, Phase VI.* Memorandum Report. 98 p.

Izbicki, John A. 1983. Evaluation of the San Dieguito, San Elijo, and San Pasqual Hydrologic Subareas for Reclaimed Water Use, San Diego County, California. U. S. Geological Survey Water-Resources Investigations Report 83-4044. 131 p.

Additional References

California Department of Water Resources (DWR). 1973. *Preliminary Evaluation of Groundwater Basins in San Dieguito Investigation*. Preliminary report. 20 p.

_____. 1983. *San Diego County Cooperative Groundwater Studies Reclaimed Water Use, Phase I.* Southern District Report 84 p.

Errata

Substantive changes made to the basin description will be noted here.

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Exhibit 12

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EVALUATION OF THE SAN DIEGUITO, SAN ELIJO, AND SAN PASQUAL HYDROLOGIC SUBAREAS FOR RECLAIMED WATER USE, SAN DIEGO COUNTY, CALIFORNIA

By John A. Izbicki

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations Report 83-4044

Prepared in cooperation with the
COUNTY OF SAN DIEGO
and the
CALIFORNIA DEPARTMENT OF WATER RESOURCES

5008-07

August 1983

UNITED STATES DEPARTMENT OF THE INTERIOR

JAMES G. WATT, Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

For additional information
write to:

District Chief
U.S. Geological Survey
2800 Cottage Way, Room W-2235
Sacramento, Calif. 95825

Copies of this report may
be purchased from:

Open-File Services Section
Western Distribution Branch
U.S. Geological Survey
Box 25425, Federal Center
Denver, Colo. 80225
Telephone: (303) 234-5888

CONTENTS

ILLUSTRATIONS

TABLES

Geology

The San Pasqual hydrologic subarea lies entirely within the Peninsular Range Province. Crystalline rocks of the southern California batholith are exposed in or underlie the entire subarea (fig. 23).

The most extensive rocks are granodiorites which cover slightly over 50 percent of the subarea. These rocks are resistant to weathering and form prominent hills and ridgetops.

Green Valley Tonalite is exposed in approximately 30 percent of the subarea. Green Valley Tonalite is not resistant to erosion and forms deeply weathered lowlands and hilly topography, especially in the vicinity of faults. Green Valley Tonalite may weather to several hundred feet in depth, forming a material known locally as residuum, or decomposed granite (DG). These deeply weathered exposures occupy 1,550 acres, or slightly over 8 percent of the subarea.

Small exposures of gabbro and diorite and metamorphic rock occur as scattered remnants or roof pendants within the more extensive crystalline rocks of the subarea. In some instances these rocks, particularly the gabbro, are deeply weathered and resemble weathered outcrops of Green Valley Tonalite.

Quaternary alluvium stretches across the southern half of the San Pasqual hydrologic subarea. Three smaller alluvium-filled valleys join the main valley from the northwest, northeast, and south. In total, alluvium covers almost 15 percent of the subarea.

Soils

There are three major soil associations within the San Pasqual hydrologic subarea. Fallbrook-Vista and Cienba-Fallbrook soils are found in upland areas. Visalia-Tujunga soils are found in the valley floor (fig. 24).

Soils of the Fallbrook-Vista association have developed along the western edge of the subarea and near San Diego Wild Animal Park. This association is characterized by Fallbrook and Vista soils, between 1.5 to 4 feet thick, and shallow Cienba soils, generally less than 1.5 feet thick. Deep soils are atypical of this association and only small areas of Ramona soils, developed over weathered tonalite, attain thicknesses greater than 5 feet. Infiltration capacities are high to moderate throughout most of the Fallbrook-Vista association, ranging from 0.6 to 2.0 in/h for Fallbrook soils, to 20 in/h for Cienba soils. Ramona soils are characterized by a clay hardpan at a depth of 1.5 feet; consequently, infiltration rates for Ramona soils are poor and range between 0.2 to 0.6 in/h.

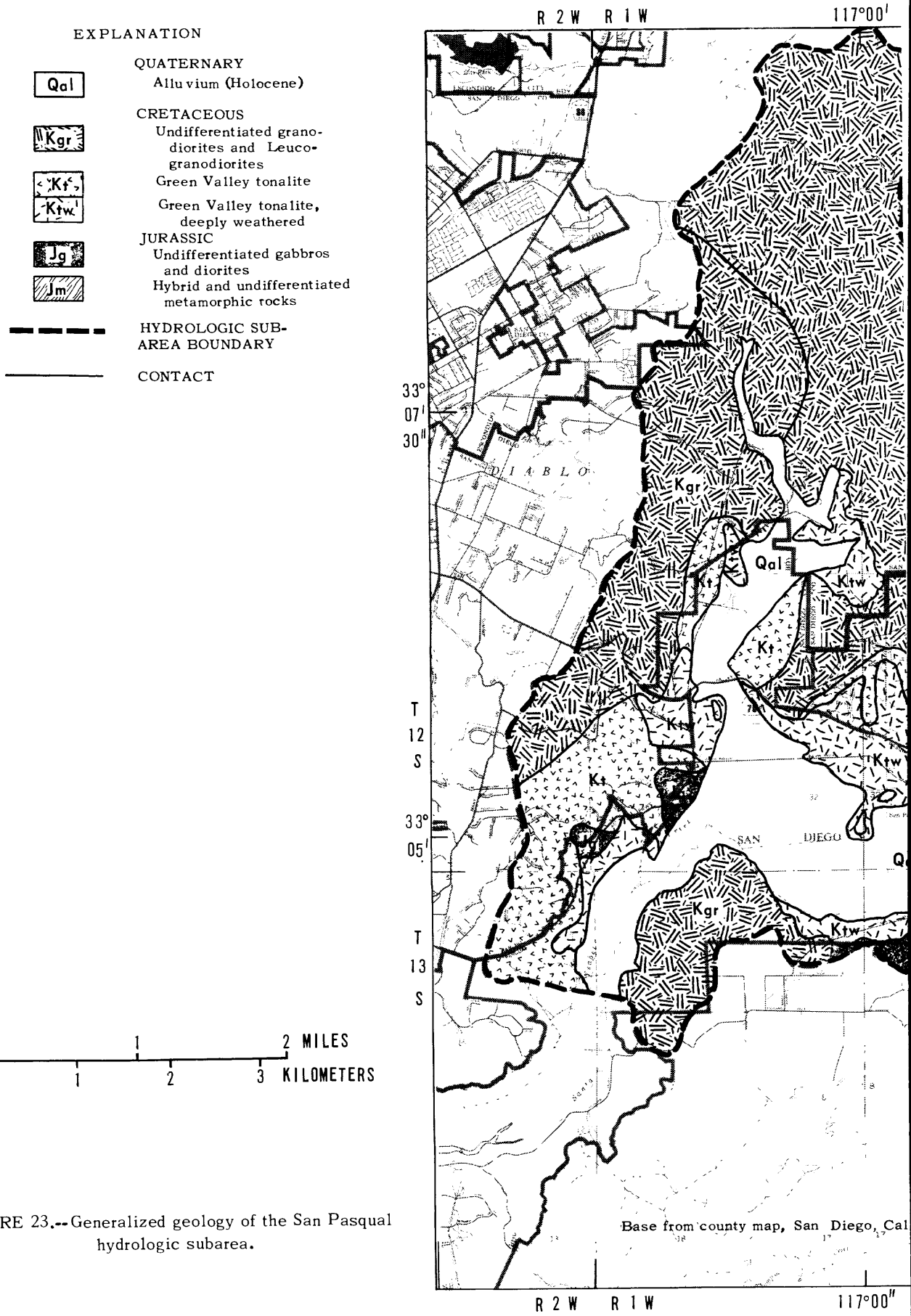
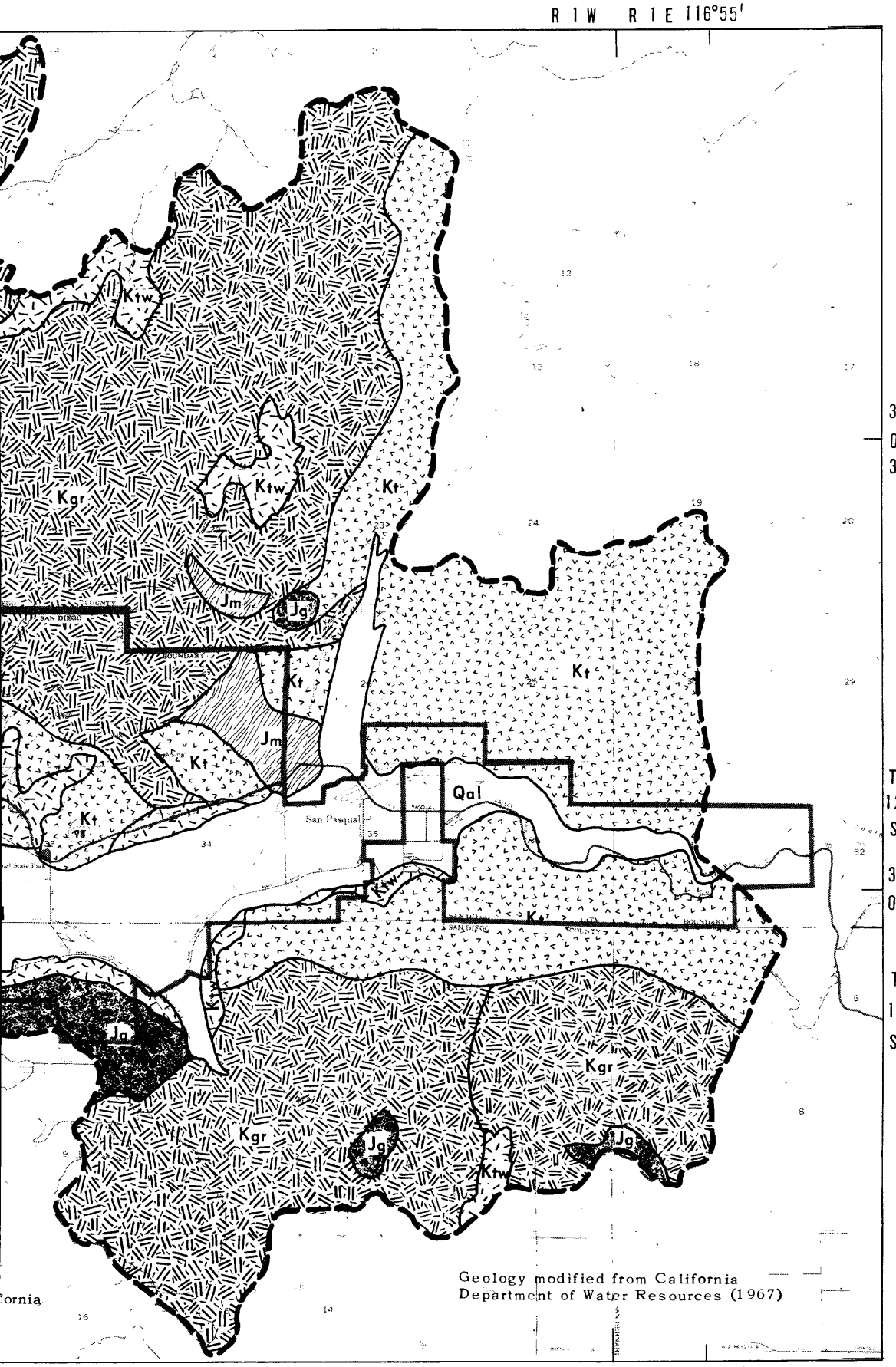


FIGURE 23.--Generalized geology of the San Pasqual hydrologic subarea.


R 1W R 1E 116°55'
33° 07' 30"
T 12 S
33° 05'
T 13 S
Ktw
Kgr
Kt
Jm
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Qal
Ja
San Pasqual
Geology modified from California Department of Water Resources (1967)
R 1W R 1E 116°55'

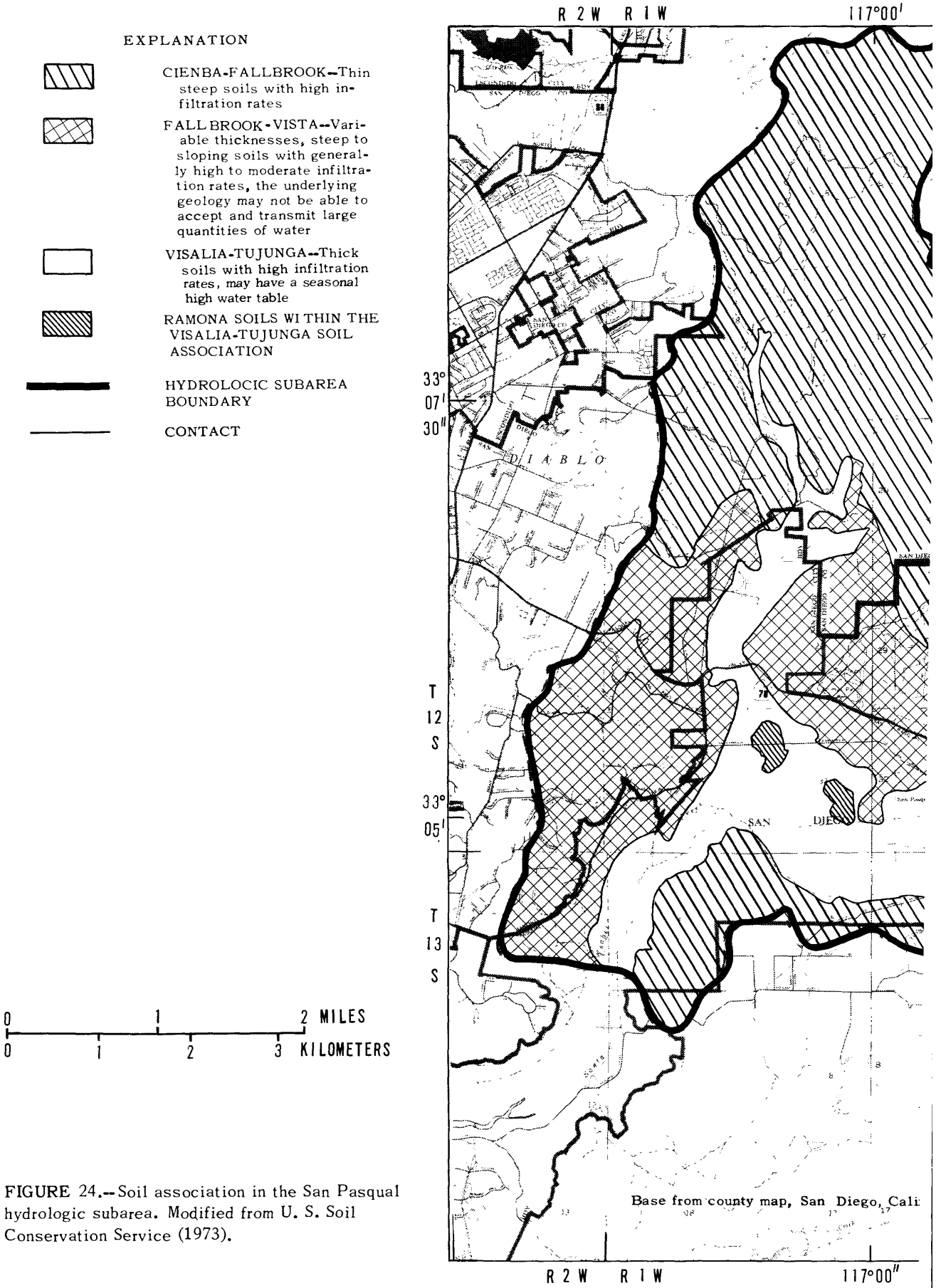
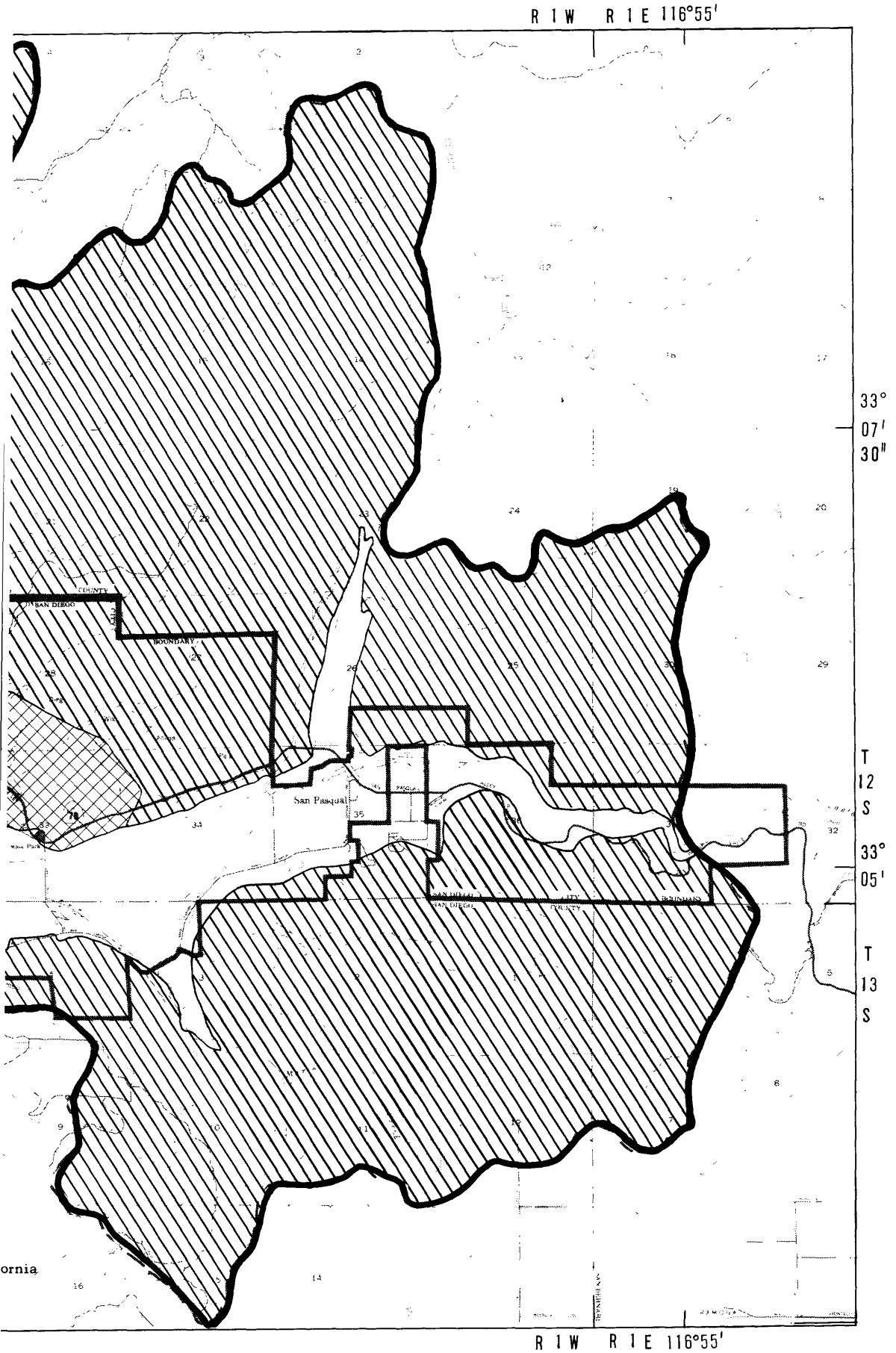


FIGURE 24.--Soil association in the San Pasqual hydrologic subarea. Modified from U. S. Soil Conservation Service (1973).


R 1W R 1E 116°55'
33° 07' 30"
T 12 S
33° 05'
T 13 S
San Pasqual
COUNTY OF SAN DIEGO
BOUNDARY
R 1W R 1E 116°55'

The Cienba-Fallbrook association has many of the same soils as the Fallbrook-Vista association, but in different proportions. Shallow Cienba soils developed over granodiorite dominate this association. However, small areas of Fallbrook and Vista soils have developed over exposures of tonalite and gabbro.

Limitations on applying reclaimed water to upland soils are soil thickness and the ability of the underlying soil profile and geology to accept, filter, and transmit water. Presently, many agricultural areas in the uplands are able to transmit irrigation return water from hillside avocado groves only through shallow circulation and subsurface discharge to springs. If this were reclaimed water, there could be health hazards associated with viruses not killed by wastewater treatment processes or removed by limited soil contact. Proper choice of application sites, methods, rates, and amounts should minimize shallow circulation and surface discharge of reclaimed water, thus minimizing health concerns associated with reclaimed water use on upland soils.

Soils of the Visalia-Tujunga association have developed over the alluvium. All soils within this association are greater than 5 feet thick. In general, infiltration capacities are high and range from 2.0 to 6.3 in/h for Visalia soils, to greater than 20 in/h for Tujunga soils. Small areas of Ramona soils are also present in the Visalia-Tujunga association, particularly where alluvial fill is thin. The primary limitation on application of reclaimed water to soils of the Visalia-Tujunga association is a high water table, within several feet of land surface much of the year.

Surface Water

Streamflow Characteristics

Streamflow data are summarized in table 7, and the locations of stream gages are shown in figure 25. Streamflow into the San Pasqual hydrologic subarea is from Santa Ysabel, Guejito, Santa Maria, and Cloverdale Creeks. A small amount of streamflow originates as springs in uplands of the hydrologic subarea. All surface-water flow leaves the hydrologic subarea through the San Dieguito River at San Pasqual Narrows.

Santa Ysabel Creek is the largest stream, draining 128 mi^2 of largely undeveloped land above the San Pasqual hydrologic subarea. Large parts of its watershed are within Cleveland National Forest and several Indian reservations. Streamflow in Santa Ysabel Creek has been regulated since July 1954 by Sutherland Reservoir, which has a capacity of 29,680 acre-ft, and may further be controlled by the proposed Palmo Dam, which will have a capacity of 30,000 acre-ft and an average annual yield of 8,500 acre-ft.

TABLE 7.--Summary of flow data for the San Pasqual hydrologic subarea

[USGS, U.S. Geological Survey]

Station name	USGS No.	Period of record	Drainage area (mi^2)	Annual discharge (acre-ft) average	Annual discharge (acre-ft) median	Median number of days with flow greater than 0.1 ft^3/s	Maximum discharge for period of record instantaneous (ft^3/s)	Maximum discharge for period of record annual (acre-ft)
Santa Ysabel Creek near Ramona[1]	11025500	02-1912 to 02-1923 10-1943 to 09-1981	112	14,900	3,912	180	28,400	149,000
Santa Ysabel Creek near San Pasqual[1]	11026000	12-1905 to 09-1910 03-1911 to 09-1912 [2]04-1947 to 11-1955 04-1956 to 03-1980	128	5,000	507	102	12,500	29,700
Guejito Creek near San Pasqual	11027000	12-1946 to 09-1981	22	2,110	290	148	3,940	23,900
Santa Maria Creek near Ramona	11028500	11-1912 to 09-1920 10-1946 to 09-1981	58	4,050	145	53	15,200	43,500
San Dieguito River near San Pasqual[1]	11029000	[2]04-1947 to 04-1956 05-1956 to 09-1965	250	[3]1,610	0	0	[3]3,600	[3]14,500

[1]Flow in stream has been regulated since July 1954 by Sutherland Reservoir which has a capacity of 29,680 acre-ft. There are additional small diversions above the station.
[2]Records compiled for irrigation season only.
[3]Based on one flow event in 1958.