

Appendix B

Responses to Comments

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Appendix B Responses to Comments

This appendix contains responses to comments received on the Proposed MND and Draft EA/IS. The comment letters are included in Appendix A.

The comments received did not result in changes to the Proposed MND and Draft EA/IS text, analysis or mitigation; however, minor revisions to the text have been made that update, clarify, or amplify existing text, but represent insignificant modifications.

Pursuant to Section 15073.5 of the State CEQA Guidelines, recirculation of a negative declaration is required when a document must be substantially revised after public notice has been given. A "substantial revision" is defined under this section to mean:

- A new, avoidable significant effects have been identified and mitigation measures or project revisions must be added in order to reduce the effect to insignificance, or
- The Lead Agency determines that the proposed mitigation measures or project revisions will not reduce potential effects to less than significant and new measures or revisions must be required.

The minor revisions made do not change the project scope or any findings and conclusions as presented in the original document; therefore, no recirculation of the MND is required.

1 – Scott Gruendl, Mayor, City of Chico

Comment 1-1

The City of Chico's opposition to transfers of local groundwater is so noted. The EA/IS addresses potential impacts to existing groundwater basins in the project study area and determined that no significant impacts would occur from the Proposed Action.

Comment 1-2

The EA/IS satisfies NEPA and CEQA requirements. NEPA requires federal agencies to prepare a detailed Environmental Impact Statement (EIS) on all major Federal actions significantly affecting the quality of the human environment (42 U.S.C. 4332 (2)(c)). Similarly, CEQA requires state agencies to prepare an Environmental Impact Report (EIR) if there is substantial

evidence that a project may have a significant effect on the environment (CEQA Guidelines Section 15061(b)). The EA/IS provides a thorough and systematic evaluation of a broad range of environmental issues and demonstrates that no potentially significant impacts would occur over the transfer period as a result of the Proposed Action. The record contains no substantial evidence that any significant environmental impact may occur as a result of the Proposed Action, as mitigated. Preparation of an EIS/EIR therefore is not warranted or required. In addition, the Proposed Action is not seen as a precedent setting action continuing on into the future, but rather provides for only temporary transfers during 2014 to meet the short-term needs of water suppliers that are facing water shortages.

As described in Section 1.5 of the Draft EA/IS, Reclamation and SLDMWA are preparing an EIS/EIR for long-term transfers to streamline the process for approving yearly temporary transfers and to accommodate transfers that may extend over multiple years. The current Proposed Action for temporary transfers during 2014 has independent utility and is not dependent on, nor does it dictate the nature and scope of, the long-term transfers to be addressed in the EIS/EIR. The record contains no substantial evidence that any significant environmental impact may occur as a result of the Proposed Action, as mitigated. Thus, it is entirely appropriate for the agencies to assess single-year 2014 transfers in an EA/IS and prepare a FONSI and MND, because substantial evidence demonstrates that the Proposed Action, as mitigated, will not result in a significant impact on the environment.

Comment 1-3

Under CEQA, the purpose of an IS is to determine if a proposed project may have a significant effect on the environment; therefore, a discussion of alternatives is not required.

Similarly, the purpose of an EA completed under NEPA is to determine whether a proposed action could result in significant environmental effects that warrant preparation of an EIS. As described above in response to Comment 1-2, an EA is an appropriate level of analysis for 2014 water transfers given that, based on substantial evidence provided therein, implementation of the Proposed Action would not result in any significant environmental effects. As also noted above in response to Comment 1-2, the current Proposed Action has independent utility from the long-term water transfers being addressed in the EIS/EIR being prepared for that separate action. That EIS/EIR will include and address a reasonable range of alternatives, as required by NEPA and CEQA, with appropriate consideration given to groundwater substitution. It is not necessary or appropriate for the EA/IS to address certain alternatives that may be otherwise included in that separate EIS/EIR, such as alternatives that do not rely on groundwater substitution transfers, as suggested in comment, given that the current Proposed Action is independent of the action being addressed in the EIS/EIR. Additionally, the environmental analysis in the EA/IS provides the

reader with an understanding of potential impacts associated with a scenario that does not include groundwater substitution transfers – the No Action Alternative, and, for comparison, a scenario that does include groundwater substitution transfers – the Proposed Action, with the conclusions of the analysis being that implementation of the proposed groundwater substitution transfers would not result in significant environmental effects.

According to the DOI NEPA Regulations (Section 46.310), when the Responsible Official determines that there are no unresolved conflicts about the Proposed Action with respect to alternative uses of available resources, the EA need only consider the Proposed Action and proceed without consideration of additional alternatives, including the No Action Alternative. Although the commenter has expressed concerns about the Proposed Action, it should be noted that only two commenters expressed these types of concern. Information about the action was sent to parties who requested it and the Notice of Intent to Adopt a Mitigated Negative Declaration was published in three newspapers and was filed in 14 counties. In light of the fact that information about the action was made available to agencies and the public on a broad and extensive basis, and only very limited comments were received on the Draft EA/IS, all of which are fully addressed herein and do not change the conclusions of the Draft EA/IS, there are still no unresolved conflicts that warrant consideration of additional alternatives.

The comment cites requirements from NEPA and CEQA to include alternatives in EIS and EIR documents, respectively. Such alternatives are useful to examine whether there are ways to avoid or substantially reduce significant impacts, as would be addressed in an EIS or EIR; however, the EA/IS concluded that implementation of the Proposed Action, as mitigated, would not result in any unavoidable significant impacts and the record contains no substantial evidence that any significant impacts would result from the Proposed Action. A discussion of alternatives within the EA/IS is unwarranted.

Comment 1-4

The Draft EA/IS analyzes cumulative impacts of transfers in Chapter 3, Section XVIII(b), including as related to air quality, biological resources, and groundwater resources. That section includes a list of transfers that could occur in addition to the Proposed Action as part of a cumulative condition. To determine this list, the lead agencies reached out to other potential buyers and sellers (including both state and federal as suggested in the comment) to characterize the potential transfers under consideration for 2014. Public comments have not disclosed any additional transfers that are missing from this list. Because of the short-term nature of this project (it will be completed in September 2014), the lead agencies did not identify other current or future projects (in addition to those listed in Table 3-10) that may contribute to the cumulative effects identified in this analysis after the proposed project is complete. Past projects have pumped additional groundwater from the

Sacramento Valley Groundwater Basin that could contribute to cumulative effects. The groundwater modeling effort considered these past projects effects on groundwater levels in the baseline condition and the model results show effects of transfers on groundwater levels relative to historic conditions that include pumping. The cumulative analysis does assess impacts based on the very dry conditions in 2014 and the past dry years that contributed to this condition.

Comment 1-5

The Proposed Action is being proposed specifically in response to diminishing water supplies, as described in Section 1.2 of the EA/IS. The Proposed Action would help to move and manage limited water supplies to areas where it is most needed. Groundwater modeling was conducted to evaluate potential impacts to the aquifers from groundwater substitution activities associated with the Proposed Action.

The Proposed Action is a short-term water transfer over a period of 3 to 6 months depending on the specific water agency proposing to transfer water. The projected changes in climate conditions are expected to result in a variety of impacts in the state of California, including changes to precipitation, substantial loss of mountain snow pack, and a range of sea level rise along the California coast (California Climate Change Center 2012)¹. Climate change is a global problem and the quantity of GHGs that it takes to result in a climate change effect is not known; however, the quantity is known to be substantial. Several air districts, such as the SMAQMD, acknowledge that a single project alone cannot cause a noticeable change in climate change (2013).² Therefore, it is not appropriate to link the Proposed Action, especially in light of its minimal emissions (compared to statewide emissions) and short duration, to specific effects on the aquifer systems.

Under NEPA, the Council on Environmental Quality (CEQ) published *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions* (2010)³ that proposed how environmental documents should consider both the GHG emissions effects of a proposed action or alternative and the relationship of climate change effects to a proposed action or alternatives. The draft CEQ guidance asserts that it is not useful for a

¹ California Energy Commission, California Climate Change Center. 2012. *Climate Change and Sea Level Rise Scenarios for California Vulnerability and Adaptation Assessment*. July. Prepared by Scripps Institution of Oceanography. Accessed on: 04 02 2014. Available at: <http://www.energy.ca.gov/2012publications/CEC-500-2012-008/CEC-500-2012-008.pdf>.

² Sacramento Metropolitan Air Quality Management District. 2013. *CEQA Guide to Air Quality Assessment*. Chapter 6: Greenhouse Gas Emissions. April. Accessed on: 04 02 2013. Available at: <http://www.airquality.org/ceqa/ceqguideupdate/Ch6ghgFINAL.pdf>.

³ Council on Environmental Quality. 2010. *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*. February 18. Accessed on: 04 02 2014. Available at: <http://www.whitehouse.gov/sites/default/files/microsites/ceq/20100218-nepa-consideration-effects-ghg-draft-guidance.pdf>.

NEPA evaluation to link a specific Proposed Action to climatological changes and the environmental impacts thereof. Additionally, while the CEQ acknowledges that the effects of climate on a proposed action should be considered, agencies must be cognizant of the scientific limitations on predicting climate change effects, especially for actions of a short-term nature. Based on these considerations, it is not feasible to consider the effects the Proposed Action would have on sensitive aquifer systems in light of the impacts of climate change.

Comment 1-6

The term “mitigation plan” regarding groundwater substitution transfers originated in the *DRAFT Technical Information for Preparing Water Transfer Proposals (Reclamation and DWR 2013)*, and is used in this EA/IS to maintain consistency. However, it does not indicate “mitigation” from a NEPA and CEQA perspective, because the EA/IS does not identify significant groundwater resource impacts that require mitigation. In this case, the “mitigation plan” must identify a course of action if monitoring efforts indicate the potential for adverse effects. The EA/IS includes a detailed modeling effort to assess these potential effects and did not identify significant impacts; therefore, these effects are unlikely and this plan is an added protection to verify that effects do not occur.

Comment 1-7

As indicated above in response to Comment 1-1, the Proposed Action is not seen as a precedent setting action continuing on into the future, but rather provides for only temporary transfers during 2014 to meet the short-term needs of water suppliers that are facing water shortages.

2 – Thomas Lippe, Attorney, AquAlliance

Comment 2-1

As described in greater detail below, the draft EA/IS identified potentially significant air quality impacts and, consistent with the intent and provisions of NEPA and CEQA, identified several mitigation measures that would reduce those impacts to levels that are less than significant. Based on the analysis in the draft EA/IS and the absence of any substantial evidence of a significant environmental impact resulting from the Proposed Action, as mitigated, a finding of no significant impact under NEPA and a mitigated negative declaration under CEQA are the appropriate levels of environmental review for the Proposed Action and the preparation of an EIS or EIR is not warranted (NEPA-40 CFR 1501.4(e)(1) and CEQA-14 CCR 15064(f)(2)).

Section III in Chapter 3 of EA/IS addresses the potential air quality impacts of the Proposed Action. The summary environmental checklist on page 3-4 of the

EA/IS and the associated narrative discussions that follow on pages 3-4 through 3-11 assess and delineate the significance of air quality impacts, and specific mitigation measures are set forth on page 3-8 for those air quality impacts identified as being potentially significant. That analysis is reiterated in several aspects of the subject section. Table 3-2 and Table 3-3 summarize emissions from each water agency and make a determination about whether air quality impacts would be significant from groundwater substitution activities. Mitigation measures for significant NO_x emissions identified at Pleasant Grove-Verona Mutual Water Company are provided on page 3-8 of the draft EA/IS. As discussed, implementation of the mitigation measures would be sufficient to reduce NO_x emissions to less than significant; Table 3-4 supports this conclusion by summarizing mitigated emissions. In accordance with Section 15097(a) of the CEQA Guidelines, a mitigation monitoring and reporting program (MMRP) will be adopted in conjunction with approval of the project to ensure activities associated with transferring water comply with all applicable environmental mitigation measures. The MMRP for the project is provided herewith in Appendix E.

Comment 2-2

The CEQA guidelines published by the Feather River, Sacramento Metropolitan, and Yolo-Solano air districts are intended as guides to help public agencies evaluate air quality impacts. Proposed projects with emissions that meet or exceed the recommended significance criteria are assumed to have a potentially significant adverse impact on air quality (See Chapter 2 of the SMAQMD CEQA Guidelines). The air districts are experts in the field of air quality, and these experts consider the thresholds to be protective of public health within each air district. Engines used for groundwater pumping activities associated with the Proposed Action are located in agricultural areas and are not within the proximity of sensitive populations like schools, hospitals, residences, and day care centers. As a result, SLDMWA determined that the significance thresholds used by the air districts are suitable and appropriate for evaluating the air quality impacts of the Proposed Action. Comparison of the numerical estimates of emissions in Tables 3-2 and 3-3 were appropriately compared with these significance thresholds to disclose the degree of air quality impacts expected from the proposed project.

As described on page 3-5 of the draft EA/IS, the threshold used to evaluate significant impacts in Colusa, Glenn, and Shasta counties is based on the definition of a “major source” in the federal Clean Air Act. Because the air quality in these counties is better than the other counties covered by the Feather River, Sacramento Metropolitan, and Yolo-Solano air districts, given that they are in attainment for all national ambient air quality standards (NAAQS), the major source threshold used by the Clean Air Act was deemed suitable and appropriate to evaluate significant air quality impacts in these counties. The major source threshold used by the Clean Air Act is intended to prevent further degradation of air quality in a region.

Please also see response to Comment 2-3 below regarding the commenter's assertions about cumulative impacts.

Comment 2-3

The logic of determining cumulative significance based on individual project significance is consistent with the air districts' interpretation of CEQA. The air districts acknowledge the heart of the matter because air pollution is largely a cumulative problem (see Chapter 8 of the SMAQMD CEQA Guidelines). SLDMWA agrees that air quality is a cumulative phenomenon and that the nonattainment status of the air basins is a result of past and present development. As a result, the issue at hand is whether a project's contribution to air quality impacts is cumulatively considerable. As maintained by the air districts (SMAQMD 2011), the significance thresholds developed by them are suitable and appropriate to determine if an impact would be cumulatively considerable. In other words, individual significance translates a cumulatively considerable incremental contribution to a significant cumulative impact.

Comment 2-4

As stated in the response to Comment 2-2, the air quality in Colusa, Glenn, and Shasta counties is better than the air quality in the other counties, so the significance threshold is derived from the "major source" threshold in the federal Clean Air Act. The commenter is incorrect by asserting that these counties are listed as nonattainment areas for the ozone NAAQS, as shown in Table 2-6 of the EA/IS (United States Environmental Protection Agency 2013). Additionally, while listed as nonattainment for the California ambient air quality standards (CAAQS), Colusa and Glenn counties are designated as "transitional" areas, meaning that they are close to achieving attainment with the CAAQS. Shasta County, additionally, is close to reaching attainment, with only about five to six exceedences per year (three exceedences would designate Shasta as a transitional area). As a result, using a threshold developed in an air district designated nonattainment for both NAAQS and CAAQS (e.g., Sacramento County) is not appropriate for use in an area designated attainment for NAAQS and transitional for CAAQS.

Appendix G documents the assumptions that were used to reduce significant impacts to less than significant levels. The number and types of engines and how emission factors would change based on new assumptions are summarized in the appendix.

3 – Barbara Vlamis, AquAlliance

Comment 3-1

Reclamation and SLDWMA have received AquAlliance's comment letter and attachments; the attachments to the comment letter are available upon request

and at Reclamation's and SLDWMA's offices (Reclamation: 2800 Cottage Way, Sacramento, CA 94825; SLDWMA: 842 6th Street, Los Banos, CA 93635). The comments and documents contained in the attachments pertain to other actions and projects separate from, and independent of, the currently Proposed Action. The references comments AquAlliance's comments on the 2009 Drought Water Bank, the 2010-2011 Water Transfer Program, and 2013 Water Transfers; written responses to these materials were provided in conjunction with the final NEPA/CEQA environmental review documents completed for those other actions/projects.

Comment 3-2

Public Resources Code Section 21067 defines a lead agency as "the public agency which has the principal responsibility for carrying out or approving a project which may have a significant effect upon the environment." SLDWMA is negotiating transfer agreements with potential sellers on behalf of the Participating Members, and as such, will be a key party in the transfers analyzed in the EA/IS.

DWR will not be a party involved in negotiating transfers, nor will the agency be a party to any of the transfer contracts. The comment suggests that DWR will approve transfers, but that is not accurate. Potential sellers in this EA/IS will submit transfer information to Reclamation for review and approval under federal and state law. DWR will have a coordination role in the process because it will coordinate with Reclamation on review of potential transfer information packages (to help ensure consistency between CVP-related transfers and non-CVP-related transfers). This is not a role with "principal responsibility" such that DWR should be the CEQA lead agency.

Comment 3-3

The document title was selected to clearly indicate who would receive the transferred water. SLDWMA is a party in the transfers analyzed in the EA/IS; therefore, including its name in the title helps clarify who would receive the water.

Comment 3-4

The Notice of Intent to Adopt a Mitigated Negative Declaration was filed according to CEQA Guidelines Section 15072. The notice identified several ways to view the Mitigated Negative Declaration, including in-person access at SLDWMA's office. The notice also listed a contact person and contact phone number in case people had difficulty accessing the electronic documents or if they wished to be mailed a CD version. If there were issues accessing the environmental documents on Reclamation's website, there were several other publicized means to obtain relevant documents and a direct contact available to assist in the matter.

Comment 3-5

The table of contents in the Final EA/IS has been edited to incorporate resource area titles in Chapter 3.

Comment 3-6

The lead agencies establish the purpose and need to best describe their underlying reasons for taking an action, and Section 1.2 of the EA/IS sets forth the statement of purpose and need under NEPA and the project objectives under CEQA. The comment pertains to the merits of the Proposed Action and not to the environmental analysis in the EA/IS.

Hydrologic and groundwater conditions in the buyers' area are included in Section 2.5.3. The current Proposed Action for temporary transfers during 2014 has independent utility and therefore does not segment a project. Please also see response to Comment 1-2 for additional discussion regarding why the EA/IS for the Proposed Action is not segmented.

Comment 3-7

As discussed in response to Comment 3-6, the lead agencies establish their purpose and need. Reclamation has multiple planning efforts to help meet the many demands on the CVP, even during dry conditions. The Water Supply meetings cited in the comment were an example of one of these planning efforts. The meetings examined different potential hydrologic scenarios for water year 2014 and compiled potential actions to address potential shortages. Reclamation's drought website includes descriptions of Reclamation's drought planning and activities to address water shortages:

<http://www.usbr.gov/mp/drought/index.html>. Water transfers are one of the potential actions included on this website.

As described on page 1-2, Reclamation is not asking any districts to sell water. Reclamation's potential action is to approve and facilitate transfers, if appropriate based on detailed review of the transfers. Reclamation is not soliciting potential buyers or sellers for transfers.

Comment 3-8

Table 2-4 lists potential buyers of the proposed CVP and non-CVP water available for transfer by sellers. The final allocation to CVP water service contractors south of the Delta is unknown, but the initial allocation was 0 percent. The buyers listed in this document could purchase up to the maximum quantities listed in this EA/IS available for transfer. The final quantity of water to be transferred is dependent on numerous factors, including future changes in hydrologic conditions, export capacity available for transfer water, negotiations between buyers and sellers, and Reclamation approval. The amount of water to be transferred is unknown at this time.

Reclamation is not managing a bank or program; therefore, priority criteria for the use of water were not identified in the EA/IS. The participating buyers and sellers are negotiating water transfers, including the transfer quantity, method, and use. The EA/IS discusses potential impacts in the buyers' area under the No Action Alternative and Proposed Action in Chapter 3.

Comment 3-9

Please see response to Comment 3-2 regarding why SLDMWA is the appropriate CEQA lead agency. Reclamation completed the 2009 Drought Water Bank EA to assess the potential environmental impacts under NEPA of transferring up to 199,885 acre-feet from CVP contractors (not 600,000 acre-feet as described in the comment). That EA analyzed impacts to air quality based on groundwater substitution impacts, and included mitigation measures to reduce those impacts to a less-than-significant level. Reclamation also consulted with USFWS on the proposed transfers, particularly related to potential cropland idling/shifting effects on GGS, which resulted in USFWS issuing a new biological opinion. The biological opinion was based on the best available science for the giant garter snake. Buyers received 79,926 acre-feet of transferred water under the 2009 Drought Water Bank EA/FONSI and biological opinion.

The 2010-2011 Water Transfer Program EA analyzed transfers up to approximately 200,000 acre-feet. The non-CVP transfers did not receive NEPA coverage because they were included only as part of the cumulative analysis. No water was transferred under the action addressed by the 2010-2011 Water Transfer Program environmental document. Similarly, the 2013 Water Transfers EA only provided NEPA coverage for the 37,715 acre-feet included in the description of the Proposed Action. The other transfers included in the comment were part of the cumulative analysis and therefore did not receive NEPA coverage through the 2013 Water Transfers EA.

Comment 3-10

The lead agencies considered the factors included in the comment, and determined that an EIS/EIR was not warranted. Please see responses to Comments 1-2 and 2-1 for additional explanation. Chapter 3 of the EA/IS addresses the potential impacts associated with the Proposed Action including, but not limited to, as related to the regional environment, biology, and hydrology, and concluded that no significant impacts would occur.

Comment 3-11

Reclamation is not required to release a draft FONSI for review. Reclamation's role on the project is described on page 1-2 of the EA/IS, as cited in the comment; the role is limited to approving and facilitating CVP-related transfers.

The comment lists several examples of various projects and programs, alleging that Reclamation and DWR should have “known” that programmatic review was necessary for transfers; however, these examples are related to other projects or programs. The Sacramento Valley Water Management Agreement was a multi-pronged program to address water rights issues in the Sacramento Valley, and the purpose of this effort was not to provide programmatic analysis of water transfers. Similarly, the *Critical Water Shortage Contingency Plan* had multiple objectives and the program EIR was not the same as the transfers under the Proposed Action.

The lead agencies have completed this EA/IS to evaluate the potential for significant environmental impacts resulting from implementation of proposed transfers and satisfy CEQA and NEPA. Reclamation and SLDWMA are working on the Long-Term Water Transfers EIS/EIR to evaluate the impact of potential water transfers over the next ten years. The current Proposed Action for temporary transfers during 2014 has independent utility and is not dependent on, nor does it dictate the nature and scope of, the long-term transfers to be addressed in the EIS/EIR. See response to Comment 1-2 for additional information.

As discussed in Section 2.2.3, the SWRCB is not a Responsible Agency because forbearance agreements do not require SWRCB approval. Reclamation is the NEPA lead agency because of the need to approve water transfers under Federal law.

Because the Proposed Action includes transfers that have independent utility, considering these transfers for one year does not constitute improper segmentation and a programmatic environmental document is not needed.

Comment 3-12

The comment cites requirements from NEPA and CEQA to include alternatives in EIS and EIR documents, respectively. However, as described in response to Comment 1-2, the lead agencies for the Proposed Action determined that an EIS/EIR is not warranted. The alternatives are useful to examine whether there are ways to avoid or substantially reduce significant impacts; however, implementation of the Proposed Action, as mitigated, will not result in any significant impacts.

According to the DOI NEPA Regulations (Section 46.310), when the Responsible Official determines that there are no unresolved conflicts about the Proposed Action with respect to alternative uses of available resources, the EA need only consider the Proposed Action and proceed without consideration of additional alternatives, including the No Action Alternative. Information about the action was sent to parties who requested it and the Notice of Intent to Adopt a Mitigated Negative Declaration was published in three newspapers and was filed in 14 counties. Out of the parties that received the notice, only two parties

submitted comments expressing concerns over the project. In light of the fact that information about the action was made available to agencies and the public on a broad and extensive basis, and only very limited comments were received on the Draft EA/IS, all of which are fully addressed herein and do not change the conclusions of the Draft EA/IS, there are still no unresolved conflicts that warrant consideration of additional alternatives.

Comment 3-13

The subject tables within Chapter 2 of the EA/IS are correct and accurate as presented therein. The EA/IS fully analyzes the impacts associated with all of the transfers in Tables 2-2 and 2-3 to allow sellers maximum flexibility in how they want to make water available for transfer. Many districts may use groundwater substitution, cropland idling/shifting, or a combination of both methods to make water available. Because the final methods of transfer were not known when the analysis for the EA/IS was underway, potential sellers included the maximum amounts for both types of transfer. The lead agencies wanted to be clear that the overall amount transferred would be less than if numbers in Tables 2-2 and 2-3 were added together, so they included Table 2-1 to indicate the overall upper limits by agency.

Comment 3-14

The text in Chapter 2 has been clarified in the Final EA/IS to indicate that the objective is to have groundwater levels recover to the seasonal high levels before transfers begin. Reclamation will review well locations as part of the transfer information package submitted before water is transferred. During this review, Reclamation will examine well construction and local hydrogeologic information to determine if a well has the potential to cause excessive stream flow losses outside of the wet season. See response to Comment 3-37 for additional information on the 12 percent stream flow loss figure.

Comment 3-15

Cropland idling is a typical land management practice for growers. Growers also vary cropping patterns year to year based on market conditions. These, and other factors, often result in annual fluctuations of acreage of a particular crop that is planted and harvested. Based on analysis of harvested rice acreage provided by the USDA's County Agricultural Commissioners' Data Reports, annual harvested acreage in Colusa, Sutter, and Yolo counties varied by up to 20 percent, and even higher, in some years. Table B-1 shows historic rice acreage in the counties where cropland idling is proposed.

Table B-1. Annual Harvested Rice Acreage by County in Sellers' Area

Year	Glenn	Annual % Change	Colusa	Annual % Change	Sutter	Annual % Change	Yolo	Annual % Change
1994	83,882	--	125,680	--	102,589	--	20,917	--

1995	84,631	1%	114,600	-9%	105,482	3%	25,012	20%
1996	83,686	-1%	128,690	12%	93,164	-12%	25,999	4%
1997	85,768	2%	141,530	10%	90,437	-3%	25,800	-1%
1998	81,820	-5%	135,950	-4%	94,442	4%	17,816	-31%
1999	82,980	1%	140,920	4%	100,087	6%	24,483	37%
2000	87,383	5%	147,270	5%	107,704	8%	36,229	48%
2001	87,239	0%	111,250	-24%	81,857	-24%	28,717	-21%
2002	92,382	6%	134,300	21%	96,224	18%	32,446	13%
2003	87,793	-5%	127,350	-5%	93,654	-3%	37,303	15%
2004	86,017	-2%	150,130	18%	121,131	29%	45,655	22%
2005	88,876	3%	136,400	-9%	97,801	-19%	34,670	-24%
2006	82,436	-7%	142,600	5%	92,984	-5%	29,997	-13%
2007	82,668	0%	148,550	4%	108,241	16%	32,660	9%
2008	77,770	-6%	150,200	1%	92,344	-15%	30,057	-8%
2009	89,483	15%	152,400	1%	109,766	19%	36,593	22%
2010	88,209	-1%	154,000	1%	115,000	5%	41,400	13%
2011	84,900	-4%	149,000	-3%	112,000	-3%	42,500	3%
2012	84,800	0%	150,000	1%	116,000	4%	40,500	-5%
Average	85,491	--	139,730	--	101,573	--	32,658	--
Source: USDA, Agricultural Commissioners Report 1995-2013								

The EA/IS text on page 2-12 has been revised to read “Historical amounts of idled land vary year to year, and in the past, have varied by up to 20 percent. This indicates that the local economy has adjusted to similar amounts of cropland idling.” The hearing required by Water Code Section 1745.05(b) serves to protect local economies if cropland idling exceeds historic levels and could result in economic effects.

Chapter 4, Section 4.3 provides an evaluation of socioeconomic impacts of land idling under the No Action Alternative and cropland idling transfers under the Proposed Action. The section discusses economic effects of cropland idling under drought conditions that would occur under the No Action Alternative. Water districts in Sacramento Valley do not know the planting decisions of their growers; therefore, quantification of land idling under the No Action Alternative is not possible. The section clearly states that there would be adverse economic effects in the Sacramento Valley as growers take actions, including idling, to address water shortages under the No Action Alternative. Section 4.3 also identifies that secondary economic effects would occur in the regional economy as a result of idling under the Proposed Action and quantifies the potential effects to employment. This analysis is done using an economic multiplier for employment from IMPLAN 2011 data set. The section states that similar relative adverse effects would occur to labor income and economic output in the regional economy as a result of the Proposed Action.

Per Water Code Section 1745.05(b), water districts will hold a public hearing if the amount of water from land idling exceeds 20 percent of the water that would have been applied or stored by the water suppliers absent the water transfer in any given hydrologic year. A public hearing is not yet scheduled, nor is it known that one will be required, because districts do not yet know what their

final water supplies will be and interested growers have not yet committed to water transfers. If a public meeting is necessary, districts will publicize the meeting using multiple methods, including website and newspaper notifications and an email will be sent to those on water transfer distribution lists.

Comment 3-16

The purpose of Section 2.3, Recent Environmental Documents, is to show that water transfers are a common water management tool used by agencies in response to water shortages and have had extensive environmental analysis in past NEPA/CEQA compliance documents. The 2010-2011 Water Transfer Program EA is appropriately listed in this section. The legal complaint submitted to Federal court that challenged the document did not proceed forward and no water transfers occurred under the document.

As described in Section 1.5 of the Draft EA/IS, Reclamation and SLDMWA are preparing an EIS/EIR for long-term transfers evaluate the impact of potential water transfers over the next ten years and to accommodate transfers that may extend over multiple years. The current Proposed Action for temporary transfers during 2014 has independent utility and is not dependent on, nor does it dictate the nature and scope of, the long-term transfers to be addressed in the EIS/EIR.

Comment 3-17

The full set of monitoring data from 2013 water transfers is not yet complete, but available data has been added to Appendix C.

The lead agencies have added groundwater monitoring data for areas throughout the sellers' area in Appendix F to provide additional background information. The hydrographs in Appendix F show that over time, water levels have decreased in drier periods but have not shown long-term increasing or decreasing trends. The commenter cites information from DWR that shows decreases in groundwater levels from 2004 to 2013 and 2011 to 2013; however, 2013 was a dry year. The DWR maps show the change from one point (either 2004 or 2011, respectively) to another point (2013). These maps show that the groundwater levels decline in a dry year, but as noted above, there is no evidence of a material increase or decrease in long-term trends for groundwater level when groundwater data for additional years, such as those shown in the hydrographs in Appendix F, are taken into account.

Comment 3-18

The environmental commitment has been edited in the Final EA/IS to indicate that carriage water will maintain water quality conditions that would have existed absent a transfer.

Reclamation and DWR have provided information to the SWRCB regarding exceedences at Old River near Tracy Boulevard. Reclamation and DWR have

worked to improve water quality in the Delta using measures such as reducing exports at Banks and Jones Pumping Plants, increasing releases from New Melones Reservoir into the Stanislaus River, and modifying operations of agricultural barriers in the Delta. These measures have greatly reduced electroconductivity in the Delta but have not improved quality at this monitoring station. Reclamation and DWR have found that water quality exceedences are not attributable to CVP or SWP operations (Reclamation and DWR 2012).

Comment 3-19

The EA/IS and the *DRAFT Technical Information for Preparing Water Transfer Proposals* (DWR and Reclamation 2013) include the process and criteria that Reclamation will use to review water transfer information packages from potential sellers. Reclamation will review the proposed Monitoring and Mitigation Plans to verify that they meet these criteria.

Comment 3-20

Water transfers would not affect seismicity; therefore, a detailed discussion of faults in the region is not necessary.

Comment 3-21

The checklist is taken directly from Appendix G of the CEQA Guidelines and is the template used for the impacts discussion. The term “special status species” is used which implies all jurisdictional agencies over listed species, including NMFS. The discussion of impacts below the checklist sections are inclusive of all potential impacts to special status species. The impacts discussion appropriately identifies NMFS as a regulating agency relative to potential special status species impacts.

Comment 3-22

Water transfers are a small portion of total Project deliveries during the summer months. Resource agencies, including USFWS and NMFS, evaluated the effects of water transfers in the Biological Opinions and placed limitations on transfers during the July – September period to reduce potential effects. The agencies found that transfers would not affect special status fish species given these constraints. The cited paper by Thomas Cannon does not specifically mention water transfers at all throughout the document. USFWS evaluated impacts to Delta smelt in the Biological Opinions and concluded that smelt are not near the pumps in the summer months and would not be affected by water transfers.

Comment 3-23

The EA/IS includes a thorough evaluation of potential water transfer impacts on GGS. Reclamation and SLDMWA have incorporated conservation measures into the project description to avoid or mitigate potential impacts to GGS to a less-than-significant level. Impacts of the Proposed Action, as mitigated, were found to be less than significant and an EIS/EIR is not necessary. The agencies coordinated frequently with USFWS biologists in development of the conservation measures and are formally consulting with USFWS on 2014 water transfers.

Reclamation technical experts will review all monitoring and mitigation plans for cropland idling/shifting transfers prior to approval of the transfer. If the plans are not adequate, the transfer will not be approved. The requirement of a monitoring and mitigation plan will be included in the transfer approval. Reclamation technical staff will review reports and conduct field visits to ensure that the measures are being implemented and approval conditions are met. A third party is not needed to ensure compliance.

Comment 3-24

The text in the Background section of the Final EA/IS has been edited to clarify that dry conditions persist in both the buyer and seller areas. The resource area analyses in Chapter 3 also describe potential impacts associated with dry conditions that would exist with either the No Action Alternative or the Proposed Action. Also, in response to this and other comments, groundwater monitoring data has been added in Appendix F to provide additional background information to further support the analysis and conclusions of the draft EA/IS analysis.

Comment 3-25

Chapter 3, Hydrology and Water Quality, item (a) analyzes the potential changes to water quality relative to existing conditions and the No Action Alternative, as required by CEQA and NEPA.

Section 2.5.6.3 characterizes the groundwater quality as part of the environmental setting. A reference to the volatile organic compounds found near Chico in the 2005 GAMA results (in this comment) has been added to this section. Chapter 3, Hydrology and Water Quality, item (f) assesses potential effects to groundwater quality from water transfers and finds the impacts to be less than significant. Figures 3-3 and 3-4 show that there would be no change in groundwater levels near the City of Chico; therefore, transfers would not mobilize the potential constituents of concern in the groundwater.

Comment 3-26

Figures 3-1 and 3-2 and the figures in Appendix K show results from the groundwater model, which includes hydrology from 1969 through 2003. Additional groundwater monitoring data has been added in Appendix F to further characterize groundwater conditions, in support of the analysis and conclusions of the draft EA/IS analysis.

Comment 3-27

Additional groundwater monitoring data has been added in Appendix F to further characterize groundwater conditions. These well hydrographs support the statement in the draft EA/IS that groundwater levels typically rebound quickly after dry years. The examples cited in the comment (near Durham and on the Yuba River) are not near the proposed transfers and are outside the potential areas of groundwater level drawdown.

Comment 3-28

The environmental setting (Chapter 2) provides information on the physical environmental conditions in the vicinity of the potential transfers, as required by CEQA. The Proposed Action does not include potential groundwater substitution transfers in Butte County, and the potential groundwater drawdown does not extend into Butte County (see Figures 3-3 and 3-4). Therefore, information on the groundwater conditions in these areas was not included.

The comment also refers to concerns in the northwestern portion of Glenn County; however, this area is also outside the area of potential groundwater substitution transfers. Groundwater substitution transfers are not proposed from entities in Glenn County. Transfers from Colusa County have the potential to cause drawdown of less than 1 foot in the southeastern corner of Glenn County, but this area is very small and not in the area of concern referenced in the comment.

Comment 3-29

Additional groundwater modeling data has been added in Appendix F to further characterize groundwater conditions, in support of the analysis and conclusions of the draft EA/IS analysis.

Comment 3-30

The text in the Final EA/IS has been edited for clarity. The intent was not to indicate that the groundwater level declines would be identical to those in past years, but rather that groundwater levels would follow similar trends by declining during drought periods.

Comment 3-31

The analysis of potential groundwater impacts follows the approach outlined in this comment. The first step was to assess the significance of the potential impact relative to the threshold in the checklist regarding depletion of groundwater supplies. The lead agencies applied a groundwater model to estimate potential changes in groundwater levels and determined that these changes would be less than significant. The groundwater modeling effort provides substantial evidence regarding the scope and extent of potential effects to groundwater resources. Because the record contains no substantial evidence that the impact would be significant, the additional steps listed in the comment regarding mitigation are not warranted.

Comment 3-32

Please see response to Comment 3-27.

AquAlliance's comments on the 2013 Water Transfers EA also focus on groundwater conditions in Butte County, which would not be affected by the Proposed Action (as described in response to Comment 3-27).

The commenter's environmental concerns are outside of the area of the potential water transfers and are not caused by the proposed water transfers. The EA/IS discloses the potential environmental impacts of the Proposed Action, as required under NEPA and CEQA.

Comment 3-33

Please see response to Comment 1-6.

Comment 3-34

Figures 3-3 and 3-4 disclose modeling output from SacFEM, and the Redding Groundwater Basin is not included in SacFEM. Including the basin in the figures would be misleading because it would appear that the Proposed Action would have no effect within that area, rather than the small changes projected in the groundwater analysis.

Figure 2-1 shows the entire area where water transfers may originate.

Comment 3-35

It appears that this document is no longer available on the listed websites; therefore, the websites have been removed from the reference list. As with the other references that are not available online, this reference is part of the project file and is available upon request.

Comment 3-36

Table 3-8 in the Final EA/IS has been corrected to include Anderson-Cottonwood ID, consistent with tables in Chapter 2 of the EA/IS, and also the sellers in Table 3-8 have been placed in alphabetical order. Tule Basin Farms has been removed as a potential seller in the Proposed Action because they are not proposing to sell water to SLDMWA; therefore, they were not added to Table 3-8.

Comment 3-37

The 12 percent streamflow depletion factor was agreed to by legal entities that hold rights to water as a way to address impacts that may accrue to stream flow as a consequence of groundwater substitution transfers. As shown on Figures 3-3 and 3-4, groundwater level changes are centered around the Sacramento and Feather Rivers; if there are effects to stream flows, these two waterways are the ones that could be affected. Reclamation and DWR operate the facilities on these two waterways and would be the water rights holders that would be affected. Both entities have agreed to the streamflow depletion factor.

Comment 3-38

The base maps in Figures 3-3 and 3-4 have been edited for clarity in the Final EA/IS.

Comment 3-39

The Proposed Action is not a part of the Long-Term Water Transfers EIS/EIR discussed in Section 1.5. The current Proposed Action for temporary transfers during 2014 has independent utility and is not dependent on, nor does it dictate the nature and scope of, the long-term transfers to be addressed in the EIS/EIR. Chapter 3, Section XVIII, item (b) describes the potential cumulative effects of the Proposed Action with other water transfers. The programs, plans, and studies listed in the comment are primarily efforts that investigated water management actions but did not actually take those actions; therefore, they are not included in the cumulative analysis. The status of each program is described below:

- i. CalFed Bay-Delta Program, Record of Decision (August 2000): the CalFed ROD included water transfers as a potential water management action. It did not identify specific water transfers, but rather an open water market that would allow water transfers (such as the Proposed Action).
- ii. Sacramento Valley Water Management Agreement (Phase 8) (October 2001): the EIS/EIR for this agreement has not been completed, and no action has been taken.

- iii. Sacramento Valley Integrated Regional Water Management Plan (2006): no specific actions were taken related to water transfers as a result of this plan.
- iv. Sacramento Valley Regional Water Management Plan (January 2006): pursuant to the Sacramento River Settlement Contracts, this plan investigates efficiency and water management actions. If any of these actions move forward, they would require analysis and documentation under CEQA. Because they have not begun this step, they are not reasonably foreseeable to occur during the period with 2014 water transfers.
- v. Stony Creek Fan Conjunctive Water Management Program: this was a study to determine the potential for conjunctive water management; no actions have been taken specifically to implement this program.
- vi. Draft Initial Study for 2008-2009 Glenn-Colusa Irrigation District Landowner Well Program: this program considered pumping to help dry conditions within the district during 2008-2009; however, no actions were implemented.
- vii. Regional Integration of the Lower Tuscan Groundwater Formation into the Sacramento Valley Surface Water System Through Conjunctive Water Management (June 2005): this effort was a study and has not resulted in water management actions.
- viii. Stony Creek Fan Aquifer Performance Testing Plan for 2008-2009: Glenn-Colusa ID completed aquifer testing in 2011 and found that groundwater levels recovered in 2012 (West Yost Associates 2012). The study is complete. Historic pumping is part of the environmental setting (and reflected in the water levels in Appendix F).
- ix. Annual forbearance agreements (2008 had an estimated 160,000 acre feet proposed): these forbearance agreements did not occur in 2008 or in any subsequent years.
- x. The Delta Stewardship Council's Plan and EIR approved in 2013: no actions have yet been taken under this EIR and no actions are projected for the period of implementation of the Proposed Action.
- xi. The Bay Delta Conservation Plan and EIS/EIR currently out for public review and comment: no actions have yet been taken under this EIS/EIR and no actions are projected for the period of implementation of the Proposed Action.

Comment 3-40

The citations included in this comment on subsidence are only partial excerpts from the draft EA/IS and do not fully or accurately reflect the context and conclusions of the complete analysis. These excerpted sections acknowledge that the hydrogeology in the sellers area mean that groundwater actions (in general) have the potential to cause subsidence in the basins. However, subsequent paragraphs in the analysis indicate that while a potential for subsidence exists in the seller areas, the Proposed Action would have very low potential to cause subsidence because of the small changes in groundwater levels. The impact would therefore be less than significant.

The lead agencies have incorporated the subsidence monitoring measures described in the comment to provide added protection regarding potential subsidence. The monitoring measures are not described as mitigation measures; mitigation measures are not necessary because the impact was not found to be significant.

The comment indicates that the analysis of subsidence is deferred; however, the section cited in the comment assesses significance of impacts related to subsidence.

The comment cites an expert opinion on subsidence; however, this opinion was not developed regarding 2014 Water Transfers. The expert opinion from Dr. Mish is on the Stony Creek Fan Conjunctive Management Program. In this opinion, he indicated that the conclusion that subsidence would not be “measurably affected” for the Stony Creek Fan Conjunctive Management Program requires additional data.

The EA/IS includes expert analysis and conclusions developed by the agencies’ experts. The resumes of two of these experts are included at the end of this appendix.

Comment 3-41

Section IX, item (d) discusses the potential to alter drainage in a way that would result in flooding on- or off-site. The Proposed Action does not include earthwork that would increase flooding.

The excerpt in the comment related to subsidence is taken out of context. The subsidence section on page 3-39 of the draft EA/IS begins with a definition of subsidence and its potential effects (including the potential to affect drainage). The comment cites this section and misrepresents it as being indicative of the impacts of the Proposed Action, while, in reality, the discussion within the EA/IS that follows that particular cite provides the impacts analysis and concludes that the Proposed Action would have less than significant impacts related to subsidence. As such, secondary concerns related to drainage are not likely to cause increased flooding.

Comment 3-42

The *DRAFT Technical Information for Preparing Water Transfer Proposals* (DWR and Reclamation 2013) includes detailed criteria that Reclamation will use when evaluating the Monitoring Plans submitted by potential willing sellers. These criteria are summarized in the EA/IS, and include the number and extent of monitoring wells, monitoring timing, reporting information, quality and subsidence monitoring, and a coordination plan.

Most of the citations in the comment are related to the Mitigation Plan. The potential environmental effects cited in this comment refer to the items that must be considered when developing a Mitigation Plan; that is, the Mitigation Plan must have an approach to address any of these impacts if they should unexpectedly arise.

The *DRAFT Technical Information for Preparing Water Transfer Proposals* (DWR and Reclamation 2013) identifies the technical information that should be included in a Mitigation Plan, including processes to receive and investigate reports of purported environmental or third-party effects.

Monitoring Plans include provisions for monitoring potential effects to wetland areas, and Mitigation Plans must include measures to address unanticipated impacts. The lead agencies have been working with USFWS regarding areas that must be protected for GGS; they have identified several areas of wetlands or preserves that are important to GGS and must be specifically included in transfer proposals and Monitoring and Mitigation Plans. Text has been added to Chapter 3 to incorporate this information.

Comment 3-43

The United States Geologic Survey (USGS) has an extensive monitoring network in the Sacramento Valley that includes waterways near potential groundwater substitution transfers. As shown on Figures 3-3 and 3-4, groundwater level changes are centered around the Sacramento and Feather Rivers; if there are effects to stream flows, these two waterways are the ones that could be affected. Reclamation and DWR carefully monitor flow in these waterways (and their tributaries) as part of operating the CVP and SWP, respectively, and these efforts will continue into the future.

Comment 3-44

The EA/IS assesses the potential impacts of the dry conditions in 2014 as part of the No Action Alternative. The Proposed Action is analyzed as a change from these conditions, and the EA/IS considers whether the Proposed Action could exacerbate conditions under the No Action Alternative to cause significant impacts. The comment specifically addresses surface and groundwater resources; these analyses are in Chapter 3, Section IX, items (a), (b), and (f).

The comment refers to DWR as the CEQA lead agency; see response to Comment 3-2 for this topic.

Comment 3-45

Chapter 3, Section XVII, includes a cumulative analysis and determines that 2014 transfers would not have cumulatively considerable impacts. The analysis does not assume that impacts would be less than significant because the action is temporary. The cumulative analysis considers other water transfers that could be facilitated by Reclamation or DWR and inter-basin transfers. Past projects have pumped additional groundwater from the Sacramento Valley Groundwater Basin that could contribute to cumulative effects. The groundwater modeling effort considered these past projects effects on groundwater levels in the baseline condition and the model results show effects of transfers on groundwater levels relative to historic conditions that include pumping. The cumulative analysis does assess impacts based on the very dry conditions in 2014 and the past dry years that contributed to this condition.

2014 water transfers are not part of a larger program. The transfers are proposed during the summer of 2014 to help reduce effects of the current drought. The transfers do not represent long-term agreements of water transfers to buyers. Reclamation and SLDMWA are completing a project-level EIS/EIR for long-term water transfers that will evaluate one-year or multi-year water transfers from 2015-2024.

Comment 3-46

The EA/IS does not state that 2014 water transfers are part of the Long-Term Water Transfer EIS/EIR that Reclamation and SLDMWA are currently developing, as asserted by the commenter. The 2014 transfers are a separate action from those to be evaluated in the EIS/EIR. As stated in Section 1.5, the EIS/EIR will evaluate transfers from 2015 through 2024 and that transfers under the EIS/EIR would not affect 2014 transfers. As stated in response to Comment 3-39, 2014 water transfers or the Long-Term Water Transfers EIS/EIR under development are not a component of the programs listed in Section VI of the comment. Chapter 3, Section XVIII, lists other projects considered in the cumulative condition and evaluates incremental cumulative effects of 2014 water transfers. Because of the short-term nature of this project (it will be completed in September 2014), long-term water transfers were not included in the cumulative condition or other projects with impacts that would occur past September 2014.

Comment 3-47

The analysis under item “a” is a thorough evaluation of potential impacts to special status fish and terrestrial species. Reclamation and SLDMWA considered potential impacts, and based on the evaluation, conservation

measures were built into the project description to minimize or avoid effects to special status species. The analysis describes what the potential impacts are, how the conservation measures would reduce impacts, and concludes that effects would be less than significant. The Proposed Action is not part of a larger project. Cumulative effects to special status species are evaluated in Chapter 3, Section XVII. See response to Comment 3-46.

Comment 3-48

Please see responses to Comments 1-2 and 1-3.

4 – Scott Cantrell, California Department of Fish and Wildlife

Comment 4-1

Reclamation and SLDMWA recognize the role of DFW and, as indicated in Section 4.5.2 of the Draft EA/IS, coordinated with DFW during preparation of the document, which including environmental commitments to include with the Proposed Action. DFW correctly summarizes the Proposed Action in the second paragraph of the comment letter.

Comment 4-2

Chapter 3, Section IV Biological Resources, discusses effects of water transfers to biological resources in Oroville and Shasta reservoirs and the Sacramento and Feather rivers qualitatively. Surface water modeling was not completed for the EA/IS because the maximum quantity of water transfers relative to total reservoir storage and river flows would be minor and the Proposed Action would not result in significant impacts to fish. DFW's concurrence with the findings of the EA/IS analysis is so noted.

Comment 4-3

Reclamation will ensure that all environmental commitments are implemented to reduce or avoid impacts to species. Reclamation staff will ensure that measures are being implemented through review of monthly reports, field visits, and necessary coordination with transfer participants.

Reclamation and SLDMWA have developed a Mitigation, Monitoring, and Reporting Plan, which is included in Appendix E of the Final EA/IS. The requirement of the monitoring and mitigation for each individual transfer will be included in the transfer approval.

Reclamation will coordinate with DFW and USFWS to identify priority habitat for species in potential area where water transfers could occur. Reclamation will continue to engage DFW and USFWS in the process of evaluation and monitoring water transfers on lands that are priority habitat for species to make sure that impacts are minimized.

Comment 4-4

Reclamation and SLDMWA will continue to collaborate and consult with DFW and USFWS on implementation of water transfers, particularly on transfers proposed in areas of suitable habitat for giant garter snake (GGS). Reclamation appreciates DFW assistance in the development of the 2014 environmental commitments and will coordinate with DFW, as appropriate, in the provision of information regarding water transfer proposals, monitoring, and review of monitoring data collected.

Comment 4-5

Reclamation met with USFWS and DFW on April 3, 2014 to further discuss conservation measures to support development of the Biological Opinion. The conservation measures have been revised based on discussions and agreements made at the meeting. The revised conservation measures are included in Chapter 2 of the Final EA/IS.

Comment 4-6

See response to Comment 4-3. Reclamation will review monitoring and mitigation based on local conditions for each transfer and the potential for cumulative effects.

Comment 4-7

Reclamation and SLDMWA will continue to collaborate with DFW, in addition to USFWS, on implementation of water transfers, particularly on transfers proposed in areas of suitable habitat for GGS and other special status species.

Groundwater Expert Resumes

The groundwater resources evaluation was supervised by two experts: Mr. Stanley (Chip) Parrott from Reclamation and Mr. Brian Heywood from CDM Smith. Their resumes are attached.

Stanley Eugene Parrott
 3353 Verdeca Way
 Rancho Cordova, CA 95670 US
 Mobile: 916-956-0186 - Ext:
 Day Phone: 916-978-5329 - Ext:
 Email: sparrott@usbr.gov

Availability: **Job Type:** Permanent
Work Schedule: Full-Time

Work Experience: **U.S. Bureau of Reclamation** **Series: 1350 Pay Plan: GS Grade: 12**
 2800 Cottage Way
 Sacramento, CA 95825 United States

02/2005 - Present

Hours per week: 40

Geologist (This is a federal job)

Duties, Accomplishments and Related Skills:

WATER-RESOURCES EXPERTISE: As Reclamation's Regional Groundwater Hydrologist, I primarily work on water-resources projects in the Sacramento Valley. Specifically, I work on conjunctive use water management projects involving water districts who pump groundwater to meet local demand while allowing their contracted surface water supply to be transferred to downstream users. I work closely with State officials from the California Department of Water Resources, local water district managers and consultants in developing and carrying out these programs. I address such issues as groundwater-surface water interaction, impacts upon third-party well owners, water quality, and land subsidence. I apply numerical models to quantify any impacts.

DATA COLLECTION PROGRAMS AND REPORT WRITING: I plan and implement complex hydrologic programs. For example, in 2008, I performed permeability testing in unconsolidated sediments at Lake Shasta Reservoir in Redding, California. This testing was part of a feasibility-level, subsurface exploration program to be used in designing bridge alignments and levees for the proposed enlargement of Shasta Reservoir. In conducting these tests, I performed both constant head and falling head tests at several 50-60 feet (ft) deep drill holes in both the unsaturated and saturated zones. I used inflatable packers to seal off 10-ft test sections, and then deployed downhole pressure transducers to measure hydraulic head decline over time. I then downloaded the data directly to a portable palm device.

In analyzing the data, I used published equations to calculate hydraulic conductivity (K) values for each 10-ft interval. I presented my findings in a thorough technical report in which I provided the test methods, tabulated K values, generated graphs showing head decline as a function of time, and discussed the significance of my final results.

DEVELOPING PROPOSALS: Over the course of my career, I have developed and written numerous proposals for water-resources projects. As an example, in 2008 I initiated a review of Reclamation's Cachuma Project along the Santa Ynez River in southern California. Reclamation had conducted ongoing water level measurements and water quality sampling since the project began in the 1950s. However, I observed the need to determine the status of each well's construction to ensure that the data being obtained were from properly constructed wells. Therefore, I developed a well -inventory proposal in which I clearly stated the project objectives and scope of work. In the proposal, I created an approach for monitoring water levels and water quality, identified staff to work on the project, established deliverables such as the final well inventory report, developed a project schedule and generated a detailed cost estimate. As a result of my proposal, in the fall of 2008 the project manager became convinced of the need to conduct a well review and directed me to proceed with my proposed work.

REVIEWING WORK SUBMITTED BY EMPLOYEES: I review and comment on technical memoranda submitted by other hydrologists. For example, I reviewed a draft report titled, "Site-Wide Groundwater Technical Memorandum for BF Sisk Dam." The purpose of the report was to describe groundwater conditions at the dam so that engineers could perform deformation analysis due to seismic loading. My comments addressed such issues as describing the relation between reservoir levels and groundwater

elevations, accuracy of measurements obtained from instrumentation in the dam (porous-tube piezometers and vibrating wire piezometers), as well as documenting the effects of foundation seepage on groundwater levels. I tactfully communicated my comments to the hydrologist and he inserted my comments into the document.

DIRECTING TECHNICAL PERSONNEL: I serve as a mentor to one staff Hydrologist. Since hiring this individual, I have trained him on all aspects of Reclamation's groundwater hydrology program including field data collection, data management, analysis and reporting. In monitoring the employee's progress, I wrote a quarterly performance evaluation and assessed his overall performance in completing assigned tasks. I also wrote a quarterly update to his Individual Development Plan that identified specific training needs to ensure that he progressed along his career path.

With regard to developing his projects, I trained the employee to establish clear project objectives, supported by specific tasks, and a schedule for completing those tasks. I communicate with the employee almost daily to discuss his upcoming work schedule in order to maintain a high level of productivity and efficiency. Currently, in part as a result of my guidance, the employee has developed into a capable Hydrologist who mostly acts independently and requires only minimal supervision.

ACCOMPLISHMENTS (See Additional Information)

Supervisor: Greg Mongano (916/978-5300)

Okay to contact this Supervisor: Yes

U.S. Army Corps of Engineers
Mobile, AL United States

Series: 1350 **Pay Plan:** GS **Grade:** 11

03/2000 - 02/2005

Salary: 53,840.00 USD Per Year

Hours per week: 40

Geologist (This is a federal job)

Duties, Accomplishments and Related Skills:

GROUNDWATER HYDROLOGIC STUDIES AND REPORTING: I oversaw field investigations to ensure compliance with environmental regulations. For example, at the Ft. McClellan Army Installation, in Anniston, Alabama, I supervised site investigations and remedial actions involving metals and chlorinated solvent contamination in soil and groundwater. I became familiar with various drilling methods including hollow-stem auger, air rotary, rock coring, ODEX and Rotasonic. I observed and documented the contractor's installation of numerous groundwater monitoring wells, application of borehole geophysics, and collection of soil and groundwater samples. I was an active participant in Resident Advisory Board and Base Closure Team meetings, and I participated in a groundwater subcommittee that advised officials from the U.S. EPA, Alabama Department of the Environment and the Army Environmental Coordinator.

I also submitted biweekly reports to the senior technical leader documenting contractor activities and work quality issues. Each report included a list of site personnel, purpose of the work, a discussion of field activities and a conclusion and recommendations section. On a performance evaluation in November 2003, my supervisor commented, "Excellent reports are submitted as appropriate."

ACCOMPLISHMENT:

+ I oversaw drilling and installation of 3 water supply and 4 waste injection wells in Djibouti, East Africa from December 2002 through March 2003 in support of the U.S. Army's "Operation Enduring Freedom." Worked closely with Mobile District's Core Drill Unit to ensure wells were installed according to plan. Updated Army and Marine Corps officers daily of job progress. Despite numerous logistical obstacles such as acquiring drilling supplies through customs, all 7 wells were successfully constructed. I received the U.S. Army Corps of Engineers' highest civilian award, the "Commander's Award for Civilian Service."

Supervisor: Ed Herman (Retired) (251/690-2685)

Okay to contact this Supervisor: Yes

Panterra Corporation
Dayton, OH United States

08/1997 - 06/2000

Hours per week: 20

Hydrologist

Duties, Accomplishments and Related Skills:

WATER QUALITY MONITORING: Applied knowledge of water chemistry to successfully operate a leachate treatment facility at a cement kiln-dust landfill in Fairborn, Ohio. Regularly monitored water quality parameters, performed quarterly groundwater and surface water sampling then entered data into spreadsheets. Independently solved complex technical problems related to the treatment facility. For example, when the water treatment facility shut down, I had to determine the cause. Typically, this was due either to the pH or TDS of the leachate being out of compliance with regulatory standards. To resolve this problem, I adjusted the pH by adding sulfuric acid or diluted the leachate by adding freshwater. I also submitted monthly reports to the client summarizing water quality data.

ACCOMPLISHMENT:

+ In 1997, in order to pay for graduate school, I earned an internship at Panterra Corporation, a water resources consulting firm, in Dayton, Ohio. I worked 20 hours per week and gained experience in water quality monitoring at a leachate treatment facility. At the same time, I pursued a challenging academic curriculum that included courses such as Introductory Groundwater Flow and Transport, Groundwater Modeling, Geophysics, and Groundwater Contamination and Site Remediation. In June 2000, I successfully defended my Master's Thesis and was awarded an M.S. degree in Geology (Hydrogeology Concentration).

Supervisor: Robert Curley (937/237-7050)

Okay to contact this Supervisor: Yes

Law Engineering

Chantilly, VA United States

08/1993 - 08/1997

Hours per week: 40

Geologist

Duties, Accomplishments and Related Skills:

HYDROLOGIC INVESTIGATIONS: Familiar with all phases of site characterization assessments at large federal facilities including: I oversaw removal of 12 underground storage tanks at Ft. Belvoir, Virginia in which I secured drilling permits, logged drill holes, documented monitoring well installation, sampled soil and groundwater, and wrote detailed site characterization reports; I managed multiple delivery orders on several UST/AST projects at the Quantico Marine Corps Command in Quantico, Virginia and delineated a hydrocarbon plume using an on-site laboratory equipped with a gas chromatograph/flame ionization detector. I also served as project manager for a low-level, radioactive-waste siting project in Pennsylvania in which I effectively managed 5 staff employees to ensure on-time submittal of statewide coverage of carbonate lithology using a GIS.

ACCOMPLISHMENT:

+ Received "Employee of the Month" award in May 1995 for outstanding work during field activities at a Superfund site in New Jersey.

Supervisor: Bill Kilpatrick ((703)968-4700)

Okay to contact this Supervisor: Yes

Education:

Wright State University Dayton, OH United States

Master's Degree 06/2000

GPA: 3.6 of a maximum 4.0

Credits Earned: 81 Quarter hours

Major: Geology (Hydrogeology Concentration)

Relevant Coursework, Licenses and Certifications:

Advisor: Abinash A. Agrawal, Thesis: "Investigation of Aerobic Cometabolic Biodegradation of Trichloroethylene Using Phenol as a Primary Substrate." Coursework in Groundwater Flow and Transport, Advanced Groundwater Flow and Transport, Aquifer Test Analysis, Groundwater Modeling (MODFLOW), Hydrogeochemistry, Isotope Hydrology, Geophysics, Groundwater Contamination and Site Remediation.

Furman University Greenville, SC United States

Bachelor's Degree 06/1984

GPA: 3.0 of a maximum 4.0

Credits Earned: 128 Semester hours

Major: Geology

Relevant Coursework, Licenses and Certifications:

Senior Thesis: "Lineaments as Fault Zones in Northwestern South Carolina." Coursework in Physical Geology, Petrology, Structural Geology, Mineralogy, Optical Mineralogy, Sediment and Stratigraphy, Calculus, Chemistry, Biology and Physics.

Job Related Training:

WORKSHOPS AND SEMINARS

Two webinars on construction and inspection methods for water supply wells, National Groundwater Association (NGWA), 2012

2-day USGS workshop on the Central Valley Hydrologic Model (CVHM), 2012

Four-part webinar series on abandoned and improperly constructed wells in California, Groundwater Resources Association of California (GRAC), 2012

Four-part webinar series titled, "Pumping Tests for Aquifer Evaluation," 2011

Basic Water Well Design and Construction, 2010

Seminar on the ArcHydro Groundwater Data Model, 2010

USGS Course: Report Planning, Writing, Policy, and Peer Review, 2009

Hydrogeosphere Groundwater Modeling Workshop, 2008

Construction Dewatering and Ground Water Control: Design and Application, 2008

Introduction to GIS, 2008

Aquifer Testing for Improved Hydrogeologic Site Characterization, 2007

Seminar on Improving Hydrogeologic Analysis of Fractured

Bedrock Systems, 2005

ArcGIS 8.1 Workshop, 2002

Borehole Geophysics and Hydrophysical Testing Workshop, 2000

CONFERENCES

California Biennial Groundwater Conference, Sacramento, California, 2005 - 2007

Bureau of Reclamation Geology Conference, Las Vegas, Nevada, 2007

Affiliations:

Groundwater Resources Assoc. of California - Member

References:

Name	Employer	Title	Phone	Email
Michael Mitchener (*)	U.S. Bureau of Reclamation	Project Manager	916/978-4640	mmitchener@usbr.gov
Dennis Mayton (*)	U.S. Army Corps of Engineers	Senior Geologist	251/689-6605	dhmayton@hotmail.com
Steve Sherer (*)	U.S. Bureau of Reclamation	Senior Geologist	916/978-5326	ssherer@usbr.gov

(*) Indicates professional reference

Additional Information:

PROFESSIONAL LICENSES

Certified Professional Geologist in California, License No. 8301

Certified Professional Geologist in Virginia, License No. 2801 001278

ACCOMPLISHMENTS ctd.

U.S. Bureau of Reclamation

+ In 2012, I reviewed and commented on a consultant's technical memorandum evaluating well performance for 2 new production wells at the Volta Wildlife Refuge. This work is part of a 3-year pilot study to assess well specific capacity, well efficiency, radius of influence, well interference, hydraulic connection between aquifers and long-term sustainable yield of the wells. After reviewing my comments, the program manager wrote: "[I] just want to say 'thank you' very much for your thorough review of the Volta Wildlife Refuge Level 2 Diversification Project's groundwater production and monitoring wells' analysis. I really appreciate and value your expertise. Thank you." In addition, Dr. Nigel Quinn, a research scientist at Lawrence Berkeley National Laboratory working under contract with Reclamation, stated after reviewing my comments, "Very thorough analysis of the EKI report. I completely endorse Chip's comments, highlighted deficiencies and suggested remedies...."

+ In 2011, I presented a briefing paper to Reclamation's Deputy Regional Director on my review of a technical memorandum on the proposed Conaway Ranch surface water assignment in Yolo County, California. Deficiencies I identified in the proposal included: the findings were based on a very limited data set, the lack of sufficient characterization of an aquitard underlying the site, converging cones of depression, and the lack of analysis of potential effects during consecutive dry years. I successfully met the Deputy Director's requested quick turnaround time of 4 days. The Deputy Director was pleased with my paper and said, "I appreciate your hard work and responsiveness."

+ In 2009, I reviewed and commented on 10 groundwater substitution transfer proposals from Reclamation water contractors participating in the Drought Water Bank (DWB). I worked cooperatively with the California Department of Water Resources (DWR) in evaluating each well's distance to major surface water features, geologic and geophysical well logs, well construction drawings, monthly pumping schedules, flow meter calibration records, and monitoring and mitigation plans. As a result, I completed my reviews within a 3-month period, the contractors corrected their proposals to meet the established guidelines, and the groundwater substitution transfers proceeded forward. The project manager commended my efforts in working closely with a state agency to accomplish a large volume of work with a very tight timeline. I also received a note of appreciation from the DWB State Coordinator stating that the Program "would not have been successful without your efforts."

AWARD

Bureau of Reclamation's "Performance Award" for "sustained superior performance," 2005 - 2011. Sustained a yearly numerical rating of "4" out of "5."

Brian J. Heywood, P.E.

Senior Water Resources Engineer

Mr. Heywood licensed California Professional Engineer with 15 years of water resources experience in a wide array of projects involving groundwater supply, surface water/groundwater interaction, and groundwater contamination. His experience includes numerous groundwater resources assessments for planning and environmental documentation goals and the building, calibration, and application of groundwater flow and contaminant transport models to complex hydrogeologic settings.

Project Manager/Project Engineer, Integrated Groundwater-Surface Water Modeling, Butte County, California. Mr. Heywood was the project manager and project engineer/groundwater modeler for a program for Butte County, California, that will aid the county in the management of water resources to meet the current and future needs of agricultural, municipal and industrial users, and the environment. The first phase of this project included a decision point at which selection of a modeling code was performed. During this phase, Mr. Heywood worked to review the proposed application of the model and assess the compatibility of the proposed modeling codes (particularly its ability to simulate groundwater-surface water interaction, surface water diversions, irrigation and agricultural pumping). Mr. Heywood was instrumental in updating the county's current model using California DWR's IWFM code. As the project manager, Mr. Heywood directed work to calibrate and test the updated model. The project also simulated water management scenarios using the updated model. These scenarios were compared to a "Base Case" simulation to assess the potential changes to the groundwater system and groundwater/surface water interaction. Mr. Heywood's work throughout the project has required numerous presentations to various technical and non-technical audiences describing the project purpose, status, and results.

Project Manager, Seepage Management Support, San Joaquin River Restoration Program, California. Mr. Heywood is the project manager for a support contract with the U.S. Bureau of Reclamation's San Joaquin River Restoration Program (SJRRP) to provide technical assistance related to groundwater seepage issues along the San Joaquin River. As part of the SJRRP, flows introduced to formerly dry portions of the river have the potential to impact shallow groundwater levels adjacent to the river, affecting agricultural activities. This project includes performing site visits, site assessments, and appraisal level seepage control project design. Data collection, including groundwater levels, soil salinity, monitoring well installation, and water quality sampling will all be part of this project.

Project Engineer, Recycled Water Master Plan, Los Angeles, California. Mr. Heywood has been working on the groundwater replenishment portion of a recycled water master plan. His work has included review and assessment of infiltration capacity and availability of existing recharge facilities for potential use in recharging recycled water. The assessment of the available volumes of recycled and native water is critical to both the master plan and to the California Department of Public Health requirements necessary for groundwater replenishment of recycled water. Mr. Heywood has worked directly with the client staff in multiple departments to discuss and resolve issues as necessary. Mr. Heywood is also coordinating with client staff to have the client perform groundwater modeling activities to support the master plan.

Education

M.S. - Civil Engineering, Northeastern University, 1997

B.S. - Civil Engineering, Northeastern University, 1995

Registration

Professional Engineer: California, 2008

Project Manager/Project Engineer, Integrated Water Resources Management Plan, San Joaquin County, California. Mr. Heywood was the project manager and project engineer on several modeling studies within the Central Valley. These projects, including work in San Joaquin County, have involved the use of integrated groundwater/surface water models. In San Joaquin County, modeling work was performed to support the Eastern San Joaquin Integrated Water Resources Management Plan (IRWMP) through assessments of potential benefits to the groundwater system due to various proposed management activities. The project involved evaluating the impacts due to potential projects such as in-lieu water transfers, recharge ponds, and groundwater injection. Mr. Heywood also contributed to the development of a screening level systems model, using STELLA®, to evaluate and refine the GBA's IRWMP alternatives, with the objective to stabilize groundwater levels in the county. The development of the screen level model required detailed accounting of water movement between zones in the regional groundwater model.

Project Manager/Project Engineer, Tank Farm Contamination Study, Reno, Nevada. Mr. Heywood is the Project Manager for a groundwater remediation project near Reno, Nevada. He has a long history working on this project including calibrating and applying a numerical groundwater model. He was involved in the re-calibration of an existing model after flooding resulted in major changes in site hydrogeology and after updated hydrogeologic information was recorded. His work with the groundwater model has been used in the design of groundwater pump-and-treat systems and in preparation of an application for an Underground Injection Control (UIC) permit. This work included assessment of capture zones for remedial wells and particle tracking for evaluation of recirculation of treated water. Mr. Heywood also worked to update the site monitoring and reporting procedures to reduce the time and effort required. Mr. Heywood is also managing a task to sparge ozone at two "hot spot" locations to provide localized contaminant mass reduction. Mr. Heywood has direction responsibilities for client contact and coordination with the regulatory agency, the Nevada Division of Environmental Protection.

Water Resources Specialist, Santa Margarita River Conjunctive Use Project EIS/EIR, California. Mr. Heywood developed the Water Resources portions of the Environmental Impact Statement/Environmental Impact Report (EIS/EIR) document for this conjunctive use project in which the U.S. Bureau of Reclamation was the lead agency. Development of the existing conditions sections involved discussion of hydrologic and the hydrogeologic setting of the project. An assessment of potential impacts due to the project was also developed. The project included potential changes to both surface water and groundwater conditions. Project components such as surface water diversion, groundwater recharge ponds, and groundwater pumping were included in the analysis. Documentation was developed subject to NEPA and CEQA regulations.

Project Engineer, Spreading Basin Study, Pomona, California. Mr. Heywood has worked for various clients in the Pomona, California, area to assess spreading basin operations and the impacts of spreading on the groundwater basin. Both three-dimensional and simple Excel®-based spreadsheet models were developed to assess the impacts to the groundwater system due to changes in spreading operations and groundwater pumping. The different models that were developed were targeted for specific uses and audiences based on the capabilities of the model. The projects that Mr.

Heywood has worked on have aimed to optimize operation of this adjudicated basin while preventing adverse impacts such as rising water conditions.

Groundwater Specialist, Water Transfer Program Environmental Documentation, California. Mr. Heywood has led the groundwater analysis for several EA and EIS/R documents detailing water transfer programs. This programs included the Long-Term Environmental Water Account EIS/EIR and the Bureau of Reclamation's 2010-2011 EA, 2014 EA. 10-Year Long Term documents. He worked with the team to develop methodology for assessing groundwater impacts and prepare the groundwater impacts analysis. Mr. Heywood's work involved assessing potential changes in groundwater levels, flow patterns, and groundwater/surface water interaction due to in-lieu groundwater transfers. The analysis was performed using the MicroFEM numerical groundwater modeling code. He also assisted with addressing the groundwater substitution issues in the revised project White Papers.

Groundwater Specialist, San Joaquin River Restoration Program – Reach 4B Low Flow, California. Mr. Heywood involved in decision making related to assessment of potential groundwater impacts due to San Joaquin Rivers Restoration Program. Decisions have included the choice of available groundwater assessment tools (e.g., groundwater models) based on the tools' availability and technical appropriateness.

Groundwater Specialist, Lake Davis Pike Eradication Project EIR, California. Mr. Heywood assessed the potential impacts of groundwater resources due to a project to eradicate the invasive pike species from Lake Davis, California. The California Department of Fish and Game undertook the eradication project in order to prevent further damage to the California river system. The project involved analyzing various eradication alternatives including dewatering and chemical treatments. The potential impacts to groundwater resources, including changes to water levels and water quality, were analyzed and presented in the project Environmental Impact Report (EIR).

Project Engineer, Source Water Contributing Areas Assessment, Long Island, New York. Mr. Heywood worked on a project to assess source water contributing areas for more than 1,300 supply wells on Long Island, New York. He developed an automated procedure to convert existing regional groundwater flow models for Long Island to sub-regional flow models covering the entire island at 200 foot node spacing. The procedure also involved developing model output groundwater flow and saltwater intrusion models that were compatible with the ESRI ArcGIS® tools used for further spatial analysis.

Project Engineer, Regional Groundwater Basin Study, Reno, Nevada. In the Reno, Nevada area, Mr. Heywood developed and calibrated a regional 3-D groundwater flow model to assess groundwater and contaminant movement within the Truckee Meadows Basin. Model calibration involved replicating water levels that fluctuate greatly due to seasonal stresses on the aquifer. The complex hydrogeologic nature of the basin consists of high degrees of vertical anisotropy in the aquifer materials, faults, and large-scale groundwater sinks. Various layers, typically non-continuous, of low permeability materials exist throughout the basin. The objective of the model was to provide the client with a tool to assist in making decisions regarding PCE contamination issues throughout the basin.

Project Engineer, Groundwater Modeling for Harbor Expansion, Savannah, Georgia. Mr. Heywood worked on a project, sponsored by the U.S. Army Corps of Engineers, involving 3-dimensional saltwater intrusion modeling conducted as part of a series of

investigations to determine if deepening of the Savannah, Georgia, Harbor channel has the potential to impact the water quality in Upper Floridian Aquifer within the project area. The Floridian Aquifer is the largest source of freshwater in the coastal area of Georgia and the potential for saltwater intrusion is a growing concern among the coastal communities and State and Federal agencies. Project tasks included reviewing and compiling historical data and creating a model dataset based on the USGS's regional MODFLOW model, developing and calibrating a numerical model of the hydrologic system including and underlying the navigation channel, simulations of planned project dredging, and preparation of a report. The numerical modeling for this project was performed using the DYNCFE coupled flow/density-driven transport code.

Project Modeler, Salt Contamination Study, Indiana. Mr. Heywood was the project modeler on a project in Indiana where groundwater in the vicinity of a municipal well field was been impacted by salt storage facility operations. His work involved developing and applying, in combination, groundwater flow, mass transport, and salt water intrusion computer models to address both dissolved and separate (dense) phase salt migration. This work included interpreting site hydrogeology, groundwater flow conditions, and observed concentrations of sodium and chloride. His modeling work simulated migration of the salt plume over the 30-year history of the site. The model was used to design the site remedial system.

Project Engineer, Petroleum Terminal, Southern California. Mr. Heywood worked on a project to develop, calibrate, and apply a groundwater flow model in the vicinity of a petroleum terminal in Southern California. The project involved assessment of the hydrogeology and flow conditions in the area and development and calibration of the groundwater flow model. The model was used to assess the effectiveness of an existing groundwater extraction system and to recommend enhancements to the extraction system.

Project Engineer, Marina Development Project, Oahu, Hawaii. Mr. Heywood completed the calibration of a groundwater flow model for a site on the island of Oahu, Hawaii. This modeling effort involved detailed calibration to tidal fluctuations. Water levels in monitoring wells were both damped and lagged from tide changes. Tide levels varied on both a daily and long-term (e.g. year) timeframes. Modeling using a sharp-interface saltwater model was done to predict the impact of major excavation in the area. Mr. Heywood's on-going modeling work is being used to assess changes, if any, in aquifer water levels occurring during on-going excavation activities.

Project Engineer, Feasibility Study, Southern California. Mr. Heywood participated in a project for an industry group in Southern California involving groundwater and mass transport modeling for a Feasibility Study submitted to U.S. EPA. His work entailed groundwater model calibration to address complicated flow patterns exhibiting widely differing characteristics in the upper and lower aquifers. Potential contaminant flow paths and travel times were investigated to assess the effectiveness of remedial alternatives. The work simulated a 30-year period with varying stresses on the aquifer.

Project Engineer, Groundwater Model Development. Mr. Heywood contributed to the development of a computer code, which simulates the effects of non-linear adsorption of mass in a saturated aquifer system. His work consisted of interpreting and verifying the simulation results.

Professional Activities

Member, American Water Resources Association

Member, Groundwater Resources Association of California

Member, California Water & Environmental Model Forum

Publications

Heywood, Brian, and William Fernandez. "Using Multiple Scale Groundwater Models to Assess the Impacts of Restoration Flows in the San Joaquin River." Presented at California Water and Environmental Modeling Forum (CWEMF) 2014 Annual Meeting, February 2014.

Heywood, Brian J., Karilyn J. Heisen, and Kristen E. Hard. "Utilizing the Power of GIS for Surface Water/Groundwater Modeling." Proceedings of the American Water Resources Association (AWRA) 2008 Spring Specialty Conference: GIS and Water Resources V, March 2008.

Loutsch, Andria, Enrique López-Calva, Brian Heywood, and Brandon Nakagawa. "Systems Modeling for Development and Analysis of Alternatives for Sustainable Groundwater Management." Proceedings of the American Water Works Association (AWWA) Annual Conference, June 2007.

Heywood, Brian, Toccoy Dudley, Ben Swann, and Karilyn Heisen. "Butte County IWFM Model." Presented at California Water and Environmental Modeling Forum (CWEMF) 2007 Annual Meeting, February 2007.

Hossain, R. Paul, Brian J. Heywood, and Robert H. Fitzgerald. "A Regional Groundwater Model for the Butte Basin." Poster Presentation at California Water and Environmental Modeling Forum (CWEMF) 2006 Annual Meeting, February 2006.

Hossain, Rehad P., Robert H. Fitzgerald, Brian J. Heywood, and Mark Maimone. "Coupled Groundwater Flow and Saltwater Transport Simulation of the Potential Impacts of Savannah Harbor Dredging." Presented at National Ground Water Association (NGWA) Ground Water Expo 2005, December 2005.

Hossain, R. Paul, Robert H. Fitzgerald, and Brian Heywood. "Modeling the Butte Groundwater Basin with IGSM2." Poster Presentation at 25th Biennial Groundwater Conference and 14th Annual Groundwater Resources Association (GRA) of California Meeting, October 2005.

Heywood, B.J., M.A. Taylor, and R.H. Fitzgerald. "Developing a SWAP Using Integrated Groundwater Modeling and GIS Tools." Presented at New England Water Works Association (NEWWA) - 124th Annual Conference, September 2005.

Hossain, Paul, Brian Heywood, Robert Vince, and Robert Fitzgerald. "Butte Basin IGSM2 Model." Poster Presentation at California Water and Environmental Modeling Forum (CWEMF) 2005 Annual Meeting, March 2005.

Hossain, Rehad P., Brandon Nakagawa, and Brian Heywood. "Integrated Groundwater-Surface Water Modeling and Application for Integrated Resource Planning." Poster Presentation at Groundwater Resources Association (GRA) of California Annual Meeting, September 2004.

Heywood, Brian and Rehad P. Hossain. "A Versatile Toolbox for Simulating and Visualizing Complex Groundwater Contamination Problems." Poster Presentation at Groundwater Resources Association (GRA) of California Annual Meeting, September 2004.

Heywood, B.J., M.A. Taylor, M. Labiak, R.H. Fitzgerald, D.E. O'Rourke, B.M. Harley. "Use of Integrated Groundwater Modeling and GIS Tools in the Development of Source Water Assessments for 1,300 Wells in Nassau and Suffolk Counties, Long Island, New York." Proceedings of the American Water Resources Association (AWRA) 2004 Spring Specialty Conference: GIS and Water Resources III, May 2004.

Maimone M., B. Harley, R. Fitzgerald, H. Moe, R. Hossain, and B. Heywood, "Coastal Aquifer Planning Elements", Chapter 1 in Coastal Aquifer Management – Monitoring, Modeling and Case Studies. CRC Press. Alexander H.D. Cheng and Driss Ouazar, ed. 2003.

Heywood, Brian J., Robert H. Fitzgerald, and Jim F. Ford. "Numerical Modeling to Aid in Management of Groundwater Basin." American Water Resources Association (AWRA) Annual Conference. Oral Presentation, November 2003.

Heywood B.J., M.A. Taylor, M. Labiak, R. Fitzgerald, D. O'Rourke, B.M. Harley, and R. Entringer. "Use of Integrated Groundwater Modeling and GIS Tools Development of Source Water Assessments for 1,300 Nassau and Suffolk Counties, Long Island, New York." American Water Resources Association (AWRA) Annual Conference. Poster Presentation, November 2003.

Heywood, B.J. and R.H. Fitzgerald. "Modeling the contamination of an aquifer from a highway salt storage facility." Proceedings of the First International Conference and Workshop on Saltwater Intrusion and Coastal Aquifers: Monitoring, Modeling, and Management, 2001.

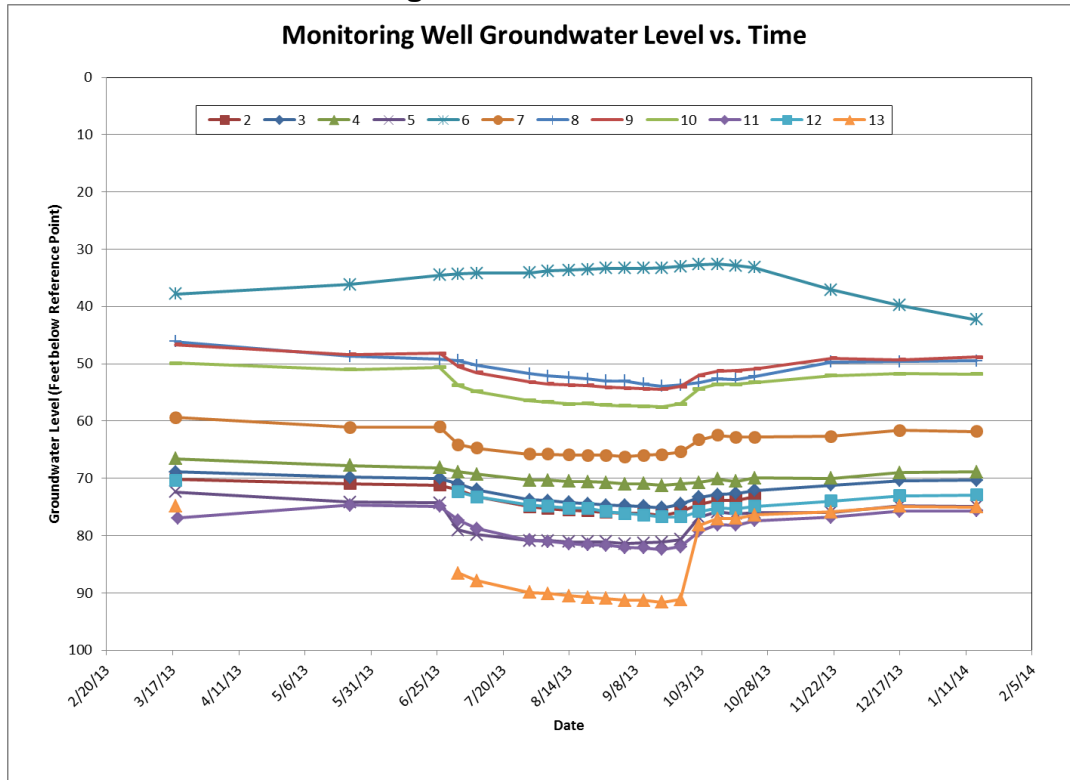
Appendix C

Groundwater Monitoring Data from 2013 Water Transfers

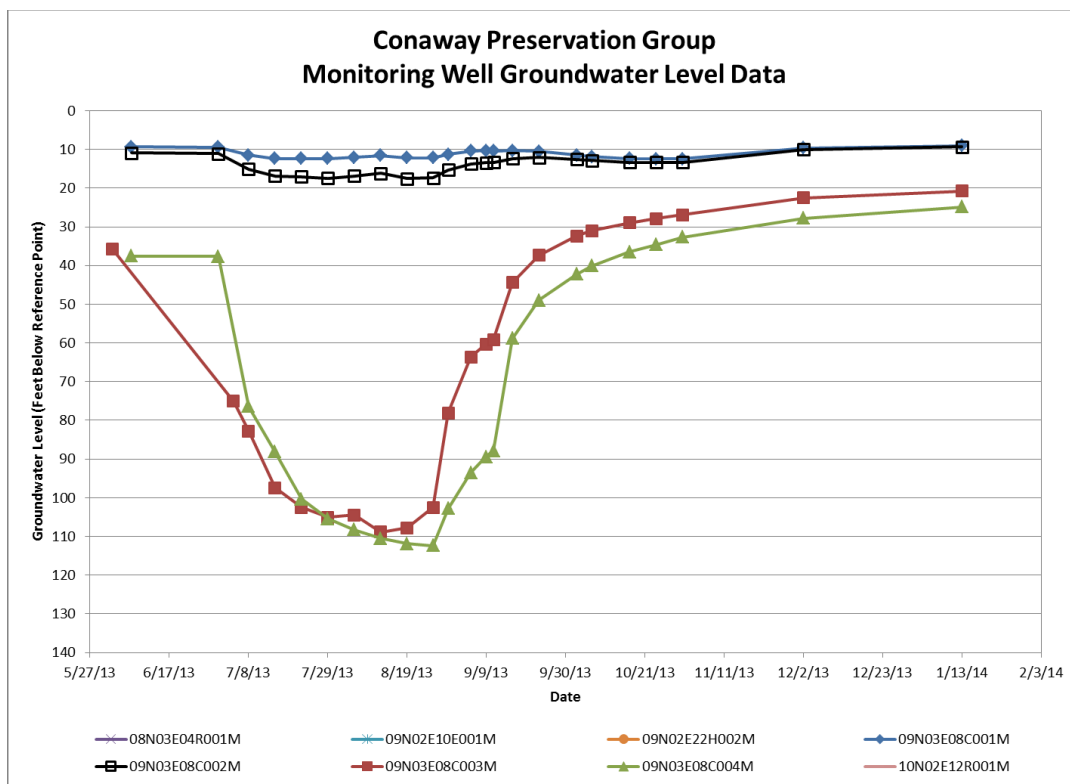
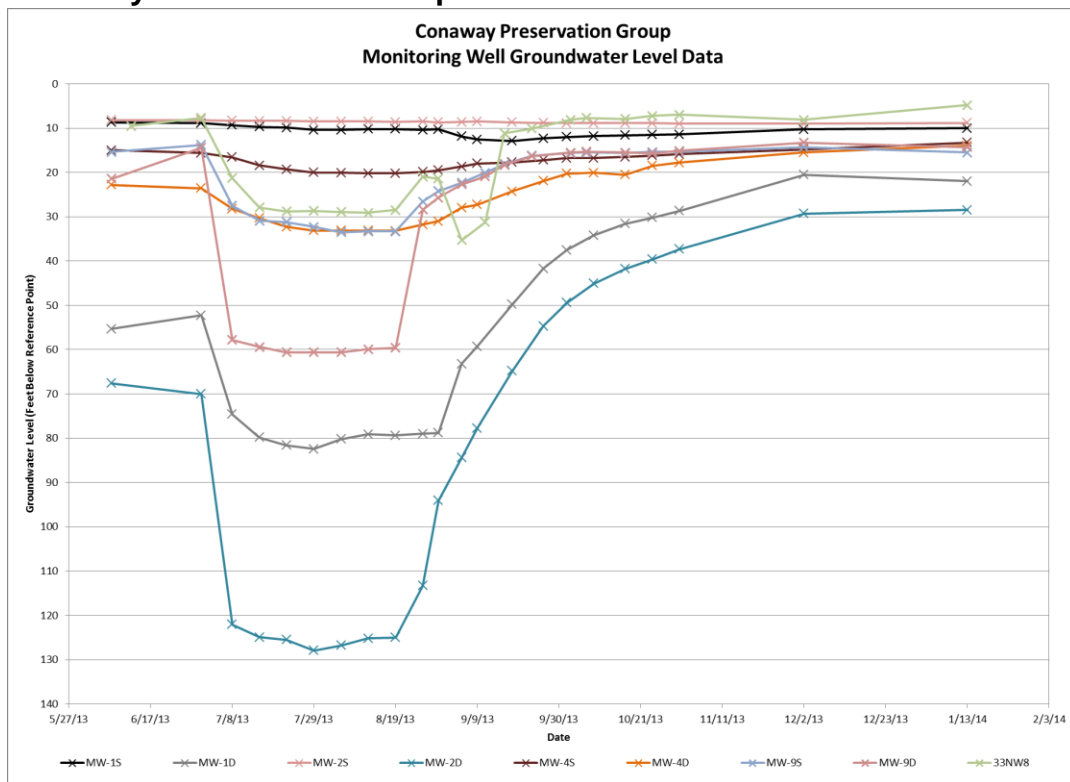
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Appendix C Groundwater Monitoring Data from 2013 Water Transfers

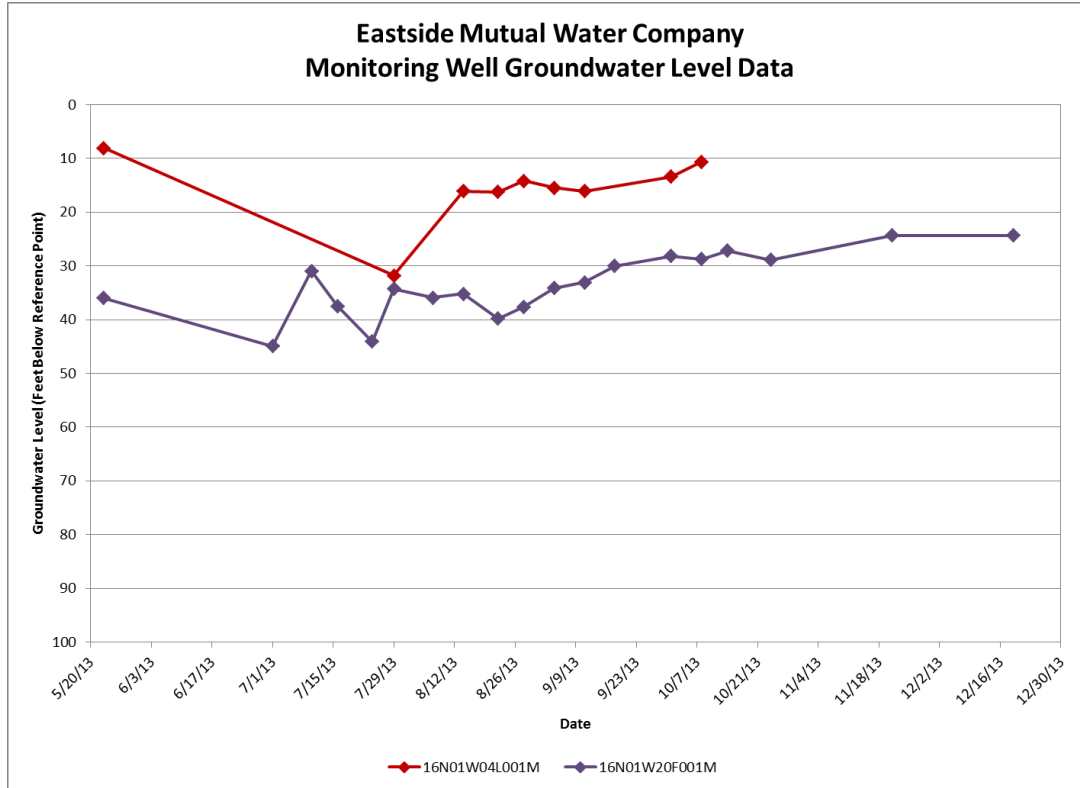
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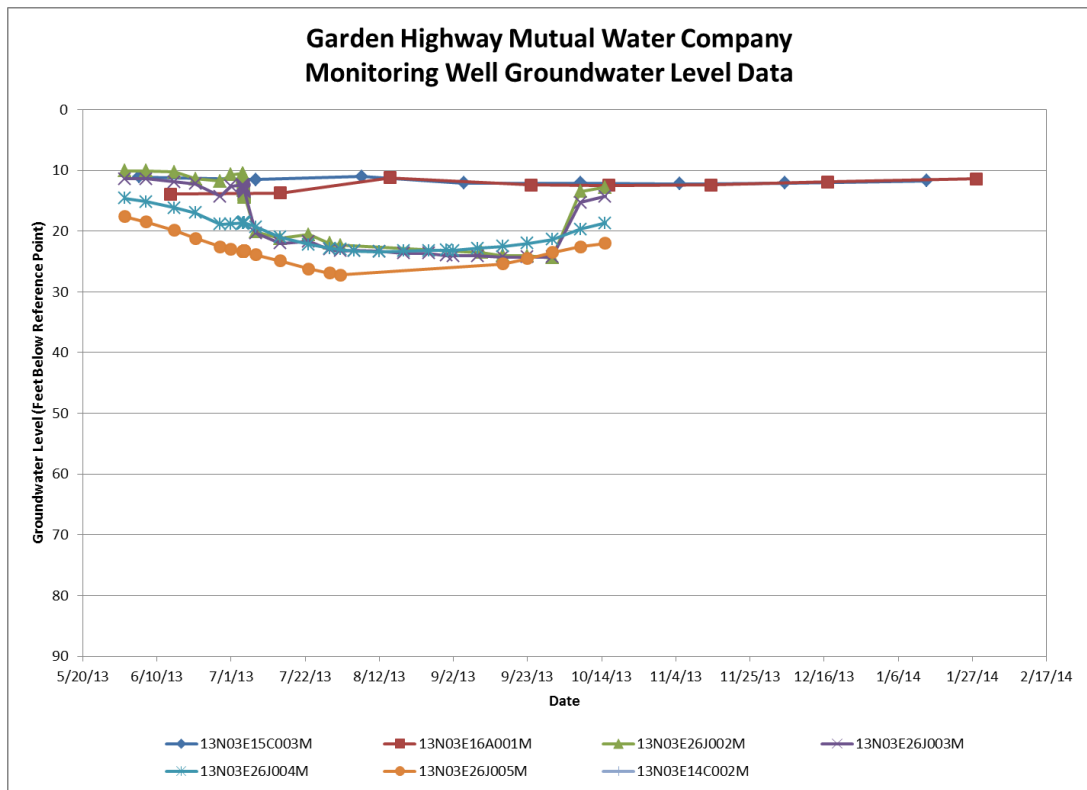
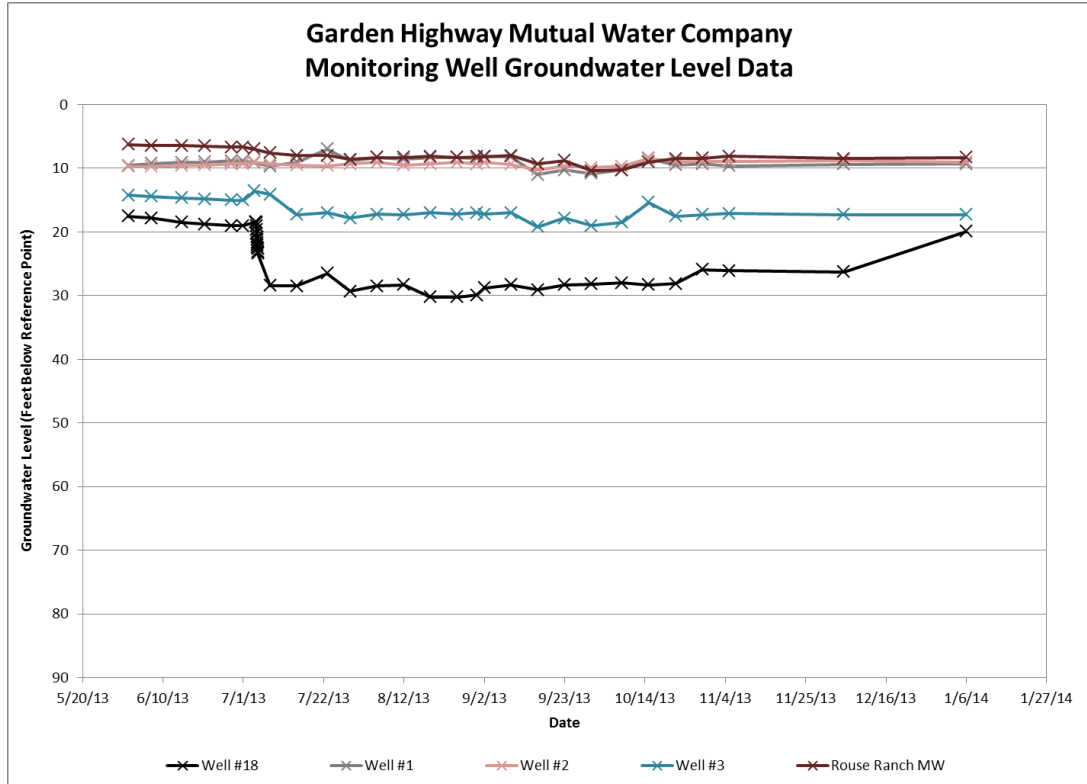
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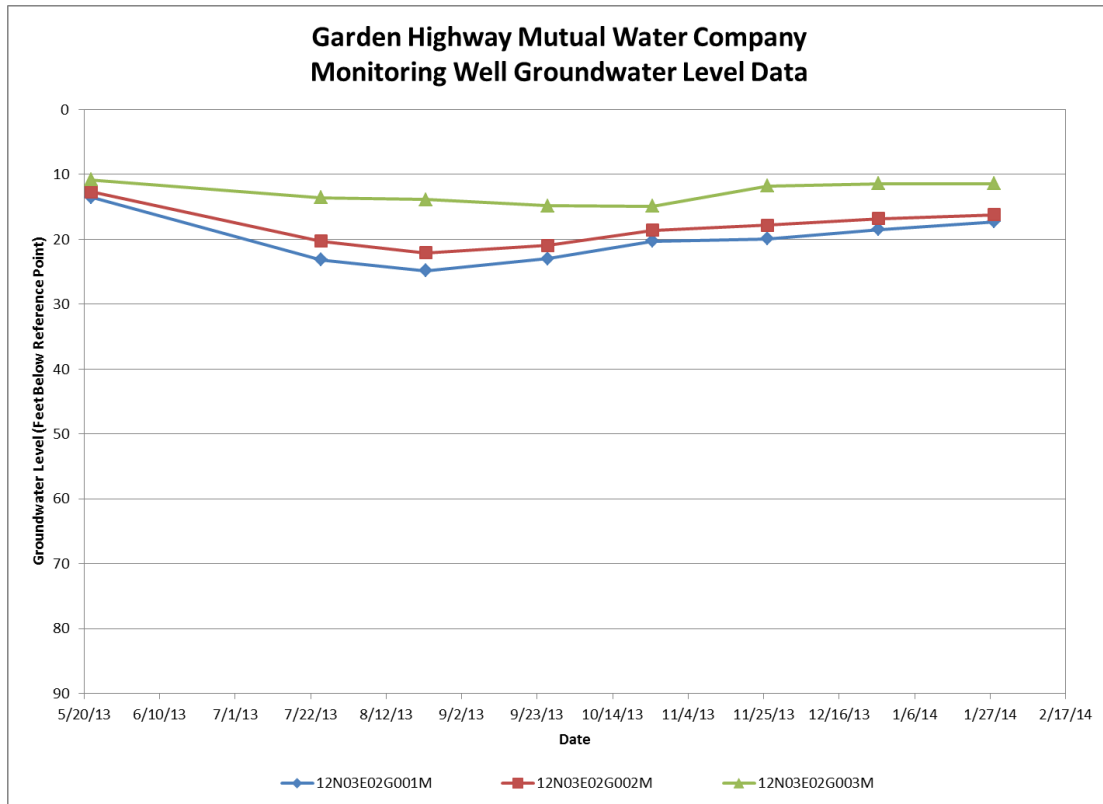


Eastside Mutual Water Company

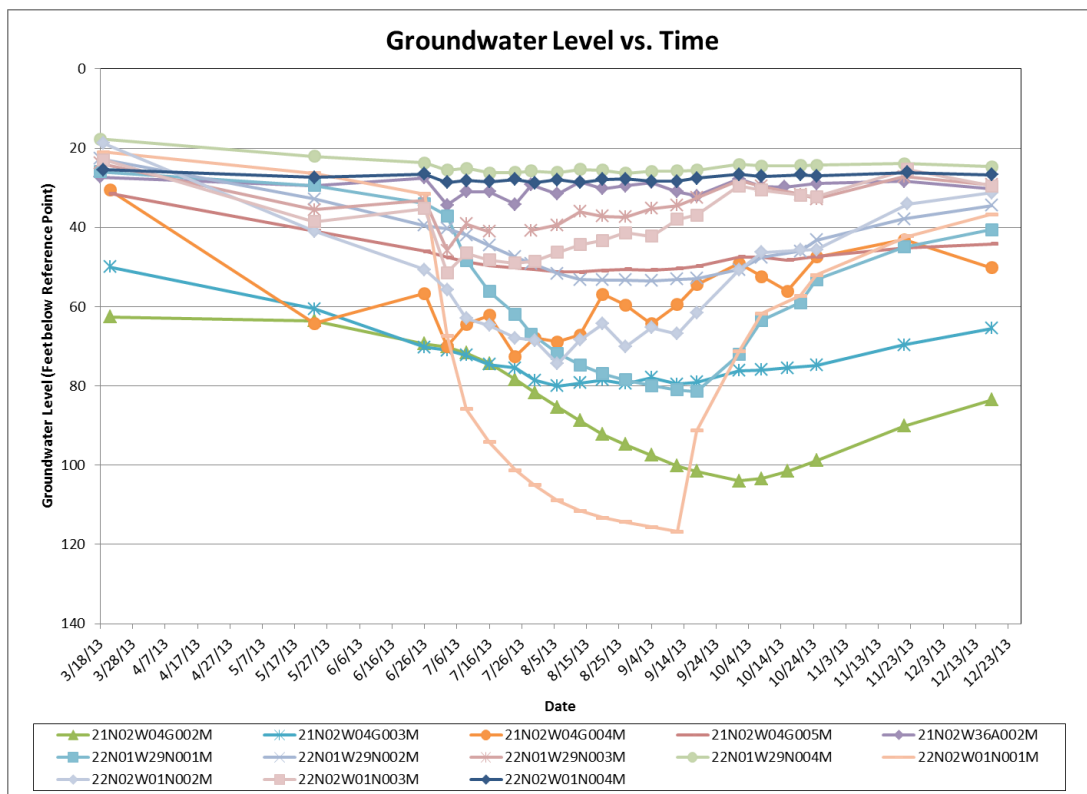
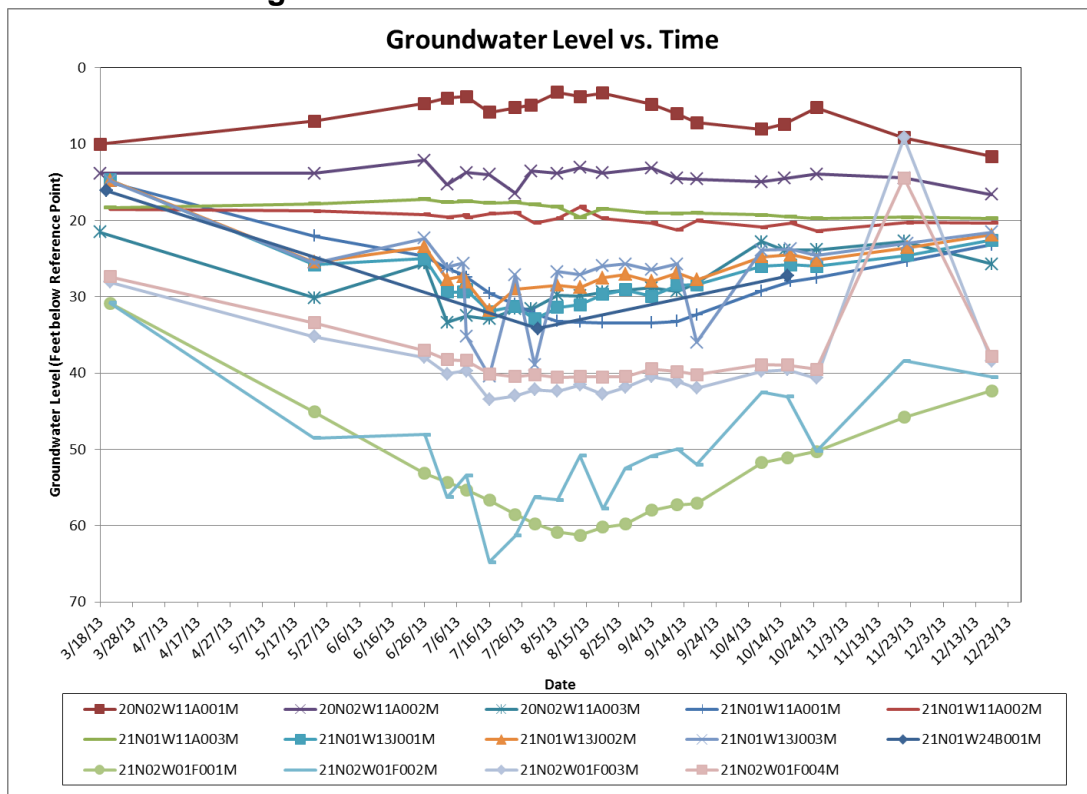


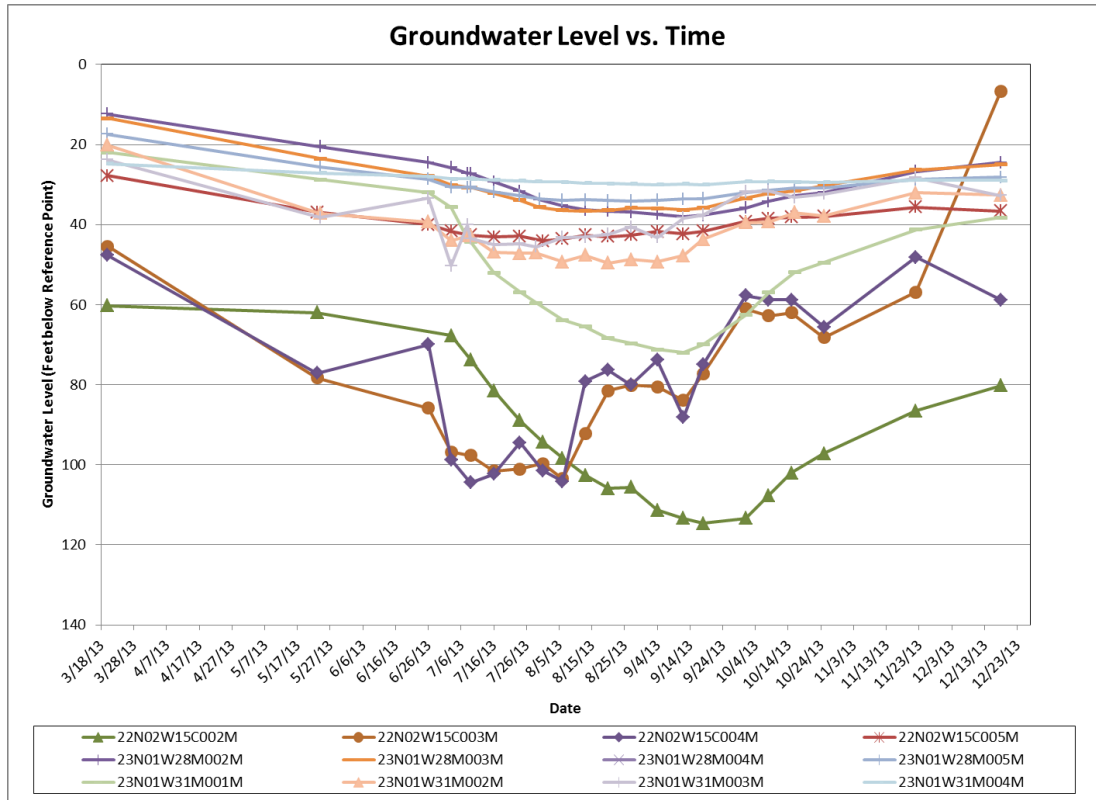
Garden Highway Mutual Water Company



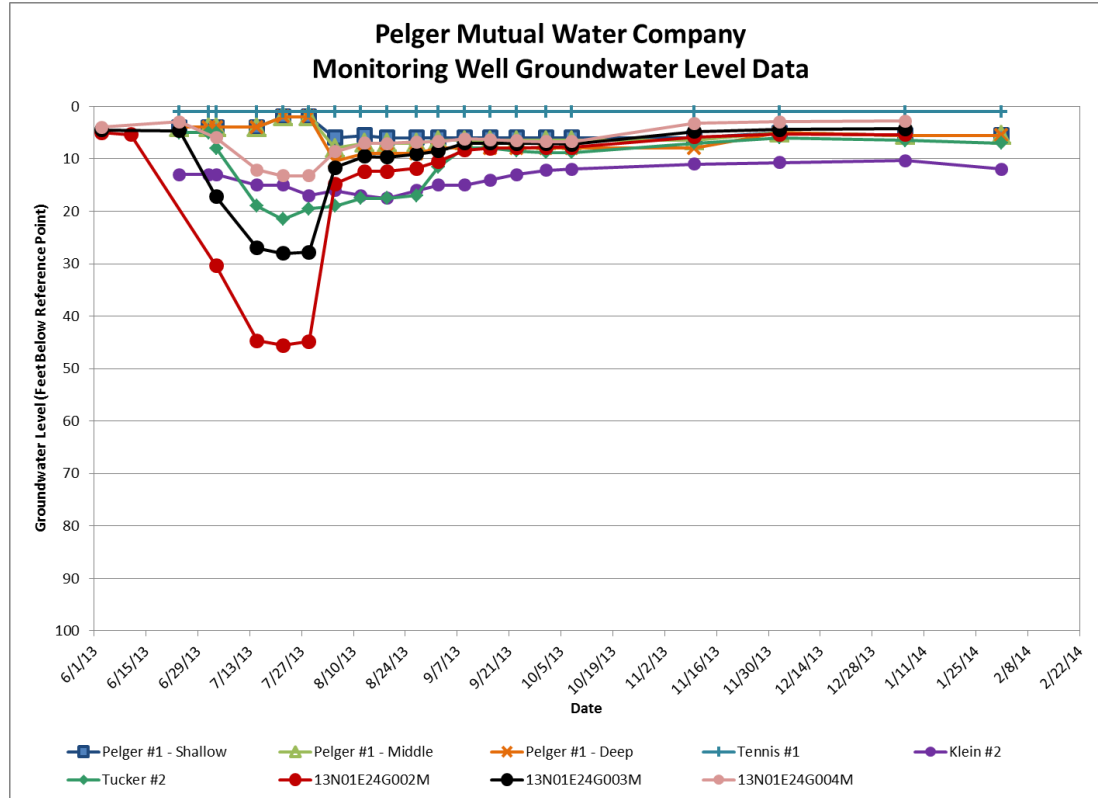


Glenn-Colusa Irrigation District

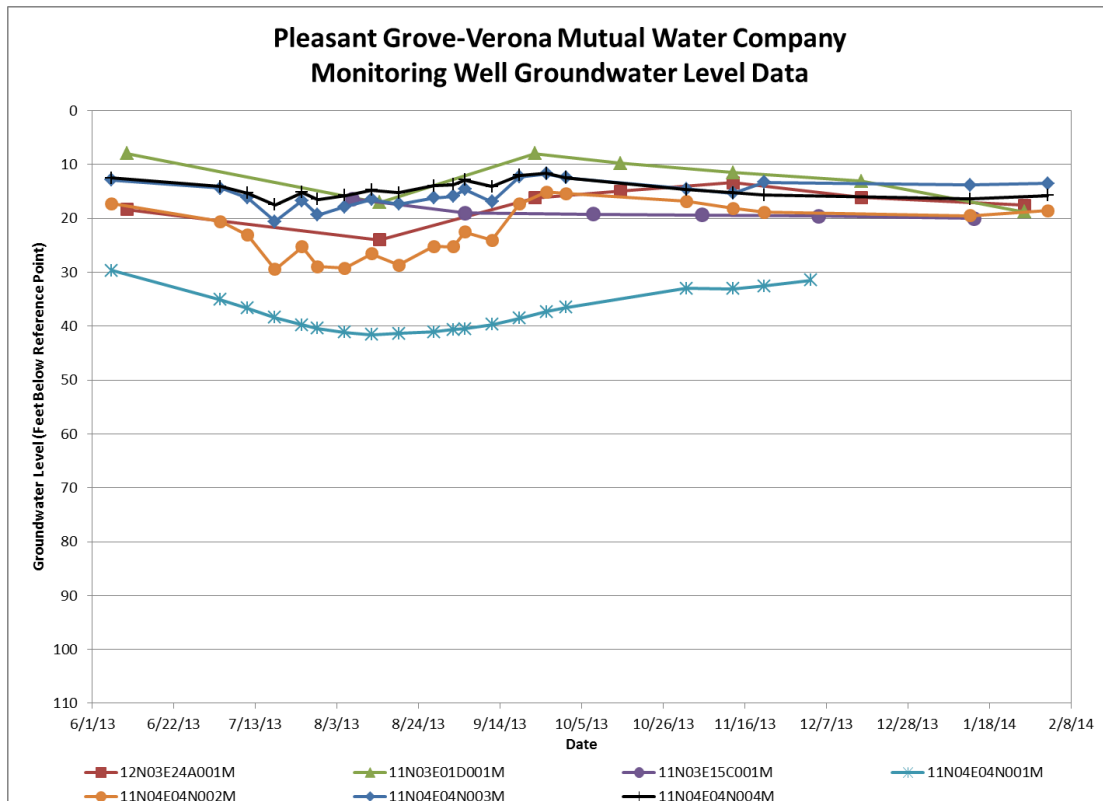
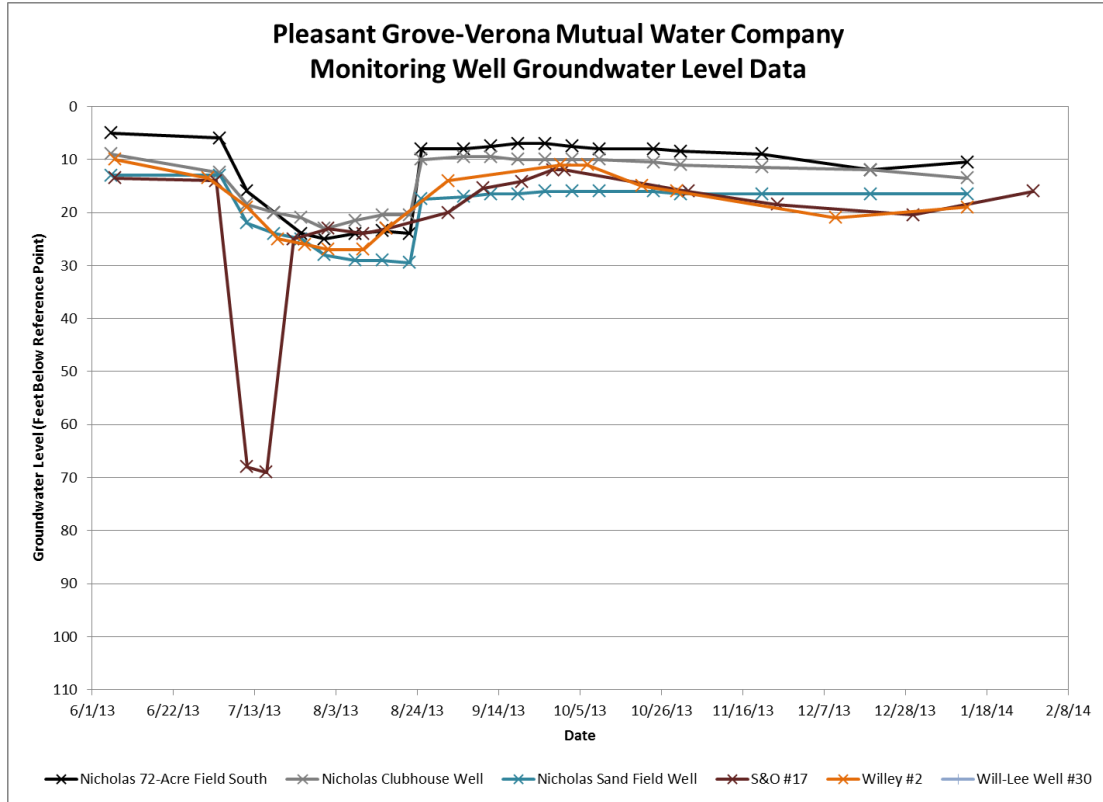




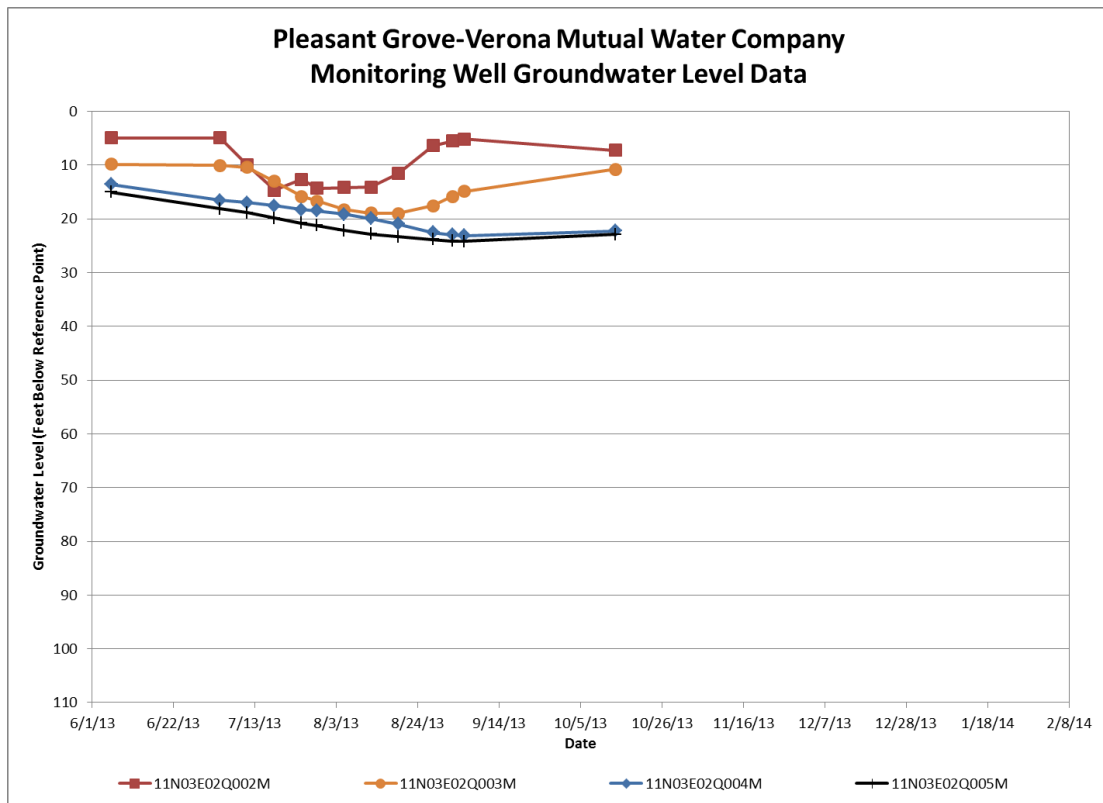
Pelger Mutual Water Company



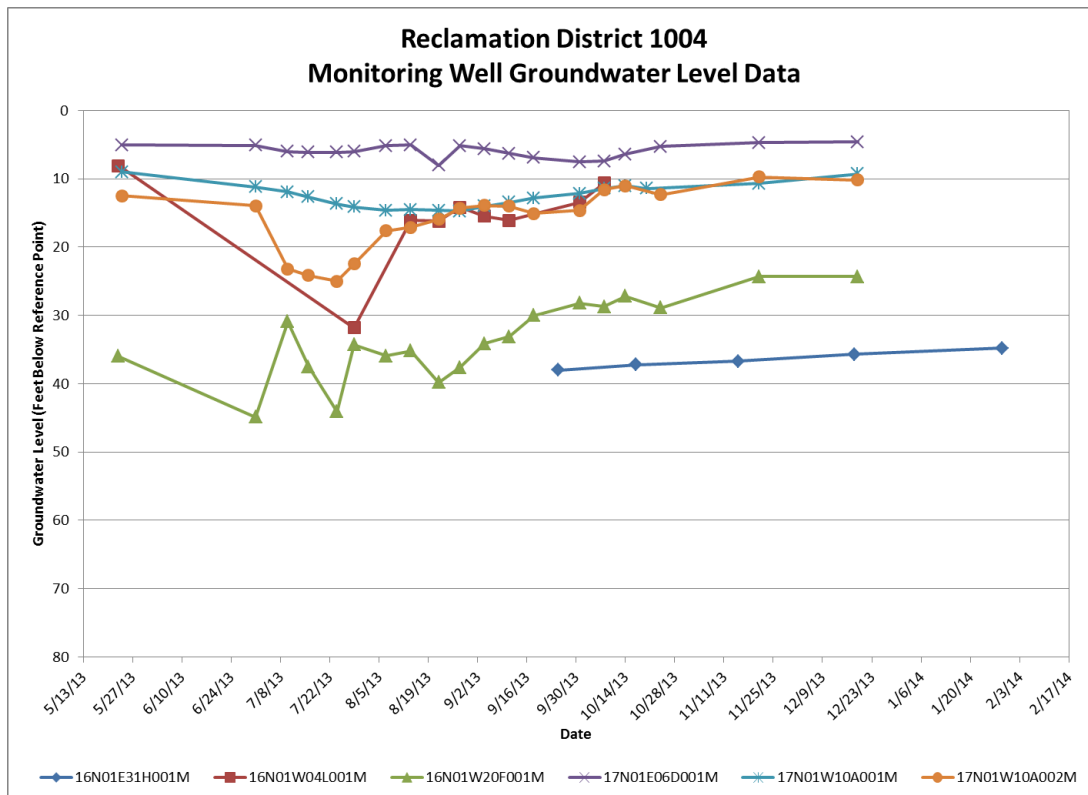
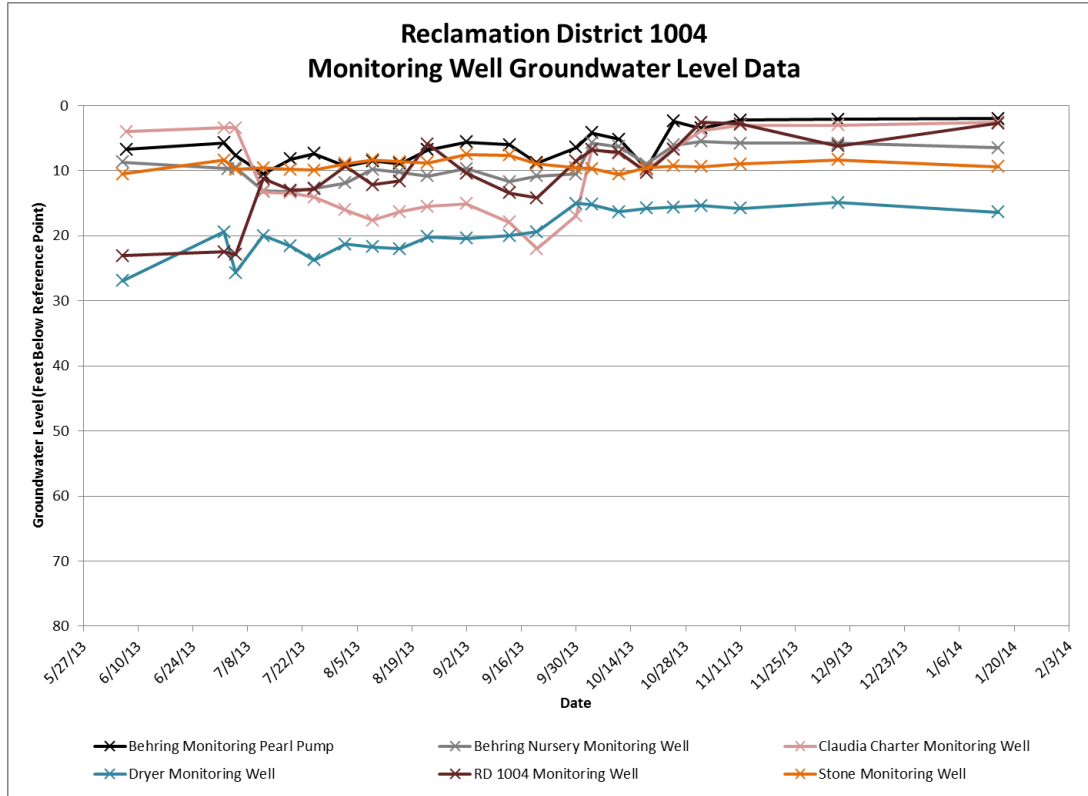
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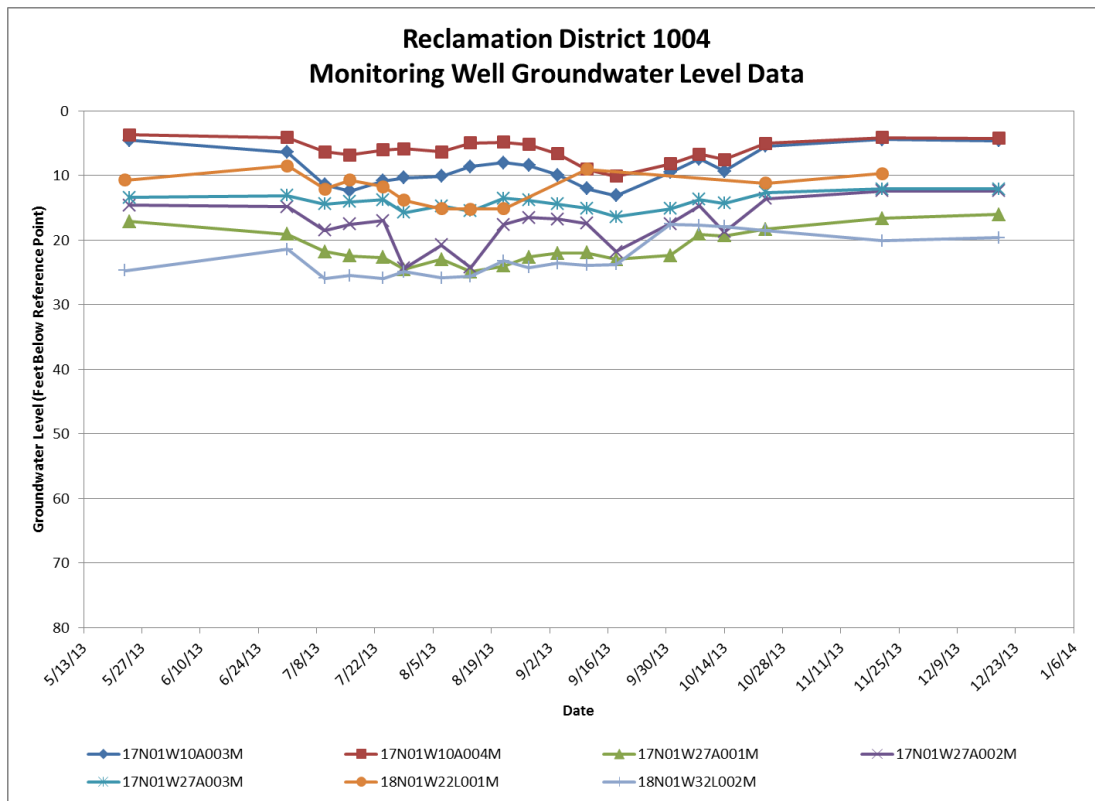
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Environmental Assessment/Initial Study



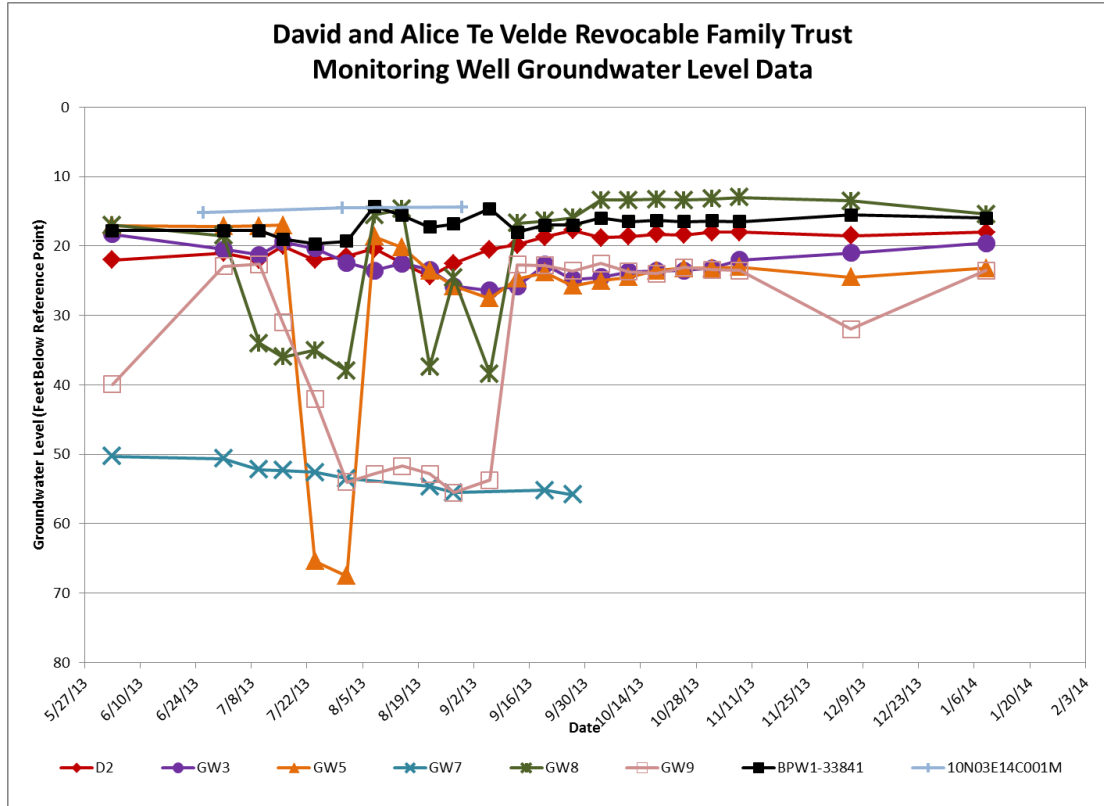
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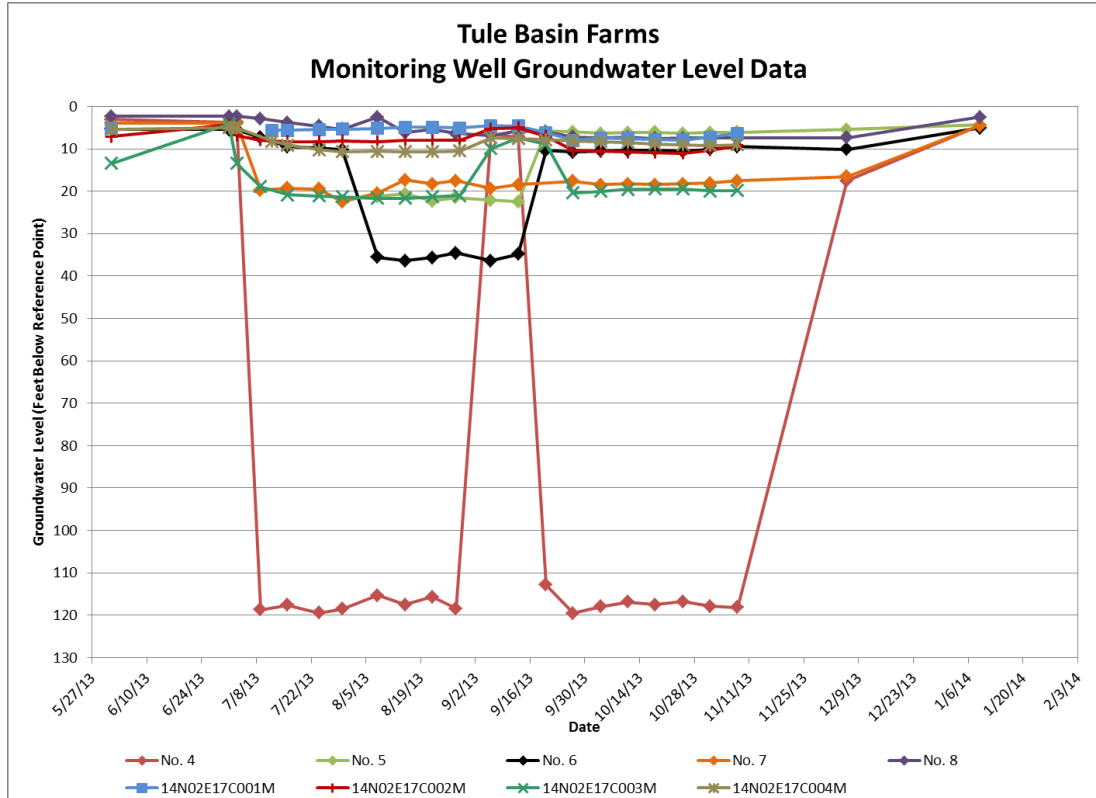
2014 San Luis & Delta-Mendota Water Authority Water Transfers
Environmental Assessment/Initial Study



Te Velde Revocable Trust



Tule Basin Farms



Appendix D

Environmental Commitments and Minimization Measures

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Appendix D

Environmental Commitments and Minimization Measures

This appendix includes the environmental commitments and minimization measures for 2014 water transfers. Chapter 2 of the EA/IS includes the environmental commitments and Chapter 3 of the EA/IS includes an evaluation of environmental effects and associated minimization measures.

D.1 Environmental Commitments

Groundwater Substitution and Cropland Idling Transfers

- Carriage water will be used to maintain water quality in the Delta.

Groundwater Substitution Transfers

- Well reviews and monitoring and mitigation plans will be implemented to minimize potential effects of groundwater substitution on nearby surface and ground water resources. Well reviews, monitoring and mitigation plans will be coordinated and implemented in conjunction with local ordinances, basin management objectives, and all other applicable regulations. DWR and Reclamation have published draft technical information related to cropland idling/shifting and groundwater substitution transfers in the Draft Technical Information for Preparing Water Transfer Proposals -- 2014 (Reclamation and DWR 2013), which is available at <http://www.water.ca.gov/watertransfers/>.
- In groundwater basins where sellers are in the same groundwater subbasin as protected aquatic habitats, such as GGS preserves and conservation banks, groundwater substitution will be allowed as part of the 2014 Water Transfers if the seller can demonstrate that any impacts to water resources needed for special status species protection have been addressed. In these areas, sellers will be required to address these impacts as part of their mitigation plan.

Cropland Idling Transfers

- As part of the approval process, Reclamation will have access to the land to verify how the water transfer is being made available and to verify that the actions to protect the GGS are being implemented.
- Reclamation will provide a map(s) to USFWS in May of 2014 showing the parcels of riceland that are idled for the purpose of transferring water in 2014. These maps will be prepared to comport to Reclamation's GIS standards.
- Water transfers will not be approved from a field fallowed during the two previous years (water may be made available from the same parcel in successive years) (Reclamation and DWR 2013).
- Movement corridors for aquatic species include the major irrigation and drainage canals. The water seller will keep at least two feet of water in the major irrigation and drainage canals (but never more than existing conditions).
- In order to limit reduction in the amount of over-winter forage for migratory birds, including greater sandhill crane, transfers will minimize actions near known wintering areas in the Butte Sink.
- To ensure effects of cropland idling/shifting actions on western pond turtle habitat are avoided or minimized, canals will not be allowed to completely dry out.
- The focus of GGS mitigation in districts proposing water transfers made available from fallowed rice fields will be to ensure adequate water is available for priority suitable habitat with a high likelihood of GGS occurrence.
 - The determination of priority habitat will be made through coordination with GGS experts, GIS analysis of proximity to historic tule marsh, and GIS analysis of suitable habitat. The priority habitat areas are indicated on the priority habitat map which will be maintained by FWS. In addition, fields abutting or immediately adjacent to federal wildlife refuges will be considered priority habitat.
 - Maintenance water in smaller drains and conveyance infrastructure supports key habitat attributes such as emergent vegetation for GGS for escape cover and foraging habitat. If crop idling/shifting occurs in priority habitat areas, Reclamation will work with contractors to document that adequate water remains in drains and canals in those priority areas. Documentation may include flow records, photo

documentation, or other means of documentation agreed to by Reclamation and USFWS.

- Areas with known priority GGS populations will not be permitted to participate in cropland idling/shifting transfers. Water sellers can request a case-by-case evaluation of whether a specific field would be precluded from participating in 2014 Water Transfers. These areas include:
 - Fields abutting or immediately adjacent to Butte Creek, Colusa Drainage Canal, Gilsizer Slough, the land side of the Toe Drain along the Sutter Bypass, Willow Slough and Willow Slough Bypass in Yolo County; and
 - Lands in the Natomas Basin.

D.2 Minimization Measures

Groundwater

The *DRAFT Technical Information for Preparing Water Transfer Proposals* (Reclamation and DWR 2013) and Addendum (Reclamation and DWR 2014) provide guidance for the development of proposals for groundwater substitution water transfers. The objectives of this process are: to mitigate adverse environmental effects that occur; to minimize potential effects to other legal users of water; to provide a process for review and response to reported third party effects; and to assure that a local mitigation strategy is in place prior to the groundwater transfer. The seller will be responsible for assessing and minimizing or avoiding adverse effects resulting from the transfer within the source area of the transfer.

Each entity participating in a groundwater substitution transfer will be required to confirm that the proposed groundwater pumping will be compatible with state and local regulations and groundwater management plans. Reclamation's transfer approval process and groundwater minimization measures set forth a framework that is designed to avoid and minimize adverse groundwater effects. Reclamation will verify that sellers adopt these minimization measures to minimize the potential for adverse effects related to groundwater extraction.

Well Review Process Potential sellers will be required to submit well data for Reclamation and, where appropriate, DWR review, as part of the transfer approval process. Required information is detailed in the *DRAFT Technical Information for Preparing Water Transfer Proposals* (Reclamation and DWR 2013) and Addendum (Reclamation and DWR 2014) for groundwater substitution transfers.

For the purposes of this EA/IS, Reclamation assumes that streamflow losses due to groundwater pumping to make water available for transfer are 12 percent of the amount pumped. Sellers may submit modeling information from approved models to demonstrate that this percentage should be different. Reclamation continues to require well location and construction information to ensure that the criteria in the *DRAFT Technical Information for Preparing Water Transfer Proposals* (Reclamation and DWR 2013) are met.

Monitoring Program Potential sellers will be required to complete and implement a monitoring program that must, at a minimum, include the following components:

- *Monitoring Well Network.* The monitoring program will incorporate a sufficient number of monitoring wells to accurately characterize groundwater levels and response in the area before, during, and after transfer pumping takes place.
- *Groundwater Pumping Measurements.* All wells pumping to replace surface water designated for transfer shall be configured with a permanent instantaneous and totalizing flow meter capable of accurately measuring well discharge rates and volumes. Flow meter readings will be recorded just prior to initiation of pumping and at designated times, but no less than monthly and as close as practical to the last day of the month, throughout the duration of the transfer.
- *Groundwater Levels.* Sellers will collect measurements of groundwater levels in both participating transfer wells and monitoring wells. Groundwater level monitoring will include measurements before, during and after transfer-related pumping. The water transfer proponent will measure groundwater levels as follows:
 - Prior to transfer: Groundwater levels will be measured monthly from March 2014 until the start of transfer.
 - Start of transfer: Groundwater levels will be measured on the same day that the transfer begins, prior to the pump being turned on.
 - During transfer: Groundwater levels will be measured weekly throughout the transfer period.
 - Post-transfer: Groundwater levels will be measured weekly for one month after the end of transfer pumping, after which groundwater levels will be measured monthly until March 2015.

- *Groundwater Quality.* For municipal sellers, the comprehensive water quality testing requirements of Title 22 should be sufficient for the water transfer monitoring program. Agricultural sellers shall measure specific conductance in samples from each participating production well. Samples shall be collected when the seller first initiates pumping, monthly during the transfer period, and at the termination of transfer pumping.
- *Land Subsidence.* Reclamation will work with the seller to develop the specifics of a mutually agreed upon subsidence monitoring effort. The extent of required land subsidence monitoring will depend on the expected susceptibility of the area to land subsidence. Areas with documented land subsidence will require more extensive monitoring than others.
- *Coordination Plan.* The monitoring program will include a plan to coordinate the collection and organization of monitoring data, and communication with the well operators and other decision makers.
- *Evaluation and Reporting.* The proposed monitoring program will describe the method of reporting monitoring data. At a minimum, sellers will provide data summary tables to Reclamation, both during and after transfer-related groundwater pumping. Post-program reporting will continue until groundwater levels recover to seasonal highs in March 2015. Water transfer proponents will provide a final summary report to Reclamation evaluating the effects of the water transfer. The final report will identify transfer-related impacts on groundwater and surface water (both during and after pumping), and the extent and significance, if any, of impacts on local groundwater users. It should include groundwater elevation contour maps for the area in which transfer operations are located, showing pre-transfer groundwater elevations, groundwater elevations at the end of the transfer, and recovered groundwater elevations in March 2015.

Mitigation Plan Potential sellers will also be required to complete and implement a mitigation plan. If the seller's monitoring efforts indicate that the operation of wells for groundwater substitution pumping are causing substantial adverse impacts, the seller will be responsible for mitigating any significant environmental impacts that occur. Mitigation actions could include:

- Curtailment of pumping until natural recharge corrects the issue.
- Lowering of pumping bowls in third party wells affected by transfer pumping.

- Reimbursement for significant increases in pumping costs due to the additional groundwater pumping to support the transfer.
- Other actions as appropriate.

To ensure that mitigation plans will be tailored to local conditions, the plan must include the following elements:

1. A procedure for the seller to receive reports of purported environmental or third party effects;
2. A procedure for investigating any reported effect;
3. Development of mitigation options, in cooperation with the affected third parties, for legitimate effects; and
4. Assurances that adequate financial resources are available to cover reasonably anticipated mitigation needs.

Air Quality

Emissions from Pelger Mutual Water Company, Pleasant Grove-Verona Mutual Water Company, and Tule Basin Farms would exceed the daily NO_x thresholds.

The following mitigation measures would reduce the severity of the air quality impacts:

- AQ-1 – All diesel-fueled engines would either be replaced with an engine that would meet the applicable emission standards for model year 2013 or would be retrofit to meet the same emission standards.
- AQ-2 – Natural gas engines will be retrofit with a selective catalytic reduction device (or equivalent) that is capable of achieving a NO_x control efficiency of at least 90 percent.
- AQ-3 – Any engines operating in the area of analysis that are capable of operating as either electric or natural gas engines would only operate with electricity during any groundwater transfers.
- AQ-4 – Selling agency would reduce pumping at diesel or natural gas wells to reduce emissions to below the thresholds.

Appendix E

Mitigation Monitoring and Reporting Program

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Appendix E

Mitigation Monitoring and Reporting Program

The proposed Project would result in the potential for significant environmental impacts associated with air quality. Mitigation measures have been incorporated into the Project to reduce impacts to less than significant levels. The mitigation measures for the Project must be adopted by Reclamation and SLDMWA, in conjunction with adoption of the MND/IS.

Section 21081.6 of the Public Resources Code (PRC) and CEQA Guidelines section 15097 require the Lead Agency for each project that is subject to the CEQA to monitor performance of the mitigation measures included in any environmental document to ensure that implementation does, in fact, take place. The PRC requires the Lead Agency to adopt a monitoring and reporting program for assessing and ensuring the implementation of required mitigation measures.

In accordance with PRC Section 21081.6, SLDMWA has developed this Mitigation Monitoring and Reporting Program (MMRP) for the Project. The purpose of the MMRP is to ensure activities associated with transferring water comply with all applicable environmental mitigation requirements. Mitigation measures would reduce short-term environmental impacts associated with sellers making water available for transfer through groundwater substitution.

Table E-1 lists the mitigation measures identified in the EA/IS, responsible parties, the time frame for implementation, and the monitoring parties. A column is provided for the monitoring party to sign-off on the implementation of each mitigation measure.

In addition to the mitigation measures, several environmental commitments and minimization measures would be enacted to reduce potential environmental impacts from water transfers to biological and groundwater resources. The groundwater minimization measures are required to monitor and address potential groundwater level changes that could affect third parties or biological resources. The environmental commitments and minimization measures are included in this MMRP to verify compliance as transfers move forward. Table E-2 shows these commitments and measures, the responsible parties, time frame for implementation, and the monitoring parties.

Table E-1 Air Quality Mitigation Measures

Measure No.	Mitigation Measure	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion	
						Initials	Date
AQ-1	All diesel-fueled engines would either be replaced with an engine that would meet the applicable emission standards for model year 2013 or would be retrofit to meet the same emission standards.	Participating Sellers	Reclamation and SLDMWA	Seller transfer application package with field spot-checks	Prior to 2014 water transfers		
AQ-2	Natural gas engines will be retrofit with a selective catalytic reduction device (or equivalent) that is capable of achieving a NOx control efficiency of at least 90 percent.	Participating Sellers	Reclamation and SLDMWA	Seller transfer application package with field spot-checks	Prior to 2014 water transfers		
AQ-3	Any engines operating in the area of analysis that are capable of operating as either electric or natural gas engines would only operate with electricity during any groundwater transfers.	Participating Sellers	Reclamation and SLDMWA	Seller transfer application package with field spot-checks	Prior to 2014 water transfers		
AQ-4	Selling agency would reduce pumping at diesel or natural gas wells to reduce emissions to below the thresholds.	Participating Sellers	Reclamation and SLDMWA	Seller transfer application package with field spot-checks	Prior to 2014 water transfers		

Table E-2 Environmental Commitments and Minimization Measures for Biological Resources and Groundwater

Environmental Commitments and Minimization Measures	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion	
					Initials	Date
Carriage water will be used to maintain water quality in the Delta.	Reclamation	Reclamation	Real-time monitoring and modeling	Ongoing		
Well reviews and monitoring and mitigation plans will be implemented to minimize potential effects of groundwater substitution on nearby surface and ground water resources. Well reviews, monitoring and mitigation plans will be coordinated and implemented in conjunction with local ordinances, basin management objectives, and all other applicable regulations. DWR and Reclamation have published draft technical information related to cropland idling/shifting and groundwater substitution transfers titled <i>DRAFT Technical Information for Preparing Water Transfer Proposals</i> (Reclamation and DWR 2013), which is available at http://www.water.ca.gov/watertransfers/ .	Participating Sellers	Reclamation and SLDMWA	Seller transfer application package	Prior to 2014 water transfers		
In groundwater basins where sellers are in the same groundwater subbasin as protected aquatic habitats, such as giant garter snake (GGS) preserves and conservation banks, groundwater substitution will be allowed as part of the 2014 Water Transfers if the seller can demonstrate that any impacts to water resources needed for special status species protection have been addressed. In these areas, sellers will be required to address these impacts as part of their mitigation plan.	Participating Sellers	Reclamation and SLDMWA	Seller transfer application package	Prior to 2014 water transfers		
As part of the approval process, Reclamation will have access to the land to verify how the water transfer is being made available and to verify that the actions to protect the GGS are being implemented.	Participating Sellers	Reclamation	Regular inspections	Access provided prior to 2014 water transfers; inspections ongoing		
Reclamation will provide a map(s) to USFWS in May of 2014 showing the parcels of riceland that are idled for the purpose of transferring water in 2014. These maps will be prepared to comport to Reclamation's Geographic Information System (GIS) standards.	Participating Sellers	Reclamation	Completed mapping package	Prior to 2014 water transfers		

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Environmental Commitments and Minimization Measures	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion	
					Initials	Date
Water will not be purchased from a field fallowed during the two previous years (water may be purchased from the same parcel in successive years).	Participating Sellers	Reclamation	Seller transfer application package with field spot-checks	Prior to 2014 water transfers		
Movement corridors for aquatic species include the major irrigation and drainage canals. The water seller will keep at least two feet of water in the major irrigation and drainage canals (but never more than existing conditions).	Participating Sellers	Reclamation	Seller transfer application package with field spot-checks	Prior to 2014 water transfers		
In order to limit reduction in the amount of over-winter forage for migratory birds, including greater sandhill crane, transfers will minimize actions near known wintering areas in the Butte Sink.	Participating Sellers	Reclamation	Seller transfer application package with field spot-checks	Prior to 2014 water transfers		
To ensure effects of cropland idling actions on western pond turtle habitat are avoided or minimized, canals will not be allowed to completely dry out.	Participating Sellers	Reclamation	Regular inspections	Prior to 2014 water transfers		
<p>The focus of GGS mitigation in districts proposing water transfers made available from fallowed rice fields will be to ensure adequate water is available for priority suitable habitat with a high likelihood of GGS occurrence.</p> <ul style="list-style-type: none"> The determination of priority habitat will be made through coordination with GGS experts, GIS analysis of proximity to historic tule marsh, and GIS analysis of suitable habitat. The priority habitat areas are indicated on the priority habitat map which will be maintained by USFWS. In addition, fields abutting or immediately adjacent to Federal wildlife refuges will be considered priority habitat. Maintenance water in smaller drains and conveyance infrastructure support key habitat attributes such as emergent vegetation for GGS for escape cover and foraging habitat. If crop idling/shifting occurs in priority habitat areas, Reclamation will work with contractors to document that adequate water remains in drains and canals in those priority areas. Documentation may include flow records, photo documentation, or other means of documentation agreed to by Reclamation and USFWS. Areas with known priority GGS populations will not be permitted to participate in cropland idling/shifting transfers. Water sellers can request a case-by-case evaluation of 	Participating Sellers	Reclamation	Seller transfer application package with field spot-checks	Prior to 2014 water transfers		

Environmental Commitments and Minimization Measures	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion	
					Initials	Date
<p>whether a specific field would be precluded from participating in 2014 Water Transfers. These areas include:</p> <ul style="list-style-type: none"> Fields abutting or immediately adjacent to Butte Creek, Colusa Drainage Canal, Gilsizer Slough, the land side of the Toe Drain along the Sutter Bypass, Willow Slough and Willow Slough Bypass in Yolo County, and Lands in the Natomas Basin. 						
Potential sellers will be required to submit well data for Reclamation and, where appropriate, DWR review, as part of the transfer approval process. Required information is detailed in the DRAFT Technical Information for Preparing Water Transfer Proposals (Reclamation and DWR 2013) and Addendum (Reclamation and DWR 2014) for groundwater substitution transfers.	Participating Sellers	Reclamation and SLDMWA	Seller transfer information package	Prior to 2014 water transfers		
Potential sellers will be required to complete and implement a monitoring program that incorporates a sufficient number of monitoring wells to accurately characterize groundwater levels and response in the area before, during, and after transfer pumping takes place. The monitoring program will include a plan to coordinate the collection and organization of monitoring data, and communication with the well operators and other decision makers.	Participating Sellers	Reclamation and SLDMWA	Seller transfer application package	Plan submitted prior to 2014 water transfers; monitoring information submitted during and after transfer		
All wells pumping to replace surface water designated for transfer shall be configured with a permanent instantaneous and totalizing flow meter capable of accurately measuring well discharge rates and volumes. Flow meter readings will be recorded just prior to initiation of pumping and at designated times, but no less than monthly and as close as practical to the last day of the month, throughout the duration of the transfer.	Participating Sellers	Reclamation and SLDMWA	Seller transfer application package with field spot-checks	Ongoing		
<p>Sellers will collect measurements of groundwater levels in both participating transfer wells and monitoring wells. Groundwater level monitoring will include measurements before, during and after transfer-related pumping. The water transfer proponent will measure groundwater levels as follows:</p> <ul style="list-style-type: none"> <u>Prior to transfer</u>: Groundwater levels will be measured monthly from March 2014 until the start of transfer. <u>Start of transfer</u>: Groundwater levels will be measured 	Participating Sellers	Reclamation and SLDMWA	Regular inspections	Ongoing		

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Environmental Commitments and Minimization Measures	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion	
					Initials	Date
<p>on the same day that the transfer begins, prior to the pump being turned on.</p> <ul style="list-style-type: none"> • <u>During transfer</u>: Groundwater levels will be measured weekly throughout the transfer period. • <u>Post-transfer</u>: Groundwater levels will be measured weekly for one month after the end of transfer pumping, after which groundwater levels will be measured monthly until March 2015. 						
For municipal sellers, the comprehensive water quality testing requirements of Title 22 should be sufficient for the water transfer monitoring program. Agricultural sellers shall measure specific conductance in samples from each participating production well. Samples shall be collected when the seller first initiates pumping, monthly during the transfer period, and at the termination of transfer pumping.	Municipal Sellers	Reclamation and SLDMWA	Regular inspections	Ongoing		
Reclamation will work with the seller to develop the specifics of a mutually agreed upon subsidence monitoring effort. The extent of required land subsidence monitoring will depend on the expected susceptibility of the area to land subsidence. Areas with documented land subsidence will require more extensive monitoring than others.	Participating Sellers	Reclamation	Regular inspections	Ongoing		
The proposed monitoring program will describe the method of reporting monitoring data. At a minimum, sellers will provide data summary tables to Reclamation, both during and after transfer-related groundwater pumping. Post-program reporting will continue until groundwater levels recover to seasonal highs in March 2015. Water transfer proponents will provide a final summary report to Reclamation evaluating the effects of the water transfer. The final report will identify transfer-related impacts on groundwater and surface water (both during and after pumping), and the extent and significance, if any, of impacts on local groundwater users. It should include groundwater elevation contour maps for the area in which transfer operations are located, showing pre-transfer groundwater elevations, groundwater elevations at the end of the transfer, and recovered groundwater elevations in March 2015.	Participating Sellers	Reclamation and SLDMWA	Seller transfer application package	Plan submitted prior to 2014 water transfers; monitoring information submitted during and after transfer		

Environmental Commitments and Minimization Measures	Responsible Party	Monitoring Party	Method of Verification	Timing of Verification	Verification of Completion	
					Initials	Date
<p>Potential sellers will also be required to complete and implement a mitigation plan. If the seller's monitoring efforts indicate that the operation of wells for groundwater substitution pumping are causing substantial adverse impacts, the seller will be responsible for mitigating any significant environmental impacts that occur. Mitigation actions could include:</p> <ul style="list-style-type: none"> • Curtailment of pumping until natural recharge corrects the issue. • Lowering of pumping bowls in third party wells affected by transfer pumping. • Reimbursement for significant increases in pumping costs due to the additional groundwater pumping to support the transfer. • Other actions as appropriate. <p>To ensure that mitigation plans will be tailored to local conditions, the plan must include the following elements:</p> <ol style="list-style-type: none"> 1. A procedure for the seller to receive reports of purported environmental or third party effects; 2. A procedure for investigating any reported effect; 3. Development of mitigation options, in cooperation with the affected third parties, for legitimate effects; and 4. Assurances that adequate financial resources are available to cover reasonably anticipated mitigation needs. 	Participating Sellers	Reclamation and SLDMWA	Regular inspections	Ongoing		

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Appendix F

Groundwater Monitoring Data

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Appendix F

Groundwater Monitoring Data

This appendix contains groundwater monitoring data for wells within the seller districts. Two sources (1) CASGEM and (2) DWR's Water Data Library were used to obtain the monitoring data. The process to query out the groundwater level data is explained below.

Direction to manually lookup groundwater level data from DWR's CASGEM website:
Example Well 29N04W15E002M

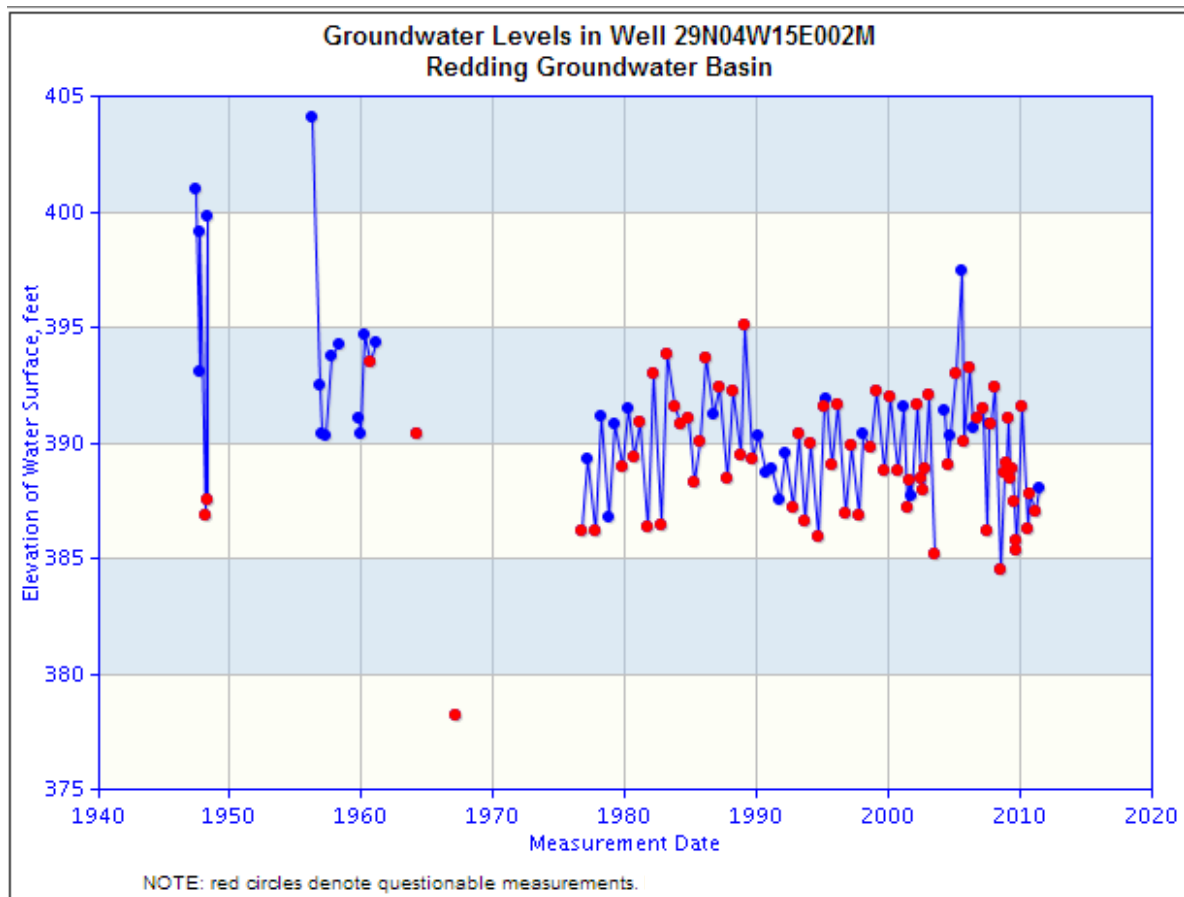
1. Go to CASGEM Public Login website:
http://www.water.ca.gov/groundwater/casgem/online_system.cfm (setup login if not previously done)
2. Select Well Information> State Well Number. Input well number (29N04W15E002M for this example)
3. Go to Well Details: View> View Hydrograph

Direction to manually lookup groundwater level data from DWR's water data library:
Example Well 29N04W15E002M

1. Go to DWR Water Data Library website: <http://www.water.ca.gov/waterdatalibrary/>
2. Select Groundwater Level Data> Data by Township
3. Input Township, Range, Baseline and Sections information (For example well **29N04W15E002M** Township= 24 North; Range=04 West; Baseline= Mt. Diablo; and Sections= 15)

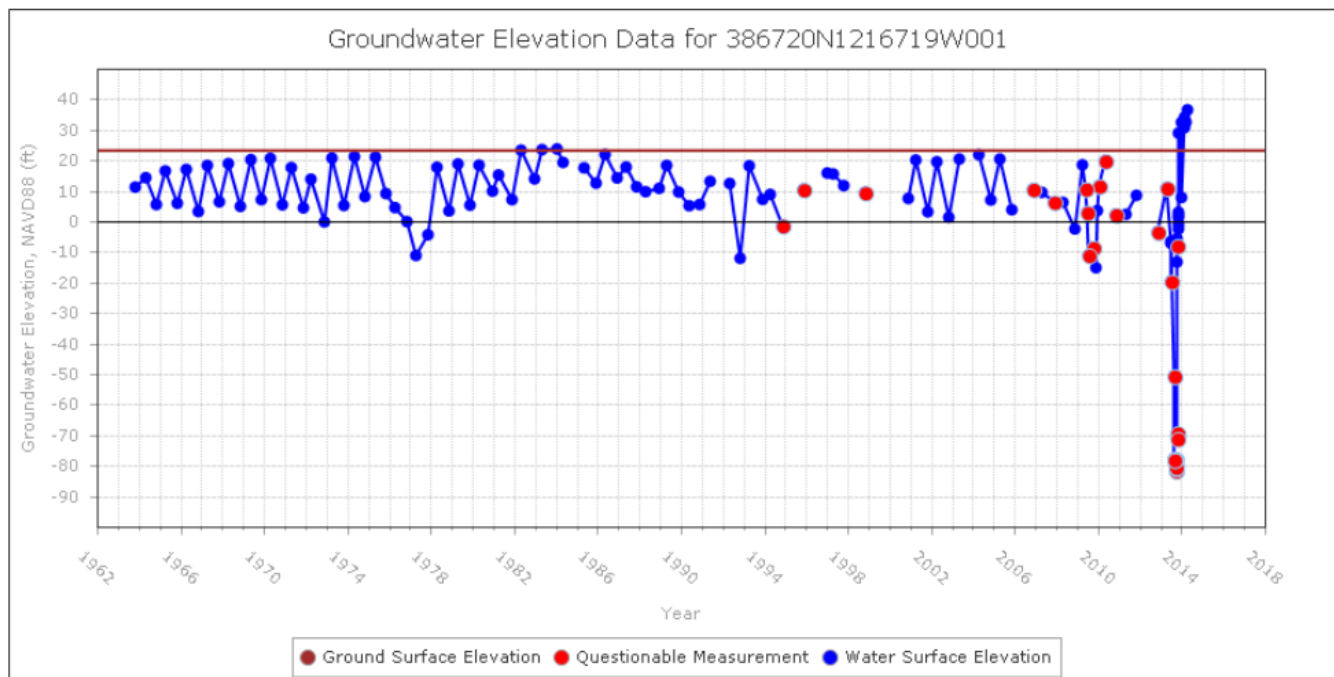
Anderson-Cottonwood Irrigation District

State Well ID 29N04W15E002M



Source: DWR's Water Data Library

Conaway Preservation Group
State Well ID 10N03E32E001M

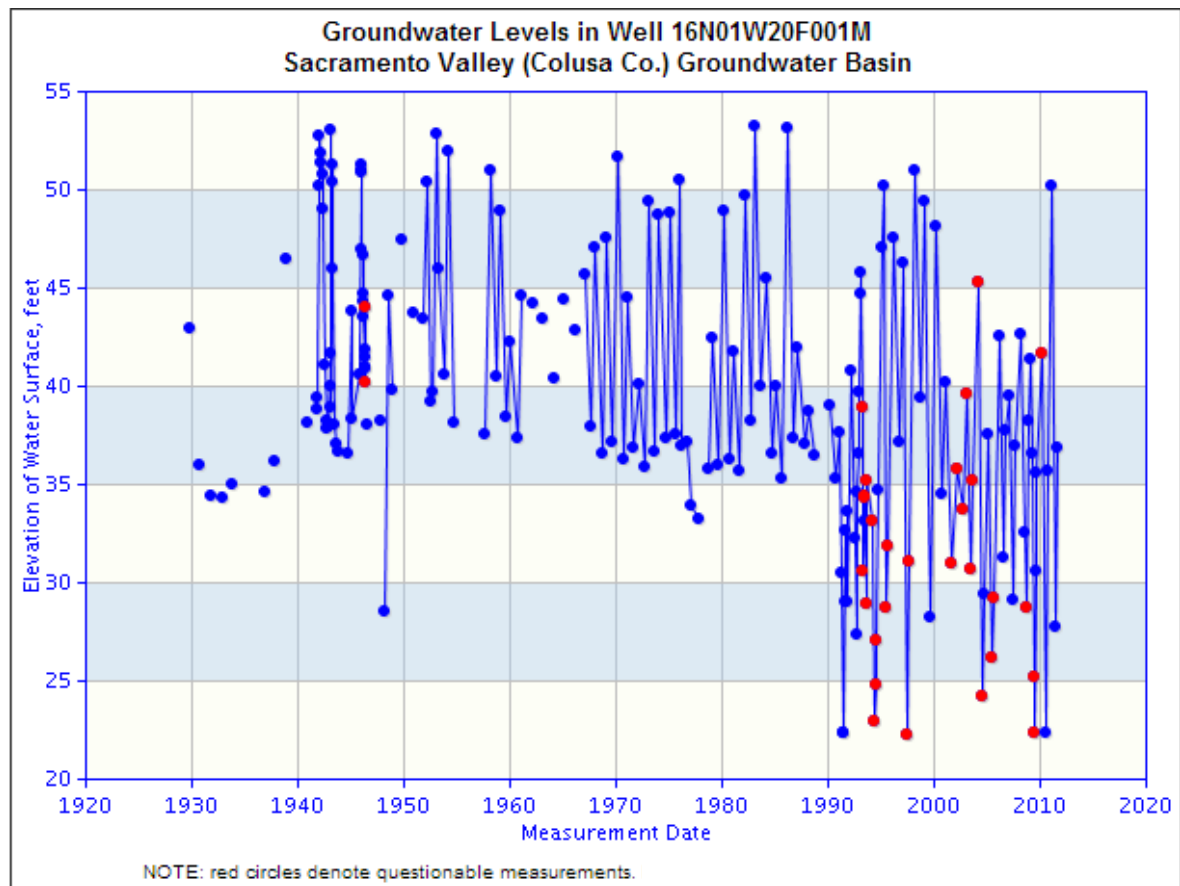


Source: DWR's CASGEM website.

Note: Well number in the title of the figure is the CASGEM Well Number.

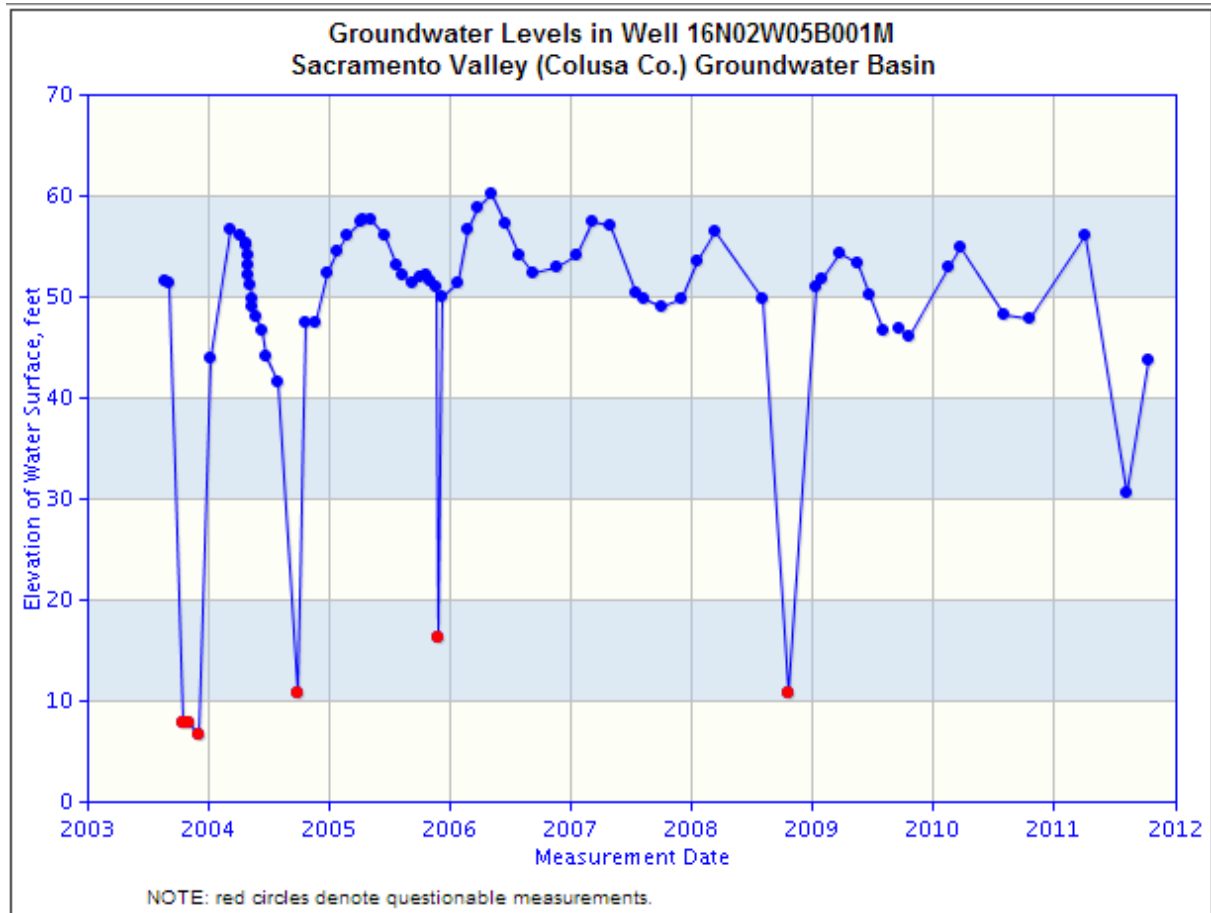
Eastside Mutual Water Company

State Well ID 16N01W20F001M



Source: DWR's Water Data Library

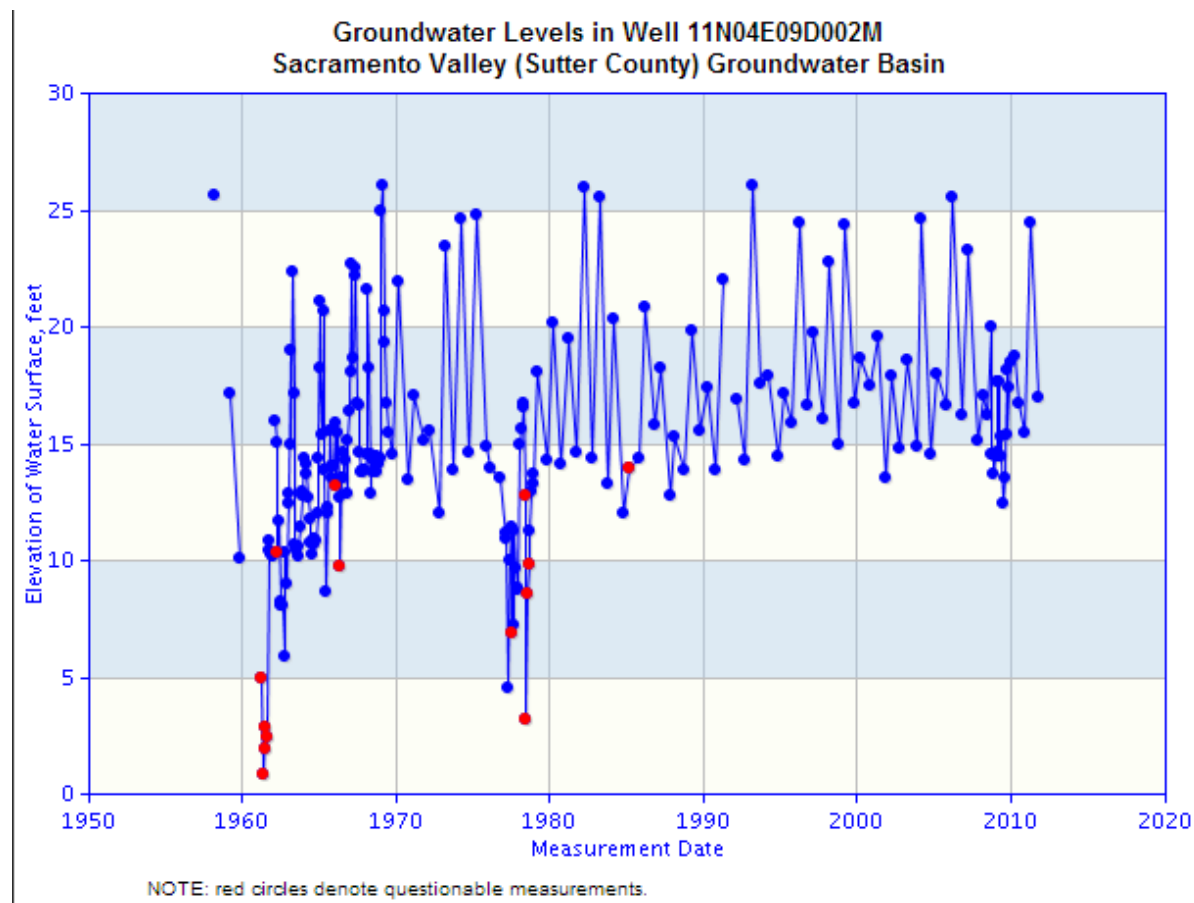
Maxwell Irrigation District
State Well ID 16N02W05B001M



Source: DWR's Water Data Library

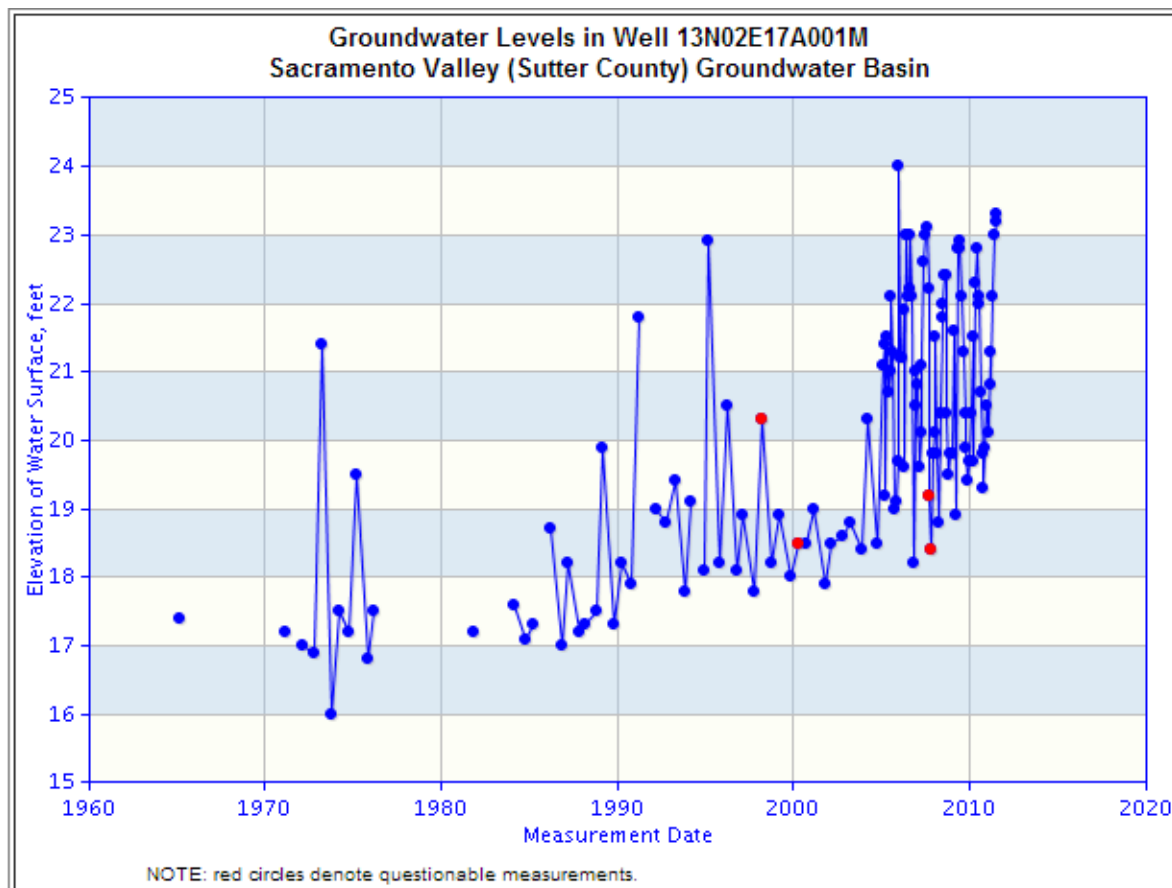
Natomas Central Mutual Water Company

State Well ID 11N04E09D002M



Source: DWR's Water Data Library

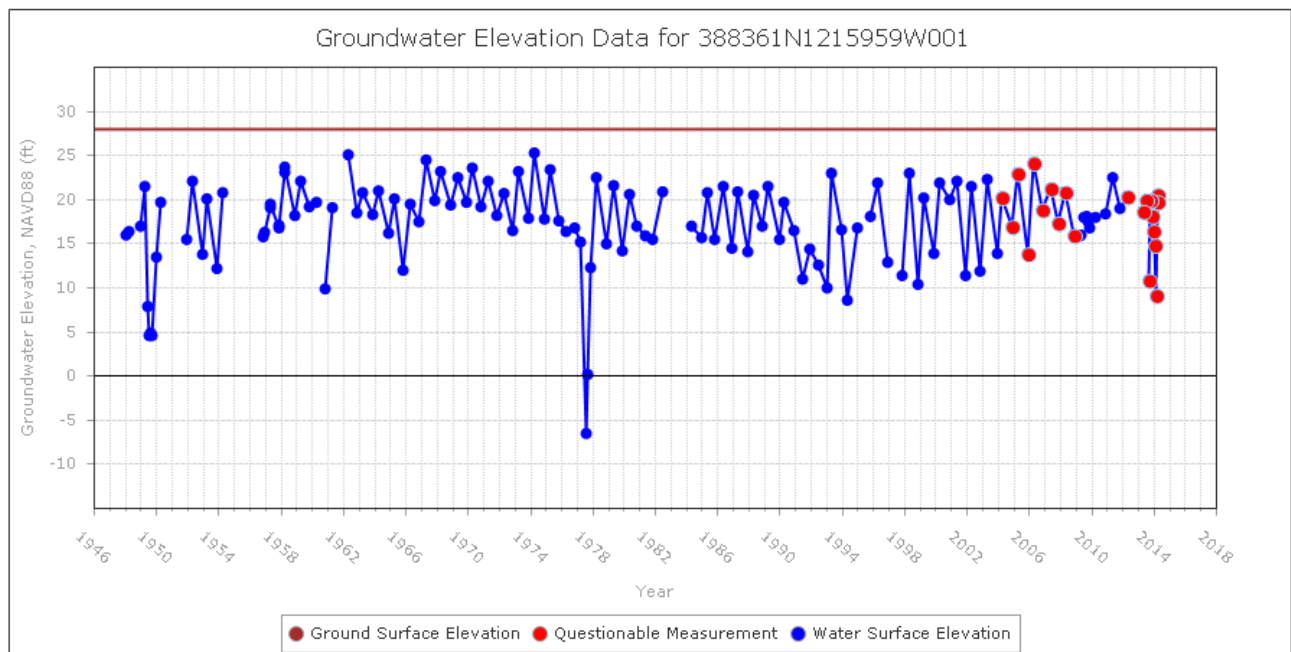
Pelger Mutual Water Company
State Well ID 13N02E17A001M



Source: DWR's Water Data Library

Pleasant Grove-Verona Mutual Water Company

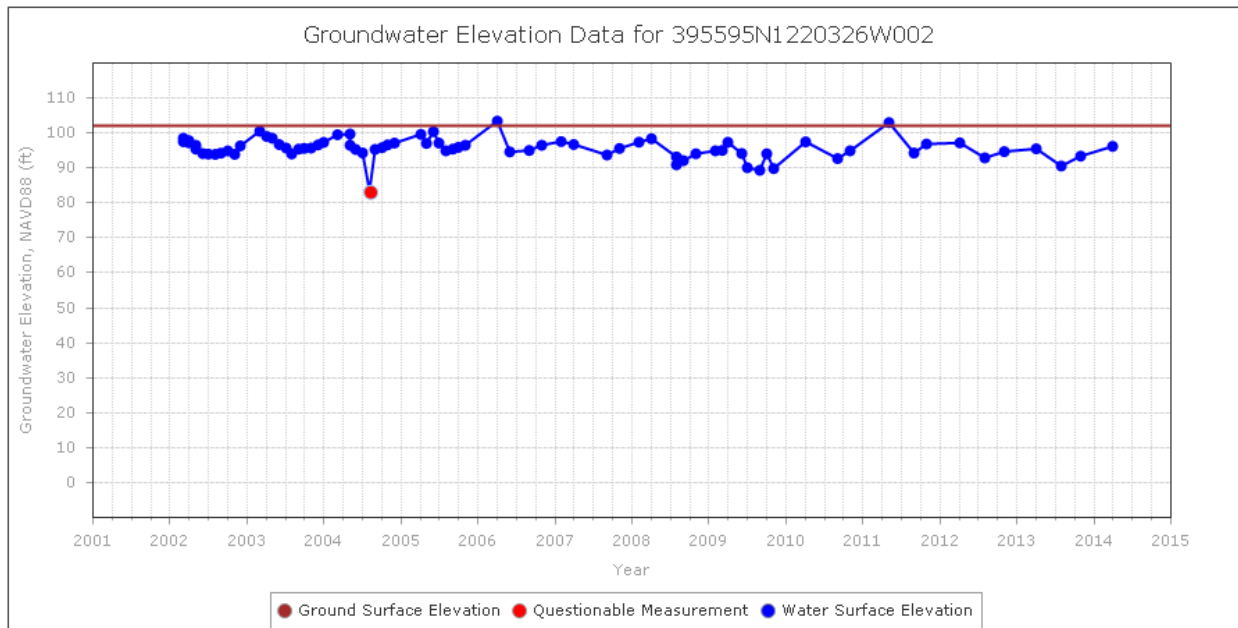
State Well ID 11N03E01D001M



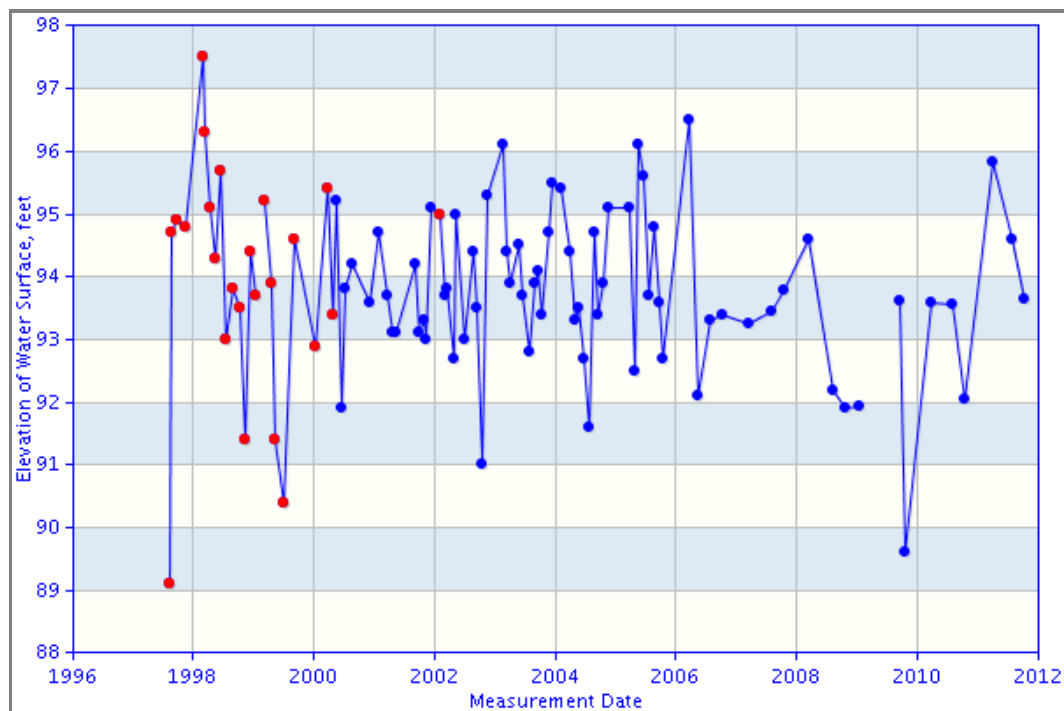
Source: DWR's CASGEM website.

Note: Well number in the title of the figure is the CASGEM Well Number.

Princeton-Codora-Glenn Irrigation District and Provident Irrigation District
State Well ID 20N02W25F002M



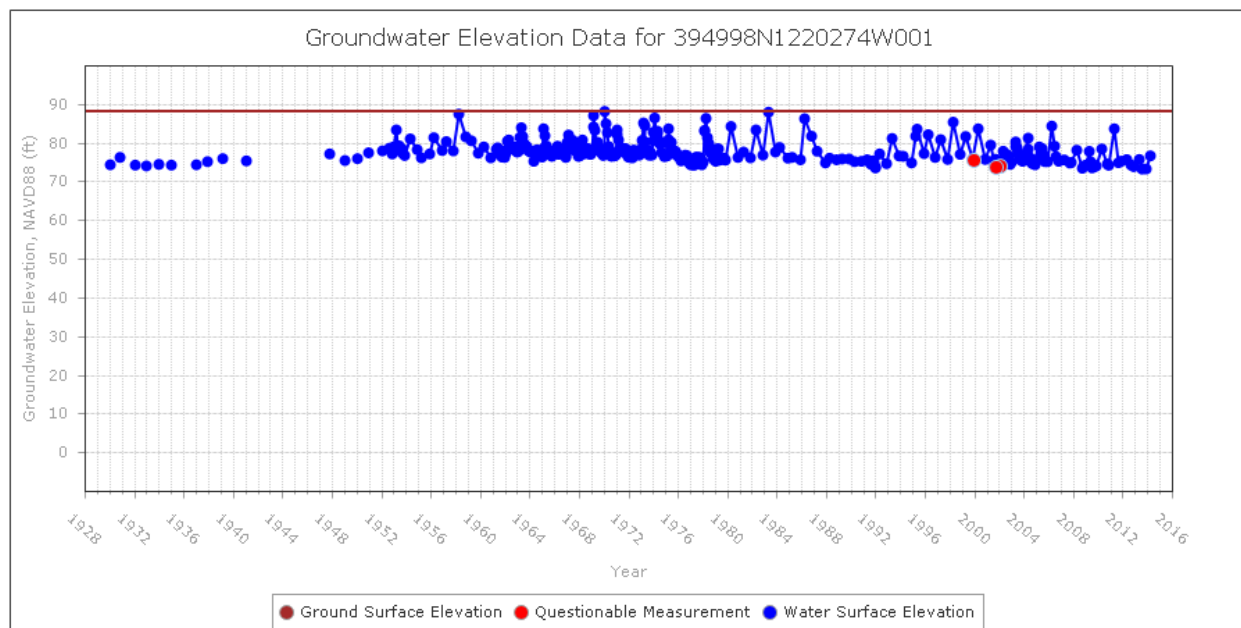
State Well ID 20N02W34J001M



Source: DWR's Water Data Library

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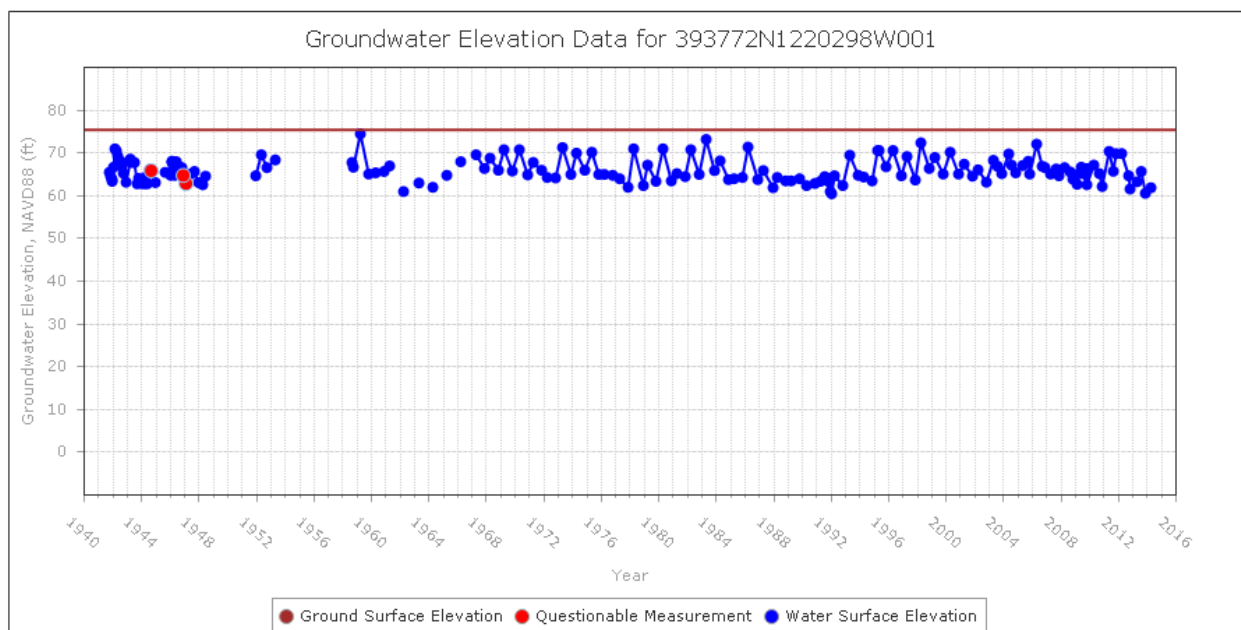
State Well ID 19N02W13J001M



Source: DWR's CASGEM website.

Note: Well number in the title of the figure is the CASGEM Well Number.

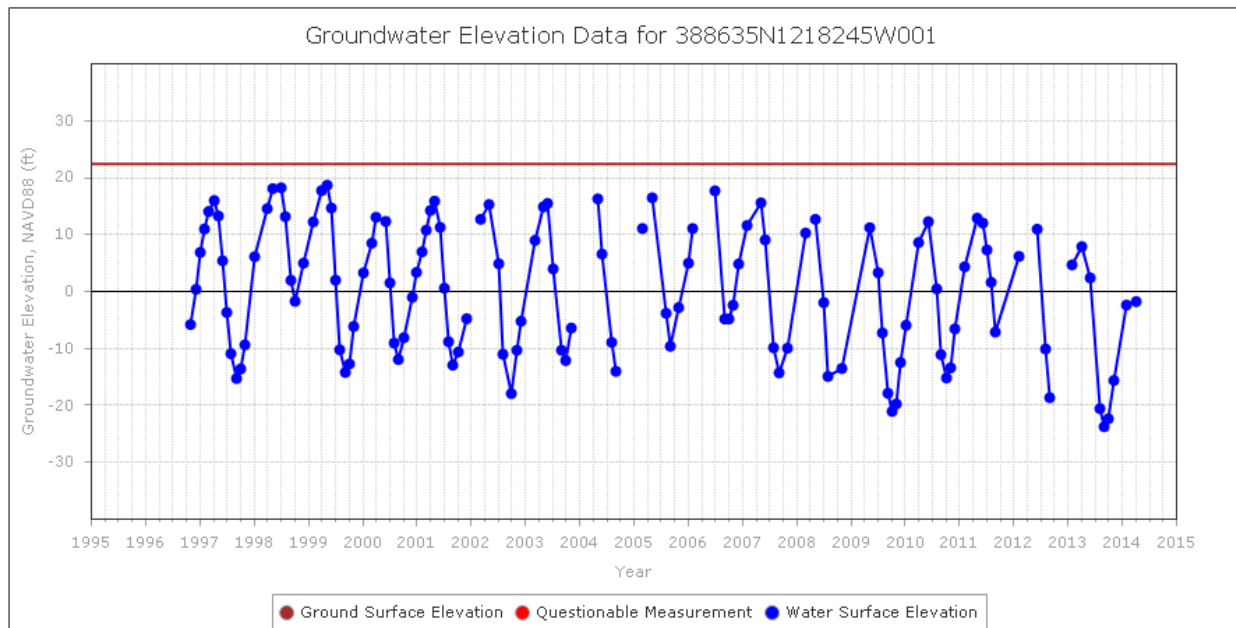
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Source: DWR's CASGEM website.

Note: Well number in the title of the figure is the CASGEM Well Number.

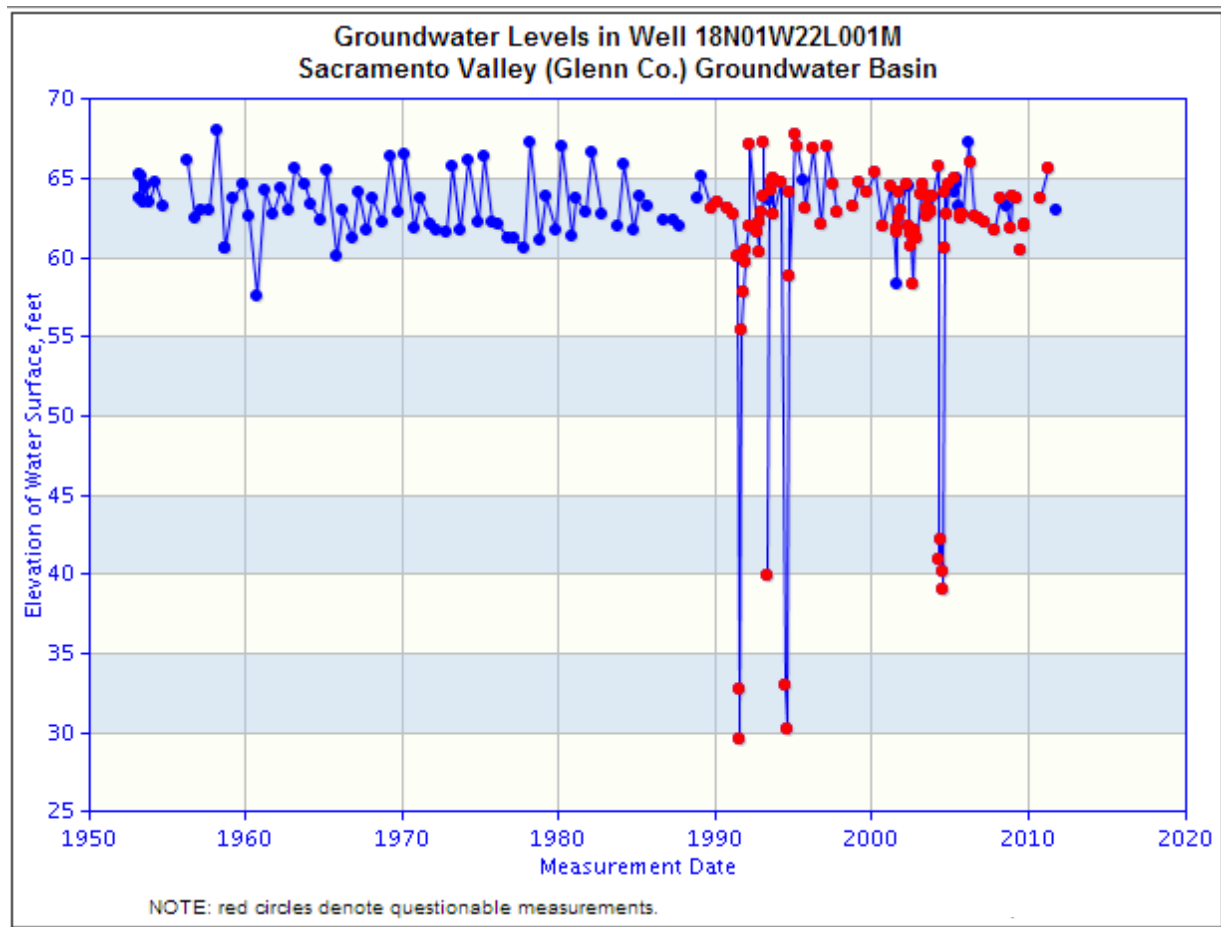
Reclamation District 108
State Well ID 12N01E26A001M



Source: DWR's CASGEM website.

Note: Well number in the title of the figure is the CASGEM Well Number.

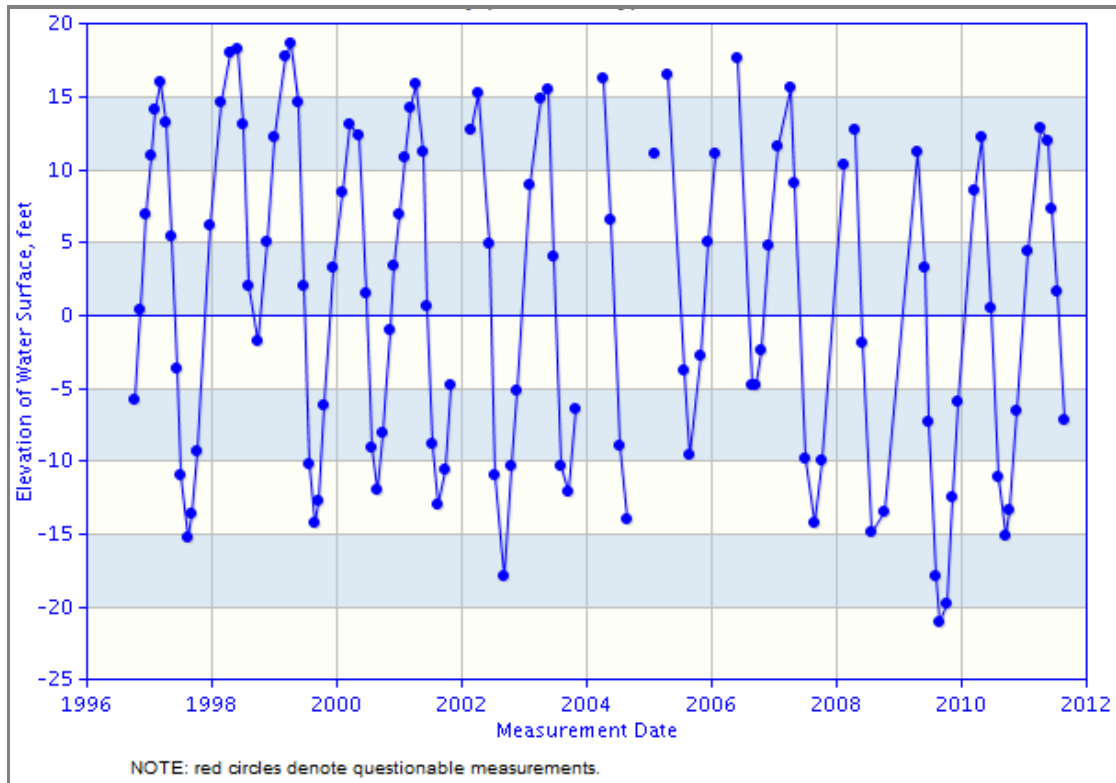
Reclamation District 1004
State Well ID 18N01W22L001M



Source: DWR's Water Data Library

River Garden Farms

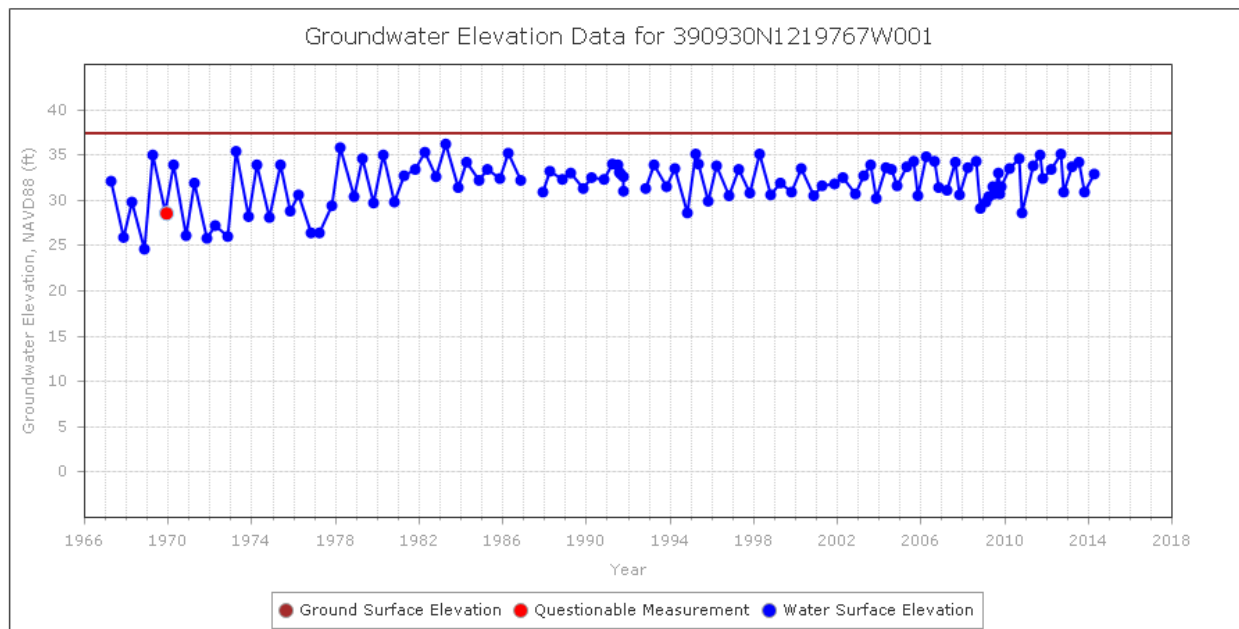
State Well ID 12N01E26A001M



Source: DWR's Water Data Library

Sycamore Mutual Water Company

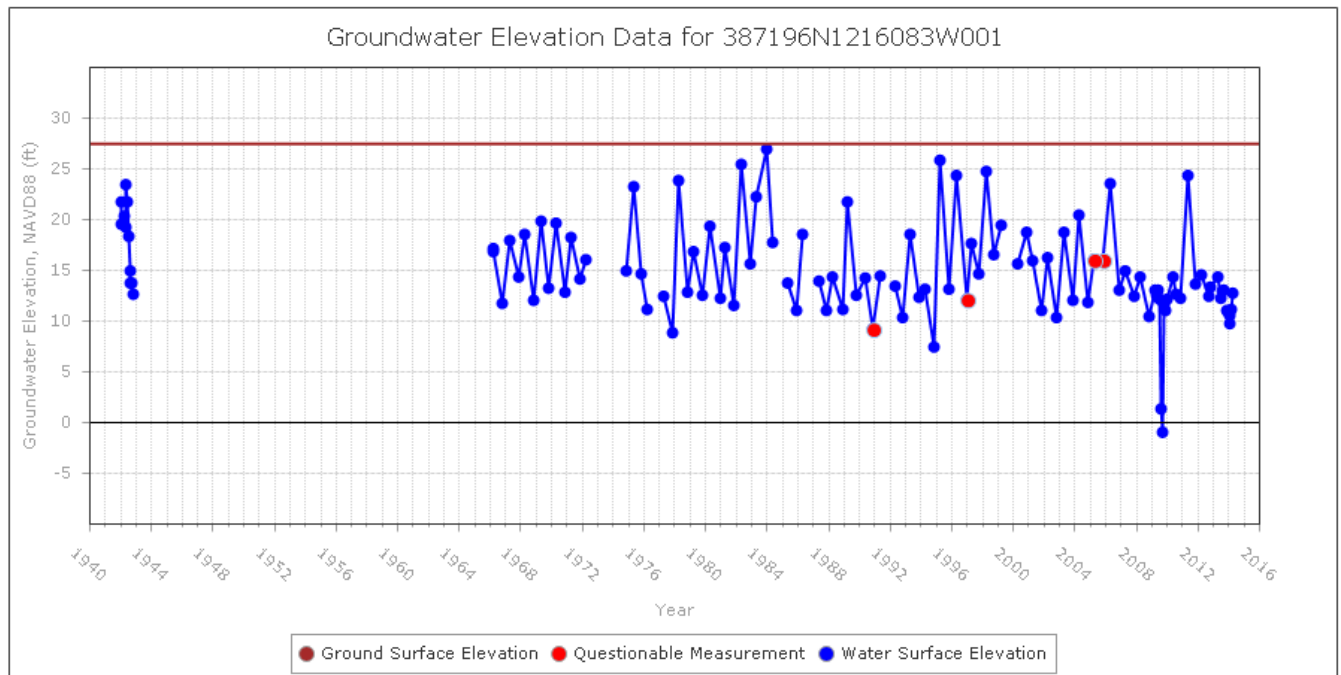
State Well ID 14N01W04K003M



Source: DWR's CASGEM website.

Note: Well number in the title of the figure is the CASGEM Well Number.

Te Velde Revocable Family Trust
State Well ID 10N03E14C001M



Source: DWR's CASGEM website.

Note: Well number in the title of the figure is the CASGEM Well Number.

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