First Periodic Evaluation

Groundwater Sustainability Plan for the Las Posas Valley Basin

DECEMBER 2024

Prepared for:

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AF	acre-feet
AFY	acre-feet per year
AMI	automated metering infrastructure
ASR	Aquifer Storage and Recovery
CMWD	Calleguas Municipal Water District
CWD	Camrosa Water District
DWR	California Department of Water Resources
EBB	Extraction Barrier and Brackish water treatment project
ELP	East Las Posas – the geographic area that encompasses both the East Las Posas Management Area and the Epworth Gravels Management Area
ELPMA	East Las Posas Management Area
ET	evapotranspiration
FCA	Fox Canyon Aquifer
FCGMA	Fox Canyon Groundwater Management Agency
Forebay Management Area	Forebay Management Area of the Oxnard Subbasin
GCA	Grimes Canyon Aquifer
GDE	groundwater-dependent ecosystem
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
InSAR	Interferometric Synthetic Aperture Radar
Judgment	Judgment in Las Posas Valley Water Rights Coalition, et al., v. Fox Canyon Groundwater Management Agency
LAS	Lower Aquifer System
LPVB	Las Posas Valley Basin
mg/L	milligrams per liter
MWD	Metropolitan Water District of Southern California
MWTP	Moorpark Wastewater Treatment Plant
NNP	No New Projects
PAC	Policy Advisory Committee
PVB	Pleasant Valley Basin
SGMA	Sustainable Groundwater Management Act
SMC	sustainable management criteria
SVWQCP	Simi Valley Water Quality Control Plant
TAC	Technical Advisory Committee
TDS	Total Dissolved Solids
UAS	Upper Aquifer System
UWCD	United Water Conservation District
USP	Upper San Pedro Formation
VCWWD	Ventura County Waterworks District
VCWPD	Ventura County Watershed Protection District

Acronym/Abbreviation	Definition
VRGWFM	Ventura Regional Groundwater Flow Model
WLPMA	West Las Posas Management Area
ZMWC	Zone Mutual Water Company

Executive Summary

The Fox Canyon Groundwater Management Agency (FCGMA), the Groundwater Sustainability Agency (GSA) for the portions of the Las Posas Valley Basin (LPVB) within its jurisdictional boundaries, and Watermaster for the entire LPVB, has prepared this first Periodic Evaluation of the LPVB Groundwater Sustainability Plan (GSP) in coordination with the Camrosa Water District-Las Posas Basin GSA and the Las Posas Basin Outlying Areas GSA (County of Ventura) and in compliance with the 2014 Sustainable Groundwater Management Act (SGMA) (California Water Code, Section 10720 et seq.)[1]. This first Periodic Evaluation of the GSP evaluates impacts of climate, water usage trends, and groundwater management decisions on groundwater conditions in the LPVB between water year 2015[2], the last water year reported in the GSP, and water year 2024.

The GSP was submitted to the Department of Water Resources (DWR) on January 13, 2020, and was approved by DWR on January 13, 2022. DWR's approval of the GSP included five recommended corrective actions, which FCGMA has worked to address over the past three years (Table ES-1, Recommended Corrective Actions and Corresponding FCGMA Activities).

Table ES-1. Recommended Corrective Actions and Corresponding FCGMA Activities

NO.	Summary of Recommended Corrective Action	Activities completed by FCGMA			Discussion of FCGMA Responses
		Technical Analysis or Study	New Project	Updated Monitoring Network	
1	Investigate the connectivity between surface water and groundwater in the ELPMA	✓	✓	✓	Section 2.7.1 and Appendix A
2	Discuss the impact of loss of storage on beneficial uses and users	✓			Section 2.3.1
3	Incorporate periodic land subsidence monitoring into the GSP's monitoring plan			✓	Sections 2.6.1 and 6.3
4	Elaborate on the use of groundwater levels as a proxy for degraded water quality	✓			Section 2.5.1
5	Develop an additional project or management action to ensure sustainability by 2040		✓		Section 3.1.1.1.4

Additionally, the FCGMA has been working to fill data gaps identified in the GSP, implement projects and management actions, and address legal actions taken in the LPVB. In particular, since the GSP was adopted, FCGMA has been focused on the action taken to adjudicate all groundwater rights in the LPVB (Las Posas Valley Water Rights Coalition, et al. v. Fox Canyon Groundwater Management Agency, Santa Barbara Sup. Ct. Case No. VENC100509700). The Santa Barbara Superior Court entered a statement of decision adopting a judgement

1 The GSAs that overlie the Las Posas Valley Basin have not been modified since the GSP was submitted.

2 A water year begins October 1 and ends September 30 to reflect the precipitation patterns in California. Under DWR's definition of a water year, water year 2024 began October 1, 2023 and ended September 30, 2024. Under the Judgment adopted in the LPVB adjudication (Las Posas Valley Water Rights Coalition, et al. v. Fox Canyon Groundwater Management Agency, Santa Barbara Sup. Ct. Case No. VENC100509700) water year 2024 begins on October 1, 2024 and will end on September 30, 2025. This document adopts DWR's naming convention for a water year. If reference is made to the Judgement definition of the water year, it will be referred to as "the Judgement defined water year."

(Judgment) that adjudicates groundwater rights, implements a physical solution, and appoints FCGMA as the Watermaster for the LPVB on July 10, 2023. In its role as the Watermaster, FCGMA has worked to implement the new administrative, fiscal, reporting, and stakeholder processes outlined in the Judgment, while simultaneously implementing the GSP. Because the Judgment is still being implemented and subject to appellate court review, its effect on FCGMA's implementation of the LPVB GSP and sustainable management of the LPVB is uncertain.

In its role as the Watermaster for the LPVB, FCGMA will continue to coordinate with other local agencies and interested parties in the LPVB and the adjacent Pleasant Valley Basin (PVB) and Oxnard Subbasin to implement the GSP and the Judgment. Agencies and interested parties were engaged during the development of this first Periodic Evaluation through project development meetings, targeted workshops, and monthly FCGMA Board meetings. Feedback and suggestions solicited during these meetings have shaped the interpretations and recommendations presented in this document.

Current Groundwater Conditions

There are three hydrogeologically distinct management areas and four principal aquifers in the LPVB (FCGMA 2019). The management areas are the West Las Posas Management Area (WLPMA), the East Las Posas Management Area (ELPMA), and the Epworth Gravels Management Area. The principal aquifers are the Shallow Alluvial aquifer, the Epworth Gravels aquifer, the Fox Canyon aquifer (FCA), and the Grimes Canyon aquifer (GCA) (FCGMA 2019). The FCA and GCA are present in both the WLPMA and ELPMA, although hydrogeologic communication between the two management areas is limited by the Somis Fault. The Shallow Alluvial aquifer is only present in the East Las Posas Management Area (ELMPA), constrained to an area adjacent to Arroyo Simi–Las Posas. The Epworth Gravels aquifer is located geographically within the ELPMA, near Broadway Road, however it is hydrologically disconnected from the underlying FCA and, therefore, is defined as its own management area. This first Periodic Evaluation of the GSP evaluates the impacts of climate, water usage, and groundwater management decisions on groundwater conditions in the WLPMA, ELPMA, and Epworth Gravels Management Area between water year 2015[3], the last water year reported in the GSP, and water year 2024.

Groundwater elevations in the WLPMA reflect the influences of groundwater recharge and groundwater production between water year 2015 and water year 2024. There is a persistent pumping depression in the southeastern WLPMA. Groundwater elevations in this area were lower in water year 2024 than they were in water year 2015. These groundwater elevations reflect the ongoing groundwater production in this area with limited recharge. In contrast, groundwater elevations in the FCA to the west and north of the pumping depression in the WLPMA were higher in water year 2024 than they were in water year 2015. This area of the WLPMA receives recharge United Water Conservation District's (UWCD) groundwater recharge operations in the Oxnard Subbasin, and groundwater elevation changes reflect the recent water years in which UWCD has been able to divert higher volumes of water from the Santa Clara River for recharge in the Oxnard Forebay. In contrast,

Groundwater elevations in the ELPMA reflect the influences of surface water recharge from Arroyo Simi-Las Posas, Calleguas Municipal Water District (CMWD) aquifer storage and recovery (ASR) operations, and groundwater production. Between water year 2015 and water year 2024 groundwater elevations in the Shallow Alluvial aquifer, which are primarily influenced by flow in Arroyo Simi-Las Posas, were stable at the upstream wells in the ELPMA and increased by 1 to 6 feet in the downstream wells. Over the same time period, groundwater elevations in the northern and eastern portions of the FCA generally declined as a result of groundwater production in areas of limited

[3] A water year begins October 1 and ends September 30 to reflect the precipitation patterns in California. Under DWR's definition of a water year, water year 2024 began October 1, 2023 and ended September 30, 2024.

groundwater recharge. Groundwater elevations in central ELPMA near the CMWD ASR well field, and in the western ELPMA were stable, or increased, between 2015 and 2024, reflecting the CMWD recharge operations, and reduced spring agricultural demand in an area of the ELPMA that is influenced by recharge from Arroyo Simi-Las Posas. The groundwater elevation in the GCA remains a data gap that requires filling. The only key well screened in the GCA did not have sufficient measurements to evaluate the change in groundwater elevation between water year 2015 and water year 2024. CMWD installed additional monitoring wells in the LPVB, since the GSP was prepared, including one screened in the GCA. These wells will provide data to fill some of the data gaps identified in the GSP. However, groundwater elevations in the GCA remain an area of uncertainty in the LPVB.

Groundwater elevations in the Epworth Gravels Management Area were higher in 2024 than they were in 2015, reflecting the combined influences of reduced groundwater production and increased precipitation in water years 2023 and 2024.

Relationship to the Sustainable Management Criteria

The GSP established minimum threshold and measurable objective groundwater elevations at 5 representative monitoring points, or “key wells”, in the WLPMA, 15 key wells in the ELPMA, and 1 key well in the Epworth Gravels Management Area. As noted in the GSP, groundwater elevations below the minimum thresholds are likely to cause undesirable results. In 2015, groundwater elevations were above the minimum thresholds at 4 of the 5 key wells in the WLPMA, all of the key wells in the ELPMA, and the only key well in the Epworth Gravels Management Area (FCGMA 2019). Groundwater elevations in the fall of 2023 were below the minimum thresholds at 2 of the 5 key wells measured in the WLPMA. However, in the spring of 2024, groundwater elevations were above the minimum thresholds at all of the key wells measured in the WLPMA, ELPMA, and Epworth Gravels Management Area.

The eastern portion of the WLPMA was the only portion of the LPVB to experience undesirable results between 2015 and 2024. In this area, fall groundwater elevations were consistently below the minimum threshold between water year 2019 and water year 2024 at one key well. The prolonged period of minimum threshold exceedances at a single well was identified as an undesirable result in the GSP (FCGMA 2019). Projects currently being evaluated as part of the Judgment will need to address the groundwater elevation declines in the eastern portion of the WLPMA in order to avoid future undesirable results.

Water Supplies in the LPVB

Water supplies in the LPVB consist of imported water, recycled water, and groundwater (Table ES-2, Historical and Current Water Supplies in the Las Posas Valley Basin). Total water supplies since 2015 (2016-2022) were approximately 4% higher than the historical average, largely due to an increase in groundwater production in the ELPMA and WLPMA and additional deliveries of recycled water. Additional groundwater production increases are currently planned for the LPVB under the Judgment as long as sufficient projects are developed to increase the sustainable yield and avoid undesirable results.

Table ES-2. Historical and Current Water Supplies in the Las Posas Valley Basin

Water Source		Historical Average (1985 - 2015) [Acre-Feet per Year][a]	Current Average (2016 - 2022) [Acre-Feet per Year][a]
Groundwater	WLPMA	13,980	15,730
	ELPMA	18,480	20,720

Table ES-2. Historical and Current Water Supplies in the Las Posas Valley Basin

Water Source		Historical Average (1985 - 2015) [Acre-Feet per Year][a]	Current Average (2016 - 2022) [Acre-Feet per Year][a]
	Epworth Gravels	1,290	460
Recycled Water		210	790
CMWD Imported Water		10,510	8,360
Camrosa Water District Deliveries		90	220
	Total	**44,560**	**46,280**

a Rounded to the nearest ten (10) acre-feet.

Future Groundwater Conditions

The average groundwater production in water years 2021 and 2022, the most recent water years in which complete groundwater production rates were reported to FCGMA, exceeded the upper estimate of the sustainable yield of the WLPMA of by approximately 4,000 AFY and exceeded the upper estimate of the combined sustainable yield of the ELPMA and Epworth Gravels aquifer by approximately 2,300 AFY. The average water year 2021 and 2022 groundwater production rate in the Epworth Gravels Management Area was within the estimated sustainable yield range for the Epworth Gravels aquifer. To address the groundwater production rates in excess of the sustainable yield in the WLPMA and ELPMA, FCGMA, with consultation, review, and comment from the LPVB policy advisory committee and technical advisory committee, will be evaluating a broader suite of projects and their benefits during development of a Basin Optimization Plan and Basin Optimization Yield Study mandated by the LPVB Judgment. Additionally, FCGMA will be evaluating a groundwater production "rampdown rate," as mandated by the LPVB Judgment. The rampdown rate assumes the "operating yield" of the basin is 40,000 AFY, and that decreases in groundwater production will occur linearly, over annual increments, between the year in which the rampdown begins and water year 2040[4].

Assessment of Progress Towards Sustainability

The primary sustainability goal for the LPVB is to "maintain a sufficient volume of groundwater in storage in each management area so that there is no significant and unreasonable net decline in groundwater or storage over wet and dry climatic cycles" (FCGMA 2019). Additionally, "groundwater levels in the WLPMA should be maintained at elevations that are high enough to not inhibit the ability of the Oxnard Subbasin to prevent net landward migration of the saline water impact front" in the Oxnard Subbasin after 2040 (FCGMA 2019). Groundwater elevations in the LPVB indicate that it is not currently experiencing undesirable results because spring 2024 groundwater elevation data were not available for one key well in the eastern part of the WLPMA. Groundwater elevations at this well were consistently below the minimum threshold in prior monitoring events, which, under the definitions established in the GSP, indicated that the WLPMA experienced undesirable results during the first five years of the GSP implementation. FCGMA continues to work toward long-term sustainability in the LPVB in its dual role as the GSA and Watermaster for the Basin. Since adopting the GSP, FCGMA has:

- Conducted ongoing groundwater elevation and quality monitoring.
- Implemented projects that address data gaps,

4 The Judgment defines the start of water year 2040 as October 1, 2040.

- Worked on the development, evaluation, and implementation of projects that increase water supplies and the sustainable yield of the LPVB.
- Begun to evaluate implementing a replenishment fee that could be used to purchase water for delivery in lieu of groundwater production in the WLPMA[5].

The information collected through these activities has improved groundwater condition monitoring, the hydrogeologic conceptual model of the LPVB, and the understanding of projects and management actions that are implementable and support sustainable groundwater management in the LPVB. This has resulted in improved estimates of the sustainable yield and potential improvements to the sustainable management criteria that will guide management over the next five years. The largest administrative uncertainty is related to how the LPVB Judgment will impact FCGMA's ability to implement the GSP and sustainably manage the LPVB. Over the next five-years, FCGMA will continue to work towards sustainability and will re-evaluate the impacts of climate, water usage, project implementation, and legal actions on groundwater conditions and groundwater management in the LPVB in accordance with the ongoing GSP evaluation process and adaptive management approach outlined in SGMA.

Summary of Public Comment

The FCGMA Board of Directors has prioritized outreach and engagement with interested parties throughout the GSP implementation process. In conjunction with the development of this first Periodic Evaluation, interested parties feedback was solicited at FCGMA and Watermaster Board meetings, in public workshops, and through release of a Draft Periodic Evaluation of the GSP, which was made available for review on the FCGMA website for 45 days. The Technical Advisory Committee (TAC) and Policy Advisory Committee (PAC), along with six stakeholders in the LPVB, prepared comments on the Draft Periodic Evaluation. Comment themes focused on data gaps in the monitoring network, numerical modeling, projects and management actions, and DWR's recommended corrective actions. Several of the comments made suggestions for additional work that needs to be done over the upcoming evaluation period. FCGMA recognizes and appreciates the significant contributions of the interested parties that have participated in the development of the GSP, its implementation, and this first Periodic Evaluation.

5 The work conducted to evaluate the replenishment fee has been supplanted by the fee structure imposed in the LPVB Judgment.

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1 Significant New Information

Table 1-1. Summary of New Information Since Groundwater Sustainability Plan

Significant New Information	Description	Aspects of Plan Affected	Warrant Changes to Any Aspects of the Plan
LPVB Adjudication			
Las Posas Valley Water Rights Coalition, et al., v. Fox Canyon Groundwater Management Agency	The Judgment adjudicates all groundwater rights in the LPVB, provides for the LPVB's sustainable management pursuant to SGMA, and appoints FCGMA as the Watermaster for the LPVB responsible for overseeing implementation of the Judgment.	Administrative Information	No
Basin Setting			
SVWQCP Discharges to Arroyo Simi-Las Posas	Since adoption of the GSP, the City of Simi Valley is no longer pursuing a program to increase recycled water use within their service area. As a result, FCGMA anticipates more flow in Arroyo Simi-Las Posas than previously assumed for the GSP	Future water budgets; Sustainable Yield.	No
Simi Valley dewatering well discharges	The City of Simi Valley is no longer planning to divert dewatering well discharges to a desalter for potable use.	Future water budgets; Sustainable Yield.	No
Monitoring Network Information			
Interferometric Synthetic Aperture Radar (InSAR) Data	DWR InSAR data is now available to evaluate land subsidence in the LPVB.	Monitoring Network	No
Projects and Management Actions			
Water Supply Projects			
Infrastructure Improvements to Zone Mutual Water Company's water delivery system	This project increases the capacity of ZMWC's delivery system to physically transfer water between the ELPMA and WLPMA of the LPVB by converting the existing ZMWC delivery system from gravity to pressure (FCGMA 2022).	Projects and Management Actions	No
Moorpark Groundwater Desalter	This project constructs a new groundwater desalter facility located east of the Moorpark Water Reclamation Facility to improve water quality in the southern portion of the ELPMA and provide an additional source of potable water supply to the LPVB (FCGMA 2022).	Projects and Management Actions	No
Arroyo Las Posas Storm Flow Diversions for	This project uses the stabilizer structure in the Arroyo Simi-Las Posas to divert storm flows during high flow events for recharge to	Projects and Management Actions	No

Table 1-1. Summary of New Information Since Groundwater Sustainability Plan

Significant New Information	Description	Aspects of Plan Affected	Warrant Changes to Any Aspects of the Plan
Recharge to the ELPMA	the ELPMA (FCGMA 2022). The structure is, adjacent to the Moorpark Wastewater Water Reclamation Facility operated by VCWWD-1,		
Projects to Address Data Gaps			
Installation of Additional Groundwater Monitoring Wells	This project proposes installation of multi-depth monitoring wells in the LPVB to assess groundwater conditions in the principal aquifers in the areas of the LPVB that lack data (FCGMA 2022).	Projects and Management Actions	No
Installation of Transducers in Monitoring Wells	This project proposes installation of transducers in representative monitoring points, or key wells, in the LPVB to reduce the temporal data gaps that currently exist in the record of aquifer conditions (FCGMA 2022).	Projects and Management Actions	No
Feasibility Studies			
Supplemental Water Supply Sources for the northern ELPMA	The studies will investigate the feasibility of providing supplemental water supplies to the northern area of the ELPMA where groundwater elevations have declined in excess of 250 feet, locally (FCGMA 2022).	Projects and Management Actions	No
Agency Coordination and Public Participation			
Formation of a PAC	The PAC serves as an advisory board to the LPVB Watermaster on policy-related matters of a non-technical nature. The PAC provides water rights holders with a voice and representation on policy matters in the LPVB.	Public Participation	No
Formation of a TAC	The TAC serves as an advisory board to the LPVB Watermaster on technical matters relating to groundwater management and sustainability of the LPVB.	Public Participation	No

2 Current Groundwater Conditions

2.1 Background

The Las Posas Valley Basin (DWR Bulletin 118 Groundwater Basin 4-008) is an alluvial groundwater basin, underlying the Las Posas Valley in Ventura County, California (Figure 2-1, Vicinity Map for the Las Posas Valley Basin). The Las Posas Valley Basin (LPVB) is divided into three management areas: the West Las Posas Management Area (WLPMA), the East Las Posas Management Area (ELPMA), and the Epworth Gravels Management Area (FCGMA 2019). The WLPMA and ELPMA are separated from each other by the Somis Fault, which limits the flow of groundwater across it. The Epworth Gravels Management Area is separated from the underlying ELPMA by low permeability sediments of the Upper San Pedro Formation (USP).

The WLPMA is in hydrologic communication with the Oxnard Subbasin to the west, and the Pleasant Valley Basin (PVB) to the south at Somis Gap. The boundary between the WLPMA and the Oxnard Subbasin is a jurisdictional boundary that follows parcel lines. The boundary between the WLPMA and the PVB is defined by the Springville – Simi - Santa Rosa fault zone. The ELPMA is connected to the PVB to the south via the Shallow Alluvial aquifer and Fox Canyon aquifer (FCA) along Arroyo Las Posas. The northern, southern, and eastern boundaries of the LPVB are delineated by the contact between the alluvial deposits and surface exposures of bedrock uplifted through regional faulting and folding associated with compressional forces along the western bend in the San Andreas Fault (FCGMA 2019).

There are four principal aquifers in the LPVB: the Shallow Alluvial aquifer in the ELPMA, the Epworth Gravels aquifer in the Epworth Gravels Management Area, the FCA in both the ELPMA and WLPMA, and the Grimes Canyon aquifer (GCA) in both the ELPMA and WLPMA (FCGMA 2019).

The primary sustainability goal for LPVB established in the Groundwater Sustainability Plan (GSP) is "to maintain a sufficient volume of groundwater in storage in each management area so that there is no significant and unreasonable decline in groundwater elevation or storage over wet and dry climatic cycles" (FCGMA 2019). Additionally, because the WLPMA is in hydraulic communication with the Oxnard Subbasin, the GSP established that "groundwater levels in the WLPMA should be maintained at elevations that are high enough to not inhibit the ability of the Oxnard Subbasin to prevent net landward migration of the saline water impact front after 2040.[6]" The criterion used to define undesirable results for chronic lowering of groundwater levels in the eastern part of the WLPMA is groundwater levels that indicate a long-term decline over periods of drought and recovery (FCGMA 2019).

Groundwater elevation minimum thresholds and measurable objectives were established at representative monitoring points, herein referred to as "key wells," in each management area of the LPVB (Figure 2-2, Representative Monitoring Points in the LPVB). In the WLPMA, minimum threshold groundwater elevations were selected to meet the sustainability goal of not inhibiting the ability of the Oxnard Subbasin to prevent net landward migration of the saline water impact front. In the ELPMA, the minimum threshold water levels were selected to limit reduction in storage to less than 20%, relative to the estimated 2015 groundwater storage volume, in areas of the ELPMA where the FCA may convert from being confined to unconfined. In areas where conversion of the FCA from

[6] Sources of water high in chloride in the Oxnard Subbasin include modern seawater as well as brines and connate water in fine-grained sediments and formations that underlie the subbasin. Therefore, the area of the Oxnard Subbasin impacted by concentrations of chloride greater than 500 milligrams per liter is referred to as the "saline water impact area," rather than the "seawater intrusion impact area," to reflect all the potential sources of chloride to the aquifers in this area.

confined to unconfined is not likely to occur, the minimum threshold water levels were selected based on the historical low water levels (FCGMA 2019). The minimum threshold groundwater level in the Epworth Gravels Management Area was selected as the groundwater level that limits reduction in storage to less than 20% relative to the estimated 2015 groundwater storage volume. The measurable objective water levels in all three management areas of the LPVB are at least 20 feet higher than the minimum threshold groundwater levels to allow for operational flexibility (FCGMA 2019).

At the time the GSP was prepared, the groundwater elevations were below the minimum threshold groundwater elevations in four of the five key wells in WLPMA, the only key well in the Epworth Gravels Management Area, and one well in the ELPMA. Therefore, the GSP established interim milestone groundwater elevations for these wells (FCGMA 2019). Groundwater elevations are compared to the interim milestones for these wells in the following sections.

The groundwater elevation minimum thresholds and measurable objectives selected to meet the sustainability goal for the LPVB were used as a proxy for all other applicable sustainability indicators in the GSP (FCGMA 2019). These groundwater elevations are higher than or equal to the historical low groundwater elevations. Therefore, the minimum thresholds and measurable objective water levels will prevent chronic lowering of groundwater levels, significant and unreasonable reduction of groundwater storage, degraded water quality as a result of groundwater production, and land subsidence related to groundwater production (FCGMA 2019). Depletions of interconnected surface water that result in a significant and unreasonable loss of groundwater-dependent ecosystem (GDE) habitat, have not occurred within the LPVB because the potential GDEs in the ELPMA are supported by surface water discharges of treated wastewater and dewatering well water that occur upstream of the eastern boundary of the LPVB (FCGMA 2019). Although the Shallow Alluvial aquifer in the ELPMA is considered to be a principal aquifer, groundwater production in the ELPMA primarily occurs in the FCA and GCA (FCGMA 2019). The GSP found that "changes in groundwater elevation in the Shallow Alluvial Aquifer related to decreased surface water flows cannot be mitigated by management actions related to groundwater pumping" (FCGMA 2019).

2.1.1 Department of Water Resources Recommended Corrective Actions

DWR's assessment and approval of the GSP included five "recommended corrective actions" that should be considered for the first periodic GSP evaluation. These recommended corrective actions and the applicable sustainability indicators are:

RECOMMENDED CORRECTIVE ACTION 1

Investigate the hydraulic connectivity of the Arroyo Simi-Las Posas, shallow aquifers, and principal aquifer to understand the reliance of the potential GDEs on the native flow and the depletion of interconnected surface water bodies. Also, identify specific locations where Arroyo Simi-Las Posas is connected to the underlying aquifer and conduct necessary investigation to quantify the depletion of interconnected surface water along with the timing of depletions.

Provide a schedule detailing when and how the data gaps identified in the GSP related to shallow groundwater monitoring near surface water bodies will be fulfilled and confirm the identification of potential GDEs.

Recommended corrective action 1 applies to depletions of interconnected surface water.

RECOMMENDED CORRECTIVE ACTION 2

Discuss the potential effects of the minimum thresholds and measurable objectives on beneficial uses and users of groundwater, particularly in the areas where groundwater levels will be maintained below 2015 and historical low levels. Provide an evaluation of the groundwater level and storage conditions when the groundwater storage loss will be 20% compared to 2015 conditions in the ELPMA and the Epworth Gravels Management Area, and, based on the result of the evaluation, discuss the effects of such conditions on beneficial users and users.

Recommended corrective action 2 applies to groundwater levels and groundwater in storage.

RECOMMENDED CORRECTIVE ACTION 3

By the first periodic evaluation of the GSP, the Agency should further describe efforts to evaluate the connection between groundwater production and groundwater quality, including the monitoring the Agency is conducting and any progress made toward evaluation of the causal relationship referenced in the GSP. The Agency should document specific details of the processes they will use to determine if groundwater management and extraction are causing adverse impacts to groundwater quality. This should include coordination with all interested parties, beneficial users of groundwater, water quality regulatory agencies, and water quality program administrators within the Basin.

Recommended corrective action 3 applies to water quality.

RECOMMENDED CORRECTIVE ACTION 4

Include periodic subsidence monitoring into the GSP to demonstrate that groundwater levels are appropriate to use as a proxy. Provide a technical basis that supports the Agency's decision of setting the minimum threshold for groundwater level below the historical low in some areas of the Basin and how that minimum threshold will avoid undesirable results related to land subsidence. Additionally, describe the potential impacts of land subsidence on beneficial uses and users of groundwater and the potential for land subsidence to impact critical infrastructure, especially for the area where the minimum threshold groundwater levels are lower than the historical low.

Recommended corrective action 4 applies to land subsidence.

RECOMMENDED CORRECTIVE ACTION 5

Develop and provide a new project or a management action as a contingency plan to include in the GSP. This alternate project or management action should address how the Basin intends to achieve its sustainability goal in the event that imported water is unavailable to use in lieu of groundwater production in the WLPMA, or if any of the project or management action included in the GSP is unable to produce expected benefit. Additionally, the project or management action provided should be developed so that it is ready to be implemented with the 20-year SGMA [Sustainable Groundwater Management Act] timeline.

Recommended corrective action 5 does not apply to a specific sustainability indicator, but is addressed in Section 3.1.1, Management Actions. Additionally, new projects that will be evaluated over the next five years are summarized in Section 3.2, Newly Identified Projects and Management Actions.

2.1.2 Chapter 2 Structure

The following sections discuss the current groundwater conditions related to each of the sustainability indicators in the LPVB. The groundwater levels relative to the SMC are discussed in Section 2.2, Groundwater Levels, along with a discussion of undesirable results related to groundwater levels, DWR recommended corrective actions related to groundwater levels, and progress toward achieving sustainability. Sections 2.3, Groundwater in Storage, through 2.7, Groundwater-Surface Water Connections, focus on the undesirable results, DWR recommended corrective actions, and the progress toward achieving sustainability for each sustainability indicator because the groundwater levels relative to the SMCs are discussed in Section 2.2, Groundwater Levels.

Changes to the SMC, if recommended, are discussed relative to each sustainability indicator.

2.2 Groundwater Levels

This section summarizes current (i.e., water year 2024) groundwater elevations in the LPVB as well as their relation to the SMCs, groundwater elevations measured at the start of the evaluation period (i.e., water year 2020), and groundwater elevations measured at the end of the GSP reporting period (i.e., calendar year 2015)[7]. Groundwater production, climate cycles, non-native surface water flows in Arroyo Simi–Las Posas, groundwater storage, and surface water delivery programs all influence groundwater levels in the LPVB (FCGMA 2019). Since 2015, the LPVB received an average of 15.6 inches of precipitation per water year, which is similar to the long-term (1956 through 2023) average precipitation of 15.3 inches per water year (FCGMA 2024a). Water years 2016, 2018, 2021, and 2022 were all below normal[8], dry, or critically dry water years as characterized in the GSP (FCGMA 2019; FCGMA 2024a). Water years 2017, 2019, 2020, and 2023 were all above normal or wet water years (FCGMA 2024a). Water-year precipitation exerts the strongest influence on groundwater levels in the western WLPMA, because UWCD is able to operate the Freeman Diversion and groundwater recharge basins in years when precipitation translates to surface flows in the Santa Clara River. In contrast, groundwater levels in the ELPMA are largely unaffected by climate cycles (FCGMA 2019).

Water year groundwater elevations are characterized using seasonal low and seasonal high measurements. Seasonal low groundwater elevations are characterized using measurements collected between October 2 and October 29 and seasonal high groundwater elevations are characterized using measurements collected between March 2 and March 29. In fall 2023, groundwater elevations were measured in 17 of the 21 key wells established in the GSP (Figure 2-3, Fall 2023 Water Levels Relative to the SMCs). In spring 2024, groundwater elevations were measured in 16 of the 21 key wells (Figure 2-4, Spring 2024 Water Levels Relative to the SMCs).

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7 For this periodic evaluation, water year is defined as the period from October 1 of the previous calendar year through September 30 of the current calendar year. For example, water year 2024 is defined as the period from October 1, 2023, through September 30, 2024.

8 Water years have been classified into five types based on their relationship to the mean water year precipitation. The five types are: critical, dry, below normal, above normal, and wet. Critical water years are < 50% of the mean annual precipitation. Dry water years are ≥ 50% and <75% of the mean annual precipitation. Below normal water years are ≥ 75% and <100% of the mean annual precipitation. Above normal water years are ≥ 100% and <150% of the mean annual precipitation. Wet water years are ≥ 150% of the mean annual precipitation.

2.2.1 Department of Water Resources Recommended Corrective Actions

DWR issued a recommended corrective action related to groundwater levels and storage (DWR 2022). This recommended corrective action states:

> Discuss the potential effects of the minimum thresholds and measurable objectives on beneficial uses and users of groundwater, particularly in the areas where groundwater levels will be maintained below 2015 and historical low levels. Provide an evaluation of the groundwater level and storage conditions when the groundwater storage loss will be 20 percent compared to 2015 conditions in the ELPMA and the Epworth Gravels Management Area, and, based on the result of the evaluation, discuss the effects of such conditions on beneficial users and users.

The following subsections discuss how this recommended corrective action was addressed since it was issued in 2022.

2.2.1.1 West Las Posas Management Area

In the WLPMA, the minimum thresholds and measurable objectives for the key wells are all above the 2015 and historical low groundwater elevations. As discussed in the GSP, the beneficial uses of groundwater in the WLPMA are anticipated to improve with these minimum thresholds and measurable objectives because they will prevent chronic lowering of groundwater levels and work in concert with the selected minimum thresholds and measurable objectives in the adjacent Oxnard Subbasin to limit further seawater intrusion into the coastal aquifers in that basin. The minimum thresholds and measurable objectives may impact beneficial users of groundwater in the WLPMA if additional projects are not developed for the region because users may be forced to reduce groundwater production in order to maintain groundwater elevations above the minimum thresholds. However, since the GSP was adopted, groundwater use in the LPVB has undergone adjudication. FCGMA, as Watermaster for the LPVB, is working in consultation with the LPVB PAC and TAC to develop projects to minimize future pumping reductions while maintaining groundwater elevations above the minimum thresholds.

2.2.1.2 East Las Posas Management Area

In the ELPMA, groundwater elevation declines cause differential impacts depending on location within the management area. These impacts are expected to be greatest in parts of the ELPMA where groundwater in the FCA occurs under unconfined conditions or may convert from confined to unconfined conditions. In order to limit the area of the FCA that would convert from confined to unconfined conditions with declining water levels, the undesirable result associated with water level declines and loss of storage was defined as localized loss of storage in excess of 20% of the estimated 2015 groundwater storage (FCGMA 2019). The areas of the ELPMA prone to conversion from confined to unconfined conditions are on the northern and southern margins of the management area, and in the vicinity of the Moorpark anticline in the central portion of the management area (FCGMA 2019).

FCGMA reviewed well screen intervals and groundwater production in areas of the ELPMA that are prone to conversion from confined to unconfined conditions. There are 22 wells in this area. Of these, 10 are CMWD ASR wells and one is operated for municipal and industrial supply. The remaining wells are agricultural wells and are not domestic or de minimis wells that produce less than 2 acre-feet per year (AFY).

Groundwater elevation declines to the minimum threshold would result in projected groundwater elevations that are below the top of the well screen in four agricultural wells, two CMWD ASR wells, and one municipal well (Table 2-1, Wells in the Area of the ELPMA Subject to Conversion of the FCA from Confined to Unconfined Conditions). Projections suggest that groundwater decline to the minimum threshold would expose greater than 50% of the well screens in one well – this well is designated as an agricultural well but was not operated during the 2016 to 2022 period. None of the wells located within the areas subject to conversion from confined to unconfined are expected to go dry (Table 2-1).

Between 2015 and 2022, the average groundwater production from the one municipal well in which groundwater elevations would fall below the top of the screen was approximately 600 AFY. Only one of the four agricultural wells in which groundwater elevations would fall below the top of the screen was operated between 2015 and 2022. During this period, groundwater production from this well averaged approximately 90 AFY. The GSP estimated the sustainable yield of the ELPMA to be between 15,500 and 20,100 AFY. Therefore, loss of production from these two wells at the minimum threshold groundwater elevations represents a loss of between 3% and 4% of the total production from the management area. However, it should be noted that for both wells, groundwater elevations are projected to be within 2 to 3 feet of the top of the well screen, which is within the uncertainty of this projection analysis.

At CMWD's ASR wells, groundwater elevations are projected to drop below the top of the screens at wells 03N19W31M03S and 03N12W28N03S. At these wells, groundwater elevations may occur approximately 50 to 80 feet below the top of the well screens, leaving between 75% and 85% of the well screen at each well saturated.

Table 2-1. Wells in the Area of the ELPMA Subject to Conversion of the FCA from Confined to Unconfined Conditions

State Well Number	Main Use	Projected Groundwater Elevation at the Minimum Threshold (ft MSL)	Top Perforation (ft MSL)	Bottom Perforation (ft MSL)	Feet Below Top of Screen at Minimum Threshold (ft)	Projected Water Level Below 50% of the Well Screen	Projected Water Level Below the Bottom of the Well
03N20W26R03S	AG	100	-85	-460	NA	No	No
03N20W34L02S	AG	76	-15	-475	NA	No	No
02N20W01B03S	M&I	82	45	-153	NA	No	No
03N19W31E02S	M&I	108	85	-255	NA	No	No
03N19W31D03S	M&I	107	-56	-486	NA	No	No
03N19W31D02S	M&I	107	-10	-430	NA	No	No
03N19W31C02S	M&I	106	-11	-316	NA	No	No
03N19W31D05S	M&I	107	-12	-547	NA	No	No
03N20W33B03S	AG	76	-100	-420	NA	No	No
03N20W33B01S	AG	76	-161	-458	NA	No	No
03N20W35G01S	AG	100	-480	-760	NA	No	No
02N20W01A01S	AG	74	76	-144	2	No	No
02N20W13F02S	AG	193	303	-157	110	No	No
03N19W30D01S	AG	101	305	-5	204	Yes	No
03N19W30D02S	AG	101	10	-270	NA	No	No

Table 2-1. Wells in the Area of the ELPMA Subject to Conversion of the FCA from Confined to Unconfined Conditions

State Well Number	Main Use	Projected Groundwater Elevation at the Minimum Threshold (ft MSL)	Top Perforation (ft MSL)	Bottom Perforation (ft MSL)	Feet Below Top of Screen at Minimum Threshold (ft)	Projected Water Level Below 50% of the Well Screen	Projected Water Level Below the Bottom of the Well
03N19W19J01S	AG	130	172	-20	42	No	No
03N19W28N03S	M&I	130	213	-89	83	No	No
03N19W31N02S	M&I	110	82	-193	NA	No	No
03N19W31M03S	M&I	108	156	-169	48	No	No
03N19W31M04S	M&I	108	25	-245	NA	No	No
03N19W31H01S	M&I	104	107	-83	3	No	No
03N20W27H03S	AG	-28	-70	-270	NA	No	No

Notes: NA = "Not Applicable." AG = "Agricultural", "M&I" = Municipal and Industrial. All M&I wells are CMWD ASR wells except well 03N19W31H01S. Well is projected to go dry if the projected water level at the minimum threshold exposes more than 50% of the total screen interval.

The measurable objective groundwater elevations are generally 30 to 50 feet higher than the minimum threshold groundwater elevations in this area. If groundwater elevations remained at the measurable objective, rather than the minimum threshold, groundwater elevation, projected groundwater elevations would be at or below the top of the well screen in two agricultural wells and two of CMWD's ASR wells. Both of these agricultural wells did not operate between 2015 and 2022.

In its role as LPVB Watermaster, FCGMA appointed members to two advisory committees: the LPVB TAC and LPVB PAC. As provided in the LPVB adjudication Judgment, the FCGMA, in consultation with the TAC and PAC, are currently working to develop a suite of projects to increase the sustainable yield of the basin and offset losses in yield because of groundwater elevation declines.

2.2.1.3 Epworth Gravels Management Area

The minimum threshold in the Epworth Gravels Management Area, which allows for up to 20% loss of storage compared to 2015 conditions, is above the historical low water level (FCGMA 2019). Many groundwater users with wells in the Epworth Gravels aquifer also have wells screened in the underlying FCA. As groundwater elevations decline in the Epworth Gravels aquifer, groundwater users in this management area rest their Epworth Gravels aquifer wells and rely on water from the FCA instead. In 2015, after several years of drought, groundwater elevations in the Epworth Gravels aquifer were 50 feet higher than the historical low water level because groundwater users reduced their pumping in this management area. Because the minimum threshold is higher than the historical low water level, groundwater users in this management area are familiar with and have historically implemented adaptive management strategies when the groundwater elevation declines, and the minimum threshold prevents chronic lowering of groundwater, the minimum threshold in the Epworth Gravels Management Area is anticipated to be protective of beneficial uses and users of groundwater in the LPVB.

2.2.2 Groundwater Elevation Changes in the Las Posas Valley Basin

The GSP reported on groundwater conditions through fall 2015. The change in water levels since 2015 varies geographically within the LPVB, reflecting both the influence of groundwater extraction and the availability and extent of groundwater recharge in the WLPMA, ELPMA, and Epworth Gravels Management Area. The change in fall and spring groundwater elevations are discussed for each management area of the LPVB in the following subsections. The changes discussed incorporate all of the wells in the GSP monitoring network that are screened in a single aquifer (Figures 2-5, Upper San Pedro Formation Groundwater Elevation Changes from Fall 2015 to 2023, through Figure 2-14, Epworth Gravels Aquifer – Groundwater Elevation Changes from Spring 2015 to 2024). This network includes, but is not limited to, the key wells identified in the GSP.

Groundwater elevation measurements were not collected from every well in the monitoring network in the fall of 2015, 2020, and 2023 or the spring of 2015, 2021, and 2024. Consequently, the discussion of groundwater elevation changes since the last data presented in the GSP (calendar year 2015) and since GSP implementation began (water year 2020) is limited to the subset of wells in the monitoring network in which measurements were collected in both water year 2024 and the earlier comparison water year. Improvements to the regularity of data collection, and addition of dedicated monitoring wells in the LPVB are required over the next five years to improve the understanding of the impacts of GSP implementation on groundwater elevations.

2.2.2.1 West Las Posas Management Area

Upper San Pedro Formation

Groundwater elevations were measured in five wells in fall 2015 and fall 2023 and in six wells in spring 2015 and spring 2024 (Figure 2-5, Upper San Pedro Formation Groundwater Elevation Changes from Fall 2015 to 2023, and Figure 2-6, Upper San Pedro Formation Groundwater Elevation Changes from Spring 2015 to 2024). There are no key wells screened in the USP because it is not a principal aquifer, although it is a source of water to the underlying FCA. Between 2015 and 2024, groundwater elevations declined in the three nested wells in the central WLPMA (wells 02N21W11J04S, 02N21W11J05S, and 02N21W11J06S) and in well 02N21W15M03S (Figures 2-5 and 2-6). The only well in which groundwater elevations were higher in water year 2024 than they were in calendar year 2015 was well 02N21W16J01S in the western portion of the WLPMA (Figures 2-5 and 2-6).

Fox Canyon Aquifer

In the western part of the WLPMA, adjacent to the Oxnard Subbasin, fall 2023 and spring 2024 groundwater elevations in the FCA were approximately 55 to 35 feet higher than they were in fall 2015 and spring 2015, respectively in well 02N21W08L03S (Figure 2-7, Fox Canyon Aquifer – Groundwater Elevation Changes from Fall 2015 to 2023, and Figure 2-8, Fox Canyon Aquifer – Groundwater Elevation Changes from Spring 2015 to 2024). Groundwater elevations in this part of the WLPMA were also higher than they were in fall 2019, the start of the current evaluation period (FCGMA 2021). Groundwater elevation recoveries in the western WLPMA since 2015 reflect the influence of UWCD's recharge operations in the Forebay Management Area of the Oxnard Subbasin, which promoted groundwater elevation recoveries in the Oxnard Subbasin of approximately 120 feet between 2015 and 2024 (FCGMA 2024a).

In contrast to the fall groundwater elevation changes observed in the western WLPMA, groundwater elevations in the eastern part of the WLPMA were lower in the fall of 2023 than they were in fall 2015 (Figure 2-7). The largest groundwater elevation decline measured over this period was at well 02N20W06R01S, where the fall 2023 groundwater elevation was approximately 80 feet lower than fall 2015 (Table 2-2, Water Year 2024 Groundwater Elevations at Key Wells in the Las Posas Valley Basin; Figure 2-7). Fall groundwater elevation declines in the eastern WLPMA reflect ongoing groundwater production in an area with limited groundwater recharge. There are insufficient measurements to provide a direct comparison of spring 2015 and spring 2024 groundwater elevations in the WLPMA (Figure 2-8).

Grimes Canyon Aquifer

No wells screened in the GCA had groundwater elevations measured in both fall 2015 and fall 2023 (Figure 2-9, Grimes Canyon Aquifer Groundwater Elevation Changes from Fall 2015 to 2023). Two wells, 02N21W28A02S and 02N21W22G01S, had groundwater elevations measured in both spring 2015 and spring 2024. Over this period, the groundwater elevation at these wells declined by approximately 7 and 10 feet, respectively (Figure 2-10, Grimes Canyon Aquifer Groundwater Elevation Changes from Spring 2015 to 2024). These wells are both located in the southern part of the WLPMA, within the Camarillo Hills, and the connectivity between water level elevations in these wells and other parts of the management area remains an area of uncertainty in the hydrogeologic conceptual model of the management area.

2.2.2.2 East Las Posas Management Area

Shallow Alluvial Aquifer

Groundwater elevations in the Shallow Alluvial aquifer have been stable since 2015 with elevations in upstream wells declining by 1 foot or less between calendar year 2015 and water year 2024. Groundwater elevations in downstream wells, adjacent to the PVB, increased by 1 to 6 feet over the same time period (Table 2-2; Figure 2-11, Shallow Alluvium – Groundwater Elevation Changes from Fall 2015 to 2024, and Figure 2-12, Shallow Alluvium Groundwater Elevation Changes from Spring 2015 to 2024). There are two key wells screened in the Shallow Alluvial aquifer. The groundwater elevation increased in well 02N20W09Q08S by 1 foot between fall 2019 and fall 2023 and increased by 0.5 feet between spring 2020 and spring 2024 (Table 2-2). Groundwater elevation was not measured in well 02N20W12MMW1 in water year 2024.

Table 2-2. Water Year 2024 Groundwater Elevations at Key Wells in the Las Posas Valley Basin

State Well Number	Aquifer	Management Area	Fall Groundwater Elevations			Spring Groundwater Elevations			Minimum Threshold	Measurable Objective	2025 Interim Mile-stone
			2023	Change from 2019	Change from 2015	2024	Change from 2020	Change from 2015			
03N19W29F06S	Epworth Gravels	Epworth Gravels	608.0	13.7	9.4	619.0	12.8	17.5	555	585	581
02N20W09Q08S	Shallow Alluvial	ELPMA	272.0	1.0	1.0	275.0	1.0	2.4	170	270	—
02N20W12 - MMW1	Shallow Alluvial	ELPMA	369.0	0.0	—	NM	—	—	300	370	—
02N20W01B02S	FCA	ELPMA	134.0	—	—	143.0	—	—	80	120	—
02N20W03H01S	FCA	ELPMA	132.0	-4.0	-19.7	150.0	-8.0	-15.5	100	135	—
02N20W04F02S	FCA	ELPMA	NM	—	—	NM	—	—	100	145	—
02N20W10D02S	FCA	ELPMA	138.7	-3.5	-11.8	198.4	48.0	32.9	80	130	—
02N20W10G01S	FCA	ELPMA	250.2	-0.5	5.4	260.2	-0.1	0.6	100	230	—
02N20W10J01S	FCA	ELPMA	281.6	0.8	2.3	288.5	1.4	2.7	110	250	—
03N19W19J01S	FCA	ELPMA	154.8	-20	-21.4	158.2	-23.0	-21.5	130	160	—
03N19W28N03S	FCA	ELPMA	156.0	—	-25.0	158.0	—	-24.0	130	170	—
03N19W31B01S	FCA	ELPMA	128.7	-34.7	-17.8	NM	—	—	105	145	—
03N20W34G01S	FCA	ELPMA	133.8	—	-8.1	145.3	-8.5	0.2	75	130	—
03N20W35R03S	FCA	ELPMA	135.0	-48.1	-1.6	147.2	—	-8.4	105	145	139
03N20W26R03S	FCA	ELPMA	130.8	-44.0	—	144.4	—	-2.1	100	120	—
03N20W35R02S	FCA	ELPMA	136.0	-45.8	7.2	148.1	—	-8.5	105	145	133
02N20W06R01S	LAS	WLPMA	-235.6	—	-81.6	NM	—	—	-170	-125	-147
02N20W08F01S	LAS	WLPMA	NM	—	—	-163.8	—	—	-195	-150	—
02N21W16J03S	LAS	WLPMA	NM	—	—	NM	—	—	-75	-45	-71
02N21W11J03S	LAS	WLPMA	-71.3	-1.5	-2.3	-63.0	-4.9	-12.0	-70	-50	-64
02N21W12H01S	LAS	WLPMA	-33.4	10.1	—	-25.3	10.1	—	-70	-45	—

Notes: NM = Not Measured. "-" indicates that one or more measurements during the analysis window were not collected. FCA = Fox Canyon aquifer. LAS = Lower Aquifer System. ELPMA = East Las Posas Management Area; WLPMA = West Las Posas Management Area. Key Wells in the WLPMA are either screened in the FCA or across multiple aquifers of the LAS

[a] Positive values indicate that groundwater elevations at the key well have increased. Negative values indicate that groundwater elevations at the key well have declined.

Upper San Pedro Formation

There are no key wells screened in the USP in the ELPMA because it is not a principal aquifer. However, it acts as a source of water to the underlying FCA. Only three wells in the USP had both fall 2015 and fall 2023 groundwater level measurements, and only one well screened in the USP had both spring 2015 and spring 2024 groundwater elevation measurements (Figures 2-7 and 2-8). The groundwater elevation declined by 12.8 feet between fall 2015 and fall 2023 and by 9.4 feet in well 03N20W35R04S between spring 2015 and spring 2024 (Figures 2-7 and 2-8). The groundwater elevation in well 02N19W07K03S declined by 0.6 feet between fall 2015 and fall 2023, whereas the groundwater elevation in well 02N19W06F01S increased by 2.9 feet over the same period (Figure 2-7).

Since the start of the evaluation period, fall groundwater elevations increased by approximately 20 feet at well 02N19W06F01S, but declined by approximately 1 and 5 feet at wells 02N19W07K03S and 03N20W35R04S, respectively (FCGMA 2021). Where measured, spring groundwater elevations changed by less than 2 feet between 2020 and 2024 (FCGMA 2021).

Fox Canyon Aquifer

Between fall 2015 and fall 2023 groundwater elevations in the FCA increased in the central portion of the ELPMA by up to 10 feet and generally declined by up to 25 feet in the balance of the ELPMA (Figure 2-7). The central part of the ELPMA is influenced by Calleguas Municipal Water District (CMWD) aquifer storage and recovery (ASR) operations.

A similar pattern of water level elevation change is observed from spring 2015 through spring 2024, with declines in the northern and eastern portions of the ELPMA and increases in groundwater elevation in the central ELPMA (Figure 2-8). However, the primary difference, is in the western part of the ELPMA, where spring 2024 groundwater elevations were higher than they were in spring 2015. This observed difference is based on groundwater elevations measured in an active agricultural well (02N20W10D02S), and likely reflects a seasonal change in local agricultural water demands.

Groundwater elevation measurements are available for nine key wells in both fall 2019 and fall 2023. Fall groundwater elevations decreased by less than a foot to 48 feet at eight wells and increased by less than a foot at one well between 2019 and 2023 (Table 2-2). Groundwater elevation measurements are available for six key wells in both spring 2020 and spring 2024 (Table 2-2). Spring groundwater elevations decreased by less than a foot to 23 feet in four wells and increased by approximately 1 foot to 48 feet in the other two between 2020 and 2024 (Table 2-2).

Grimes Canyon Aquifer

Only one well in the ELPMA, 03N20W27B01S, is screened solely within the GCA (Figures 2-9 and 2-10). This is not a key well. Sufficient measurements were not collected by the monitoring agency to evaluate the change in groundwater elevation for fall 2015 to fall 2023 and spring 2015 to spring 2024. CMWD installed additional monitoring wells in the LPVB, since the GSP was prepared, including one screened in the GCA. These wells will provide data to fill some of the data gaps identified in the GSP. However, groundwater elevations in the GCA remain an area of uncertainty in the LPVB

2.2.2.3 Epworth Gravels

Well 03N19W29F06S is the only key well in the Epworth Gravels Management Area. The fall 2023 groundwater elevation in this well was 9 feet higher than the fall 2015 and 14 feet higher than the fall 2019 (Table 2-2; Figure 2-13, Epworth Gravels Aquifer – Groundwater Elevation Changes from Fall 2015 to 2023). The spring 2024 groundwater elevation in this well was 13 feet and 18 feet higher than it was in both spring 2020 and spring 2015, respectively, (Table 2-2; Figure 2-14, Epworth Gravels Aquifer – Groundwater Elevation Changes from Spring 2015 to 2024).

2.2.3 Sustainable Management Criteria

2.2.3.1 Measurable Objectives

In 2015, the end of the GSP reporting period, groundwater elevations in the WLPMA were lower than the measurable objective water levels at three of the five key wells (FCGMA 2019). In the ELPMA, groundwater elevations were lower than the measurable objective water levels at two of the fifteen key wells (FCGMA 2019). In the Epworth Gravels management area, the groundwater elevation at the only key well was below the measurable objective (FCGMA 2019). Section 3.5 of the GSP defined interim milestones for the key wells with groundwater elevations below the measurable objectives, so that groundwater elevations would reach the measurable objectives by 2040 (FCGMA 2019).

Fall 2023 groundwater elevations were measured in three of the five key wells in the WLPMA. The elevations at two of these wells were below the measurable objectives (Table 2-2; Figure 2-3 and Figure 2-15, Groundwater Elevation Hydrographs for Representative Monitoring Points in the WLPMA). Spring 2024 groundwater elevations were above the measurable objective groundwater elevations at two (02N20W08F01S and 02N21W12H01S) of the three of the key wells measured in the WLPMA (Table 2-2; Figures 2-4 and 2-15).

In the ELPMA, fall 2023 groundwater elevations were measured in 14 key wells and were above the measurable objectives in seven of these wells. Spring 2024 groundwater elevations were measured in 12 of 15 key wells and were above the measurable objectives in 10 of these wells (Table 2-2; Figure 2-4; Figure 2-16, Groundwater Elevation Hydrographs for ELPMA Representative Monitoring Points Screened in the Shallow Alluvial Aquifer; and Figures 2-17a and 2-17b, Groundwater Elevation Hydrographs for ELPMA Representative Monitoring Points Screened in the FCA). FCGMA anticipates that groundwater elevations will stabilize between 2025 and 2040 with the implementation of projects and management actions in the ELPMA that are consistent with the GSP and Judgment.

In the only key well in the Epworth Gravels Management Area, the groundwater elevation was above the measurable objective groundwater in fall 2023 and spring 2024 (Table 2-2; Figures 2-3, 2-4, and 2-18, Groundwater Elevation Hydrographs for the Representative Monitoring Point in the Epworth Gravels Aquifer).

2.2.3.2 Minimum Thresholds

In 2015, the end of the GSP reporting period, groundwater elevations in the WLPMA were above the minimum threshold water levels at four of the five key wells in the management area (FCGMA 2019). In the ELPMA, groundwater elevations were higher than the minimum threshold water levels at all of the key wells in the management area (FCGMA 2019). In the Epworth Gravels management area, the groundwater elevation at the only key well was above the minimum threshold.

Fall 2023 groundwater elevations were measured in three of the five key wells in the WLPMA. The elevations at two of these wells, wells 02N20W06R01S and 02N21W11J03S, were below the minimum thresholds (Table 2-2). Spring 2024 groundwater elevations were above the minimum threshold groundwater elevations at all of the key wells measured in the WLPMA (Table 2-2; Figures 2-4 and 2-15).

In the ELPMA, fall 2023 and spring 2024 groundwater elevations were higher than the minimum threshold at all measured key wells (Table 2-2; Figure 2-3, 2-16, 2-17a, and 2-17b).

The groundwater elevation in the only key well in the Epworth Gravels management area was above the minimum threshold groundwater elevation in the fall of 2023 and the spring of 2024 (Table 2-2; Figures 2-3, 2-4, and 2-18).

2.2.3.3 Interim Milestones

Fall 2023 groundwater elevations were below the 2025 interim milestones in two of the key wells in the WLPMA that were measured in the fall of 2023 and had established interim milestones (Table 2-2). In the WLPMA, the spring 2024 groundwater elevation was above the 2025 interim milestones for well 02N21W11J03S, the one key well in the WLPMA that was measured and had established interim milestone (Table 2-2).

Interim milestones were established for wells 03N20W35R03S and 03N20W35R02S in the ELPMA. The fall 2023 groundwater elevation was approximately 3 feet higher than the interim milestone for well 03N20W35R02S and 4 feet lower well 03N20W35R03S (Table 2-2). The spring 2024 groundwater elevations were above the interim milestones at both wells (Table 2-2).

Both the fall and spring groundwater elevations at the key well in the Epworth Gravels Management Area were above the 2025 interim milestone for this well (Table 2-2).

2.2.4 Undesirable Results

The GSP defined undesirable results for each management area of the LPVB. The WLPMA is expected to experience undesirable results if:

- In any single monitoring event, water levels in three of the five key wells are below their respective minimum threshold; or
- The groundwater elevation in any individual key well is below the minimum threshold for either three consecutive monitoring events or three of five consecutive monitoring events, where monitoring events are scheduled to occur in the spring and fall of each year.

During the evaluation period (water year 2019 through water year 2024) fall groundwater elevations were consistently below the minimum threshold at well 02N20W06R01S. While groundwater elevations are currently higher than the minimum thresholds at four of the five key wells, the prolonged period of minimum threshold exceedances at well 02N20W06R01S indicates that the WLPMA has experienced undesirable results since the GSP was adopted.

The ELPMA is expected to experience undesirable results if:

- In any single monitoring event, water levels in 5 of the 15 key wells points are below their respective minimum threshold; or
- The groundwater elevation in any individual key well is below the minimum threshold for either three consecutive monitoring events or three of five consecutive monitoring events.

Neither of these conditions occurred in the ELPMA during the evaluation period (Figures 2-16 and 2-17).

The Epworth Gravels Management Area would experience undesirable results if the groundwater level in the key well was below the minimum threshold for either three consecutive monitoring events or in three of five consecutive monitoring events. Neither of these conditions occurred in the Epworth Gravels Management Area during the evaluation period (Figure 2-18).

2.2.5 Progress Toward Achieving Sustainability

In the fall of 2015, groundwater elevations were above the minimum thresholds at all the key wells in the LPVB. Groundwater elevations were also above the minimum thresholds at all the key wells measured in the spring of 2024. However, groundwater elevations at well 02N20W06R01S were below the minimum thresholds for three consecutive monitoring events in 2021 through 2023, indicating that the WLPMA experienced undesirable results between 2019 and 2024. The groundwater elevation in this well was not measured in the spring of 2024.

Although the WLPMA experienced undesirable results, as defined in the GSP, during the first 5 years of implementing the GSP, the groundwater level declines observed in the WLPMA were consistent with those anticipated at the time the GSP was prepared. The LPVB interested parties are currently working to alleviate declines in groundwater levels through the funding and implementation of projects. The project that will have the most impact in the WLPMA is in-lieu deliveries of groundwater. Historically, groundwater elevations in the WLPMA have recovered by over 100 feet during previous in-lieu delivery programs.

As part of the Judgment, FCGMA is developing a Basin Optimization Plan with PAC and TAC committee consultation that identifies and prioritizes a suite of technically feasible and economically viable projects that can be implemented in the LPVB prior to 2040 to maintain the yield of the basin at 40,000 AFY. Subsequently, FCGMA will develop a Basin Optimization Yield Study with committee consultation that quantifies the benefits of each project identified in the Basin Optimization Plan, ranks each project’s ability to achieve and maintain sustainability in the LPVB, and establishes a Basin Optimization Yield and Rampdown Rate. Taken together, these documents will provide a more detailed path to sustainability that is consistent with both SGMA and the Judgment.

2.2.5.1 Adaptive Management Approaches

FCGMA has taken several steps to adaptively manage the LPVB since adoption of the GSP. These have included:

- The purchase of supplemental State Water Project (SWP) water in 2019 to support recharge in the Oxnard Forebay, which is a source of water to the WLPMA.
- The development and implementation of a new extraction allocation system to facilitate groundwater extraction reporting and management in a manner consistent with SGMA.
- The development of project evaluation criteria and process to prioritize water supply and infrastructure projects that support groundwater sustainability in the LPVB.

The Judgment imposes a new management strategy that supersedes the policy and management framework developed by the FCGMA prior to July 2023. The new management structure imposed by the Judgment includes:

- An updated allocation system.
- A framework for evaluating the need for, and rate of, Rampdown within the LPVB; and
- An updated process for evaluating projects that increase water supply and Operational Yield of the LPVB.

As Watermaster for the LPVB, FCGMA is responsible for implementing the management framework outlined in the Judgment. To support the initial implementation of this management framework, FCGMA has begun development of the Basin Optimization Plan and is coordinating development of the Basin Optimization Yield Study with the LPVB TAC. These planning activities are critical first steps in constraining future Rampdown, project implementation, and additional management actions.

2.2.5.2 Impacts to Beneficial Uses and Users of Groundwater

Beneficial uses and users of groundwater within the LPVB include environmental, agricultural, domestic, and municipal and industrial users (FCGMA 2019). Groundwater elevations that remain above the minimum thresholds are anticipated to maintain beneficial uses of groundwater in the LPVB by limiting chronic lowering of groundwater levels and limiting the area of the FCA that may convert from confined to unconfined conditions. Groundwater elevations in one key well in the WLPMA were below the minimum threshold groundwater elevation for three consecutive measurement periods, which, by definition in the GSP, means the WLPMA experienced undesirable results since 2019. However, groundwater conditions in the WLPMA have not impacted beneficial users of groundwater. No wells were reported to have gone dry, and there are no interconnected surface and groundwaters in the WLPMA. Groundwater elevations in the ELPMA and Epworth Gravels Management Area do not indicate that undesirable results are occurring in either of these management areas. Similarly, no wells were reported to have gone dry and groundwater elevations adjacent to Arroyo Las Posas have not declined since 2019.

2.2.5.3 Changes to Sustainable Management Criteria

The minimum threshold and measurable objectives for each key well are listed in Table 2-3, LPVB Measurable Objectives and Minimum Thresholds.

The evaluation following does not suggest the need to change the SMC for the LPVB: current groundwater levels, updated future model scenario results, projects and management strategies, and requirements of the Judgment. The minimum thresholds will prevent chronic declines in groundwater levels, significant and unreasonable loss of groundwater in storage, and, in the WLPMA, will not prevent the Oxnard Subbasin from achieving its sustainability goal. Minimum thresholds were selected based on historical low water levels and the simulated water levels that would limit storage loss to less than 20% of the 2015 groundwater in storage. The information gained and updated numerical modeling conducted for this periodic evaluation (see Section 5, Updated Numerical Modeling) suggest that these thresholds are appropriate to prevent undesirable results in the LPVB.

Table 2-3. LPVB Measurable Objectives and Minimum Thresholds

Well Number	Management Area	Aquifer	Minimum Threshold	Measurable Objective	Fall 2015 Water Level Low	
			(ft msl)	(ft msl)	(ft msl)	Date Measured
03N19W29F06S	Epworth Gravels	Epworth Gravels	555	585	580	10/21/2015
02N20W09Q08S	ELPMA	Shallow Alluvial	170	255	271	10/15/2015
02N20W12MMW1	ELPMA	Shallow Alluvial	300	345	369	9/15/2015
02N20W01B02S	ELPMA	FCA	80	120	129.8	9/23/2012
02N20W03H01	ELPMA	FCA	100	135	157	10/19/2015
02N20W04F02S[a]	ELPMA	FCA	—	—	157	9/18/2013
02N20W10D02S	ELPMA	FCA	80	130	150.5	10/27/2015
02N20W10G01S	ELPMA	FCA	100	230	244.8	10/27/2015
02N20W10J01S	ELPMA	FCA	110	250	279.3	10/27/2015
03N19W19J01S	ELPMA	FCA	130	160	176.2	10/21/2015
03N19W28N03S	ELPMA	FCA	130	170	180.9	10/15/2015
03N19W31B01S	ELPMA	FCA	105	145	146.5	10/15/2015
03N20W34G01S	ELPMA	FCA	75	130	141.9	10/29/2015
03N20W35R03S	ELPMA	FCA	105	145	136.6	10/29/2015
03N20W26R03S	ELPMA	FCA	100	120	131.9	11/2/2015
03N20W35R02S	ELPMA	GCA	105	145	128.7	10/15/2015
02N20W06R01S	WLPMA	LAS	−170	−125	−154	10/15/2015
02N20W08F01S	WLPMA	LAS	−195	−150	−121	7/1/2014
02N21W16J03S[b]	WLPMA	LAS	—	—	−79.8	12/14/2015
02N21W11J03S	WLPMA	LAS	−70	−50	−69	10/22/2015
02N21W12H01S	WLPMA	LAS	−70	−45	−41.9	3/10/2014

Notes:

a Well 02N20W04F02 was destroyed after the GSP was prepared.

b Well 02N21W16J03 has not been measured since 2019 and has been removed from the groundwater monitoring network (see Section 6, Monitoring Network).

In the LPVB, the measurable objectives are at least 20 feet higher than the minimum thresholds to allow for operational flexibility. In the WLPMA, these objectives were selected based on the groundwater level recovery observed in wells between 1995 and 2008 that resulted from an in-lieu water deliver program, and based on the model scenarios in which the Oxnard Subbasin was able to meet its sustainability goal (FCGMA 2019). In the ELPMA and Epworth Gravels Management Area, the measurable objectives were selected based on the simulated groundwater elevation at which water levels stabilized in future model scenarios. The updated East Las Posas (ELP) modeling suggests that groundwater elevations in the ELPMA may stabilize at a higher level than was simulated in the GSP because surface water recharge to the ELPMA is expected to be maintained at higher levels than were simulated previously (See Section 5, Updated Numerical Modeling). The measurable objectives were not adjusted in this periodic evaluation because uncertainty remains in the ongoing ability of the LPVB interested parties to rely on the recharge from this surface water that is discharged to Arroyo Simi-Las Posas upstream of the LPVB boundary. One of the potential future projects includes developing an agreement to maintain flows in the Arroyo (See

Section 3, Status of Projects and Management Actions). If this project is implemented, the measurable objectives in the ELPMA may need to be adjusted in a future periodic evaluation.

As described in Section 6, Monitoring Network, two key wells were removed from the monitoring network: well 02N20W04F02S in the ELPMA and well 02N21W16J03S in the WLPMA. Well 02N20W04F02S was removed because the well was destroyed. Well 02N21W16J03S was removed because ongoing access issues has resulted in the well last being measured in 2019. The lack of measurements at these two wells creates data gaps in the characterization of groundwater conditions within the LPVB.

2.3 Groundwater in Storage

2.3.1 Department of Water Resources Recommended Corrective Actions

DWR issued a recommended corrective action related to groundwater in storage (DWR, 2021). This recommended corrective action states the following:

> Discuss the potential effects of the minimum thresholds and measurable objectives on beneficial uses and users of groundwater, particularly in the areas where groundwater levels will be maintained below 2015 and historical low levels. Provide an evaluation of the groundwater level and storage conditions when the groundwater storage loss will be 20 percent compared to 2015 conditions in the ELPMA and the Epworth Gravels Management Area, and, based on the result of the evaluation, discuss the effects of such conditions on beneficial users and users.

FCGMA's response to this corrective action is addressed in Section 2.2, Groundwater Levels.

2.3.2 Groundwater in Storage Changes in the Las Posas Valley Basin

Since adoption of the GSP, FCGMA has estimated the change in groundwater in storage in the LPVB annually using a series of linear regression models that relate measured groundwater elevations to simulated values of change in storage extracted from the Ventura Regional Groundwater Flow Model (VRGWFM; UWCD 2018) for the WLPMA and the CMWD numerical groundwater flow model for the ELPMA (CMWD 2018, FCGMA 2020, 2021, 2022, 2023, 2024b). The linear regressions utilized results from the VRGWFM for the historical period from 1985 through 2015 and from the ELPMA for the historical period from 1970 through 2015 (UWCD 2018, CMWD 2018).

As part of the periodic GSP evaluation, UWCD updated the VRGWFM to improve the hydrogeologic conceptual model of the Oxnard Subbasin and simulate groundwater conditions through September 30, 2022 (FCGMA 2024b). The CMWD model of the ELPMA is based on another hydrogeologic conceptual model; it has not been updated since the GSP. However, the model was extended to simulate groundwater conditions in the ELPMA through September 30, 2022 (See Section 5.1, Model Updates). The extended model is referred to in this document as the ELP model (See Section 5, Updated Numerical Modeling).

The change in storage values for the WLPMA summarized below are based on the model results from the updated VRGWFM (Table 2-4a, UWCD Model Water Budget for the West Las Posas Management Area Shallow Aquifer

System, Table 2-4b, UWCD Model Water Budget for the West Las Posas Management Area Lower Aquifer System). The change in storage values for the ELPMA summarized below are based on the results from the ELP model (Table 2-4c, ELP Model Water Budget for the East Las Posas and Epworth Gravels Management Areas). Because neither model simulates water years 2023 and 2024, the change in storage for the last 2 years of the evaluation period were estimated using model results from water years with similar starting and ending measured groundwater elevations. Because groundwater elevation changes in the LPVB vary across management area and by aquifer, different representative time periods were used to estimate the change in groundwater for water years 2023 and 2024 (Table 2-5, Change in Groundwater in Storage in the LPVB). Groundwater elevation changes observed between 2023 and 2024 were most similar to those observed between 2004 and 2010 for the WLPMA, 2004 and 2008 for the Epworth Gravels Management Area, 2009 and 2011 for the FCA and GCA in the ELPMA, and in 2018 for the Shallow Alluvial aquifer of the ELPMA (Table 2-5.)

Table 2-4a. UWCD Model Water Budget for the West Las Posas Management Area Shallow Aquifer System

WY	Inflows (Acre-Feet)			Outflows (Acre-Feet)			Total Inflows (Acre-Feet)	Total Outflows (Acre-Feet)	Change in Storage[a]
	Recharge	Subsurface flow from Oxnard Subbasin	Subsurface flow from Pleasant Valley Basin	Outflow to LAS	Pumping	Subsurface flow to Oxnard Subbasin			
2016[b]	3,390	1,282	173	-5,022	-478	0	4,845	-5,500	-655
2017	7,264	2,378	399	-9,317	-597	0	10,041	-9,914	127
2018	4,436	1,940	234	-6,959	-417	0	6,610	-7,376	-766
2019	6,773	3,545	386	-9,043	-300	0	10,704	-9,343	1,361
2020	4,961	3,837	299	-8,209	-223	0	9,097	-8,432	665
2021	2,240	2,780	384	-5,700	-277	0	5,404	-5,977	-573
2022	4,491	2,388	446	-7,349	-247	0	7,325	-7,596	-271
Average	**4,794**	**2,593**	**332**	**-7,371**	**-363**	**0**	**7,718**	**-7,734**	**-16**
2016 to 2022 Total	**33,555**	**18,150**	**2,321**	**-51,599**	**-2,539**	**0**	**54,026**	**-54,138**	**-112**

Notes:
[a] Negative (-) values denote a reduction of groundwater in storage. Positive (+) values denote an increase in groundwater in storage.
[b] Represents the nine-month period from January 1, 2016, through September 30, 2022.

Table 2-4b. UWCD Model Water Budget for the West Las Posas Management Area Lower Aquifer System

WY	Inflows (Acre-Feet)					Outflows (Acre-Feet)				Total Inflows (Acre-Feet)	Total Outflows (Acre-feet)	Change in Groundwater in Storage (Acre-Feet)[b]
	Recharge from LAS outcrops	Recharge	From Shallow Aquifer	Subsurface flow from Oxnard Subbasin	Subsurface flow from Pleasant Valley Basin	Subsurface flow to Oxnard Subbasin	Pumping	Subsurface flow to Pleasant Valley Basin	Subsurface flow from the ELPMA[a]			
2016[c]	713	977	5,022	0	0	-2,453	-9,856	-6	-874	6,712	-13,189	-6,477
2017	1,890	2,241	9,317	0	498	-2,763	-13,109	0	-1,232	13,946	-17,104	-3,158
2018	764	1,195	6,959	0	482	-2,388	-13,979	0	-1,179	9,401	-17,546	-8,145
2019	1,778	2,121	9,043	0	1,078	-754	-13,687	0	-951	14,021	-15,392	-1,372
2020	1,284	1,392	8,209	134	1,237	0	-14,031	0	-713	12,256	-14,744	-2,489
2021	147	379	5,700	0	912	-169	-15,360	0	-464	7,139	-15,993	-8,855
2022	1,064	1,140	7,349	0	804	-472	-13,755	0	-410	10,357	-14,638	-4,281
Average	**1,092**	**1,349**	**7,371**	**19**	**716**	**-1,286**	**-13,397**	**-1**	**-832**	**10,547**	**-15,515**	**-4,968**
2016 to 2022 Total	**7,640**	**9,445**	**51,599**	**134**	**5,011**	**-8,999**	**-93,777**	**-6**	**-5,823**	**73,832**	**-108,606**	**-34,777**

Notes:
[a] Represents simulated underflows from the East Las Posas Management Area. Positive (+) values denote flows from the ELPMA to the WLPMA. Negative (-) values denote flows from the WLPMA to the ELPMA.
[b] Negative (-) values denote a reduction of groundwater in storage. Positive (+) values denote an increase in groundwater in storage.
[c] Represents the nine-month period from January 1, 2016, through September 30, 2022.

Table 2-4c. ELP Model Water Budget for the East Las Posas and Epworth Gravels Management Areas

Water Year	Groundwater Inflows (Acre-Feet)				Groundwater Outflows (Acre-Feet)					Total Inflow	Total Outflow	Change in Groundwater in Storage (Acre-Feet)[a]
	Recharge except Arroyo Las Posas (Includes Moorpark WWTP)	Injected ASR Water	Inflow at Basin Boundary	Inflow from Arroyo Simi-Las Posas percolation	Subsurface Outflow to PVB	Riparian ET	Extraction	Outflow to WLPMA	Outflow at Basin Boundary			
2016	9,816	898	2,265	11,941	1,556	1,318	23,181	147	920	**24,920**	**27,122**	-2,202
2017	9,972	4,066	2,157	13,262	1,713	1,491	22,192	147	929	**29,458**	**26,472**	2,986
2018	9,466	1,987	2,178	11,740	1,598	1,424	24,380	148	915	**25,371**	**28,466**	-3,094
2019	9,788	6,804	2,231	12,808	1,715	1,378	19,813	149	929	**31,630**	**23,983**	7,647
2020	9,877	2,856	2,026	12,069	1,681	1,406	21,430	150	899	**26,828**	**25,566**	1,262
2021	9,468	561	2,065	12,725	1,792	1,428	26,037	150	906	**24,819**	**30,313**	-5,494
2022	9,248	947	2,101	12,503	1,754	1,471	24,448	150	904	**24,799**	**28,728**	-3,929
Average	**9,662**	**2,588**	**2,146**	**12,435**	**1,687**	**1,417**	**23,069**	**149**	**915**	**26,832**	**27,236**	**-403**
2016 to 2022 Total	**67,635**	**18,119**	**15,023**	**87,048**	**11,809**	**9,916**	**161,481**	**1,041**	**6,402**	**187,825**	**190,650**	**-2,824**

Notes: Water Budget represents the combined water budget for all principal aquifers in the ELPMA, and includes the Upper San Pedro formation and confining layers that separate principal aquifers.

[a] Negative (-) values denote a reduction of groundwater in storage. Positive (+) values denote an increase in groundwater in storage.

2.3.2.1 West Las Posas Management Area

Upper Aquifer System

The GSP reported on the change in groundwater in storage in the LPVB through the end of calendar year 2015. Between January 1, 2016, and September 30, 2022, the VRGWFM estimates that groundwater in storage in the Shallow aquifer decreased by approximately 110 AF (Table 2-4a). In order to estimate the change in storage for water years 2023 and 2024, groundwater elevation changes measured in the WLPMA between October 1, 2022, and September 30, 2024 were compared to historical groundwater elevation changes. The time period from 2004 to 2010 was found to be the period over which groundwater elevation changes were most similar to those measured between October 1, 2022, and September 30, 2024. Because of this, the simulated change in storage for the period from 2004 to 2010 was used as an estimate of the change in storage for water years 2023 and 2024. Between water years 2004 and 2010, the VRGWFM estimates that groundwater in storage in the Shallow Aquifer System decreased by approximately 580 AF (Table 2-5). Adding these estimates to the simulation results for water years 2016 through 2022 suggests that since 2016, groundwater in storage in the Shallow Aquifer System has decreased by approximately 690 AF (Table 2-5).

Lower Aquifer System

Between January 1, 2016, and September 30, 2022, the VRGWFM estimates that groundwater in storage in the LAS decreased by approximately 34,780 AF (Table 2-4b). During the 2004 through 2010 period, the VRGWFM estimates that groundwater in storage in the LAS increased by approximately 1,810 AF (Table 2-5). Adding these estimates to the simulation results for water years 2016 through 2022 suggest that groundwater in storage in the LAS has decreased by approximately 32,970 AF since 2015 (Table 2-5). This equates to an average storage loss of approximately 3,660 AFY over the nine-year period from 2016 to 2024.

Table 2-5. Change in Groundwater in Storage in the LPVB

Management Area	Aquifer / Aquifer System	Simulated 2016 - 2022 Change in Storage (acre-feet)[a]	Estimated Change in Storage for Water Years 2023 and 2024		Estimated 2016 – 2024 Change in Storage (acre-feet)[a]
			Change in Storage (acre-feet)[a]	Representative Time Period (Water Year(s)	
West Las Posas	Shallow Aquifer System[b]	-110	-580	2004-2010[d]	-690
	LAS[c]	-34,780	1,810		-32,970
Epworth Gravels	Epworth Gravels	1,100	-380	2004 – 2008	720
East Las Posas	Shallow Alluvial Aquifer	210	380	2018	590
	FCA	2,680	10,700	2009 – 2011	13,380
	GCA	370	1,600		1,970

Notes:

[a] Values rounded to the nearest 10 acre-feet. Negative (-) values denote a reduction in groundwater in storage. Positive (+) values denote in increase in groundwater in storage.

[b] In the WLPMA, the Upper Aquifer System (UAS) does not host any principal aquifers of the LPVB.

[c] In the WLPMA, the Lower Aquifer System (LAS) consists of the Upper San Pedro Formation (age-equivalent to the Hueneme aquifer in the adjacent Oxnard Subbasin), the FCA, and the GCA.

[d] Due to the limited availability of complete measurements at key wells in the WLPMA, the 2004-2010 period was selected using a single well (02N21W12H01S).

2.3.2.2 East Las Posas and Epworth Gravels Management Areas

Between 2016 and 2022, the groundwater in storage increased by approximately 3,260 AF in the Shallow Alluvial aquifer, FCA, and GCA of the ELPMA (Table 2-5). Over the same time period, groundwater in storage increased in the Epworth Gravels aquifer[9] by approximately 1,100 AF (Table 2-5). The total modeled change in storage between 2016 and 2022 for the principal aquifers in the ELP model was approximately 4,360 AF (Table 2-5).

In contrast, between 2016 and 2022, groundwater in storage declined by approximately 2,820 AF throughout the ELP model domain (Table 2-4c). The difference between the change in storage calculated for the principal aquifers and the change in storage calculated for the total model domain is a loss of storage of approximately 7,180 AF between 2016 and 2022. This loss of storage largely occurs within the Upper San Pedro Formation, which serves as a reservoir for the underlying FCA in the ELPMA.

In order to estimate the change in storage for water years 2023 and 2024, groundwater elevation changes measured in the Shallow Alluvial aquifer, Epworth Gravel aquifer, and FCA and GCA between October 1, 2022, and September 30, 2024 were compared to historical groundwater elevation changes. The observed change from 2004 to 2008 was the most similar to the observed change in 2023 and 2024 for the Epworth Gravels aquifer. The observed change in groundwater elevation in 2018 was the most similar to the observed change in 2023 and 2024 for the Shallow Alluvial aquifer. The observed change in groundwater elevation from 2009 to 2011 was the most similar to the observed change in 2023 and 2024 for the FCA and GCA.

Between 2016 and 2022, the ELP model estimates that groundwater in storage in the ELPMA increased by approximately 15,940 AF in the Shallow Alluvial aquifer, FCA and GCA (Table 2-5). The model estimates of change in storage include imported water temporarily stored in the ELPMA through CMWD’s ASR program. Over the 2016 to 2024 period, CMWD injected a net volume of approximately 16,600 AF of imported water into the ELPMA for temporary storage. These data suggest that the change in groundwater in storage in the ELPMA not associated with the CMWD ASR operations was a decline of approximately 1,200 AF.

Between 2016 and 2022, the ELP model estimates that the groundwater in storage in the Epworth Gravels aquifer increased by approximately 720 AF (Table 2-5).

2.3.3 Undesirable Results

Groundwater levels are used as a proxy for undesirable results associated with groundwater in storage in all three management areas of the LPVB. As described in Section 2.2.4, the WLPMA experienced undesirable results during the evaluation period. Groundwater in storage has declined in this management area by approximately 33,000 AF.

Since the GSP was adopted, the ELPMA and Epworth Gravels Management Area have not experienced undesirable results. However, as described above, the change in groundwater in storage in the ELPMA largely reflects CMWD’s operation of their ASR well field.

2.3.3.1 Adaptive Management Approaches

FCGMA’s approach to adaptive management is described in Section 2.2.5.1.

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9 The Epworth Gravels aquifer is the only principal aquifer in the Epworth Gravels Management Area.

2.3.3.2 Impacts to Beneficial Uses and Users of Groundwater

The benefits of GSP implementation on beneficial uses and users of groundwater in the LPVB are described in Section 2.2.5.1.

2.3.3.3 Changes to Sustainable Management Criteria

Groundwater levels are used as a proxy for groundwater in storage. As described in Section 2.2.5.3, no revisions to the SMC of the LPVB are recommended as part of this GSP evaluation.

2.4 Seawater Intrusion

Seawater intrusion is not an undesirable result that applies to the LPVB. Direct seawater intrusion has not occurred historically in the LPVB, and future numerical model simulations do not indicate that seawater intrusion will occur in the LPVB. Therefore, specific criteria for undesirable results related to seawater intrusion were not established in the GSP.

2.5 Groundwater Quality

Groundwater quality in the LPVB is characterized using the most recent groundwater samples collected over a 5-year window, during the period from 2019 through 2023 (Figure 2-19, Most Recent TDS (mg/L) Measured 2019-2023, through Figure 2-23, Most Recent Boron (mg/L) Measured 2019-2023). For the GSP, groundwater quality conditions were characterized using the most recent groundwater samples collected during the period from 2011 through 2015. The change in groundwater quality concentrations for each constituent relative to the 2011 to 2015 period is summarized in Section 2.5.2.

2.5.1 Department of Water Resources Recommended Corrective Actions

DWR issued a recommended corrective action related to groundwater quality (DWR 2021). This recommended corrective action states:

> By the first periodic evaluation of the GSP, the Agency should further describe efforts to evaluate the connection between groundwater production and groundwater quality, including the monitoring the Agency is conducting and any progress made toward evaluation of the causal relationship referenced in the GSP. The Agency should document specific details of the processes they will use to determine if groundwater management and extraction are causing adverse impacts to groundwater quality. This should include coordination with all interested parties, beneficial users of groundwater, water quality regulatory agencies, and water quality program administrators within the Basin.

FCGMA partners with local agencies, including VCWPD, UWCD, and CMWD, to monitor groundwater quality in the LPVB. For this first periodic update, changes in groundwater quality were mapped, by constituent to assess areas of the LPVB in which groundwater quality may be deteriorating (Figures 2-19 through 2-23).

In the WLPMA, groundwater production may result in significant and unreasonable degradation of water quality if areas that were not previously impacted become impacted by TDS, nitrate, sulfate, and boron concentrations that limit agricultural and potable use (FCGMA 2019). In the ELPMA, groundwater production may result in significant and unreasonable degradation of water quality if the groundwater gradient causes expansion of the currently impacted area into areas that were not previously impacted, thereby limiting agricultural and potable use. Degradation of groundwater quality resulting from groundwater production has not been observed in the Epworth Gravels Management Area, which primarily receives recharge via precipitation infiltration, and the groundwater quality reflects the recharge source (FCGMA 2019).

In order to assess whether groundwater production since 2015 may be inducing gradients that result in expansion of the areas with poor water quality, the water quality data collected during the period from 2019 through 2023 were compared to the water quality data in the GSP. For those wells in which groundwater quality declined since 2015 (Figures 2-24 through 2-28), a Mann Kendall analysis of water quality trends was performed (Table 2-6, LPVB Water Quality Trend Statistics). The location of these wells was compared to the location of areas of existing groundwater quality degradation to assess whether groundwater production has induced groundwater gradients that have resulted in the expansion of areas of degraded groundwater quality in the WLPMA and ELPMA since 2015. Evaluation of the statistical trends and geographic distribution of wells with increasing concentration trends is discussed, by management area, in Subsections 2.5.1.1 and 2.5.1.2.

Table 2-6. LPVB Water Quality Trend Statistics

Well Number	Management Area	Aquifer	TDS	Chloride	Nitrate	Sulfate	Boron
02N20W06R01S	WLPMA	FCA	No Trend	No Trend	—	No Trend	No Trend
02N20W17L01S	WLPMA	Multiple	No Trend	No Trend	No Trend	No Trend	No Trend
02N21W11A02S	WLPMA	FCA	No Trend	No Trend	—	No Trend	No Trend
02N21W17N03S	WLPMA	Undesignated (Upper aquifer system)	No Trend	**Increasing**	**Increasing**	**Increasing**	No Trend
02N21W18H12S	WLPMA	Multiple	No Trend	No Trend	No Trend	No Trend	No Trend
02N21W18H14S	WLPMA	FCA	No Trend	**Increasing**	—	No Trend	No Trend
02N21W22G01S	WLPMA	FCA	—	—	—	—	—
02N19W07B02S	ELPMA	FCA	No Trend	No Trend	**Increasing**	Decreasing	No Trend
02N20W03J01S	ELPMA	FCA	—	—	—	—	—
02N20W04F01S	ELPMA	FCA	**Increasing**	No Trend	—	No Trend	No Trend
02N20W09Q05S	ELPMA	Undesignated (LAS)	—	—	—	—	—
02N20W09Q07S	ELPMA	FCA	No Trend	No Trend	No Trend	No Trend	No Trend
03N19W29K06S	ELPMA	Undesignated	No Trend	No Trend	No Trend	**Increasing**	—
03N19W30E06S	ELPMA	FCA	No Trend	No Trend	No Trend	No Trend	—
03N19W31B01S	ELPMA	FCA	No Trend	No Trend	—	No Trend	No Trend
03N19W31H01S	ELPMA	FCA	—	—	—	—	—
03N20W36A02S	ELPMA	FCA	—	—	—	—	—
03N20W36G01S	ELPMA	FCA	—	—	—	—	—

Notes: FCA = Fox Canyon Aquifer.
Statistical significance was determined via Mann Kendall analysis. "-" indicates wells with fewer than four water quality measurements since 2015. A trend cannot be determined for these wells. "No Trend" means there were sufficient data to determine whether there was a statistically significant increase or decrease, and none was found.

2.5.1.1 West Las Posas Management Area

In the WLPMA, wells 02N21W18H14S and 02N21W17N03S had statistically significant increasing chloride concentrations since 2015 (Table 2-6). Well 02N21W17N03S also had increasing nitrate and sulfate concentrations. Both wells are located on the boundary between the WLPMA and the Oxnard Subbasin (Figures 2-26 through 2-28). Water quality in this area has been impacted by historical land uses and is generally tied to groundwater elevation (FCGMA 2019). Higher groundwater elevations in these wells are correlated with increased spreading at the UWCD groundwater recharge facilities, where diverted surface water from the Santa Clara River lowers the concentration of TDS, chloride, nitrate, sulfate, and boron in the groundwater. The observed increases in concentration of these constituents reflect the drought from 2015 through 2022. UWCD manages the spreading and distribution of surface water from the Santa Clara River to mitigate impacts to groundwater quality in this region. FCGMA will continue to coordinate with UWCD to monitor groundwater quality in these wells.

Farther east in the WLPMA, at wells 02N20W06R01S, 02N20W17L01S, and 02N21W11A02S, where groundwater production has resulted in groundwater elevation declines since 2015, there was no statistically significant trend in groundwater quality (Table 2-6). This suggests that, unlike the western WLPMA, changes in groundwater quality in the eastern WLPMA are not correlated to groundwater elevation. Additionally, the lack of observed increasing concentration trends in the eastern part of the WLPMA suggests that groundwater gradients induced by groundwater production have not caused migration of poor quality groundwater into this area of the LPVB.

2.5.1.2 East Las Posas Management Area

Historically, as treated wastewater discharges and discharges from groundwater dewatering wells upstream of the LPVB reached the ELPMA via recharge from Arroyo Simi-Las Posas, TDS, chloride, nitrate, sulfate, and boron increased (FCGMA 2019). The groundwater gradient induced flow away from the recharge area along the Arroyo and an expansion of the area impacted by higher concentrations of TDS, chloride, nitrate, sulfate, and boron. Further expansion of the impacted area beyond the extent discussed in the GSP may result in significant and unreasonable degradation of groundwater quality if agricultural and potable use are negatively impacted (FCGMA 2019).

None of the wells in the ELPMA in which groundwater quality declined since 2015 had statistically increasing trends in concentration for all the constituents reviewed. Only three wells had statistically significant increasing trends in any of the constituents reviewed. Well 02N20W04F01S in the western portion of the ELPMA near the Somis Fault, was the only well with a statistically significant increasing trend in TDS (Table 2-6, Figure 2-24, Change in TDS Concentration (mg/L) between the period from 2011-2015 and 2019-2023). Well 03N19W29K06S, in the northeastern portion of the ELPMA, had a statistically significant increasing trend in sulfate (Table 2-6, Figure 2-27 Change in Sulfate Concentration (mg/L) between the period from 2011-2015 and 2019-2023). Well 02N19W07B02S, which is near Arroyo Simi-Las Posas, had a statistically significant increasing trend in nitrate (Table 2-6, Figure 2-26 Change in Nitrate Concentration (mg/L) between the period from 2011-2015 and 2019-2023). If the increase in nitrate at well 02N19W07B02S were related to groundwater production induced migration of infiltrated surface water, the concentration of TDS, chloride, sulfate, and boron in this well would also be expected to increase. In contrast, the TDS, chloride, and boron concentrations in this well had no statistically significant trend, and the sulfate concentration in this well had a statistically significant decreasing trend. Therefore, the increase in nitrate at well 02N19W07B02S is not likely related to surface water infiltration and subsequent groundwater migration from the Arroyo Simi-Las Posas.

The increasing concentrations of sulfate in well 03N19W29K06S is also not related to groundwater production induced migration from Arroyo Las Posas because this well is located in the northern part of the ELPMA north of the Moorpark Anticline. Recharge from Arroyo Simi-Las Posas does not reach the northeastern portion of the ELPMA, and groundwater quality in this area is better than it is in the southern part of the ELPMA, adjacent to Arroyo Simi-Las Posas (Figures 2-19 through 2-23).

The increase in TDS observed in well 02N20W04F01S is unlikely to be related to the migration of the non-native recharge from Arroyo Simi-Las Posas as an increasing trend was not observed at well 02N20W09Q07S, which is between the Arroyo Simi-Las Posas and well 02N20W04F01S. There is no evidence for widespread migration of the area of degraded groundwater quality as a result of groundwater production.

The new information gathered since the GSP was prepared has helped fill in water quality data gaps surrounding the potential linkage between groundwater production and the migration of non-native recharge with higher concentrations of TDS, chloride, nitrate, sulfate, and boron. While recent data doesn’t suggest a link between groundwater quality degradation and groundwater production during the evaluation period, FCGMA will continue to collaborate with UWCD, VCWPD, and CMWD to monitor groundwater quality and evaluate the potential link between these processes in the future.

2.5.2 Groundwater Quality Changes in the Las Posas Valley Basin

2.5.2.1 West Las Posas Management Area

Total Dissolved Solids (TDS)

There are no geographic patterns in the observed change in TDS concentrations in the WLPMA since the GSP was prepared (Figure 2-24). The concentration of TDS increased by approximately 50 to 160 milligrams per liter (mg/L) in three wells on the western boundary of the WLPMA, approximately 50 to 70 mg/L in two wells in the Camarillo Hills, and approximately 80 to 90 mg/L in two wells in the central and eastern WLPMA (Figure 2-24). The concentration of TDS decreased by approximately 10 to 90 mg/L in all the other wells in the WLPMA since the GSP was prepared. TDS concentration data do not indicate that groundwater production since 2015 has caused degradation of groundwater quality or migration of contaminant plumes in the WLPMA.

Chloride

Although the concentration of chloride declined in six wells in the WLPMA since 2015, it increased by 1 to 19 mg/L in the remaining wells in the monitoring network (Figure 2-25, Change in Chloride Concentration (mg/L) between the period from 2011-2015 and 2019-2023). Wells 02N21W17N03S and 02N21W18H14S, on the western margin of the WLPMA were the only two wells with statistically significant increasing trend since 2015 (Section 2.5.1, Department of Water Resources Recommended Corrective Actions). The change in chloride concentration was not correlated with depth, as some wells screened in the FCA had increases in chloride concentration and others had decreases in chloride concentrations. This was also observed in wells screened in the GCA, and wells with unknown screen intervals (Figure 2-25). Similar to TDS, changes in chloride concentrations since 2015 do not indicate that groundwater production has caused degradation of groundwater quality or migration of contaminant plumes in the WLPMA.

Nitrate

Nitrate concentrations (NO_3 as nitrate) increased since 2015 in approximately half of the wells in the monitoring network and decreased in the other half of the wells (Figure 2-26). Nitrate concentration decreases ranged from approximately 100 mg/L (at well 02N20W18H01S) to less than 1 mg/L (at well 02N21W11A03S). Nitrate concentration increases ranged from less than 1mg/L to approximately 10 mg/L (at well 03N21W36Q01S). Well 02N21W17N03S was the only well found to have a statistically significant increasing nitrate concentration trend in the WLPMA (Table 2-6). There is no clear geographic or aquifer specific pattern to the changes in concentration. Areas of high nitrate concentration in the WLPMA tend to be the result of legacy land use practices and septic discharges (FCGMA 2019). The changes in nitrate concentration do not suggest that groundwater production has caused migration of localized areas of higher nitrate concentrations to areas with lower nitrate concentrations.

Sulfate

Sulfate concentrations, and changes in sulfate concentrations since 2015, are variable across the WLPMA (Figures 2-22 and 2-27). Concentrations range from under 100 mg/L to over 500 mg/L without a clear pattern in geographic distribution or depth. Similarly, the concentration of sulfate increased in approximately half of the wells in the WLPMA since 2015 and decreased in the other half. Only well 02N21W17N03S was found to have a statistically significant trend of increasing sulfate concentration in the WLPMA (Table 2-6). The variability in concentration and the lack of a pattern in the change in concentration does not indicate that groundwater production has caused degradation of water quality in the WLPMA.

Boron

Boron concentrations were below 1 mg/L throughout the WLPMA (Figure 2-28). These concentrations are similar to the concentrations of boron measured in groundwater during the 2011 to 2015 period (Figure 2-23). There was no significant change in boron concentrations in the WLPMA since 2015 (Figure 2-28).

2.5.2.2 East Las Posas Management Area

Total Dissolved Solids (TDS)

There are no geographic patterns in the observed change in TDS concentrations in the ELPMA since 2015 (Figure 2-24). The concentration of TDS increased by approximately 20 to 140 mg/L in eleven wells in the monitoring network and decreased by approximately 9 to 170 mg/L in 20 wells in the monitoring network. Importantly, evaluation of the trends in TDS concentration since 2015 indicate that well 02N20W04F01S is the only well with a statistically significant increase in TDS concentration in the ELPMA (Table 2-6). TDS concentration data do not indicate that groundwater production since 2015 has caused degradation of groundwater quality or migration of contaminant plumes in the ELPMA.

Chloride

Similar to TDS, there are no geographic patterns in the observed change in chloride concentrations in the ELPMA since 2015 (Figure 2-25). The concentration of chloride increased in 20 wells and decreased in the remaining 11 wells in the monitoring network. Only ten wells in the monitoring network have chloride concentrations greater than 100 mg/L (Figure 2-20, Most Recent Chloride (mg/L) Measured 2019-2023). Although the concentration of chloride increased in the majority of these wells since 2015, no well in the ELPMA had a statistically significant increasing trend in chloride concentration (Table 2-6). Chloride concentration data do not indicate that groundwater production since 2015 has caused degradation of groundwater quality or migration of contaminant plumes in the ELPMA.

Nitrate

Nitrate concentrations (NO_3 as nitrate) increased by 0.3 to 8.2 mg/L throughout much of the ELPMA, although only well 02N19W07B02S was found to have a statistically significant trend of increasing nitrate concentration in the ELPMA (Table 2-6; Figure 2-26). If groundwater migration were responsible for the observed increases in concentrations, the area of increase should be limited to the edge of a migrating groundwater plume. This is not consistent with the widespread geographic distribution of the increasing nitrate concentrations in the ELPMA (Figure 2-26). This suggests that the observed changes may be the result of land use practices, rather than migration of groundwater associated with groundwater pumping.

Sulfate

Sulfate concentrations, and changes in sulfate concentrations since 2015, are variable across the ELPMA (Figures 2-22 and 2-27). Concentrations range from under 100 mg/L in the central and northern parts of the ELPMA, to over 600 mg/L in the southern and western portions of the ELPMA. Well 03N19W29K06S, in the northeastern ELPMA, is the only well with a statistically significant trend of increasing sulfate concentration since 2015 (Table 2-6). The most recent concentration in this well, however, was 33.9 mg/L, which is the lowest sulfate concentration measured in the ELPMA (Figure 2-22). As with other constituents, the lack of a distinct geographic area in which sulfate concentrations are increasing in the ELPMA suggests that the observed changes in concentration since 2015 are not related to degradation of water quality associated with groundwater production.

Boron

Boron concentrations were below 1 mg/L throughout the ELPMA (Figure 2-23). These concentrations are similar to the concentrations of boron measured in groundwater during the 2011 to 2015 period. Boron concentrations generally changed by less than 0.2 mg/L in the ELPMA, except at well 02N20W04R03, where the concentration increased by 0.4 mg/L (Figure 2-28). This localized increase is surrounded by wells in which the concentration of boron did not change.

2.5.2.3 Epworth Gravels Management Area

Groundwater quality samples were not collected from wells in the Epworth Gravels Management Area. The lateral and vertical extent of this management area is small, and groundwater quality has historically been influenced by the volume of recharge received (FCGMA 2019).

2.5.3 Sustainable Management Criteria

The GSP did not establish specific groundwater quality minimum thresholds, measurable objectives, or interim milestones (FCGMA 2019). The SMC for groundwater quality were based on the groundwater elevations that would prevent undesirable results related to chronic declines in groundwater elevation and significant and unreasonable loss of groundwater in storage.

2.5.4 Undesirable Results

Groundwater elevations in the WLPMA indicated that the management area experienced undesirable results related to chronic declines in groundwater elevation between 2019 and 2024 (Section 2.2.4, Undesirable Results). However, no wells were reported to have gone dry during that period and changes in the groundwater quality do not appear to be correlated with decreases in groundwater elevation. The ELPMA and Epworth Gravels Management Areas did not experience undesirable results related to chronic declines in groundwater elevation or significant and unreasonable loss of groundwater in storage.

A review of the most recent concentrations of TDS, chloride, nitrate, sulfate, and boron, as well as the changes in concentration of those constituents since 2015, does not indicate that the LPVB is experiencing degraded groundwater quality related to groundwater production.

2.5.5 Progress Toward Achieving Sustainability

FCGMA has begun to address DWR's recommended corrective action related to groundwater quality and is working to improve the groundwater quality monitoring network.

2.5.5.1 Adaptive Management Approaches

The adaptive management approaches taken in the LPVB are discussed in Section 2.2.5.1.

2.5.5.2 Impacts to Beneficial Uses and Users of Groundwater

Evaluation of the changes in water quality presented in Section 2.5.2 does not indicate that beneficial uses and users of groundwater have been impacted by water quality degradation since 2015. Additionally, beneficial uses and users of groundwater in the LPVB have not reported any impacts as a result of groundwater quality changes since the GSP was prepared.

2.5.5.3 Changes to Sustainable Management Criteria

The GSP did not define specific SMC for groundwater quality. No changes related to groundwater quality SMC are warranted at this time.

2.6 Land Subsidence

2.6.1 Department of Water Resources Recommended Corrective Actions

DWR issued a recommended corrective action related to land subsidence (DWR 2022). This recommended corrective action states:

> Incorporate periodic subsidence monitoring into the GSP's monitoring plan that can be used to quantify whether land subsidence is occurring and whether the groundwater level proxy is avoiding

undesirable results associated with land subsidence. As an option, the Department provides statewide InSAR data that can be used for monitoring land subsidence.

The majority of the minimum threshold groundwater levels in the LPVB are higher than or equal to historical low groundwater elevations. The only area where the minimum threshold is lower than the historical lows is in the northern part of the ELPMA. In this area, the minimum threshold is within 30 feet of the current water level. This area has experienced over 20 feet of decline in groundwater elevation since 2015, and there has been less than 2.5 inches of decline in the land surface elevation since that time. While this decline in groundwater elevation may be the source of changes in the land surface elevation, it is challenging to disentangle changes due to groundwater production from those due to tectonic forces in the LPVB. Because of the limited area in which groundwater elevation will decline below historical lows, and the changes in land surface elevation over the last 10 years have not impacted land use, groundwater management under the GSP is not anticipated to cause land subsidence that would significantly impact future land uses. Additionally, no critical infrastructure that could be impacted by land subsidence related to groundwater production has been identified. To monitor these conditions in the future, FCGMA has incorporated periodic subsidence monitoring into the GSP monitoring network. Subsidence monitoring will be performed using DWR's statewide InSAR datasets (Section 6.4, Functionality of Additional Monitoring Network).

2.6.2 Land Subsidence in the Las Posas Valley Basin

Since 2015, DWR's InSAR data indicates that land surface elevations have changed by less than approximately 2.5 inches (Figure 2-29). These land surface deformations have not impacted land uses within the LPVB.

2.6.3 Sustainable Management Criteria

Groundwater elevations in the WLPMA indicated that the management area experienced undesirable results related to chronic declines in groundwater elevation between 2019 and 2024 (Section 2.2.4, Undesirable Results). However, no wells were reported to have gone dry during that period and changes in land surface elevation do not appear to be correlated with decreases in groundwater elevation. The ELPMA and Epworth Gravels Management Areas did not experience undesirable results related to chronic declines in groundwater elevation or significant and unreasonable loss of groundwater in storage. At this time, FCGMA will incorporate regular subsidence monitoring into its monitoring program. However, groundwater level minimum thresholds are anticipated to be protective against land subsidence related to groundwater production that impacts surface infrastructure.

2.6.4 Undesirable Results

The LPVB has not experienced undesirable results related to land subsidence since the GSP was prepared.

2.6.4.1 Adaptive Management Approaches

The adaptive management approaches taken in the LPVB are discussed in Section 2.2.5.1.

2.6.4.2 Impacts to Beneficial Uses and Users of Groundwater

Evaluation of the changes in land surface elevation shown in Figure 2-29 does not indicate that beneficial uses and users of groundwater have been impacted by land subsidence since 2015. Additionally, beneficial uses and users of groundwater in the LPVB have not reported any impacts as a result of land subsidence since the GSP was prepared.

2.6.4.3 Changes to Sustainable Management Criteria

The GSP did not define specific SMC for land subsidence. No changes related to land subsidence SMC are warranted at this time.

2.7 Groundwater–Surface Water Connections

2.7.1 Department of Water Resources Recommended Corrective Actions

DWR issued a recommended corrective action related to groundwater- surface water interactions (DWR, 2021). This recommended corrective action states:

> Investigate the hydraulic connectivity of the Arroyo Simi-Las Posas, shallow aquifers, and principal aquifer to understand the reliance of the potential GDEs on the native flow and depletion of interconnected surface water bodies. Also, identify specific locations where Arroyo Simi-Las Posas is connected to the underlying aquifer and conduct necessary investigation to quantify the depletion of interconnected surface water along with the timing of depletions.
>
> Provide a schedule detailing when and how the data gaps identified in the GSP related to shallow groundwater monitoring near surface water bodies will be fulfilled and confirm the identification of potential GDEs.

FCGMA has taken multiple steps to address this recommended corrective action. First, FCGMA conducted an additional review of historical aerial photography and groundwater elevations to better identify the timing of vegetation growth along Arroyo Simi-Las Posas and its connection to the advent of non-native flows (Appendix A). Second, FCGMA sought funding through DWR's Sustainable Groundwater Management Grant Program to install multiple monitoring wells in the LPVB, including a well located on Arroyo Simi-Las Posas that would be used to investigate the connection between the shallow aquifers and principal aquifer; however, grant funding was not awarded. Third, FCGMA has developed a schedule, which is dependent on the availability of funding, for closing the data gaps identified in the GSP related to shallow groundwater monitoring. This schedule may be updated or modified based on PAC and TAC consultation and funding that may become available through basin assessments authorized under the Judgment.

2.7.2 Undesirable Results

The loss of GDE habitat is the undesirable results associated with depletion of interconnected surface water in the LPVB. The primary cause of groundwater conditions in the LPVB that would lead to loss of GDE habitat would be loss of non-native flow in Arroyo Simi-Las Posas. Satellite based estimates of habitat greenness indicate areas of declining plant coverage since 2019 (TNC 2024). It is important to note, however, that the habitat greenness indicators in 2023 are still higher than they were in 1985, when non-native surface water flows began infiltrating into the ELPMA (TNC 2024). The areas where satellite imagery indicates declining plant cover may be related to shifting flow patterns within the arroyo, or vegetation removal during high flow events. Decreasing greenness is observed on the banks of the arroyo and in the downstream portion of the arroyo, adjacent to the PVB. In contrast, since 2015, the non-native flow in Arroyo Simi-Las Posas has been sufficient to maintain both fall 2023 and spring 2024 groundwater elevations in the Shallow Alluvial aquifer at levels that are approximately equal to or higher than they were in the fall of 2015 and spring of 2015, respectively (Figures 2-11 and 2-12). The difference between the satellite-based estimates of habitat health and the groundwater elevation data suggests that the changes in plant coverage are not related to deepening of the groundwater and loss of interconnected surface water. Based on the measured groundwater elevations, undesirable results associated with depletion of interconnected surface water resulting from groundwater production has not occurred during the evaluation period.

2.7.3 Progress Toward Achieving Sustainability

Groundwater levels are used as a proxy for depletion of interconnected surface waters and GDEs. The minimum threshold were selected to limit chronic declines in groundwater elevation and loss of interconnected surface water and groundwater. The measurable objectives for wells screened in the shallow alluvial aquifer were established at levels that promote the health of the vegetation in Arroyo Simi-Las Posas, for the purpose of improving overall conditions in the ELPMA In accordance with 23 CCR 354.30[g], failure to achieve those objectives shall not be grounds for finding of inadequacy of the Plan. Since the GSP was adopted, groundwater elevations in the Shallow Alluvial aquifer have remained constant.

2.7.3.1 Adaptive Management Approaches

FCGMA's approach to adaptive management is described in Section 2.2.5.1.

2.7.3.2 Impacts to Beneficial Uses and Users of Groundwater

Groundwater elevations in the Shallow Alluvial aquifer have remained stable since 2015 (Figure 2-11 and 2-12). Therefore, environmental uses and users of groundwater have not been impacted by declines in groundwater elevation because of groundwater production or loss of non-native recharge. However, as discussed above, satellite-based estimates of habitat greenness indicate areas of declining plant coverage since 2019 (TNC 2024). Changes in habitat greenness along Arroyo Simi-Las Posas may indicate impacts to habitat health independent of access to groundwater.

2.7.3.3 Changes to Sustainable Management Criteria

The GSP did not define specific SMC for interconnected surface water and groundwater. No changes related to interconnected surface water and groundwater SMC are warranted at this time.

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3 Status of Projects and Management Actions

The GSP identified three projects and one management action that support groundwater sustainability in the LPVB (FCGMA 2019). These projects are: (1) Purchase of Imported Water from CMWD for Basin Replenishment, (2) Arroyo Simi-Las Posas Arundo Removal, and (3) Arroyo Simi-Las Posas Water Acquisition. The management action identified in the GSP was Reduction in Groundwater Production from the LPVB. These projects and management action are still relevant and feasible. Since adoption of the GSP, FCGMA and other agencies in the basin have identified additionally projects that increase water supplies, reduce groundwater demands, and address data gaps identified in the LPVB.

As described in Section 1, Significant New Information, the LPVB is now managed under the Judgment. As part of this, projects are required to be prioritized, funded, and implemented according to a specific process and criteria developed though the LPVB Basin Optimization Plan. Additionally, the Judgment requires the development of a Basin Optimization Yield study, which defines the Basin Optimization Yield[10] and Rampdown Rate[11] for the LPVB. Development of the Basin Optimization Yield and Rampdown Rate will directly inform the rate of reduction in groundwater production required to reach and maintain groundwater sustainability. Both the Basin Optimization Plan and Basin Optimization Yield Study are being developed by FCGMA, as Watermaster for the LPVB, with consultation, review, and recommendation from the LPVB PAC and TAC. FCGMA has begun development of each plan.

This section of the GSP evaluation provides an assessment of the projects and management actions identified in the GSP, summarizes all new projects that have been identified in the LPVB that support implementation of the GSP and Judgment, and describes the process for public notice and engagement throughout the implementation of projects and management actions in the LPVB.

[10] The Judgment defines the Basin Optimization Yield as, “the estimated yield that is projected to be available to achieve sustainable groundwater management by 2040.… The Basin Optimization Yield will take into account: (i) the water available from native groundwater inflows; (ii) Return Flows; (iii) reasonably anticipated enhanced yield (i.e., managed replenishment excluding water stored and dedicated and (iv) opportunities for optimization of the Sustainable Yield achieving by relocating Extraction and transmission of water to avoid Undesirable Results. The Basin Optimization Yield will also, through Adaptive Management, take into account circumstances including: (a) improved understanding of Basin conditions and hydrogeologic parameters as a result of new data over time; (b) the current status of Basin Optimization Projects; and (c) changing hydrological conditions.”

[11] The Judgment defines the Rampdown Rate as, “The rate of Rampdown beginning in Water Year 2025 and each Water Year thereafter, which will result from the Basin Optimization Yield Study” and defines that the Rampdown Rate shall be calculated, “by dividing the amount of any deficit between the then-effective Operating Yield (e.g. 40,000 AFY) and the Basin Optimization Yield by fifteen (i.e. fifteen annual increments).” Note that the Judgment defines the start of water year 2025 as October 1, 2025.

3.1 Evaluation of Projects and Management Actions Identified in the Groundwater Sustainability Plan

3.1.1 Management Actions

3.1.1.1 No. 1: Reduction in Groundwater Production

3.1.1.1.1 Description of Management Action No. 1

The primary management action proposed in the GSP is Reduction in Groundwater Production from the LPVB. FCGMA has had the authority to monitor and regulate groundwater production in the LPVB since 1983. The FCGMA Board has used its authority to reduce groundwater production from the LPVB in the past and will continue to exert its authority over groundwater production as a Groundwater Sustainability Agency (GSA) and the Watermaster for the LPVB.

In the WLPMA, the estimated long-term rate of groundwater production that will prevent chronic declines in groundwater levels, loss of storage, and subsidence due to groundwater withdrawal and will also allow the prevention of seawater intrusion in the Oxnard Subbasin, is approximately 11,400[12] AFY with an estimated uncertainty of approximately ±1,200 AFY. In the ELPMA, the estimated long-term rate of groundwater production that will prevent chronic declines in groundwater levels, loss of storage, and subsidence due to groundwater withdrawal is approximately 19,200 AFY ±2,300 AFY[13] (Section 5.2.3, Estimates of the Future Sustainable Yield).

3.1.1.1.2 Progress Toward Implementing Management Action No. 1

Allocation System

In 2019, FCGMA adopted an ordinance to establish a new fixed extraction allocation system that supports managing groundwater demand in the LPVB in a manner consistent with SGMA and the GSP. Under this allocation system, FCGMA adopted ordinance amendments and resolutions to facilitate transition to the new ordinance and provided policies and procedures for seeking variances. Additionally, FCGMA adopted resolutions increasing tiered groundwater surcharge rates for extractions that exceed allocation. This allocation system was in effect beginning October 1, 2020, through September 30, 2023.

The Judgment adjudicated water rights in the basin and established an allocation system based on those water rights. The Judgment allocations supersede the allocations developed and adopted by FCGMA in 2019. The Judgment grants four types of allocations - Agricultural, Commercial, Domestic, and Mutual Water Company Allocations – that are based on a Landowners' Overlying Rights and the amount of groundwater used rather than the amount of groundwater extracted. The initial allocations are based on the LPVB's Operating Yield[14].

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12 The sustainable yield estimate for the WLPMA was updated as part of this Groundwater Sustainability Plan (GSP) evaluation.

13 The sustainable yield estimate for the East Las Posas Management Area (ELPMA) was updated as part of this GSP evaluation.

14 The Judgment defines the "Operating Yield" as the cumulative amount of Allocated Groundwater that may be sustainably Extracted from the Basin for Use in any particular Water Year under the terms of this Judgment, excluding the Use of any Groundwater pursuant to a right of Carryover. Consistent with the definition of "Total Safe Yield" in the Phase 1 Order, the components of the Operating Yield include all native and non-native sources of water within the Basin, or within either subbasin (as the contexts requires), presently and in the future, including native Groundwater, surface water underflow, Return Flows from the use of imported water within the Basin, recharge from treated wastewater, recharge from septic systems, storm water recharge (intentional or otherwise), recharge from natural and non-natural sources originating inside or outside the Basin, excepting augmented yield physically existing within, and recoverable from, the Basin as a result of the Calleguas ASR Project, if any.

Rampdown Framework

The Judgment defines a framework for a Rampdown in groundwater production such that by 2040, sustainable groundwater management is achieved in the LPVB. Rampdown is based on the difference between the then-effective Operating Yield and Basin Optimization Yield of the LPVB.

The Judgment defines that the initial Operating Yield for the LPVB be equal to 40,000 AFY through at least water year 2024 (i.e., October 1, 2024, through September 30, 2025, based on the Judgment's Water Year definition). Under the Judgment, Rampdown will begin in Water Year 2025, following completion of the *Basin Optimization Plan* and *Basin Optimization Yield Study*, and will continue through Water Year 2039. The amount of annual Rampdown will be calculated by dividing the amount of any deficit between the then-effective Operating Yield and the Basin Optimization Yield by fifteen (i.e., fifteen annual increments). Rampdown is re-evaluated every 5 years based on an updated *Basin Optimization Study.*

3.1.1.1.3 Benefits and Impacts of Management Action No. 1

Realized Benefits

This management action has not yet been implemented in the LPVB. Under the Judgment, reduction in groundwater production will commence in Water Year 2025 (beginning October 1, 2025).

Expected Benefits

This management action is expected to help maintain groundwater elevations to prevent declines in groundwater elevation, loss of storage, and land subsidence.

Impacts to beneficial uses and users

Maintaining groundwater elevations with reduced extraction would help maintain groundwater storage. Reduction in groundwater production may have short-term negative operational impacts on groundwater users that are required to reduce groundwater extraction. However, over the long-term, reduction in groundwater production will have a positive impact on beneficial uses and users by avoiding undesirable results in the LPVB.

3.1.1.1.4 Department of Water Resources Recommended Corrective Action

DWR's evaluation and approval of the LPVB GSP included the following recommended corrective action:

> Develop and provide a new project or a management action as a contingency plan to include in the GSP. This alternate project or management action should address how the Basin intends to achieve its sustainability goal in the event that imported water is unavailable to use in lieu of groundwater production in the WLPMA, or if any of the project or management action included in the GSP is unable to produce expected benefit. Additionally, the project or management action provided should be developed so that it is ready to be implemented with the 20-year SGMA [Sustainable Groundwater Management Act] timeline.

Since the GSP was adopted, FCGMA has worked with other agencies and interested parties in the LPVB to identify projects that were not incorporated in the GSP. Concurrently, the Judgment identified additional projects that must be evaluated as part of the Basin Optimization Yield study. The Judgment adopted a physical solution that requires

FCGMA, acting in its capacity as the Watermaster, to prepare studies documenting how the LPVB can maintain an annual operating yield of at least 40,000 AFY. FCGMA, in consultation with the LPV PAC and TAC, will evaluate identified projects, including those called out in the Judgment, as part of the Basin Optimization Yield Study, which is required by the Judgment. Results from the Basin Optimization Yield Study will be incorporated into future evaluations and, as appropriate, amendments to the GSP.

3.1.2 Projects

Projects identified in the LPVB GSP have not been implemented as of this evaluation. As discussed above, the Judgment established a new process for evaluating, prioritizing, funding, and implementing projects consistent with SGMA and the Judgment. This process will be implemented through FCGMA's development of a Basin Optimization Plan in consultation with the PAC and TAC, which is presently underway. The Basin Optimization Plan will include the following elements:

1. Criteria for determining the priority and feasibility of each Basin Optimization Project.
2. A description of the Basin Optimization Projects that are likely to be practical, reasonable, and cost-effective to implement prior to 2040 to maintain the Operating Yield at 40,000 AFY or as close thereto as achievable.
3. An analysis of whether any of the Basin Optimization Projects (i) are consistent with SGMA and the achievement of Sustainable Groundwater Management, and (ii) will prevent or alleviate, or cause or exacerbate, Undesirable Results or Material Injury.
4. A prioritization schedule of the Basin Optimization Projects to be implemented.
5. A schedule for the Basin Optimization Projects that are to be implemented to be evaluated, scoped, designed, financed, and developed.
6. A 5-year budget for the costs of capital improvements, and the operation and maintenance, of the Basin Optimization Projects.

The subsections below provide a summary of the projects originally considered in the GSP and the anticipated benefits upon project completion.

3.1.2.1 Project No. 1: Purchase of Imported Water from Calleguas Municipal Water District for Basin Replenishment

3.1.2.1.1 Description of Project No. 1

The Purchase of Imported Water from CMWD for Basin Replenishment Project (Purchase of Imported Water from CMWD Project) would supply imported water to the eastern part of the WLPMA in lieu of groundwater production (FCGMA 2018). This project would directly result in decreased groundwater production from discrete wells in the WLPMA. This project is limited to water purveyors with ability to receive water from CMWD (FCGMA 2019).

3.1.2.1.2 Benefits and Impacts of Project No. 1

Realized Benefits

This project is conceptual; thus, benefits have not yet been realized. Feasibility of implementing this project in the LPVB will be evaluated through the Basin Optimization Plan.

Expected Benefits

The project is expected to help to assist with water level recoveries and prevent undesirable results by reducing groundwater demands in the eastern part of the WLPMA.

Impacts to beneficial uses and users

In lieu deliveries to the WLPMA would help to maintain groundwater in storage in the WLPMA and prevent chronic lowering of groundwater levels, thereby having a positive impact on beneficial uses and users.

3.1.2.2 Project No. 2: Arroyo Simi-Las Posas Arundo Removal

3.1.2.2.1 Description of Project No. 2

The Arroyo Simi–Las Posas Arundo Removal Project involves removing the invasive plant species Arundo donax from approximately 324 acres of land along the Arroyo Simi–Las Posas corridor (FCGMA 2019). Arundo would be replaced with native riparian plant species, which are estimated to consume approximately 6 to 25 AFY per acre less water than Arundo. If all of the Arundo within the 324-acre area is removed, this project could result in up to an additional 2,680 AFY of recharge to the ELPMA (FCGMA 2018).

3.1.2.2.2 Benefits and Impacts of Project No. 2

Realized Benefits

This project is conceptual; thus, benefits have not yet been realized. Feasibility of implementing this project in the LPVB will be evaluated through the Basin Optimization Plan.

Expected Benefits

Surface water infiltration through the bottom of Arroyo Simi–Las Posas is a primary recharge mechanism for the ELPMA. Arundo that lines the banks of Arroyo Simi–Las Posas consumes more water than native riparian vegetation would. Therefore, removing Arundo will make additional water available to recharge the groundwater aquifers of the ELPMA.

Impacts to beneficial uses and users

This project is anticipated to have a positive impact on groundwater recharge, as well as a positive impact on the health of riparian habitat along Arroyo Simi–Las Posas.

3.1.2.3 Project No. 3: Arroyo Simi-Las Posas Water Acquisition

3.1.2.3.1 Description of Project No. 3

The Arroyo Simi–Las Posas Water Acquisition Project would involve the purchase of recycled water from the City of Simi Valley (Simi Valley) (FCGMA 2018). In return, Simi Valley would commit to continuing to discharge the purchased or leased water from its shallow dewatering wells or the Simi Valley Water Quality Control Plant (SVWQCP) to Arroyo Simi–Las Posas for downstream recharge to the LPVB.

3.1.2.3.2 Benefits and Impacts of Project No. 3

Realized Benefits

Since adoption of the GSP, the City of Simi Valley has decided not to pursue its plans to increase recycled water utilization within its service area. As a result, the City of Simi Valley continued to discharge water produced at the SVWQCP to Arroyo Simi-Las Posas. Over the 2016 to 2023 period, these discharges averaged approximately 8,000 AFY, which is 300 AFY higher than projected in the GSP.

A formal agreement to ensure future maintenance of these non-native flows will be evaluated through the Basin Optimization Plan.

Expected Benefits

As noted above, surface water infiltration through the bottom of Arroyo Simi–Las Posas is a primary recharge mechanism for the ELPMA. Maintaining SVWQCP discharges to Arroyo Simi-Las Posas will help to prevent declines in groundwater levels and storage and help to support the health of riparian habitat along Arroyo Simi-Las Posas, which relies on infiltrating surface water.

Impacts to beneficial uses and users

This project is expected to benefit all beneficial uses and users in the ELPMA by providing a reliable, supplemental source of recharge.

Table 3-1. Status of Projects and Management Actions Identified in the Groundwater Sustainability Plan

Name	Description	Status	Expected Schedule	Benefits Observed to Date	Estimated Accrued Benefits at Completion
Management Actions					
Reduction in Groundwater Production	Reduce Groundwater production by monitoring and imposing quantitative limits on pumpers; with governing authority from the FCGMA Board as the Watermaster.	Not Implemented	Not defined	▪ Establishment of a revised allocation system ▪ Establishment of a Rampdown framework and timeline	Avoidance of undesirable results.
Projects					
Purchase of Imported Water from CMWD for Basin Replacement	Purchase of imported from CMWD for basin replenishment to supply water to the eastern part of WLPMA	Not Implemented	Not defined	N/A	Reduce groundwater production from WLPMA without limiting total quantity of water available
Arroyo Simi-Las Posas Arundo Removal	Removal of invasive Arundo donax from the Arroyo Simi-Las Posas Corridor	Not implemented	Not defined	N/A	Increase in sustainable yield
Arroyo Simi-Las Posas Water Acquisition	Purchase of recycled water from the City of Simi Valley to maintain non-native flows in the Arroyo Simi-Las Posas	Not implemented	Not defined	N/A	Maintain sustainable yield

3.2 Newly Identified Projects and Management Actions

FCGMA and the interested parties in the LPVB have identified projects that increase water supplies in the LPVB and support implementation of the GSP and Judgment. These projects were not included in the GSP. A portion of these projects were incorporated into the GSP through the 2021 GSP Annual Report for the LPVB (FCGMA 2022). These projects are summarized below and in Table 3-2, Summary of New Projects and Management Actions.

In addition to these projects, the Judgment identifies additional projects to be evaluated as part of the Basin Optimization Plan. These are summarized in Section 3.2.2, Projects Identified through the Judgment.

3.2.1 Project No. 4: Infrastructure Improvements to Zone Mutual Water Company's Water Delivery System

3.2.1.1 Description of Project No. 4

This project is intended to increase the capacity of Zone Mutual Water Company (ZMWC) delivery system to physically transfer water between the ELPMA and WLPMA of the LPVB by converting the existing ZMWC delivery system from gravity to pressure. The conversion will require: the replacement of approximately 4.5 miles of concrete gravity pipeline with PVC, HDPE, or steel pipeline and associated appurtenances, and instrumenting the delivery system with system automation controls to provide on-demand services. Implementation of this project would contribute to GSP Project No. 1, Purchase of Imported Water from CMWD for Basin Replenishment, by allowing for in-lieu deliveries to farmers. In addition, this project would increase water use efficiency through pipeline upgrades and system automation and increase the capacity to deliver blending water to agricultural well owners impacted by poor quality groundwater. It is estimated that this project would result in approximately 500 AFY of water savings and, combined with the Purchase of Imported Water from CMWD for Basin Replenishment project, would decrease groundwater demand in the LPVB by 2,300 AFY.

3.2.1.2 Benefits and Impacts of Project No. 4

Realized Benefits

This project is conceptual; thus, benefits have not yet been realized.

Expected Benefits

The project should aid in the achievement of measurable objectives and minimum thresholds for the four sustainability indicators applicable to the LPVB. This project will: (1) help raise groundwater levels, thereby increasing the volume of groundwater in storage and reducing the potential for land subsidence related to groundwater withdrawal, and (2) improve groundwater quality by providing blending water to agricultural pumpers impacted by low quality groundwater. Higher groundwater levels will also reduce pump lift, and therefore energy consumption, for municipal and agricultural pumpers.

It is estimated that implementation of this project would decrease groundwater demand in the LPVB by approximately 500 AFY.

Impacts to beneficial uses and users

This project benefits beneficial uses and users in the WLPMA by helping to raise groundwater levels and storage.

3.2.2 Project No. 5: Moorpark Groundwater Desalter

3.2.2.1 Description of Project No. 5

This project proposed by the Ventura County Waterworks District No. 1 (VCWWD-1) consists of construction of a new groundwater desalter facility located east of the Moorpark Water Reclamation Facility, along Los Angeles Avenue. The project goals are to improve water quality in the southern portion of the ELPMA and provide an additional source of potable water supply to the LPVB. The project aims to achieve these goals by pumping and treating high-TDS groundwater from the southern portion of the ELPMA. In doing this, the project would: (1) assist the wastewater treatment plants in the Calleguas Creek Watershed in compliance with the Regional Water Quality Control Board total maximum daily load limit for chloride, sulfate, and TDS, (2) reduce the dependence on imported water in the LPVB by providing new local potable supplies, (3) improve groundwater quality in the southern portion of the ELPMA, and (4) create additional underground storage within the ELPMA. Preliminary analyses of the project anticipate that the Moorpark Desalter operate at a maximum sustainable rate of 7,600 AFY.

Project components include: (1) construction of new groundwater extraction wells to pump high-TDS groundwater from the ELPMA, and (2) construction of a desalter facility that would treat the low-quality groundwater prior to incorporation into the VCWWD-1 delivery system. Preliminary analyses for the proposed desalter have been completed and the project is in the planning phase.

3.2.2.2 Benefits and Impacts of Project No. 5

Realized Benefits

This project is conceptual; thus, benefits have not yet been realized. Feasibility of implementing this project in the LPVB will be evaluated in the Basin Optimization Plan.

Expected Benefits

Depending on the operational conditions and distribution of desalted water, this project should aid in the achievement of measurable objectives and minimum thresholds for water quality by removing constituents of concern from the southern portion of the ELPMA, which has been impacted by degraded water quality resulting from surface water recharge originating from outside the LPVB boundaries. In addition, this project would be complementary to GSP Project No. 3, *Arroyo Simi-Las Posas Water Acquisition*, which aims to maintain dewatering well and/or SVWQCP discharges to the Arroyo Simi-Las Posas for downstream recharge to the LPVB, by increasing the available storage capacity in the aquifers underlying Arroyo Simi-Las Posas.

Impacts to beneficial uses and users

This project would benefit beneficial uses and users by improving groundwater quality conditions in the Southern ELPMA and providing a new source of water supply throughout the LPVB.

3.2.3 Project No. 6: Arroyo Las Posas Storm Flow Diversions for Recharge to the East Las Posas Management Area

3.2.3.1 Description of Project No. 6

This project proposes to divert storm flows from Arroyo Simi-Las Posas for recharge to the ELPMA. The proposed diversions would occur during high flow events via a new surface intake located near the existing stabilizer structure in the Arroyo Simi-Las Posas adjacent to the Moorpark Wastewater Water Reclamation Facility operated by VCWWD-1. The storm flows would then be delivered to the existing percolation ponds to recharge the aquifers in the ELPMA. The project proposes to use the entire 40 acres of the existing percolation ponds and anticipates that the diversions would provide up to 2,000 AFY of recharge. The 2,000 AFY estimated recharge may increase the sustainable yield of the ELPMA up to the corresponding amount, provided adequate storage is available in the aquifers.

3.2.3.2 Benefits and Impacts of Project No. 6

Realized Benefits

This project is conceptual; thus, benefits have not yet been realized. Feasibility of implementing this project will be evaluated in the Basin Optimization Plan.

Expected Benefits

The project should aid in the achievement of measurable objectives and minimum thresholds for the four sustainability indicators applicable to the LPVB. This project will: (1) help raise groundwater levels throughout the ELPMA by providing 2,000 AFY of additional recharge to the basin, thereby increasing the volume of groundwater in storage and reducing the potential for land subsidence related to groundwater withdrawal, and (2) improve groundwater quality in the southern portion of the ELPMA by recharging higher-quality water compared to the base flows in Arroyo Las Posas that are composed predominantly of discharges from the SVWQCP. Higher groundwater levels that result from this recharge project may also reduce pump lift, and therefore energy consumption, for municipal and agricultural pumpers.

This project is estimated to increase the sustainable yield of the ELPMA by up to 2,000 AFY.

Impacts to beneficial uses and users

This project would positively impact beneficial uses and users in the ELPMA.

3.2.4 Project No. 7: Installation of Additional Groundwater Monitoring Wells

3.2.4.1 Description of Project No. 7

This project proposes installation of multi-depth monitoring wells in the WLPMA and ELPMA of the LPVB to assess groundwater conditions in the principal aquifers of the LPVB that lack data. The GSP determined that there were spatial data gaps in the understanding of aquifer conditions and identified four potential new well locations that would help fill the identified gaps. In the WLPMA, the GSP identified the boundary between the WLPMA and the Oxnard Subbasin as an area that would benefit from additional groundwater monitoring to improve characterization of groundwater gradients across the basin boundary. In the ELPMA, the GSP identified the potential groundwater dependent ecosystem located along Arroyo Simi-Las Posas as a region that would benefit from additional groundwater monitoring. A new multi-depth groundwater monitoring well in this location would provide data on groundwater gradients in an area of infiltrating surface water. In addition, the GSP notes that there are no dedicated monitoring wells screened in the GCA in the ELPMA and that adding a monitoring well would improve the understanding of groundwater gradients between the FCA and GCA.

Since submittal of the GSP, well 02N20W04F02S, a key well in the ELPMA, was destroyed. A new dedicated monitoring well to replace this well would provide better characterization of groundwater conditions in the western part of the ELPMA. In the WLPMA, FCGMA identified the pumping depression in the eastern portion of the management area as an area that would benefit from a new dedicated monitoring well. Additionally, well 02N21W16J03S, the only key well in the central part of the WLPMA, has not been measured since 2016. This part of the WLPMA would benefit from a new dedicated monitoring well.

3.2.4.2 Benefits and Impacts of Project No. 7

Realized Benefits

This project is conceptual; thus, benefits have not yet been realized.

Expected Benefits

The expected benefits of this project lie in the additional data gathered from the well installation process and the ongoing monitoring of the groundwater conditions at the well sites. These data can be used to refine the conceptual and numerical models of the LPVB. Such refinement may result in reevaluation and adjustment of the minimum thresholds or measurable objectives.

Impacts to beneficial uses and users

This project is anticipated to benefit beneficial uses and users in the LPVB by improving characterization and management of the basin.

3.2.5 Project No. 8: Installation of Transducers in Groundwater Monitoring Wells

3.2.5.1 Description of Project No. 8

This project proposes installation of transducers in representative monitoring points, or key wells, in the LPVB. The GSP determined that there were temporal data gaps in the understanding of aquifer conditions. These data gaps limit the number of wells that can be used to contour spring high and fall low groundwater conditions. These temporal data gaps also impact estimates of the change in groundwater in storage in the LPVB. The temporal data gaps have persisted in each annual report prepared after the GSP was submitted to DWR. Additionally, as most key wells are agricultural irrigation wells, transducers will help assure that measured groundwater levels are static water levels unaffected by recovery or potential well interference. The addition of transducers will help ensure that spring high and fall low groundwater levels are collected from key wells within a 2-week window, as recommended by DWR, and will provide a clearer understanding of groundwater conditions during the spring and fall measurement events. This will allow better comparison for annual change in storage estimates and will facilitate sustainable management of the LPVB.

3.2.5.2 Benefits and Impacts of Project No. 8

Realized Benefits

This project is conceptual; thus, benefits have not yet been realized.

Expected Benefits

The expected benefits of this project lie in the collection of data from a 2-week window each spring and fall and the ongoing monitoring of the groundwater conditions at the well sites including a better understanding of potential well interference and non-static conditions on the water level measurements. This data can be used to inform management decisions depending on the observed groundwater conditions.

Impacts to beneficial uses and users

This project is anticipated to benefit beneficial uses and users in the LPVB by improving characterization and management of the basin.

3.2.6 Project No. 9: Feasibility Study to Identify Possible Supplemental Water Supply Sources for the Northern East Las Posas Management Area

3.2.6.1 Description of Project No. 9

This project seeks to understand the feasibility of providing supplemental water supplies to the northern area of the ELPMA. The GSP identified the area of the ELPMA north of the Moorpark anticline as a region where groundwater elevations have exhibited historical declines that locally exceed 250 feet. Groundwater elevation trends in this part of the ELPMA differ from those measured in the southern portion of the ELPMA, where groundwater elevations have experienced periods of recovery in response to increasing flow in Arroyo Simi-Las Posas. Groundwater elevations north of the Moorpark anticline are less responsive to flows in Arroyo Simi-Las Posas and are primarily influenced by groundwater production and CMWD's ASR operations. Supplemental water supplies to this area will reduce groundwater demand in this part of the ELPMA.

3.2.6.2 Benefits and Impacts of Project No. 9

Realized Benefits

This project is conceptual; thus, benefits have not yet been realized.

Expected Benefits

This feasibility study is expected to provide a clear understanding of the volume of supplemental water supplies, and corresponding piping infrastructure, required to offset groundwater demands and maintain groundwater elevations above the minimum thresholds in the northern portion of the ELPMA. In addition, this feasibility study will provide stakeholders with estimated costs associated with the supplemental water deliveries and corresponding infrastructure requirements and will also provide stakeholders with an estimate of the potential increase to the sustainable yield of the ELPMA.

Impacts to beneficial uses and users

This project is anticipated to benefit beneficial uses and users in the ELPMA by identifying the feasibility of implementing projects that help to reduce groundwater demands in the northern part of the basin, which impacts the sustainable yield of the ELPMA.

3.3 Additional Projects Identified in the Judgment

The Judgment identifies nine projects that must be considered in the *Basin Optimization Plan* for the LPVB:

1. Removing, and periodic removal maintenance, of Arundo donax from the Las Posas Valley Watershed in an environmentally safe manner.
2. Importing of surplus water.
3. Arroyo Las Posas storm water capture and recharge.
4. Constructing desalter(s) to address water quality issues in the Arroyo Simi Creek.
5. Formalizing an agreement with the City of Simi Valley to maintain up-stream wastewater treatment plant discharges, or treated effluent, into the Arroyo Simi Creek.
6. Formalizing an agreement with the City of Simi Valley for recycled water deliveries to Las Posas Valley users via pipeline.
7. Designing and constructing new or modified infrastructure in order to deliver In Lieu Water to deficit areas for Use in Lieu of Extracted Groundwater and to increase water conveyance within the LPVB.
8. Developing a program for least cost acquisition of Allocation Basis or Annual Allocations, or Carryover as an alternative to replenishment.
9. Using CMWD facilities for replenishment.

The current understanding of projects 1 through 5 and 7 are summarized in Sections 3.1, Evaluation of Projects and Management Actions Identified in the Groundwater Sustainability Plan, and 3.2, Newly Identified Projects and Management Actions. Projects 6, 8, and 9, are projects that have been newly identified in the LPVB through the Judgment. These newly identified projects will be evaluated in the Basin Optimization Plan.

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Table 3-2. Summary of New Projects and Management Actions

Name	Description	Status	Expected Schedule	Benefits Observed to Date
New Projects				
Infrastructure Improvements to Zone Mutual Water Company's water delivery system	Conversion of existing ZMWC delivery system from gravity to pressure	Not Implemented	Not defined	N/A
Moorpark Groundwater Desalter	Groundwater desalter facility locate east of the Moorpark Water Reclamation Facility	Not Implemented	Not defined	N/A
Arroyo Las Posas Storm Flow Diversions for Recharge to the ELPMA	Construction of a new surface water intake and percolation ponds along Arroyo Simi-Las Posas	Not Implemented	Not defined	N/A
Installation of Additional Groundwater Monitoring Wells	Installation of up to four (4) new dedicated monitoring wells in the ELPMA and WLPMA	Not Implemented	Not defined	N/A
Installation of Transducers in Groundwater Monitoring Wells	Installation of transducers in key wells in the LPVB.	Not Implemented	Not defined	N/A
Feasibility Study to identify possible supplemental water supply sources for the northern ELPMA	Feasibility study to evaluate providing supplement water supplies to the northern area of the ELPMA.	Not Implemented	Not defined	N/A
Formalizing an agreement with the City of Simi Valley for recycled water deliveries to Las Posas Valley users via pipeline	Not Defined.	Not Defined.	Not Defined.	N/A
Developing a program for least cost acquisition of Allocation Basis or Annual Allocations, or Carryover as an alternative to replenishment	Not Defined.	Not Defined.	Not Defined.	N/A
Using CMWD facilities for replenishment	Not Defined.	Not Defined.	Not Defined.	N/A

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4 Basin Setting Review

4.1 Hydrogeologic Conceptual Model

There are three hydrogeologically distinct management areas (WLPMA, ELPMA, and Epworth Gravels Management Area) and four principal aquifers (the Shallow Alluvial aquifer, Epworth Gravels aquifer, FCA, and GCA) in the LPVB (FCGMA 2019). The FCA and GCA are present in both the WLPMA and ELPMA, although hydrogeologic communication between the two management areas is limited by the Somis Fault. The Shallow Alluvial aquifer is only present in the East Las Posas Management Area (ELMPA), constrained to an area adjacent to Arroyo Simi–Las Posas. The Epworth Gravels aquifer is located geographically within the ELPMA, near Broadway Road, however it is hydrologically disconnected from the underlying FCA and, therefore, is defined as its own management area. The Upper San Pedro formation, while not a principal aquifer in the LPVB, acts as a source of water to the underlying FCA. This section of the GSP evaluation summarizes new information that helps to improve understanding of the groundwater conditions within each principal aquifer.

4.1.1 New Information and Data

4.1.1.1 Hydrostratigraphic Information

WLPMA

UWCD maintains the three-dimensional (3D) hydrostratigraphic model of the Oxnard Subbasin, PVB, and WLPMA. This 3D hydrostratigraphic model maps the lateral extents, thicknesses, and properties of the six water-bearing aquifers in the LPVB. The 3D model was designed during development of the VRGWFM and integrates geophysical logs (e-logs) and lithologic data from approximately 575 wells in the Oxnard Subbasin, PVB, and WLPMA with structural geologic information into a 3D model developed using the Rockworks software (UWCD 2018). Since adoption of the GSP, UWCD has continued development of the 3D hydrostratigraphic model of the region. UWCD has focused their hydrostratigraphic model updates on areas in the Oxnard Subbasin underlying the Naval Base Ventura County installations at Point Mugu and Port Hueneme, where groundwater is impacted by seawater intrusion. These revisions impact the interpretation of aquifer thicknesses and extents along the coastline of the Oxnard Subbasin.

While these hydrostratigraphic model updates are not specific to the LPVB, they help to improve understanding of the impacts of groundwater conditions in the WLPMA of the LPVB on seawater intrusion in the Oxnard Subbasin. These revisions are described in FCGMA (2024a). Projects have been identified to install additional monitoring wells and transducers in existing wells that would address data gaps in the ELPMA (Sections 3.2.4 and 3.2.5.) FCGMA applied for DWR SGMA Implementation Grant funding for these projects but was not awarded funds. These projects will be evaluated further in the Basin Optimization Plan.

ELPMA and Epworth Gravels

CMWD installed three multi-level groundwater monitoring wells in the ELPMA and Epworth Gravels management area. One well will help characterize the Epworth Gravels, FCA, and GCA and a second will help characterize the Upper San Pedro formation and FCA in the ELPMA. Data from these wells will be used to better characterize vertical gradients between aquifers. While these wells improve the hydrogeologic conceptual model, data gaps remain in both management areas. Projects have been identified to install additional monitoring wells and transducers in existing wells that would address data gaps in the LPVB (Sections 3.2.4 and 3.2.5). FCGMA applied for DWR SGMA Implementation Grant funding for these projects but was not awarded funds. These projects will be evaluated further in the Basin Optimization Plan.

4.1.2 Groundwater Conditions

New data made available since adoption of the GSP that help to improve characterization of groundwater conditions in the LPVB include DWR's InSAR data and the Nature Conservancy's satellite-based estimates of riparian habitat health along Arroyo Simi-Las Posas. These data are described in Sections 2.6, Land Subsidence, and 2.7, Groundwater–Surface Water Connections, and improve understanding of the relationship between groundwater extractions, groundwater levels, and undesirable results in the LPVB.

4.1.3 Updates to the Hydrogeologic Conceptual Model

4.1.3.1 Recharge Areas

The majority of groundwater production from the LPVB occurs from the San Pedro and Santa Barbara formations, which host the FCA and GCA. These formations are expressed at land surface along South Mountain and along the base of the Oak Ridge and Santa Susana Mountains (Figure 4-1, Potential Recharge Areas of the Las Posas Valley Basin). While a portion of these areas lie outside of the LPVB, these outcrops act as recharge areas for the principal aquifers of the LPVB.

4.2 Data Gaps in the Hydrogeologic Conceptual Model

The GSP identified data gaps in the hydrogeologic conceptual model of the LPVB (FCGMA 2019). These data gaps create uncertainty in the understanding of the impacts of water level changes on change in storage in each aquifer. Since adoption of the GSP, CMWD has installed three new monitoring wells. Well 03N19W30M07 is a new nested monitoring well screened in the Epworth Gravels aquifer. Well 03N19W30D07, -08, and -09 is a clustered monitoring well screened in the Epworth Gravels aquifer, the FCA and the GCA. Well 02N20W11B01, -02, and -03 is a clustered monitoring well that addresses a data gap in groundwater elevations in the Upper San Pedro Formation and the FCA south of the Moorpark anticline. Additionally, projects have been identified to install monitoring wells and transducers in existing wells that would further address data gaps in both the ELPMA and WLPMA (Sections 3.2.4 and 3.2.5.) FCGMA applied for DWR SGMA Implementation Grant funding for these projects but was not awarded funds. These projects will be evaluated further in the Basin Optimization Plan. A summary of the data gaps identified in the GSP is included in Table 4-1, Summary of Actions Taken to Address Data Gaps Identified in the GSP.

Table 4-1. Summary of Actions Taken to Address Data Gaps Identified in the GSP

Data Gap Identified in the GSP		
No.	Description	Status of Data Gap
1	Distributed measurements of aquifer properties from wells screened solely in a single aquifer	▪ Progress has been made to address these data gaps, but data gaps remain in the LPVB. ▪ Projects that begin to address these data gaps are being evaluated and prioritized for implementation over the next 5 years in a manner consistent with the GSP and Judgment.
2	Distributed measurements of groundwater quality from wells screened solely in a single aquifer	
3	The volume of leakage between the USP and underlying FCA	
4	The connectivity and vertical flow between multiple distinct water-bearing zones within the USP	

4.3 Water Use Changes and Associated Water Budget

The GSP characterized historical land uses and water supplies within the LPVB through December 31, 2015. This section summarizes the water supplies in the LPVB since 2015. Land use changes within the LPVB since 2015 are provided as context.

4.3.1 Land Use Change

Land use change in the LPVB was evaluated using DWR's statewide land use data for 2014 and 2022. Land uses were grouped into three categories: agriculture, urban, and idle/unclassified. Between 2014 and 2022, the area of agricultural land increased by approximately 499 acres, area of urban land increased by approximately 395 acres, and area of idle/unclassified land increased by approximately 487 acres (Table 4-2, Land Use Change 2014 - 2022). The total mapped land use in the LPVB in DWR's published data sets varies by 1,381 acres between 2014 and 2022 pointing to uncertainty in the data which should be considered when evaluating the land-use changes.

Table 4-2. Land Use Change 2014-2022

Land Use	2014 (acres)	2022 (Acres)	Difference (acres)	Percent Change
Agriculture	18,403	18,902	499	3%
Urban	6,892	7,287	395	6%
Idle/Unclassified	108	595	487	453%

Source: DWR 2024.
Notes: DWR's land use mapping totals to 25,403 acres in 2014 and 26,784 in 2022. The difference in total mapped land use reflects uncertainty in the Statewide mapping and not a change in the areal extent of the LPVB.

4.3.2 Water Supplies during the Evaluation Period

Water supplies in the LPVB consist of imported water, recycled water, and groundwater. This section of the GSP evaluation summarizes the total water supplies in the LPVB and provides a comparison to historical usage. Because the GSP provides data on water supplies through 2015, water supply data are summarized here for water years

2016 through 2023. However, water-use trends over the evaluation period are characterized using data for the period of water years 2020 through 2023[15]. Data for water year 2024 (Judgment Water Year 2023) were not available at the time of reporting.

4.3.2.1 Groundwater

On December 14, 2020, the FCGMA adopted a new Ordinance to Establish an Extraction Allocation System for the Las Posas Valley Groundwater Basin. The prior system provided an efficiency allocation to agricultural pumpers based on the crop type, number of acres planted, and water-year type. This enabled increased groundwater extractions if more water-intensive crops were planted, or additional acres were brought into production. The new system established fixed extraction allocations assigned to each production well, a change that was needed to sustainably manage the basin. The ordinance additionally transitioned extraction reporting from calendar year to water year. The allocation system went into effect on October 1, 2021 (start of water year 2022[16]) through September 30, 2023. The Judgment adjudicated water rights in the basin and established an allocation system based on those water rights. The Judgment allocations supersede the allocations developed and adopted by FCGMA in 2019. The initial allocations are based on the LPVB's Operating Yield[17].

Table 4-3, Reported Annual Groundwater Extractions in the WLPMA by Aquifer System and Water Use Sector, and Table 4-4, Reported Annual Groundwater Extractions in the ELPMA by Aquifer System and Water Use Sector, summarize groundwater extractions from the LPVB since 2015. Because groundwater extractions are not reported monthly, groundwater production prior to calendar year 2021 cannot be reported on a water-year basis. Therefore, the groundwater extractions for 2016 through 2020 reported in Tables 4-3 and 4-4 follow the historical precedent and represent calendar year extractions.

Due to the transition from calendar-year to water-year reporting, the water year 2021 groundwater extractions reported in Tables 4-3 and 4-4 represent: (i) a combination of reported and estimated extractions for the period from October 1, 2020, through December 31, 2020, and (ii) a combination of reported and estimated extractions for the period from January 1, 2021, through September 30, 2021. Agricultural extractions between October and December 2020 were estimated using monthly automated metering infrastructure (AMI) data that were validated against the 2020 calendar year extraction reports. Municipal and domestic extractions between October and December 2020 were estimated by assuming that 50% of the reported extraction between June and December occurred between October and December.

The water year 2023 extractions presented in Tables 4-3 and 4-4 represent the extractions reported to FCGMA over the 2023 reporting period as of January 26, 2024, and do not include estimates of extractions from non-reporting wells based on AMI data. FCGMA had received complete reporting from approximately 70% of the operators within

15 Groundwater extraction trends for the evaluation period are summarized using data from two years: water year 2021 and 2022. Due to the transition from calendar year to water year reporting in 2021, there is uncertainty in the estimate of groundwater extractions for water year 2021. Water year 2023 was not included because, at the time of reporting, FCGMA had only received and/or processed extraction reports for approximately 80% of the operators in the LPVB.

16 Water year 2022 covers the period from October 1, 2021, through September 30, 2022.

17 The Judgment defines the "Operating Yield" as the cumulative amount of Allocated Groundwater that may be sustainably Extracted from the Basin for Use in any particular Water Year under the terms of this Judgment, excluding the Use of any Groundwater pursuant to a right of Carryover. Consistent with the definition of "Total Safe Yield" in the Phase 1 Order, the components of the Operating Yield include all native and non-native sources of water within the Basin, or within either subbasin (as the contexts requires), presently and in the future, including native Groundwater, surface water underflow, Return Flows from the use of imported water within the Basin, recharge from treated wastewater, recharge from septic systems, storm water recharge (intentional or otherwise), recharge from natural and non-natural sources originating inside or outside the Basin, excepting augmented yield physically existing within, and recoverable from, the Basin as a result of the Calleguas ASR Project, if any.

the LPVB. In water year 2022, extraction from the operators with incomplete reporting accounted for approximately 15% of the total extractions in the basin.

Comparison to Historical Groundwater Supplies

During the 1985 to 2015 period, an average of 35,100 AFY of groundwater was extracted from the LPVB (FCGMA 2019). Approximately 86% was used for agriculture, 14% was used for municipal supply, and less than 2% was reportedly used for domestic purposes. Available data characterizing groundwater extractions in water years 2021 and 2022 indicate that groundwater extractions from the LPVB averaged approximately 40,400 AFY (Tables 4-3 and 4-4), or 15% higher than the 1985 to 2015 average. In water years 2021 and 2022, approximately 86% of the pumped groundwater was used for agriculture, 13% was used for municipal supply, and 1% was used for domestic purposes.

The higher than historical average groundwater extractions over the 2020 and 2021 water years reflect a general increase in groundwater demands and reduction in imported water usage. Additionally, in-lieu deliveries to both the ELPMA and WLPMA were discontinued in 2016; these deliveries have historically reduced groundwater demands within the LPVB (Section 4.3.2.2, Imported Water, and Section 4.3.2.4, Calleguas Municipal Water District Aquifer Storage and Recovery Project and In-Lieu Storage).

Comparison to Projected Groundwater Supplies

Future projections of groundwater extractions were updated as part of this 5-year GSP evaluation (Section 5.2). Under baseline conditions, groundwater extractions from the LPVB are projected to average approximately 36,100 AFY. This is approximately 15% lower than the average annual groundwater extractions over the 2021 and 2022 water years.

Importantly, groundwater extractions from the LPVB are now managed under the Judgment, which establishes the initial Operating Yield of the LPVB at 40,000 AFY. This Operating Yield will remain in effect through Water Year 2024 (October 1, 2024, through September 30, 2025), after which FCGMA may implement Rampdown to support sustainable groundwater management of the LPVB. The rate of, and need for, Rampdown will be developed through the Basin Optimization Yield Study.

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Table 4-3. Reported Annual Groundwater Extractions in the WLPMA by Aquifer System and Water Use Sector

Year	Reporting Complete / Estimated Percentage Complete (%)[a]	Shallow Alluvial System (acre-feet)				Lower Aquifer System (acre-feet)				Wells in Unassigned Aquifer Systems (acre-feet)				Total (acre-feet)
		AG	M&I	Dom	Sub-total	AG	M&I	Dom	Sub-total	AG	M&I	Dom	Sub-total	
CY 2016	Yes	1,365	0	1	1,366	9,442	2,356	0	*11,799*	2,168	197	32	*2,398*	**15,562**
CY 2017	Yes	1,372	0	1	1,372	10,497	2,294	0	*12,791*	1,735	204	43	*1,982*	**16,146**
CY 2018	Yes	920	0	1	921	9,625	1,627	0	*11,252*	2,294	206	41	*2,540*	**14,714**
CY 2019	Yes	619	0	0	619	8,737	2,109	0	*10,846*	2,773	132	41	*2,946*	**14,411**
CY 2020	Yes	883	0	1	883	9,269	2,086	0	*11,355*	3,591	212	73	*3,877*	**16,115**
WY 2021	Yes	892	0	1	893	10,989	2,207	0	*13,196*	3,690	173	30	*3,893*	**17,982**
WY 2022	Yes	384	0	0	385	8,554	2,123	0	*10,677*	3,856	214	65	*4,135*	**15,197**
WY 2023[b]	No/70%	362	0	0	362	5,930	1,412	0	*7,342*	2,202	178	30	*2,410*	**10,114**
	2016-2022 Average	919	0	1	920	9,588	2,115	0	11,702	2,872	191	46	3,110	15,732
	2021 - 2022 Average	638	0	1	639	9,772	2,165	0	11,937	3,773	194	47	4,014	16,589

Notes: AG = Agriculture; Dom = domestic; M&I = Municipal and Industrial; CY = Calendar Year (January 1 through December 31); WY = Water Year (October 1 through September 30)

[a] Qualifier indicates whether extraction reporting is complete for the given year. “Yes” indicates no additional reporting is anticipated. “No” indicates that additional reporting is anticipated. The percentage included after the “No” qualifier represents the estimated total percentage of operators who have reported extractions to FCGMA as of January 26, 2024.

[b] Groundwater extractions are preliminary and expected to change. Additional extraction reporting is anticipated.

Table 4-4. Reported Annual Groundwater Extractions in the ELPMA and Epworth Gravels Management Area by Aquifer System and Water Use Sector

Year	Reporting Complete / Estimated Percentage Complete (%)[a]	Epworth Gravels Aquifer (acre-feet)				Upper San Pedro Formation (acre-feet)				Fox Canyon Aquifer (acre-feet)				Grimes Canyon Aquifer (acre-feet)				Wells in Multiple or Unassigned Aquifers (acre-feet)				Total (acre-feet)[b]
		AG	M&I	Dom	Sub-total	AG	M&I	Dom	Sub-total	AG	M&I	Dom	Sub-total	AG	M&I	Dom	Sub-total	AG	M&I	Dom	Sub-total	
CY 2016	Yes	1,009	0	0	*1,009*	583	0	0	*583*	11,233	1,128	0	*12,361*	89	87	0	*176*	5,969	98	20	*6,087*	**20,216**
CY 2017	Yes	875	0	0	*875*	580	0	0	*580*	12,305	1,093	0	*13,398*	105	91	0	*197*	6,328	131	30	*6,489*	**21,539**
CY 2018	Yes	712	0	0	*712*	562	0	0	*562*	11,471	1,392	0	*12,863*	78	92	0	*171*	6,167	419	30	*6,616*	**20,924**
CY 2019	Yes	716	0	0	*716*	217	0	0	*217*	11,050	1,289	0	*12,339*	77	99	0	*177*	3,954	134	20	*4,109*	**17,557**
CY 2020	Yes	817	0	0	*817*	133	0	0	*133*	11,729	1,616	0	*13,345*	106	121	0	*228*	5,540	272	21	*5,833*	**20,356**
WY 2021	Yes	773	0	0	*773*	152	0	0	*152*	13,073	1,926	0	*14,998*	93	172	0	*266*	10,258	167	34	*10,459*	**26,648**
WY 2022	Yes	155	0	0	*155*	216	0	0	*216*	11,087	3,187	0	*14,274*	90	52	0	*142*	5,635	557	21	*6,213*	**21,002**
WY 2023[c]	No/70%	388	0	0	*388*	185	0	0	*185*	5,535	2,733	0	*8,268*	57	115	0	*172*	6,438	114	170	*6,722*	**15,735**
2016 - 2022 Average		**722**	**0**	**0**	**722**	**349**	**0**	**0**	**349**	**11,707**	**1,662**	**0**	**13,368**	**91**	**102**	**0**	**194**	**6,265**	**254**	**25**	**6,544**	**21,177**
2021 - 2022 Average		**464**	**0**	**0**	**464**	**184**	**0**	**0**	**184**	**12,080**	**2,556**	**0**	**14,636**	**92**	**112**	**0**	**204**	**7,947**	**362**	**27**	**8,336**	**23,825**

Notes: AG = Agriculture; Dom = domestic; M&I = Municipal and Industrial; CY = Calendar Year (January 1 through December 31); WY = Water Year (October 1 through September 30)

[a] Qualifier indicates whether extraction reporting is complete for the given year. “Yes” indicates no additional reporting is anticipated. “No” indicates that additional reporting is anticipated. The percentage included after the “No” qualifier represents the estimated total percentage of operators who have reported extractions to FCGMA January 26, 2024

[b] CMWD extractions are not included in the total extractions.

[c] Groundwater extractions are preliminary and expected to change. Additional extraction reporting is anticipated.

4.3.2.2 Imported Water

Imported water supplies in the LPVB consist of:

- Imported Metropolitan Water District of Southern California potable water (State Water Project and/or Colorado River water) delivered by CMWD to water purveyors in the basin.
- Groundwater pumped from the PVB and Arroyo Santa Rosa Valley Basin served by Camrosa Water District (CWD).
- Non-potable water served by CWD.

CMWD is the largest imported water supplier to the LPVB and has provided approximately 97% (or 8,400 AFY) of the imported water since water year 2015 (Table 4-5. Sales and Usage of CMWD Imported Water Supplies). Approximately 27% of the imported water by CMWD delivered to purveyors during the evaluation period was used to support agriculture and the remainder was used for municipal and industrial purposes (Table 4-5). Since 2015, CWD has imported an average of approximately 200 AFY of imported groundwater and non-potable water (Table 4-6, Other Imported and Recycled Water Supplies).

Comparison to Historical Imported Water Supplies

During the 1985 to 2015 period, CMWD delivered an average of approximately 10,500 AFY of imported water in the LPVB. Approximately 89% was delivered and used within the ELPMA and approximately 11% was delivered and used within the WLPMA. In the ELPMA, approximately 74% (or 6,800 AFY) of the imported water delivered by CMWD to purveyors was used for municipal and industrial purposes and the remainder was used for agriculture. In the WPLMA, approximately 77% (or 900 AFY) was used for municipal and industrial purposes (FCGMA 2019). CMWD's imported water deliveries during the 2016 to 2023 period were approximately 20% lower than the 1985 to 2015 average.

During the 1985 to 2015 period, CWD imported water was served by purveyors for an average of approximately 90 AFY for agricultural and municipal and industrial use in the ELPMA (FCGMA 2019). CWD's imported water delivered to purveyors in the ELPMA during the 2016 to 2022 period was approximately twice their historical delivery amounts (Table 4-6).

Comparison to Projected Imported Water Supplies

In their 2015 and 2020 UWMPs, CMWD included imported water demand projections for Berylwood Heights Mutual Water Company, California-American Water Company, CWD, Crestview Mutual Water Company, Solana Verde Mutual Water Company, VCWWD-1, VCWWD-19, and ZMWC. Over the 2020 to 2025 period, these projections average approximately 8,900 AFY (CWMD 2016; CMWD 2021). Under normal, single year dry, and multi-year dry scenarios, CMWD does not anticipate experiencing water supply shortages that would impact their ability to meet these demands (CWMD 2016; CMWD 2021). Over the 2020 to 2023 period, the CMWD delivered approximately 7,700 AFY to water purveyors in the LPVB. This is approximately 1,200 AFY, or 5% lower, than the projections in CMWD's 2015 and 2020 UWMP.

CWD projects that they will be able to provide approximately 370 AFY of imported non-potable water to users in ELPMA through the next 50-year planning horizon. Their 2016 to 2023 deliveries of Conejo Creek Project water were approximately 200 AFY lower than these projections. CWD does not anticipate continuing the delivery of groundwater pumped from the Arroyo Santa Rosa Valley Basin and PVB for use in the ELPMA.

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Table 4-5. Sales and Usage of CMWD Imported Water Supplies (Acre-Feet)

	BHMWC	Cal-Am[a]	CWD			Crest-view MWC	Solana Verde MWC[b]			VCWWD No. 1[c]			VCWWD No. 19[d]							Zone MWC[e]			Total Imported Water Deliveries						
	ELPMA	WLPMA	ELPMA			WLPMA	WLPMA			ELPMA			WLPMA			ELPMA				WLPMA	ELPMA		WLPMA			ELPMA			
Water Year	AG	M&I	AG	M&I	Sub-total	M&I	AG	M&I	Sub-total	AG	M&I	Sub-total	AG	M&I	Sub-total	AG	M&I	Sub-total	Sub-total	AG		Sub-total	AG	M&I	Sub-total	AG	M&I	Sub-total	Total
2016	16	404	75	54	*129*	165	310	16	*327*	1,707	5,122	*6,830*	271	112	383	181	75	*256*	*639*	181	121	*301*	762	697	*1,460*	2,100	5,251	*7,350*	**8,810**
2017	6	413	69	51	*121*	72	272	14	*286*	1,826	5,478	*7,305*	100	41	141	67	28	*94*	*235*	0	0	*0*	372	541	*912*	1,968	5,557	*7,525*	**8,437**
2018	0	461	71	53	*124*	347	324	17	*341*	2,057	6,171	*8,228*	448	186	633	298	124	*422*	*1,056*	0	0	*0*	772	1,011	*1,783*	2,427	6,348	*8,775*	**10,558**
2019	0	414	73	54	*127*	178	235	12	*248*	1,711	5,133	*6,845*	149	62	210	99	41	*140*	*350*	0	0	*0*	384	666	*1,050*	1,883	5,228	*7,112*	**8,162**
2020	0	438	92	69	*161*	40	249	13	*262*	1,798	5,394	*7,192*	117	49	166	78	32	*110*	*276*	0	0		366	539	*905*	1,968	5,495	*7,463*	**8,368**
2021	0	221	67	51	*118*	473	349	18	*368*	2,001	6,002	*8,002*	3	1	4	2	1	*3*	*7*	0	0	*0*	352	714	*1,066*	2,069	6,053	*8,122*	**9,188**
2022	6	401	64	49	*113*	73	306	16	*323*	1,561	4,683	*6,244*	40	17	57	27	11	*38*	*95*	0	0	*0*	347	506	*853*	1,658	4,742	*6,401*	**7,254**
2023	0	328	45	48	*94*	0	180	9	*190*	1,347	4,041	*5,389*	39	16	55	26	11	*37*	*92*	0	0	*0*	219	353	*572*	1,418	4,100	*5,519*	**6,091**
2016-2023 Average	**3**	**385**	**70**	**54**	**123**	**168**	**278**	**15**	**293**	**1,751**	**5,253**	**7,004**	**146**	**60**	**206**	**97**	**40**	**137**	**344**	**23**	**15**	**43**	**447**	**629**	**1,075**	**1,936**	**5,347**	**7,283**	**8,359**
2020 - 2023 Average	**2**	**347**	**67**	**54**	**121**	**146**	**271**	**14**	**285**	**1,677**	**5,030**	**6,706**	**50**	**21**	**70**	**33**	**14**	**47**	**117**	**0**	**0**	**0**	**321**	**528**	**849**	**1,778**	**5,098**	**6,876**	**7,725**

Notes: M&I = Municipal and Industrial; Ag = Agriculture; CMWD = Calleguas Municipal Water District; BHMWC = Berylwood Heights Mutual Water Company; Cal-Am = California-American Water Company; CWD = Camrosa Water District; Crestview MWC = Crestview Mutual Water Company; Solan Verde MWC = Solana Verde Mutual Water Company; VCWWD No. 1 = Ventura County Waterworks District No. 1; VCWWD No. 19 = Ventura County Waterworks District No. 19; Zone MWC – Zone Mutual Water Company; WLPMA = West Las Posas Management Area; ELPMA = East Las Posas Management Area.

[a] Estimated using the fraction of California-American Water Company's service area that overlies the LPVB. Approximately 3% of the total CMWD sales to California-American Water Company.

[b] Total water sales provided by CMWD. Consistent with the GSP, total water sales were divided by assuming that 95% of the imported water was used for agriculture and 5% of the total water sales was used for M&I.

[c] Total water sales provided by CMWD. Consistent with the GSP, total water sales were divided by assuming that 75% of the imported water was used for agriculture and 25% of the total water sales was used for M&I (Ventura County Public Works Agency, Waterworks District email 4-19-2016).

[d] Total water sales provided by CMWD. Consistent with the GSP, total water sales were divided by assuming that 60% was used in the WLPMA and 40% was used in the ELPMA. Within each management area, it was assumed that approximately 70% of the imported water was used for agriculture and 30% was used for M&I (Ventura County Public Works Agency, Waterworks District email 4-19-2016).

[e] Total water sales provided by CMWD. Consistent with the GSP, total water sales were divided by assuming that 60% of the imported water was used in the WLPMA and 40% of the imported water was used in the ELPMA.

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Table 4-6. Other Imported and Recycled Water Supplies (Acre-Feet)

Water Year[a]	MWTP		Camrosa Water District Deliveries Used in the ELPMA					Total M&I	Total AG	Total
	Recycled Water for M&I	Recycled Water for AG	Pleasant Valley Basin groundwater used for M&I	Pleasant Valley Basin groundwater used for AG	Arroyo Santa Rosa Valley Basin groundwater used for M&I	Arroyo Santa Rosa Valley Basin groundwater used for AG	Non-potable water for AG			
2016	582	0	10	14	21	29	114	**613**	**157**	**770**
2017	723	0	9	13	33	44	100	**765**	**157**	**922**
2018	864	0	10	13	33	44	96	**906**	**154**	**1,060**
2019	842	0	9	13	26	35	143	**876**	**190**	**1,066**
2020	861	0	11	15	17	24	130	**889**	**169**	**1,058**
2021	746	0	12	16	12	16	114	**770**	**146**	**916**
2022	949	0	20	28	14	20	103	**983**	**150**	**1,133**
2023	718	18	0	0	0	0	370	**718**	**388**	**1,105**
2016 - 2023 Average	**786**	**2**	**10**	**14**	**19**	**26**	**146**	**815**	**189**	**1,004**
2021 - 2022 Average	**818**	**5**	**11**	**15**	**11**	**15**	**179**	**840**	**213**	**1,053**

Notes: NR = Not Reported. MWTP = Moorpark Wastewater Treatment Plant; AG = Agriculture; M&I = Municipal and Industrial

[a] Data for water years 2016 through 2020 were provided on a calendar year basis. To estimate water year usage, 25% of the imported water from a given calendar year was assigned to the following water year, and 75% of the imported water from a current calendar year was assigned to the same water year.

4.3.2.3 Recycled Water Supplies

VCWWD No. 1 delivers recycled water produced at the Moorpark Wastewater Treatment Plan (MWTP) for use in the ELPMA (Table 4-6). Between 2003 and 2022, recycled water in the ELPMA was used exclusively for municipal and industrial uses. In 2023, VCWWD No. 1 began delivering recycled water produced at the MWTP for agricultural uses (Table 4-6).

Comparison to Historical Recycled Water Supplies

VCWWD No. 1 began delivering recycled water in the ELPMA in 2003. Between 2003 and 2015, VCWWD No. 1 delivered an average of approximately 500 AFY of recycled water for municipal and industrial use in the ELPMA (FCGMA 2019). VCWWD No. 1's recycled water deliveries during the 2020 to 2023 period were approximately 65% higher than the 2003 to 2015 average (Table 4-6).

Comparison to Projected Recycled Water Supplies

VCWWD No. 1 projects an increase in recycled water demands within their service area through 2040 (VCWWD No. 1 2021). In 2020, total recycled water demands in their service area equaled approximately 941 AF. By 2040, VCWWD No. 1 anticipates that recycled water demands in their service area will equal 2,200 AFY (VCWWD No. 1 2021). These demands are within the MWTP's current treatment capacity of 3.0 mgd (3,360 AFY) (VCWWD No. 1).

In 2020, VCWWD No. 1 served a total of 941 AF of recycled water produced at MWTP within their service area (VCWWD No. 1). Approximately 90% of this was served within the LPVB (Table 4-6). Using this percentage to estimate the projected recycled water supplies available to the LPVB, it is estimated that approximately 2,000 AFY of recycled water would be available for use in the LPVB in the future. The 2020 to 2023 average recycled water usage within the LPVB is approximately 60% lower than this estimate.

4.3.2.4 Calleguas Municipal Water District Aquifer Storage and Recovery Project and In-Lieu Storage Program

CMWD has injected water into the ELPMA since 1993 through their ASR program (FCGMA 2019). Additionally, as part of a program supported by MWD, CMWD has historically delivered imported water to LPVB users in lieu of groundwater pumping in both the WLPMA and ELPMA. In 2015, the end of the reporting period for the GSP, CMWD had 25,192 AF of storage in the WLPMA and 11,398 AF of storage in the ELPMA (FCGMA 2019).

Table 4-7, CMWD Aquifer Storage and Recovery Program, summarizes CMWD's ASR operations for the period from 2016 through 2023. At the end of the 2023 water year, CMWD had approximately 25,192 AF of storage in the WLPMA and 28,168 AF of storage in the ELPMA.

Table 4-7. CMWD Aquifer Storage and Recovery Program (Acre-Feet)

Year[a]	In Lieu Water Deliveries		Net ASR System Injection in ELPMA	Cumulative Storage[b]			ASR		Calc Net ASR System Injection in ELPMA
	WLPMA	ELPMA		WLPMA	ELPMA	Total	Injections	Extractions	
CY 2016	0	155	3,004	25,192	14,559	39,751	3,110	106	3,004
CY 2017	0	0	2,538	25,192	17,099	42,291	2,581	43	2,538
CY 2018	0	0	1,138	25,192	18,238	43,430	1,568	431	1,138
CY 2019	0	0	8,068	25,192	26,308	51,500	8,322	255	8,068
CY 2020	0	0	808	25,192	27,119	52,311	1,230	421	808
Transition Period									
2021	0	0	445	25,192	27,566	52,758	611	166	445
WY 2021	0	0	-1,355	25,192	26,230	51,422	1,057	2,412	-1,355
WY 2022	0	0	1,936	25,192	28,168	53,360	4,059	2,123	1,936

Notes: CY = Calendar Year; WY = Water Year; Transition Period = Period from January 1, 2021, through September 30, 2021.

[a] Water year is defined as October 1 of the preceding year through September 30 of the current year. For example, WY 2021 is October 1, 2020, through September 30, 2021

[b] Includes CMWD's storage prior to 2016.

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5 Updated Numerical Modeling

Numerical groundwater flow modeling of the LPVB was performed using two different models:

- **Coastal Plain Model:** a version of the VRGWFM MODFLOW numerical model developed and maintained by UWCD, which covers the entirety of the WLPMA, Oxnard Subbasin, PVB, and Mound Subbasin (UWCD 2018).
- **ELP model:** a MODFLOW numerical model developed by CMWD, which covers the entirety of the ELPMA and Epworth Gravels Management Area (CMWD 2018).

Both the Coastal Plain Model and ELP model are basin-scale models that reasonably reproduce historical trends in groundwater elevations in response to groundwater production, climate, recharge, and other basin management operations. These models were found to be appropriate tools to assess potential future groundwater levels under differing climate and management scenarios for the GSP (FCGMA 2019).

As part of this GSP evaluation of the LPVB, both the VRGWFM and ELP model were updated to re-evaluate projected future conditions in the LPVB and validate each model's ability to reproduce groundwater elevations measured between January 1, 2015, and September 30, 2022. Section 5.1, Model Updates, describes the updates to each model since development of the GSP and Section 5.2, describes the updated future scenario modeling performed for this GSP evaluation, along with updated estimates of the sustainable yield of the LPVB.

5.1 Model Updates

5.1.1 West Las Posas Management Area Model

For the GSP, numerical groundwater flow modeling for the WLPMA was performed using the VRGWFM (UWCD 2018). UWCD actively maintains the VRGWFM to support regional groundwater management. The version of the VRGWFM used during development of the GSP covered the entirety of Oxnard and Mound Subbasins and the majority of the WLPMA and PVB (UWCD 2018). Following adoption of the GSP, UWCD expanded the VRGWFM to cover the entirety of WLPMA and PVB and include the Santa Paula, Piru, and Fillmore Subbasins (UWCD 2021a). As part of this, UWCD updated their hydrogeologic conceptual model of the Oxnard, Santa Paula, Piru, and Fillmore Subbasins to improve representation of local hydrogeologic conditions and, in the Oxnard Subbasin, better represent groundwater elevations along the coast and their influence on seawater intrusion.

Due to the complexity of simulating the effects of Santa Clara River flows on groundwater conditions in the Santa Paula, Piru, and Fillmore subbasins, with a daily model timestep, UWCD maintains a localized version of the VRGWFM that excludes these upper basins and uses a monthly timestep. This branch-off of the VRGWFM is informally referred to as the Coastal Plain Model. Consistent with the GSP modeling, the Coastal Plain Model represents interactions between the Oxnard Subbasin and the upgradient Santa Paula Subbasin using a general head boundary condition (UWCD 2018). While the Coastal Plain Model is distinct from the VRGWFM, the model design and structure are consistent with the model used during development of the GSP. Therefore, the Coastal Plain Model is considered an update to the GSP model and was used for the 5-year GSP evaluation modeling.

Improvements to the Coastal Plain Model compared to the GSP model include revised estimates of subsurface exchanges with the Santa Paula Subbasin (Basin No. 4-004.04), and updated hydrostratigraphy in the vicinity of Port Hueneme and Point Mugu. These updates are summarized in FCGMA (2024a).

In the WLPMA, UWCD updated the boundary condition used to represent the Somis Fault, which separates the WLPMA and ELPMA (FCGMA 2019). For the GSP modeling, this boundary was represented using a no-flow boundary condition. The Coastal Plain Model now includes a general head boundary condition along the southeastern portion of the fault. As a result, the Coastal Plain Model simulates subsurface flows from the WLPMA to the ELPMA (Table 2-4c). These modeled flows are not integrated into the modeling conducted for the ELPMA.

While groundwater elevation measurements on the east and west side of the Somis Fault are limited, available data suggest that the Somis Fault is a significant barrier to groundwater flow (FCGMA 2024b, FCGMA 2019). The groundwater elevation gradient is from the ELPMA to the WLPMA (FCGMA 2024b, FCGMA 2019). FCGMA anticipates coordinating with UWCD, in consultation with the LPVB TAC, to better coordinate the representation of this boundary between the ELPMA and WLPMA in both LPVB models. Resulting revisions to the models will be incorporated into future modeling of the LPVB.

A broader discussion of updates to the Coastal Plain Model will be detailed in a technical memorandum prepared by UWCD[18].

5.1.1.1 Model Extension and Recalibration

As part of this 5-year evaluation, UWCD extended the Coastal Plain Model to simulate groundwater conditions in the WLPMA through the end of water year 2022 (i.e., September 30, 2022). During the model update and extension process, UWCD re-calibrated the Coastal Plain Model. This re-calibration effort involved incremental adjustments to local hydraulic conductivity, storativity, and boundary conductance values and resulted in better simulation of groundwater conditions along the coastline and simulation of groundwater conditions in the WLPMA (details to be included in UWCD's Coastal Plain Model update technical memorandum).

5.1.2 East Las Posas Management Area Model

For the GSP, numerical groundwater flow modeling for the ELPMA and Epworth Gravels Management Area was performed using the ELP model (CMWD 2018). CMWD no longer maintains this model but has provided the model to FCGMA to support management of the LPVB. As discussed in Section 4.1, Hydrogeologic Conceptual Model, no new information that warranted revisions to the hydrogeologic conceptual model used in the numerical model was identified in the ELPMA and Epworth Gravels Management Area. Because of this, the ELP model was not revised for this GSP evaluation.

5.1.2.1 Model Extension

As part of this 5-year evaluation, FCGMA extended the ELP model to simulate groundwater conditions in the ELPMA and Epworth Gravels through the end of water year 2022 (i.e., September 30, 2022). The model was not re-

18 United Water Conservation District anticipates publishing the Coastal Plain Model update technical memorandum in fall 2024.

calibrated as part of this effort. The ELP model extension, and validation, will be detailed in a technical memorandum prepared by FCGMA[19].

5.2 Future Scenario Water Budgets and Sustainable Yield

The future scenario modeling was updated as part of this 5-year GSP evaluation to better reflect current groundwater usage trends within the LPVB; update the future hydrology; and update the projects assumptions included in the simulation of future groundwater conditions. In addition, the future modeling time period was updated to account for the extension in the historical modeling period. Results from the updated future model scenarios were used to estimate the sustainable yield of the LPVB under different project and management scenarios.

Revisions to the simulation time period, baseline extractions, future hydrology, and suite of projects considered in the future scenarios are described in Section 5.2.1, Updated Future Scenario Assumptions. The suite of future scenarios, and associated model results, are summarized in Section 5.2.2, Projected Water Budgets. Resulting revisions to the estimates of the future sustainable yield of the LPVB are summarized in Section 5.2.3, Estimates of the Future Sustainable Yield.

In September 2024, as part of the stakeholder review and engagement process, FCGMA, in coordination with UWCD and CWD, identified that the numerical modeling performed for this periodic evaluation double-counted the volume of Camarillo recycled water that would be available to PVCWD, which impacts groundwater extractions within the Oxnard Subbasin and PVB in the Coastal Plain Model. Immediately following this, FCGMA requested revised water supply projections from CWD, the agency responsible for delivering Camarillo recycled water to PVCWD, to: (i) provide additional clarity on the volumes and sources of recycled water that CWD anticipates delivering to PVCWD, and (ii) confirm that all other CWD water supplies are appropriately represented in the modeling. Through this additional data request, FCGMA determined that the numerical modeling described in this periodic evaluation:

- Over-represents the volume of recycled water supplies available to PVCWD by 1,500 AFY
- Under-represents the volume of Conejo Creek Project deliveries to PVCWD by 400 AFY

As described in Section 5.2.3.1, the difference in simulated and anticipated water supplies to PVCWD does not impact FCGMA's understanding of the future sustainable yield of the Oxnard Subbasin, Pleasant Valley Basin, and WLPMA. (Section 5.2.3.1). Because of this, the entire suite of modeling was not updated to correct the representation of future water supplies to PVCWD as part of this periodic evaluation. However, FCGMA anticipates updating the entire suite of numerical modeling performed for this evaluation to accurately represent the revised understanding of PVCWD water supplies for the WLPMA. The updated model results will be presented in an addendum to this periodic evaluation.

5.2.1 Updated Future Scenario Assumptions

This section describes the set of assumptions used for the updated modeling and provides a comparison to the assumptions used for the GSP.

19 FCGMA anticipates publishing the ELPMA extension and validation technical memorandum in fall 2024.

5.2.1.1 Updated Simulation Time Period

The future scenarios developed for this 5-year evaluation simulate groundwater conditions in the LPVB over the 47-year period from October 1, 2022, through September 30, 2069 (i.e., water years 2023 through 2069). This simulation period, combined with the 2020, 2021, and 2022 water-year simulation results (Sections 5.1.1, West Las Posas Management Area Model, and 5.1.2, East Las Posas Management Area Model), provides a 50-year GSP projection horizon as required under 23 CCR §354.18.

Comparison to the GSP Modeling

The future scenarios developed for the GSP simulated groundwater conditions in the LPVB over the 50-year period from January 1, 2020, through December 31, 2069 (FCGMA 2019). Because water years 2020, 2021, and 2022 were incorporated into the historical modeling, the future scenarios were updated to begin in water year 2023[20].

5.2.1.2 Updated Baseline Extraction Rates

The future baseline groundwater extraction rates used for the 5-year evaluation modeling are equal to the 2016 to 2022 average[21]. Groundwater extractions over this period consist of both reported and estimated extractions. Estimated extractions were based on available AMI data for wells with missing extraction reports (for example, see FCGMA 2023).

Comparison to the GSP Modeling

For the GSP, the future baseline extraction rates were equal to the average 2015 to 2017 extraction rates. The 2015 to 2017 extraction rate for the LPVB was equal to approximately 36,000 AFY. The updated baseline extraction rates are approximately equal to those simulated for the GSP (FCGMA 2019; Sections 5.2.2.1.2, Future Baseline Scenario, and 5.2.2.2.2, No New Projects Scenario).

5.2.1.3 Updated hydrology

The future hydrology used for this 5-year evaluation modeling is the 1933 through 1979 hydrology, adjusted by DWR's 2070 central tendency climate change factors, with the noted exception that water year 1933 hydrology was replaced with water year 1978 hydrology. Average annual precipitation over this 47-year period is approximately equal to the long-term average and includes periods of drought as well as wetter-than-average conditions.

Water year 1933 hydrology was approximately 40% drier than the long-term historical average. Conversely, precipitation measured in water year 2023 in the LPVB was approximately 220% higher than the long-term historical average, and the volume of Santa Clara River water diverted for recharge in the Forebay Management Area of the Oxnard Subbasin was approximately 230% of the long-term historical average (FCGMA 2024a). To represent the wet 2023 water year in the future projections, the hydrologic record for water year 1933 was replaced with the hydrologic record for water year 1978. Water year 1978 was selected because flows available for diversion from

20 For the GSP modeling, water year is defined as October 1 of the previous calendar year through September 30 of the current calendar year. For example, water year 2020 refers to the period from October 1, 2019, through September 30, 2020.

21 Water year 2020 was not included in the calculation. FCGMA transitioned extraction reporting from calendar year to water year in 2020; therefore 2020 extraction reporting only spanned 9 months (January 1 through September 30).

the Santa Clara River were similar to those in water year 2023 – recharge in the Oxnard Subbasin Forebay associated with these diversions provide a source of recharge to the WLPMA.

Comparison to the GSP Modeling

The future scenarios developed for the GSP used hydrology measured during the 1930 to 1979 period, adjusted by DWR's 2070 central tendency climate change factors. This hydrology represented the future hydrology for the period from January 1, 2020, through December 31, 2069 (FCGMA 2019). The hydrology used for this 5-year evaluation modeling is consistent with the hydrology used for the GSP, with the noted exception that water year 1933 hydrology was replaced with water year 1978 hydrology.

5.2.1.4 Future Projects and Water Supply

The suite of projects incorporated into the future scenario modeling are summarized in Table 5-1, Projected Future Water Supplies and Projects in the LPVB, and in Section 5.2.2, Projected Water Budgets. In addition to the existing and planned water supply projects and programs in the LPVB, FCGMA and other agencies in the adjacent Oxnard Subbasin and PVB are implementing projects that increase water supplies in each basin. These include projects that increase Santa Clara River diversions, the delivery and use of State Water Project water, and delivery of recycled throughout the Oxnard Subbasin and PVB. These projects are summarized in FCGMA (2024a). While these projects will not be implemented in the LPVB, projects that increase recharge in the Forebay Management Area of the Oxnard Subbasin will benefit the WLPMA.

As noted in Section 3.3, Additional Projects Identified in the Judgment, FCGMA, with consultation, review, and comment from the LPVB PAC and TAC, will be evaluating a broader suite of projects and their benefits during development of the Basin Optimization Plan and Basin Optimization Yield Study. FCGMA will, as appropriate, integrate these new projects into the GSP based on the findings of these two planning documents.

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Table 5-1. Projected Future Water Supplies and Projects in the Las Posas Valley Basin

Source of Future Water Supply	Existing Projects and Programs: Description	Existing Projects and Programs: Project Proponent	Existing Projects and Programs: Projected Future Water Supply/In Lieu Delivery (acre-feet)	Planned Water Supply Projects: Project Name or Description	Planned Water Supply Projects: Project Proponent	Planned Water Supply Projects: Projected Reduction in Groundwater Demands (acre-feet)
Imported Water	CMWD Imported Water Deliveries to Purveyors	CMWD	8,900			
	Groundwater Pumped from the ASRV and used in the LPVB	CWD	0			
	Groundwater Pumped from the PVB and used in the LPVB	CWD	0			
Non-potable and Recycled Water	CWD Deliveries	CWD	370			
	MWTP Discharges to Percolation Ponds in the ELPMA	VCWWD-1	360			
	MWTP Deliveries to AG and M&I Operators	VCWWD-1	2,000[a]			
	Maintenance of SVWQCP discharges in Arroyo Simi-Las Posas	FCGMA	2,400 - 3,600			
Demand Reduction				Water Delivery Infrastructure Improvements	ZMWC	500
				Purchase of Imported Water from CMWD for Basin Replenishment	FCGMA	1,762
				Arroyo Simi-Las Posas Arundo Removal	FCGMA	1,900
Total Anticipated Water Supply from Existing Projects and Programs (Acre-Feet)			**14,030 – 15,230**	**Total Anticipated Demand Reduction from Potential Future Projects (acre-feet)**		**4,162**

Notes: CMWD = Calleguas Municipal Water District; CWD = Camrosa Water District; VCWWD No. 1 = Ventura County Waterworks District No. 1; ZMWC = Zone Mutual Water Company; FCGMA = Fox Canyon Groundwater Management Agency; ND = Not Defined.

[a] Estimated based on VCWWD No. 1 projections in their 2020 UWMP and actual deliveries within the LPVB in water year 2020.

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5.2.2 Projected Water Budgets

Five model scenarios were developed for this 5-year evaluation in accordance with the SGMA guidelines, and consistent with the GSP, to evaluate the future sustainable yield of the LPVB. These scenarios are:

- Future Baseline Scenario
- No New Projects Scenario
- Projects Scenario
- Basin Optimization Scenario
- Extraction Barrier Brackish (EBB) Water Treatment Project Scenario

The Basin Optimization and EBB Water Treatment Project Scenario are only applicable to the WLPMA because they evaluate the effects of projects specific to the Oxnard Subbasin; these projects do not provide a new source of water supply for, or impact groundwater conditions in, the ELPMA and Epworth Gravels Management Area.

As noted in Section 5.2.1, Updated Future Scenario Assumptions, the scenarios cover a 47-year period from October 1, 2022, through September 30, 2069 (i.e., water year 2023 through water year 2069). Consistent with the GSP, the period from 2023 through 2039 is referred to as the "implementation period" and the period from 2040 to 2069 is referred to as the "sustaining period." Due to the connection between the WLPMA and Oxnard Subbasin, the sustainable yield was evaluated using the model runs that resulted in: (1) no net flux of seawater into either the UAS or LAS of the Oxnard Subbasin, (2) no landward migration of the saline water impact front in the Oxnard Subbasin, and (3) no chronic lowering of groundwater levels in WLPMA. These metrics were evaluated over the 30-year sustaining period, with consideration of the uncertainty in Coastal Plain Model's predictions (FCGMA 2019).

The Coastal Plain Model includes both the Oxnard Subbasin and the PVB in the model domain, and the modeling assumptions associated with each scenario discussed below include the assumptions made for these adjacent basins.

5.2.2.1 West Las Posas Management Area Modeling

5.2.2.1.1 Evaluation Metrics

A total of eight (8) model simulations were completed for the WLPMA under the five scenarios referenced above. Results from each model run were analyzed to characterize the effects of different pumping distributions, projects, and management actions on:

- Groundwater conditions in the WLPMA
- Underflows between the WLPMA and Oxnard Subbasin
- Seawater flux in the Oxnard Subbasin
- Landward migration of the saline water impact front in the Oxnard Subbasin

The methods for characterizing these four model-estimates are summarized below.

Groundwater Conditions in the WLPMA

The effects of pumping, projects, and management actions on groundwater conditions in the WLPMA were evaluated by comparing the simulated groundwater elevations at key wells in the central and eastern part of the WLPMA to the minimum thresholds and measurable objectives established at each well. In this part of the WLPMA, the minimum thresholds were established based on the average low historical groundwater elevations in the early 1990s, before in-lieu surface water deliveries to the WLPMA began (FCGMA 2019). The measurable objectives were selected based on the groundwater level recovery observed between 1995 and 2008 (FCGMA 2019). These minimum threshold and measurable objective groundwater elevations are anticipated to provide sufficient operational flexibility for groundwater elevation declines and recovery in response to multi-year periods of drought and wet climate cycles, without causing undesirable results associated with chronic lowering of groundwater levels, reduction of groundwater in storage, degradation of water quality, and/or land subsidence.

Model simulations in which the projected groundwater elevations were below these thresholds were not considered sustainable.

Underflows between the WLPMA and Oxnard Subbasin

The Coastal Plain Model simulates underflows between the Oxnard Subbasin, PVB, and WLPMA. Results from the Coastal Plain Model were used to calculate the average underflows across each boundary, and by aquifer system, during the 30-year sustaining period to characterize the impacts of pumping, projects, and management actions implemented in one basin on groundwater conditions in an adjacent basin.

Seawater Flux in the Oxnard Subbasin

The Coastal Plain Model provides an estimate of the volume of water entering and leaving the Oxnard Subbasin along the coastline on a monthly timestep. This estimate is evaluated along four coastal segments: (1) from the northern boundary of the Oxnard Subbasin, south to Channel Islands Harbor, (2) Channel Islands Harbor to Perkins Road, which is south of Port Hueneme, (3) Perkins Road to Arnold Road, and (4) Arnold Road to Point Mugu (Figure 5-1, Modeled Seawater Flux Coastal Segments). The coastal segment from Channel Islands Harbor to Point Mugu (segments 2 through 4) represents the approximate coastal boundary of the Saline Intrusion Management Area and the portion of the Oxnard Subbasin that has historically been impacted by seawater intrusion (FCGMA 2019).

Net seawater flux for each model run was calculated by averaging the annual flow of seawater into the Oxnard Subbasin south of Channel Islands Harbor during the sustaining period. Net seawater flux was calculated separately for both the UAS and LAS to develop an estimate of sustainable yield by aquifer system.

Landward Migration of the Saline Water Impact Front

The landward migration of the saline water impact front in the Oxnard Subbasin was characterized using particle tracking for a subset of the model runs. Initial particle positions were set along the current interpretation of the 2020 saline water impact front in each aquifer. The particles were released at the start of the model simulation to provide a 50-year trajectory of the saline water migration throughout the Oxnard Subbasin.

Particle tracks were analyzed concurrently with the estimates of seawater flux to characterize the likelihood of ongoing landward migration of saline water and seawater intrusion over the 30-year sustaining period.

Scenarios with UWCD's EBB Project

The approach for evaluating seawater intrusion in the Oxnard Subbasin differs between the scenarios that do and do not include UWCD's EBB project. This approach is described in detail in Section 5.2.2.1.6, Extraction Barrier and Brackish Water Treatment Scenario.

5.2.2.1.2 Future Baseline Scenario

SGMA requires that the GSP include an assessment of "future baseline" conditions. The Future Baseline scenario developed for this 5-year evaluation built on the GSP modeling and was designed to assess whether current groundwater extractions from the Oxnard Subbasin, PVB, and WLPMA are sustainable. To do this, the average annual 2016 to 2022 extraction rates, adjusted by surface- and recycled-water deliveries, were simulated. Future surface water deliveries in the Oxnard Subbasin and PVB were estimated by UWCD using their Surface Water Distribution Model (UWCD 2021b) with the GSP evaluation hydrology (Section 5.2.1.3, Updated Hydrology). Estimates of recycled water available for use in lieu of groundwater in the Oxnard Subbasin and PVB were provided by the City of Camarillo, CWD, and the City of Oxnard. In addition, the Future Baseline Scenario included all existing projects that are either funded or currently under construction in the Oxnard Subbasin, PVB, and WLPMA (Table 5-1; FCGMA 2024a, FCGMA 2024c).

Adjusting the 2016 to 2022 average groundwater extractions by projected surface water and recycled water supplies leads to an average annual groundwater extraction rate over the sustaining period of approximately 68,300 AFY in the Oxnard Subbasin, 13,900 AFY in the PVB, and 13,500 AFY in the WLPMA.

Future Baseline Model Assumptions

The Future Baseline model simulation assumptions included the following:

- Average annual extractions from the WLPMA equal to the 2016 to 2022 average.
- Starting groundwater levels equal to the September 30, 2022, groundwater levels from the Coastal Plain Model.
- Precipitation and streamflow for the 1933 to 1979 period, adjusted by DWR's 2070 central tendency climate change factors, with 1933 hydrology replaced by 1978 hydrology (Section 5.2.1.3, Updated Hydrology).
- Estimates of Santa Clara River water available for diversion, prepared by UWCD using the 5-year GSP evaluation hydrology and calculated using their Surface Water Distribution Model.
- Estimates of recycled water availability in the Oxnard Subbasin and PVB provided by the City of Oxnard, City of Camarillo, and CWD.

In addition to these assumptions, all existing projects in the WLPMA were included in the Future Baseline model scenario (Table 5-1).

Future Baseline Model Results

During the sustaining period, groundwater elevations in the eastern part of the WLPMA were higher than the minimum thresholds at three of the four key wells in the management area but were only higher than the measurable objective at one well (Figures 5-2a and 5-2b, Key Well Hydrographs in the West Las Posas Management Area)[22]. Additionally, results from this model simulation indicate that groundwater pumping at the average 2016 to 2022 rate in the Oxnard Subbasin, PVB, and WLPMA would cause ongoing seawater intrusion into the Oxnard Subbasin and landward migration of the current saline water impact front (Table 5-2, Summary of WLPMA Modeling Results; Figures 5-3 through 5-9). The average annual seawater flux into the UAS and LAS of the Oxnard Subbasin was approximately 2,100 AFY and 3,400 AFY, respectively (Table 5-2). In the UAS and LAS, particle tracks indicate that the current saline water impact front would migrate landward (Figures 5-3 through 5-10). Based on these factors, the average 2016 to 2022 pumping distribution in the Oxnard Subbasin, PVB, and WLPMA was determined not to be sustainable.

Under the Future Baseline conditions, there was approximately 4,400 AFY of underflow from the Oxnard Subbasin to the WLPMA (Table 5-2). These underflows impact groundwater elevations, seawater flux, and saline water migration in the Oxnard Subbasin.

22 The simulated groundwater elevations were adjusted so that the October 2022 simulated heads were approximately equal to those measured at each key well.

Table 5-2. Summary of WLPMA Modeling Results

Future Scenario		Average Annual Extraction and Flow Rates Over the Sustaining Period (2040 – 2069; AFY)							
		Future Baseline	No New Projects			Basin Optimization	Projects	EBB	
			NNP1	NNP2	NNP3			Baseline	Projects
Groundwater Extractions[a]	SA	-400	-300	-400	-300	-400	-300	-400	-300
	LAS	-13,100	-10,500	-13,100	-11,100	-11,800	-11,100	-13,100	-11,100
	Total	**-13,500**	**-10,800**	**-13,500**	**-11,400**	**-12,200**	**-11,400**	**-13,500**	**-11,400**
Seawater Flux into the Oxnard Subbasin[b]	UAS	2,100	-1,400	-1,500	-800	-400	1,300	6,900	6,200
	LAS	3,400	500	200	1,000	1,100	2,900	4,000	3,400
	Total	**5,500**	**-900**	**-1,300**	**200**	**700**	**4,200**	**10,900**	**9,600**
Flux across the Current Saline Water Impact Front in the Oxnard Subbasin[c]	UAS	—	—	—	—	—	—	3,200	3,800
	LAS	—	—	—	—	—	—	500	600
	Total	**—**	**—**	**—**	**—**	**—**	**—**	**3,700**	**4,200**
Underflows from PVB to the Oxnard Subbasin [d]	UAS	900	900	800	900	900	1,600	1,100	1,800
	LAS	300	-1,200	-2,000	-1,000	-1,000	600	500	900
	Total	**1,200**	**-300**	**-1,200**	**-100**	**-100**	**2,200**	**1,600**	**2,700**
Underflows from WLPMA to the Oxnard Subbasin [d]	UAS	-4,900	-3,500	-3,800	-3,800	-4500	-4,400	-5,000	-4,500
	LAS	500	-1,000	-1,800	-800	300	700	500	800
	Total	**-4,400**	**-4,500**	**-5,600**	**-4,600**	**-4,200**	**-3,700**	**-4,500**	**-3,700**

Notes: SA = shallow aquifer system; NNP = No New Projects; AFY = acre-feet per year; PVB = Pleasant Valley Basin; WLPMA = West Las Posas Management Area of the Las Posas Valley Basin

a Negative (-) values denote discharges, or outflows. Positive (+) values denote recharge, or inflows.

b Represents the average annual simulated seawater flux across the coastline south of Channel Islands Harbor in the Oxnard Subbasin. The uncertainty in the seawater flux for the UAS is +/- 2,200 AFY. The uncertainty in the seawater flux for the LAS is +/- 800 AFY.

c Represents sum of fluxes across the interpreted 500 mg/L chloride concentration contour in each principal aquifer. Positive (+) values indicate that fresh groundwater is migrating toward the coast and UWCD's EBB extraction wells. Results are shown only for the EBB scenarios because seawater flux across the coastline in all other scenarios is an indication of ongoing seawater intrusion.

d Positive (+) values represent net underflow into the Oxnard Subbasin. Negative (-) values represent net underflows out of the Oxnard Subbasin.

5.2.2.1.3 No New Projects Model Scenario

The No New Projects (NNP) Scenario was designed to provide a direct simulation of the groundwater pumping distributions in the Oxnard Subbasin, PVB, and WLPMA that limit seawater flux into the Oxnard Subbasin and the landward migration of the 2020 saline water impact front. Three separate model runs were conducted under the NNP Scenario: NNP 1, NNP2, and NNP3. Each model run incorporated all the assumptions included in the Future Baseline scenario (Section 5.2.2.1.2, Future Baseline Scenario) but used different sets of assumptions for groundwater production.

The NNP Scenario model runs evaluated different pumping distributions and reductions to provide the FCGMA Board of Directors information to evaluate potential future projects and management actions and their relation to sustainable groundwater management of the WLPMA, Oxnard Subbasin, and PVB.

Additionally, and importantly, FCGMA as the Watermaster for the LPVB, will be developing a Basin Optimization Plan that evaluates and prioritizes projects that increase the sustainable yield of the WLPMA (Section 3.1.2, Projects). Information developed as part of the Basin Optimization Plan will be integrated into future evaluations and, as appropriate, amendments to the LPVB GSP.

No New Projects Scenario Assumptions

As described above, the NNP Scenario included all the assumptions from the Future Baseline Scenario, except for the distribution of groundwater production. Groundwater production distributions were adjusted by basin and aquifer system in each of the three model runs. The specific distributions used in each model run are described below.

No New Projects 1

The NNP1 model run incorporated a 20% reduction in pumping in the UAS of the Oxnard Subbasin, an 80% reduction in pumping in the LAS of the Oxnard Subbasin, and a 20% reduction in pumping from both aquifer systems in the PVB and WLPMA (Table 5-2). This reduction in groundwater production, adjusted by surface and recycled water availability, resulted in an average annual groundwater production rate of approximately 37,500 AFY in the Oxnard Subbasin, 12,100 AFY in the PVB, and 10,800 AFY in the WLPMA.

No New Projects 2

The NNP2 model run was designed to evaluate the impacts of pumping in the PVB and WLPMA on seawater flux in the LAS of the Oxnard Subbasin. To do this, a 10% reduction in pumping was implemented in the UAS of the Oxnard Subbasin, a 100% reduction in pumping was implemented in the LAS of the Oxnard Subbasin, and no pumping reductions were implemented in the PVB and WLPMA. Implementing this reduction in groundwater production resulted in an average annual groundwater production rate of approximately 36,900 AFY in the Oxnard Subbasin, 13,100 AFY in the PVB, and 13,500 AFY in the WLPMA. The NNP2 run was specifically to evaluate flows between the basins and not as a potential management scenario.

No New Projects 3

The NNP3 model run was designed to evaluate future groundwater conditions using a revised estimate of the sustainable yield of the Oxnard Subbasin, PVB, and WLPMA. The revised estimate was developed using a multi-parameter system of linear regressions developed using results from the Future Baseline, NNP1, and NNP2 model runs. The NNP3 scenario incorporated a 15% reduction in pumping in the UAS of the Oxnard Subbasin, a 65% reduction in pumping in the LAS of the Oxnard Subbasin, and a 15% reduction in pumping in both aquifer systems of the PVB and WLPMA (Table 5-2). Implementing this reduction in groundwater production results in an average annual groundwater production rate of approximately 43,500 AFY in the Oxnard Subbasin, 12,400 AFY in the PVB, and 11,400 AFY in the WLPMA.

No New Projects Scenario Model Results

No New Projects 1

In the NNP1 scenario, groundwater elevations during the sustaining period were, on average, 30 feet higher than the Future Baseline scenario and were higher than the measurable objectives at two of the four key wells (Figure 5-2a and 5-2b). Over this time, approximately 1,400 AFY of groundwater discharged to the Pacific Ocean through the UAS south of Channel Islands Harbor, and approximately 500 AFY of seawater entered the Oxnard Subbasin through the LAS south of Channel Islands Harbor (Table 5-2, Figures 5-3 and 5-4). Particle tracks were not conducted for this model run.

The NNP1 pumping distribution resulted in approximately 3,500 AFY of underflows from the UAS of the Oxnard Subbasin to the WLPMA – this is a 30% reduction in underflow recharge compared to the Future Baseline conditions (Table 5-2). In the LAS, approximately 1,000 AFY of underflows occurred from the Oxnard Subbasin to the WLPMA. This is a change in both the direction and magnitude of LAS underflows, compared to the Future Baseline Scenario.

No New Projects 2

The NNP1 model simulation indicates that pumping in the WLPMA influences seawater flux into the Oxnard Subbasin by capturing underflows that would otherwise be recharging the Oxnard Subbasin. The effects of this are more pronounced in the LAS, where differential reductions in pumping between the Oxnard Subbasin, PVB, and WLPMA result in a change in the direction and magnitude of underflows between basins. To better characterize this process, the NNP2 simulation included a complete reduction in pumping in the LAS of the Oxnard Subbasin while maintaining groundwater production in the PVB and WLPMA at the Future Baseline rates.

The NNP2 pumping distribution resulted in approximately 1,800 AFY of underflows from the LAS of the Oxnard Subbasin to the WLPMA (Table 5-2). This represents a difference of approximately 2,300 AFY in underflow recharge to the LAS of the Oxnard Subbasin from the WLPMA, compared to the Future Baseline scenario. In the UAS, underflows from the Oxnard Subbasin to the WLPMA were similar to the NNP1 simulation (Table 5-2).

The increased underflows from the Oxnard subbasin helped to raise groundwater elevations in the eastern part of the WLPMA. Over the sustaining period, groundwater elevations in the four key wells were approximately 15 feet higher than the Future Baseline scenario, despite the fact that groundwater production in the WLPMA was the same in both scenarios. Groundwater elevations were higher than the minimum threshold at all four key wells and remained higher than the measurable objective at two key wells.

In the NNP2 simulation, approximately 1,500 AFY of groundwater discharged to the Pacific Ocean through the UAS south of Channel Islands Harbor and approximately 200 AFY of seawater entered the Oxnard Subbasin through the LAS south of Channel Islands Harbor (Table 5-2; Figures 5-3 and 5-4). Particle tracks were not conducted for this model run.

No New Projects 3

In the NNP3 model run, approximately 800 AFY of groundwater discharged to the Pacific Ocean through the UAS south of Channel Islands Harbor and approximately 1,000 AFY of seawater entered the Oxnard Subbasin through the LAS south of Channel Islands Harbor (Table 5-2; Figures 5-3 and 5-4). Compared to the NNP1 simulation, this represents a 40% reduction in the volume of groundwater lost to the Pacific Ocean through the UAS and provides a similar estimate of seawater flux into the LAS of the Oxnard Subbasin, given the uncertainty in the Coastal Plain Model predictions (FCGMA 2019).

Particle tracks indicate that the NNP3 pumping distribution results in a recession of the saline water impact front in the Oxnard aquifer along the coast of the Oxnard Subbasin (Figure 5-11). Similarly, south of Casper Road, particle tracks show no landward migration of the saline water impact front in the Mugu aquifer (Figure 5-12). In the northern portion of the saline water impact front in the Mugu aquifer, the NNP3 pumping distribution reduced saline water migration by approximately 50% (Figure 5-12).

In the LAS, the NNP3 pumping distribution does not fully mitigate the landward migration of the saline water impact front, except in the GCA. In the Hueneme aquifer, particle tracks show ongoing landward migration over the entire 47-year simulation period; however, the particle trajectories in the NNP3 scenario are approximately 40% shorter than the Future Baseline Scenario (Figures 5-13 and 5-7). In the upper and basal FCA, the 2020 saline water impact front migrated landward by approximately 0.1 miles (Figures 5-14 and 5-15). This is an approximately 80% reduction in the saline water impact front migration within the FCA, and within the model uncertainty.

The NNP3 pumping distribution resulted in approximately 800 AFY of underflows from the LAS of the Oxnard Subbasin to the WLPMA (Table 5-2). This represents a difference of approximately 1,300 AFY in underflow recharge to the LAS of the Oxnard Subbasin compared to the Future Baseline scenario. However, the reduction in underflows to the Oxnard Subbasin were lower than the NNP1 and NNP2 model runs (Table 5-2). In the UAS, the NNP3 pumping distribution results in a 22% reduction in underflow recharge from the Oxnard Subbasin compared to the Future Baseline Scenario (Table 5-2).

Over the sustaining period, groundwater elevations at the key wells were approximately 25 feet higher than the Future Baseline scenario. Groundwater elevations were higher than the minimum threshold at all four key wells and remained higher than the measurable objective at two key wells. These simulated groundwater elevations indicate that the NNP3 pumping rate avoids chronic lowering of groundwater levels and storage in the WLPMA.

These simulated groundwater elevations, particle tracks, and seawater flux results indicate that NNP3 pumping rates and distributions in the Oxnard Subbasin, PVB, and WLPMA are sustainable, within the uncertainty of the Coastal Plain Model.

5.2.2.1.4 Basin Optimization Model Scenario

To support effective management, the GSP established five separate management areas in the Oxnard Subbasin: the Forebay Management Area, the West Oxnard Plain Management Area, the Oxnard Pumping Depression Management Area, the Saline Intrusion Management Area, and the East Oxnard Plain Management Area (Figure 5-1). Results from an initial investigation of the pumping impacts within each management area on seawater flux indicate that the sustainable yield of the Oxnard Subbasin, PVB, and WLPMA could be increased by shifting pumping out of the Saline Intrusion and Oxnard Pumping Depression management areas into the West Oxnard Plain and Forebay management areas (FCGMA 2024). The Basin Optimization Scenario was developed to integrate these results into the future scenario modeling for the GSP, with the goal of increasing total groundwater production from the Oxnard Subbasin, PVB, and WLPMA, while maintaining similar estimates of seawater flux and landward migration of the saline water impact front as the NNP3 model run.

The pumping distribution evaluated as part of this Basin Optimization scenario neither represents a commitment by FCGMA to implement a reduction and/or shift in groundwater production. While the simulated pumping scenario provides the foundation on which additional basin optimization strategies can be developed and evaluated, implementing management actions consistent with this scenario would require the development of additional projects that equitably distribute impacts across operators in the Oxnard Subbasin. Additionally, and importantly, FCGMA and other agencies in the Oxnard Subbasin are implementing water supply and treatment projects aimed at increasing the sustainable yield of the Oxnard Subbasin. These projects should be considered in future evaluations of basin optimization strategies.

Basin Optimization Scenario Assumptions

As described above, the Basin Optimization Scenario included all the assumptions from the Future Baseline Scenario, except for the distribution of groundwater production. Using the results from the Future Baseline Scenario and NNP Scenario, along with the results from FCGMA's initial investigation of management area impacts, the Basin Optimization Scenario implemented:

- A 10% reduction in groundwater production from the UAS of the Oxnard Subbasin
- A 40% reduction in groundwater production from the LAS of the Oxnard Subbasin
- A 10% reduction in groundwater production from both aquifer systems of the PVB
- A 10% reduction in groundwater production from both aquifer systems of the WLPMA

Importantly, during the sustaining period, all pumping that would have occurred in the Saline Intrusion Management Area of the Oxnard Subbasin and 40% of the pumping that would have occurred in the Oxnard Pumping Depression Management Area of the Oxnard Subbasin, was moved to the West Oxnard Plain Management Area. Implementing this reduction and shift in groundwater production resulted in an average annual groundwater production rate of approximately 52,300 AFY in the Oxnard Subbasin, 13,800 AFY in the PVB, and 12,200 AFY in the WLPMA.

This scenario did not include any changes to existing land uses in the Oxnard Subbasin. Therefore, this modeling scenario assumes that implementing pumping shifts across the Oxnard Subbasin would occur concurrently with the development of infrastructure projects that would deliver water to operators directly impacted by pumping reductions.

Basin Optimization Scenario Results

In the Basin Optimization Scenario, approximately 400 AFY of groundwater discharged to the Pacific Ocean through the UAS and approximately 1,100 AFY of seawater entered the Oxnard Subbasin through the LAS (Table 5-2, Figures 5-3 and 5-4). These estimates are similar to the seawater flux values estimated in the NNP3 simulation and are within the quantitative uncertainty of the Coastal Plain Model.

Particle tracks show a similar recession of the saline water impact front in the Oxnard aquifer (Figure 5-17). In the Mugu aquifer, the Basin Optimization Scenario pumping distribution reduced the landward migration of the saline water impact front in the Oxnard Subbasin compared to the NNP3 simulation (Figure 5-18). In the Hueneme aquifer, FCA, and GCA, particle tracks show similar trajectories of the saline water impact fronts within each aquifer (Figures 5-19 through 5-22).

The Basin Optimization Scenario pumping distribution resulted in approximately 300 AFY of underflows from the LAS of the WLPMA to the Oxnard Subbasin, which is similar to those simulated in the Future Baseline scenario (Table 5-2). Underflows from the UAS of the Oxnard Subbasin to the WLPMA were approximately 10% (or 400 AFY) less than the Future Baseline Scenario.

Over the sustaining period, groundwater elevations at the key wells in the WLPMA were approximately 15 feet higher than the Future Baseline scenario. Groundwater elevations were higher than the minimum threshold at all four key wells and remained higher than the measurable objective at two key wells (Figures 5-2a and 5-2b). Like the NNP3 scenario, these simulated groundwater elevations indicate that the Basin Optimization pumping distribution avoids chronic lowering of groundwater levels and storage in the WLPMA.

The simulated groundwater elevations, particle tracks, and simulated seawater flux results indicate that an average annual production rate of approximately 52,300 AFY in the Oxnard Subbasin, 13,800 AFY in the PVB, and 12,200 AFY in the WLPMA could be sustainable if pumping is redistributed across the Oxnard Subbasin.

5.2.2.1.5 Projects Scenario

Modeling of future conditions in the Projects Scenario included all the assumptions incorporated in the Future Baseline Scenario, and in the WLPMA also included the Purchase of Imported Water from CMWD for Basin Replenishment project and ZMWC's infrastructure improvement project. In the Oxnard Subbasin and PVB, projects include UWCD's Freeman Expansion project and FCGMA's Voluntary Temporary Fallowing Project (FCGMA 2024a). The City of Oxnard's AWPF Expansion project was not incorporated into the Projects Scenario because use(s) of AWPF water have not yet been defined. Additionally, UWCD's EBB Water Treatment project was not included in the Projects Scenario, but rather, was evaluated in a separate scenario to account for the impacts of this project on groundwater elevations and seawater flux along the coast (Section 5.2.2.1.6 Extraction Barrier and Brackish Water Treatment Scenario).

Incorporation of the potential future projects in the Projects Scenario does not represent a commitment by FCGMA to move forward with each project included in the future model scenario.

Projects Scenario Assumptions

In the WLPMA, the Purchase of Imported Water from CWMD for Basin Replenishment included the of 1,763 AFY for delivery to the eastern portion of the WLPMA in lieu of groundwater extraction. ZMWC's infrastructure improvements are anticipated to reduce groundwater demands by approximately 500 AFY. The combination of these projects results in a reduction in pumping of 2,263 AFY. Simulated pumping was reduced uniformly and proportionally at ZMWC and VCWWD-19 wells located in the WLPMA.

In the Oxnard Subbasin simulated future projects included UWCD's Freeman Diversion Expansion project, which, under the projected future hydrology, would increase Santa Clara River water diversions by approximately 6,800 AFY compared to Future Baseline conditions. UWCD anticipates delivering a portion of this water to users on their pipelines including in the PVB and recharging a portion of this water in the Forebay. The timing and volume of pipeline deliveries and recharge was determined by UWCD using their Surface Water Distribution Model.

Two voluntary temporary fallowing projects were modeled in the Projects Scenario. In the Oxnard Subbasin, a 504 AFY reduction of pumping was simulated. In the PVCWD service area, a voluntary temporary fallowing program was simulated using a 2,407 AFY reduction in agricultural water demands, which consists of both surface water, recycled water, and groundwater. To do this, agricultural water demands were reduced uniformly and proportionally in the PVCWD service area, and UWCD's Surface Water Distribution Model was used to estimate the resulting reduction in groundwater pumping. These projects are discussed in detail in FCGMA (2024a, 2024c).

After incorporating the potential future projects, the average groundwater production rate for the UAS in the Oxnard Subbasin was 39,500 AFY and the average groundwater production rate for the LAS in the Oxnard Subbasin was 26,600 AFY for the Projects Scenario. In the PVB, the average groundwater production rate was 4,100 AFY in the UAS and 8,900 AFY in the LAS. In the WLPMA, the average production rate in the LAS was 11,400 AFY (Table 5-2).

Projects Scenario Results

In the Projects Scenario, groundwater production from the Oxnard Subbasin at a rate of approximately 66,100 AFY resulted in seawater flux into both the UAS and LAS of the Oxnard Subbasin. In the UAS, the seawater flux averaged approximately 1,300 AFY over the sustaining period, and in the LAS, the seawater flux averaged approximately 2,900 AFY over the sustaining period. These results indicate that implementation of UWCD's Freeman Expansion Project, FCGMA's temporary voluntary fallowing project, and ZMWC's infrastructure improvement and in-lieu delivery project would result in a 20% decrease in total seawater flux, compared to the Future Baseline Scenario. The majority of these benefits would occur in the UAS (Table 5-2). This scenario is not considered sustainable.

Implementation of these three projects in the Oxnard Subbasin, PVB, and WLPMA, without any additional demand reduction actions, results in a decrease in net underflows from the Oxnard Subbasin to the WLPMA (Table 5-2).

Over the sustaining period, groundwater elevations at the key wells in the WLPMA were approximately 25 feet higher than the Future Baseline scenario, which reflects the benefits of re-initiating in-lieu deliveries in the WLPMA and additional recharge in the Oxnard Forebay. Groundwater elevations were higher than the minimum threshold at all four key wells and were higher than, or equal to, the measurable objective at three key wells (Figures 5-2a and 5-2b).

5.2.2.1.6 Extraction Barrier and Brackish Water Treatment Scenario

UWCD is designing and implementing an EBB Water Treatment Project to create a seawater intrusion barrier at Naval Base Ventura County Point Mugu in the Oxnard Subbasin. UWCD intends to operate the project by extracting brackish groundwater from the Oxnard and Mugu aquifers near the coast, creating a pumping trough that helps prevent landward migration of saline water throughout the Oxnard Subbasin. Because successful implementation and operation of this project will intentionally lower groundwater elevations along the coastline, thereby inducing seawater flux along the coast, a separate set of model simulations were conducted to evaluate this project.

Two model runs were conducted under this scenario:

- Future Baseline with EBB
- Projects with EBB

The assumptions used for each model run are described below. The pumping distributions evaluated in the EBB Water Treatment Scenario does not represent a commitment by FCGMA to move forward with pumping scenarios or projects.

EBB Water Treatment Scenario Assumptions

Simulation of UWCD's EBB Water Treatment project included the following:

- A total of ten (10) EBB extraction wells screened in the Oxnard aquifer, pumping at a combined rate of approximately 5,000 AFY over the 30-yr sustaining period.
- A total of ten (10) EBB extraction wells screened in the Mugu aquifer, pumping at a combined rate of approximately 5,000 AFY over the 30-year sustaining period.

Consistent with the current project understanding (Section 3.1.1, Management Actions), implementation of the EBB Water Treatment Project occurred in two phases:

- **Phase I (Water Year 2028 through Water Year 2030):** 2,500 AFY of production from 5 wells screened in the Oxnard aquifer, and 1,000 AFY of production from 2 wells screened in the Mugu aquifer.
- **Phase I (Water Year 2031 through Water Year 2069):** 5,000 AFY of production from 10 wells screened in the Oxnard aquifer, and 5,000 AFY of production from 10 wells screened in the Mugu aquifer.

Based on the current project understanding, it was assumed that 50% of the brackish water treated as part of the EBB project would be made available for delivery and use in the Oxnard Subbasin. Of this, UWCD anticipates delivering approximately 1,500 AFY to Naval Base Ventura County and delivering the remaining 3,500 AFY either to operators in the Oxnard Subbasin or to the Forebay for additional recharge. For simplicity in both the Future Baseline with EBB and Projects with EBB scenario, it was assumed that the 3,500 AFY of treated EBB water was recharged in the Oxnard Forebay Management Area. The addition of a consistent source of recharge to the Forebay through this project resulted in an increase in the availability of Santa Clara River water for delivery to users on the PTP and PVP.

Future Baseline with EBB Model Simulation

The Future Baseline with EBB simulation included all the assumptions from the Future Baseline Scenario, and also included the full implementation of UWCD's EBB Water Treatment Project. Including UWCD's EBB Water Treatment Project resulted in a total groundwater production rate of 78,200 AFY in the Oxnard Subbasin, 13,800 AFY from the PVB, and 13,500 AFY from the WLPMA.

Projects with EBB Model Simulation

The Projects with EBB simulation included all the assumptions from the Projects Scenario, and also included the full implementation of UWCD's EBB Water Treatment Project. The net effects of UWCD's EBB Water Treatment Project, Freeman Diversion Expansion Project, Voluntary Temporary Fallowing Project, and In-Lieu and infrastructure improvement projects in WLPMA resulted in a total groundwater production rate of 75,800 AFY from the Oxnard Subbasin, 13,000 AFY from the PVB, and 11,400 AFY from the WLPMA.

EBB Water Treatment Scenario Model Results

Because UWCD's EBB project will increase seawater flux into the Oxnard Subbasin, while mitigating the landward migration of saline water in the Oxnard Subbasin, groundwater sustainability was evaluated by calculating the simulated flows across the current inland extent of saline water impact in the UAS and LAS of the Oxnard Subbasin. The average annual flows across these boundaries for the 30-year sustaining period were used to characterize the pumping rates, projects, and management actions that would result in no net landward movement of the current saline water extents.

Like some of the scenarios that do not include UWCD's EBB projects, the net flow estimates were analyzed concurrently with particle tracks to characterize the trajectory of the saline water impact front over the sustaining period.

Future Baseline with EBB

In the Future Baseline with EBB scenario, groundwater elevations at key wells in the WLPMA were equal to the groundwater elevations simulated in the Future Baseline scenario (Figures 5-23a and 5-23b)[23]. Approximately 3,200 AFY of groundwater flowed across the current inland extent of saline water impact in the UAS of the Oxnard Subbasin, toward the coast. This flow direction indicates that, under Future Baseline conditions, operation of UWCD's EBB project mitigated against the net landward migration of saline water over the 30-year sustaining period. Particle tracks show a recession in the saline water impact front in the UAS, and corresponding capture of groundwater that migrates toward the coast by UWCD's EBB extraction wells (Figures 5-24 and 5-25).

Over the sustaining period, approximately 500 AFY of groundwater flowed across the current inland extent of saline water impact in the LAS, toward the coast (Table 5-2). This suggests that, under the Future Baseline conditions, while UWCD's EBB project does not include any dedicated extraction wells in the LAS, operation of the UAS extraction wells limit the landward migration of saline water throughout the LAS. This interpretation is consistent with particle tracks that shows a recession of the saline water impact front, particularly near Point Mugu (Figures 5-26 through 5-29). However, particle tracks suggest some inland migration in the Hueneme aquifer near Port Hueneme (Figure 5-26). Presently, there are no wells in this vicinity to monitor the actual saline front. Although modeled particle tracks indicate inland migration of approximately 0.75 miles over the 30-year sustaining period, the closest wells screened across the Hueneme aquifer are still more than 1.5 miles from the modeled inland saline intrusion extent.

These results indicate that groundwater production at the average 2016 to 2022 rates in the Oxnard Subbasin, PVB, and WLPMA may be sustainable if UWCD's EBB project is implemented at a 10,000 AFY production scale. It is noted, however, that projected groundwater elevations exceed the current minimum thresholds in the WLPMA at the key wells in the WLPMA under this scenario (Figure 5-23a). Minimum thresholds will need to be re-evaluated with further development of the EBB project to ensure that they continue to protect against undesirable results.

Projects with EBB

In the Projects with EBB scenario, groundwater elevations at the key wells in the WLPMA were approximately equal to the groundwater elevations simulated in the Projects scenario (Figures 5-23a and 5-23b)[24]. Approximately 3,800 AFY of groundwater flowed across the current inland extent of saline water impact in the UAS, toward the coast in the Oxnard Subbasin. This is an increase in the coastward flow of approximately 20% compared to the Future Baseline with EBB simulation. Like the Future Baseline with EBB simulation, this indicates that operation of UWCD's EBB project will limit the landward migration of saline water throughout the UAS over the 30-year sustaining period.

23 Due to the similarity in simulated groundwater conditions in the WLPMA, the Future Baseline with Extraction Barrier Brackish (EBB) groundwater elevations plot directly on top of the Future Baseline scenario groundwater elevations.

24 Due to the similarity in simulated groundwater conditions in the WLPMA, the Projects with EBB groundwater elevations plot directly on top of the Projects scenario groundwater elevations.

This is consistent with particle tracks that show a recession in the saline water impact front in the UAS (Figures 5-30 and 5-31).

Over the sustaining period, approximately 600 AFY of groundwater flowed across the current inland extent of saline water impact in the LAS, toward the coast in the Oxnard Subbasin. Like the Future Baseline with EBB scenario, this suggests that, while UWCD's EBB project does not include any dedicated extraction wells in the LAS, operation of the UAS extraction wells results in the vertical migration of flow from the LAS to UAS, limiting the landward migration of saline water throughout the LAS. This interpretation is consistent with particle tracks that shows a recession of the saline water impact front, particularly near Point Mugu (Figures 5-32 through 5-35). The one exception to this is in the Hueneme aquifer near Port Hueneme, where the particle trajectories under the Projects with EBB scenario were similar to those in the Future Baseline with EBB scenario.

5.2.2.2 East Las Posas Management Area Modeling

A total of four (4) model simulations were completed for the ELPMA under the three scenarios that are applicable to the management area. Results from each model run were analyzed to characterize the effects of pumping, projects, and management actions on chronic lowering of groundwater levels and reduction of groundwater in storage over the 30-year sustaining period. The simulated groundwater elevations from each model run were compared to the minimum thresholds and measurable objectives established in the GSP to assess the potential impacts on beneficial uses and users of groundwater in the ELPMA (FCGMA 2019).

5.2.2.2.1 Future Baseline Scenario

SGMA requires that the GSP include an assessment of "future baseline" conditions. The Future Baseline scenario developed for this 5-year evaluation built on the GSP modeling and was designed to assess whether current groundwater extractions from the ELPMA are sustainable. In the ELPMA, the Future Baseline extraction rate was equal to 22,500 AFY; of this, 1,470 AFY was extracted from the Epworth Gravels management area.

Future Baseline Model Assumptions

The Future Baseline model simulation assumptions included the following:

- Average annual extractions from the ELPMA and Epworth Gravels Management Area equal to approximately 22,500 AFY.
- Starting groundwater levels equal to the September 30, 2022, groundwater levels from the ELP Model.
- Precipitation and streamflow for the 1933 to 1979 period, adjusted by DWR's 2070 central tendency climate change factors, with 1933 hydrology replaced by 1978 hydrology (Section 5.2.1.3, Updated Hydrology).
- Average annual discharges of SVWQCP discharges to Arroyo Simi-Las Posas equal to approximately 9,900 AFY (FCGMA 2019).
- 1,300 AFY of dewatering well discharges from the City of Simi Valley to Arroyo Simi-Las Posas.

In addition to these assumptions, all existing projects in the ELPMA were included in the Future Baseline model scenario (Table 5-1).

Future Baseline Model Results

During the sustaining period, groundwater elevations in the ELPMA were higher than the minimum thresholds at eight of the 14 key wells and did not reach the measurable objectives for any key well. Over this period, chronic lowering of groundwater levels occurred in the northern part of the ELPMA in six key wells, where the influence of flows in Arroyo Simi-Las Posas are less pronounced (Figures 5-36a through 5-36e). Groundwater in storage declined at an average rate of approximately 1,800 AFY (Table 5-3, Summary of ELP Modeling Results).

Chronic lowering of groundwater levels also occurred in the Epworth Gravels Management Area under the Future Baseline Scenario (Figure 5-37, Key Well Hydrographs for the Epworth Gravels Management Area). During the sustaining period, groundwater in storage in this management area declined at an average rate of approximately 180 AFY.

Table 5-3. Summary of ELP Modeling Results

Simulation		Average Annual Groundwater Production Rate (2040 – 2069; AFY)			Average Annual Change in Storage (2040 – 2069; AFY)[a]		
		Epworth Gravels	ELPMA	Total	Epworth Gravels	ELPMA	Total
Future Baseline		1,470	21,070	22,540	-180	-1,810	**-1,980**
No New Projects	NNP1	1,330	17,900	19,230	-30	-240	**-270**
	NNP2	1,330	17,900	19,230	-30	-400	**-430**
Projects		1,330	17,900	19,230	-30	-140	**-170**

Notes: AFY = acre-feet per year; NNP = No New Projects; ELPMA = East Las Posas Management Area; Epworth Gravels = Epworth Gravels Management Area.

[a] Negative (-) values denote a reduction in groundwater in storage.

5.2.2.2.2 No New Projects Scenario

The NNP Scenarios were designed to provide a direct simulation of the groundwater pumping distributions in the ELPMA and Epworth Gravels Management Area that avoid chronic lowering of groundwater levels and storage. Two separate model runs were conducted under the NNP Scenario: NNP 1 and NNP2. Each model run incorporated all the assumptions included in the Future Baseline scenario (Section 5.2.2.2.1, Future Baseline Scenario) but used different sets of assumptions for groundwater production and SVWQCP discharges to Arroyo Simi-Las Posas.

Additionally, as noted previously, FCGMA will be developing a Basin Optimization Plan that evaluates and prioritizes projects that increase the sustainable yield of the ELPMA and Epworth Gravels Management Area. Information developed as part of the Basin Optimization Plan will be integrated into future evaluations and, as appropriate, amendments to the LPVB GSP.

No New Projects Scenario Assumptions

Groundwater Production

Both the NNP1 and NNP2 model runs incorporate a 10% reduction in pumping in the Epworth Gravels Management Area and a 15% reduction in pumping in the ELPMA (Table 5-3). Groundwater production was reduced linearly from the start of the simulation period through 2040. During the sustaining period, total groundwater production in the ELPMA and Epworth Gravels was equal to approximately 19,200 AFY (Table 5-3).

SVWQCP Discharges to Arroyo Simi-Las Posas

The NNP1 and NNP2 model runs incorporated two different assumptions for the volume of SVWQCP discharges to Arroyo Simi-Las Posas over the entire 47-year simulation period. In the NNP1 scenario, SVWQCP discharges were held constant at the Future Baseline rates, which are approximately equal to the long-term historical average (Table 5-4 Summary of Annual Discharges Simulated in the East Las Posas Model (2040-2069 Average); Section 5.2.2.2.1 Future Baseline Scenario).

Table 5-4. Summary of Annual Discharges Simulated in the East Las Posas Model (2040 - 2069 Average)

Scenario		Discharges from SVWQCP to Arroyo Simi-Las Posas		Dewatering Well Discharges to Arroyo Simi-Las Posas	
		Volume (AFY)	Description	Volume (AFY)	Description
GSP (2019)	Future Baseline	4,736	Historical Average adjusted by the City of Simi Valley's recycled water demand projections in their 2015 UWMP (5,200 AFY by 2040)	0	Based on the City of Simi Valley's plans, at the time, to desalt and reuse the dewatering water by 2022.
	Projects[a]	9,427	Project to purchase 4,691 AFY of SVWQCP water to maintain discharges to Arroyo Simi-Las Posas		
GSP Periodic Evaluation (2024)	Baseline & No New Projects 1	9,936	Historical average.	1,318	2016-2022 average.
	No New Projects 2	8,040	2016 - 2022 average.		
	Projects[a]	9,936	Historical average.		

Notes

a Projects include approximately 900 AFY of additional Arroyo Simi-Las Posas inflows associated with the Arundo Removal project

Discharges of SVWQCP discharges have declined over the past decade in response to increasing water conservation efforts within the City of Simi Valley. Over the 2016 to 2022 period, SVCWQP discharges averaged approximately 8,040 AFY, which is approximately 1,890 AFY less than the assumptions used in the Future Baseline scenario. To evaluate the effects of reduced SVWQCP discharges on groundwater conditions within the ELPMA, the NNP2 scenario simulated a SVWQCP discharge rate of 8,040 AFY.

No New Projects Scenario Model Results

No New Projects 1

During the sustaining period, groundwater elevations in the ELPMA were higher than, or equal to, the minimum thresholds at all key wells and were higher than the measurable objectives at 6 (or 40%) of the key wells (Figures 5-36a through 5-36e). Over this period, groundwater levels remained stable, including in the northern ELPMA (Figures 5-36a through 5-36e). Groundwater in storage declined at an average rate of approximately 300 AFY (Table 5-3), which is within the predictive uncertainty of the ELP model (FCGMA 2019).

Similar to the ELPMA, the simulated groundwater elevation in the Epworth Gravels Management Area remained higher than the minimum threshold throughout the 47-year simulation period. During the 30-year sustaining period, groundwater elevations at well 03N19W29F06S, the only key well in the Epworth Gravels Management Area, declined at an average rate of approximately 0.25 feet per year. This is an 85% reduction in the rate of groundwater elevation decline at this well compared to the Future Baseline scenario (Figure 5-37). During the sustaining period, groundwater in storage in this management area declined at an average rate of approximately 30 AFY.

No New Projects 2

Simulated groundwater elevations and change in storage in the NNP2 model run were similar to NNP1 (Table 5-3; Figures 5-36a through 5-37). The similarity in results indicates that, under the simulated pumping distribution, the sustained flows in Arroyo-Simi Las Posas help to fill the aquifers in the southern part of the ELPMA, such that, SVWQCP discharges in excess of approximately 8,040 AFY do not significantly increase the volume of recharge to the ELPMA. In the NNP1 scenario, the increased flows in Arroyo-Simi Las Posas primarily serve to increase outflows to the PVB. These results suggest that implementing new projects to increase available storage in the southern ELPMA may increase the benefit of projects that maintain flows in Arroyo Simi-Las Posas.

The simulated groundwater elevations in the Epworth Gravels Management Area are equal to the NNP1 simulation because groundwater conditions in this part of the LPVB are not impacted by flows in Arroyo Simi-Las Posas.

5.2.2.2.3 Projects Scenario

Modeling of future conditions in the Projects Scenario included all the assumptions in the NNP1 scenario and also included the proposed Arroyo Simi-Las Posas Arundo Removal project (Table 5-1). As noted above, additional projects in the ELPMA will be considered by FCGMA, in consultation with the LPVB committees, as part of the Basin Optimization Plan. FCGMA anticipates incorporating these projects into future evaluations and, as appropriate, amendments of the GSP as additional information is developed for these projects.

The Nature Conservancy estimated that implementation of the Arroyo Simi-Las Posas Arundo Removal project will result in a reduction of evapotranspiration (ET) losses and an increase in Arroyo Simi-Las Posas flows by up to 2,680 AFY (FCGMA 2019). To simulate this project, all ET demands associated with Arundo within the Arroyo-Simi Las Posas corridor were removed from the model – this accounted for approximately 1,900 AFY of the 2,680 AFY in estimated ET demand reductions. The remaining 780 AFY of ET demand reductions are anticipated to occur upstream of the LPVB. Because of this, the surface water flows entering the ELPMA through Arroyo Simi-Las Posas were increased by 780 AFY.

Projects Scenario Model Results

Simulated groundwater elevations and change in storage in the Projects model run were similar to NNP1 (Table 5-3; Figures 5-36a through 5-37). Like the NNP2 model run, the similarity in results indicates that the sustained flows in Arroyo Simi-Las Posas over the 50-year projection horizon helps to fill the aquifers in the southern part of the ELPMA, such that, the Arroyo Simi-Las Posas Arundo Removal project provides little additional recharge to the ELPMA. Under these conditions, this project increases outflows to the PVB. Like the NNP results, these results suggest that implementing new projects to increase available storage in the southern ELPMA may increase the benefit of projects that maintain flows in Arroyo Simi-Las Posas.

The simulated groundwater elevations in the Epworth Gravels Management Area are equal to the NNP1 simulation because groundwater conditions in this part of the LPVB are not impacted by flows in Arroyo Simi-Las Posas.

5.2.3 Estimates of the Future Sustainable Yield

The sustainability goal for the LPVB is: “to maintain a sufficient volume of groundwater in storage in each management area so that there is no significant and unreasonable net decline in groundwater or storage over wet and dry climatic cycles” (FCGMA 2019). Additionally, “groundwater levels in the WLPMA should be maintained at elevations that are high enough to not inhibit the ability of the Oxnard Subbasin to prevent net landward migration of the saline water impact front” in the Oxnard Subbasin after 2040 (FCGMA 2019).

5.2.3.1 West Las Posas Management Area

Future projected groundwater elevations at all key wells in the WLPMA indicate that, except for the Future Baseline conditions, the management area is not expected to experience long-term decline in groundwater elevation or storage over wet and dry climatic cycles (Figures 5-2a and 5-2b). Because of this, the sustainable yield of the WLPMA was estimated by evaluating the seawater flux into the Oxnard Subbasin, south of Channel Islands Harbor, over the 30-year sustaining period. The sustaining period was assessed because SGMA recognizes that undesirable results may occur during the 20-year implementation period, as basins move toward sustainable groundwater management. In addition to the flux of seawater, particle tracks from model runs were analyzed to evaluate the potential migration of the current extent of saline water impact in the UAS and the LAS of the Oxnard Subbasin. As described in Section 5.2.2.1, Future Baseline Scenario, the particles were placed along the approximate inland extent of the zone of saline water impact in 2020. Scenarios that minimize the net flux of seawater into the Oxnard Subbasin and the landward migration of the saline water impact front over the 30-year sustaining period are sustainable for the Oxnard Subbasin, while those that allow for net seawater intrusion and landward migration of the saline water impact front are not.

Sustainable Yield without Future Projects

All three simulations performed under the NNP Scenario avoided chronic lowering of groundwater levels in the WLPMA and reduced seawater intrusion in the LAS of the Oxnard Subbasin during the 30-year sustaining period and resulted in net freshwater loss from the UAS of the Oxnard Subbasin to the Pacific Ocean. Therefore, the simulation with the highest overall production rate, that also minimized impacts from adjacent basins, was identified as the best estimate of the sustainable yield of the Oxnard Subbasin, PVB, and WLPMA, in the event that no new future projects are implemented in each basin. The simulation with the highest total groundwater production rate from this scenario was NNP3 – under this simulation, an average of approximately 11,400 AFY of groundwater was pumped from the WLPMA (Section 5.2.2.1.3 No New Projects Model Scenario). This estimate of the sustainable yield is approximately 1,100 AFY lower than the estimate presented in the GSP (FCGMA 2019). Applying the estimate of sustainable yield uncertainty calculated during the development of the GSP for the sustaining period suggests that the sustainable yield of the WLPMA may be as high as 12,600 AFY or as low as 10,200 AFY (FCGMA 2019).

The 2021 to 2022 average annual extractions from the WLPMA of 16,600 AFY is approximately 4,000 AFY higher than the estimated upper end of the sustainable yield of the WLPMA (Table 4-3).

Sustainable Yield with Future Projects

In the Projects Scenario, implementation of the UWCD's Freeman Expansion project and FCGMA's Voluntary Temporary Fallowing project helped to increase groundwater levels and the sustainable yield of the WLPMA. The primary benefits to the sustainable yield of the WLPMA associated with these projects are increased underflow recharge from the Oxnard Subbasin to the WLPMA that result from additional recharge in the Forebay Management Area of the Oxnard Subbasin. While the Purchase of Imported Water from CWMD for Basin Replenishment helps to increase groundwater levels in the WLPMA, the project does not increase the sustainable yield of the management area.

Over the 1985 to 2015 period, the relationship between modeled underflows between the Oxnard Subbasin and WLPMA suggest that approximately 7% of the water recharged in the Oxnard Forebay recharges the WLPMA as underflows from the UAS of the Oxnard Subbasin to the WLPMA. In the Projects scenario, recharge in the Oxnard Forebay was approximately 4,900 AFY higher than the Future Baseline scenario. Using the relationship between historical Forebay recharge and underflows, it is estimated that the implementation of projects in the Oxnard Subbasin and PVB would increase the sustainable yield of the WLPMA by approximately 340 AFY.

Therefore, if projects are implemented to increase diversions from the Santa Clara River and incentivize Voluntary Temporary Fallowing in the Oxnard Subbasin and PVB, the sustainable yield of the WLPMA may be as high as approximately 13,040 AFY or as low as 10,640 AFY.

Sustainable Yield with UWCD's EBB Water Treatment Project

Both simulations conducted under the EBB Water Treatment Scenario avoided chronic lowering of groundwater levels in the WLPMA and limited the landward migration of saline water in the Oxnard aquifer, Mugu aquifer, FCA, and GCA along the coastline of the Oxnard Subbasin. Because of this, the simulation with the highest overall production rate was used as the estimate of sustainable yield of the Oxnard Subbasin if UWCD's EBB Water Treatment project is successfully implemented as described in Section 5.2.2.1.6, Extraction Barrier and Brackish Water Treatment Scenario. The simulation with the highest total groundwater production rate from this scenario was the Future Baseline with EBB simulation – under this simulation, an average of approximately 13,500 AFY of groundwater was extracted from the WLPMA (Section 5.2.2.1.6 Extraction Barrier and Brackish Water Treatment Scenario). This would represent an increase in the sustainable yield of WLPMA of approximately 2,100 AFY compared to the scenario in which no new projects are implemented in the Oxnard Subbasin, PVB, and WLPMA.

Therefore, if UWCD's EBB project is implemented at a 10,000 AFY production scale, the sustainable yield of the WLPMA may be as high as approximately 14,700 AFY or as low as 12,300 AFY.

Impact of Recycled Water Double Counting on the Estimate of Sustainable Yield

As described in the introduction to Section 5.2, the simulations described above over-represent the volume of recycled water supplies to PVCWD by 1,500 AFY and under-represent the volume of Conejo Creek Project deliveries to PVCWD by 400 AFY. To evaluate the impact of this on the model simulations of future groundwater conditions and estimate of sustainable yield, UWCD, at the request of FCGMA, performed one additional numerical model simulation as part of this periodic evaluation. For this additional model simulation, the Coastal Plain Model was used to re-simulate the NNP3 scenario, with the volumes of recycled water and Conejo Creek Project water deliveries to PVCWD updated using CWD's water supply projections provided to FCGMA on September 16, 2024.

Table 5-5. Comparison of Simulated Groundwater Conditions – No New Projects 3

Future Scenario Scenario		Average Annual Rate Over the Sustaining Period (2040 – 2069; AFY)	
		NNP3 (Original)	NNP3 (Corrected PVCWD Water Supplies)
Groundwater Extractions[a]	UAS	-300	-300
	LAS	-11,100	-11,100
	Total	**-11,400**	**-11,400**
Seawater Flux into the Oxnard Subbasin[b]	UAS	-800	-600
	LAS	1,000	1,200
	Total	**200**	**600**
Underflows from PVB to the Oxnard Subbasin[c]	UAS	900	600
	LAS	-1,000	-1,100
	Total	**-100**	**-500**
Underflows from WLPMA to the Oxnard Subbasin[c]	UAS	-3,800	-3,800
	LAS	-800	-800
	Total	**-4,600**	**-4,600**

Notes: NNP = No New Projects; AFY = Acre-Feet per Year; PVB = Pleasant Valley Basin; WLPMA = West Las Posas Management Area of the Las Posas Valley Basin

a Represents groundwater production from the WLPMA.

b Represents the average annual simulated seawater flux across the coastline south of Channel Islands Harbor. Negative (-) values denote discharges, or outflows, from the Oxnard Subbasin Positive (+) values denote recharge, or inflows, to the Oxnard Subbasin.

c Negative (-) values denote discharges, or outflows, from the Oxnard Subbasin. Positive (+) values denote recharge, or inflows, to the Oxnard Subbasin.

The revised PVCWD water supply projections result in an increase in groundwater production from within the Oxnard Subbasin and Pleasant Valley Basin but do not affect the groundwater production rates in the WLPMA. Additionally, the impacts to underflows between the Oxnard Subbasin and WLPMA are less than 50 AFY (Table 5-5). The revised NNP3 model simulation results in approximately 200 AFY less freshwater discharge to the Pacific Ocean through the UAS of the Oxnard Subbasin and approximately 200 AFY additional seawater flux into the LAS of the Oxnard Subbasin. These differences in coastal flux values and simulated underflows between the Oxnard Subbasin and WLPMA are within the uncertainty of the Coastal Plain Model (FCGMA 2019).

5.2.3.2 East Las Posas Management Area

Sustainable Yield without Future Projects

Both simulations performed in the NNP Scenario avoided chronic lowering of groundwater elevations and storage in the ELPMA. Because of this, the estimated sustainable yield of the ELPMA, in the absence of new projects that increase water supplies in the management area, is approximately equal to 19,200 AFY (Table 5-3)[25]. This estimate of sustainable yield is approximately 1,400 AFY higher than the estimate of sustainable yield presented in the GSP (FCGMA 2019). The increase in sustainable yield compared to the GSP reflects the benefits of sustained flows in the Arroyo Simi-Las Posas.

Applying the estimate of sustainable yield uncertainty calculated during the development of the GSP for the sustaining period suggests that the sustainable yield of the ELPMA may be as high as 21,500 AFY or as low as 16,900 AFY (FCGMA 2019).

The 2021 to 2022 average annual extractions from the ELPMA and Epworth Gravels aquifer of 23,800 AFY is approximately 2,300 AFY higher than the estimated upper end of the sustainable yield of the ELPMA and Epworth Gravels aquifer (Table 4-4).

Sustainable Yield with Future Projects

The Projects scenario suggests that, under the simulated pumping conditions, if future SVWQCP discharges are greater than 8,040 AFY, the Arroyo-Simi Arundo Removal Project will not increase the sustainable yield of the ELPMA. As noted in Section 5.2.2.2.3, Projects Scenario, under these conditions, this project will likely result in increased surface water flows to the PVB. However, the benefits of maintaining, or increasing, flows in Arroyo Simi-Las Posas may increase if new projects are implemented in the ELPMA that increase available storage in the aquifers that underlie the Arroyo. FCGMA anticipates evaluating these types of projects in the Basin Optimization Plan and Basin Optimization Yield Study.

5.2.3.3 Epworth Gravels Management Area

Both simulations performed in the NNP Scenario mitigated against chronic lowering of groundwater elevations and storage in the Epworth Gravels Management Area. Because of this, the estimated sustainable yield of the Epworth Gravels Management Area, in the absence of new projects that increase water supplies in the management area, is approximately equal to 1,330 AFY (Table 5-3). This estimate of sustainable yield is approximately equal to the sustainable yield presented in the GSP (FCGMA 2019). Applying the estimate of sustainable yield uncertainty calculated during the development of the GSP for the sustaining period suggests that the sustainable yield of the Epworth Gravels Management Area may be as high as 1,350 AFY or as low as 1,310 AFY (FCGMA 2019).

The 2021 to 2022 average annual extractions from the Epworth Gravels Management Area of approximately 460 AFY is approximately 890 AFY lower than the estimated upper end of the sustainable yield (Table 4-4).

25 Consistent with the GSP, this includes the sustainable yield of the Epworth Gravels Management Area.

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6 Monitoring Network

This section summarizes changes to the monitoring network for the LPVB, including revisions to the key well network. Groundwater wells that are included in the LPVB monitoring network are shown in Figures 6-1, Monitoring and Non-Monitoring Wells Screened in the Shallow Alluvial Aquifer, Epworth Gravels Aquifer, and Grimes Canyon Aquifer in the Las Posas Valley Basin, through Figure 6-3, Monitoring Wells Screened in the Fox Canyon Aquifer in the Las Posas Valley Basin.

6.1 Summary of Changes to the Monitoring Network

Groundwater elevation and water quality data for the LPVB are collected from a network of more than 80 wells. The wells in the monitoring network are monitored by UWCD, Ventura County Watershed Protection District (VCWPD), and CMWD, and VCWWD. FCGMA relies on these agencies to collect manual groundwater elevation measurements, automated transducer measurements, and groundwater quality samples at all wells, including key wells, in the LPVB.

Changes to UWCD's Monitoring Activities

At the time of GSP adoption, UWCD monitored five wells in the LPVB. Well 02N21W16J03S, a key well in WLPMA, has been removed from the monitoring network due to access issues that have limited measurement since 2019. The remaining four wells from the GSP that were monitored by UWCD in the LPVB are on the same monitoring schedule and no wells have been added to their network.

Changes to VCWPD's Monitoring Activities

At the time of GSP adoption, VCWPD monitored 50 wells in the LPVB. Since then, well 02N20W04F02S, a key well in the ELPMA, has been destroyed. In addition to the revisions to their monitoring network, VCWPD updated the monitoring schedule for seven of the 50 wells in the GSP monitoring network (Table 6-1).

Table 6-1. Change in VCWPD Monitoring Schedule

State Well Number	Management Area	Notes	Main Use	Screened Aquifer	Screened Aquifer System	Change in Water Levels Monitoring Schedule	Water Quality Samples Collected by VCWPD
02N20W10J01S	ELPMA	Change in WQ monitoring schedule	Monitoring	Fox	LAS	No Change, Manual	No
03N19W19J01S	ELPMA		Agricultural	Fox	LAS	No Change, Manual	No
03N20W35R02S	ELPMA		Monitoring	Fox	LAS	No Change, Manual	No
03N20W35R03S	ELPMA		Monitoring	Fox	LAS	No Change, Manual	No
02N21W11J03S	WLPMA		Monitoring	Fox	LAS	No Change, Manual	No
02N21W12H01S	WLPMA		Agricultural	Fox	LAS	Manual and Transducer	No
02N20W01B02S	ELPMA	Now monitored by CMWD	Municipal	Multiple	LAS	No change, not monitored	No

Changes to CMWD's Monitoring Activities

At the time of GSP adoption, CMWD monitored 31 wells in the LPVB. Three of the wells have been removed from the monitoring network (Table 6-2, Revisions to CMWD Monitoring Network). Well 02N20W02D02S was destroyed by the owner. Well 03N20W36P01S has a transducer stuck in the sounding tube. The transducer will be reinstalled the next time the well pump is removed. Well 03N20W35J01S is monitored with a transducer. However, the groundwater levels are considered anomalous and CMWD recommended removing this well from the monitoring network. None of these wells was identified as a key wells in the GSP. In addition to removing these wells, CMWD took over monitoring one well from VCWPD (Table 6-2, Revisions to CMWD Monitoring Network). Water quality in this well is sampled to satisfy State Water Resources Control Board (SWRCB) Division of Drinking Water (DDW) requirements.

Since the GSP was adopted, CMWD installed three new monitoring wells (Section 4.2). These wells have been added to the monitoring network. Well 03N19W30M07 is a new nested monitoring well screened in the Epworth Gravels aquifer. Well 03N19W30D07, -08, and -09 is a clustered monitoring well screened in the Epworth Gravels aquifer, the FCA and the GCA. Well 02N20W11B01, -02, and -03 is a clustered monitoring well that addresses a data gap in groundwater elevations in the Upper San Pedro Formation and the FCA south of the Moorpark anticline.

Table 6-2. Revisions to CMWD Monitoring Network

State Well Number	Manageme nt Area	Status	Main Use	Screened Aquifer	Screened Aquifer System	Water Levels Monitored by CMWD	Water Quality Samples Collected by CMWD
02N20W02D02S	ELPMA	Removed	Monitoring	Fox	LAS	—	—
03N20W36P01S	ELPMA	Removed	Monitoring	Fox	Unassigned	—	—
03N20W35J01S	ELPMA	Removed	Agricultural	Fox	LAS	—	—
02N20W01B02S	ELPMA	-	Municipal	Multiple	LAS	Transducer	Yes
03N19W30M07	ELPMA	Added	Monitoring	Epworth	Epworth	Transducer	No
03N19W30D07, -08, and -09	ELPMA and Epworth Gravels	Added	Monitoring	Epworth, Fox, Grimes	Epworth, LAS	Transducer	No
02N20W11B01, -02, and -03	ELPMA	Added	Monitoring	Upper San Pedro, Fox	LAS	Transducer	No

In addition to the revisions to their monitoring network, CMWD updated the monitoring schedule for 13 of the 31 wells in the GSP monitoring network (Table 6-3, Change in CMWD Monitoring Schedule).

Table 6-3. Change in CMWD Monitoring Schedule

State Well Number	Management Area	Notes	Main Use	Screened Aquifer	Screened Aquifer System	Changes to Water Levels Monitoring Schedule	Water Quality Samples Collected by CMWD
02N19W06F01S	ELPMA	CMWD does not collect water quality samples	Agricultural	USP	Unassigned	Transducer only	—
02N19W07G01S	ELPMA		Monitoring	Alluvium	Unassigned	Transducer only	—
02N19W07K02S	ELPMA		Monitoring	Fox	Unassigned	Transducer only	—
02N19W07K03S	ELPMA		Monitoring	USP	Unassigned	Transducer only	—
02N20W03H01S	ELPMA		Agricultural	Fox	LAS	Transducer only	—
02N20W09Q08S	ELPMA		Monitoring	Alluvium	LAS	Transducer only	—
02N20W03J01S	ELPMA	Wells are now monitored by VCWWD	Municipal	Fox	LAS	Monitored by VCWWD	—
02N20W06R01S	ELPMA		Municipal	Fox	LAS	Monitored by VCWWD	—
03N19W31H01S	ELPMA		Municipal	Fox	LAS	Monitored by VCWWD	—
03N19W31B01S	ELPMA		Municipal	Fox	LAS	Monitored by VCWWD	Monitored by VCWWD
03N19W31H01S	ELPMA		Municipal	Fox	LAS	Monitored by VCWWD	—
03N20W36A02S	ELPMA		Municipal	Fox	Unassigned	Monitored by VCWWD	—
03N20W36G01S	ELPMA		Municipal	Fox	Unassigned	Monitored by VCWWD	—

6.2 Data Gaps

6.2.1 Data Gaps That Have Been Partially Addressed

Spatial Data Gaps

FCGMA has undertaken several steps toward filling data gaps identified in the GSP. At the request of FCGMA, DWR installed a nested monitoring well cluster in 2019 near the boundary between the PVB and ELPMA, an area identified in the GSP as a critical location where groundwater elevation measurements were lacking. Another nested monitoring well cluster is being constructed in the Oxnard Subbasin near the border with WLPMA. Construction of these well clusters help characterize the interaction between the LPVB and adjacent basins.

6.2.2 Remaining Data Gaps

As described in the GSP, the existing monitoring network in the LPVB is sufficient to document groundwater and can be used to document progress toward the sustainability goals for the LPVB. Potential monitoring network improvements that address data gaps that remain from the GSP, as well as those identified during the first five years of GSP implementation, are summarized below.

6.2.2.1 Water Level Measurements: Spatial Data Gaps

The GSP identified data gaps in the spatial and vertical distribution of groundwater elevation measurements in the LPVB and recommended construction of:

- A monitoring well or wells near the boundary between the WLPMA and the Oxnard Subbasin to the west.
- A monitoring well or wells adjacent to Arroyo Simi–Las Posas, within the boundaries of the potential GDE.
- A monitoring well or wells screened in the GCA.

As described in Section 6.2.1, Data Gaps that Have Been Partially Addressed, the newly constructed monitoring well in the Oxnard Subbasin, near the boundary with the WLPMA, helps to partially address the first data gap listed above. In 2022, FCGMA applied for grant funding through DWR's Sustainable Groundwater Management Grant program to construct dedicated monitoring wells in the ELPMA and WLPMA to address the remaining spatial data gaps identified in the GSP. FCGMA was not awarded funds through this program but anticipates evaluating projects that address these data gaps as part of the Basin Optimization Plan.

Importantly, since adoption of the GSP, several groundwater level monitoring wells have been removed from the monitoring network, including two key wells (Figure 6-3):

- 02N20W04F02S, which was destroyed; and
- 02N21W16J03S, which has not been measured since 2019.

FCGMA reviewed groundwater wells in the vicinity of these key wells but was unable to identify suitable replacements that have similar geographic location, construction, and historical record of measurement. Because of this, the removal of these wells from the key well network introduces new spatial groundwater elevation data gaps:

- The destruction of well 02N20W04F02S limits characterization of groundwater conditions in the southeastern part of the ELPMA, near portions of the FCA that may transition from confined to unconfined if groundwater elevations drop to the minimum thresholds.
- The removal of 02N21W16J03S limits characterization of groundwater conditions in the western part of WLPMA, where groundwater elevations are influenced by operations in the Oxnard Subbasin.

The monitoring network is still adequate to characterize the groundwater conditions in the WLPMA and ELPMA without these wells, but would be improved with the construction of additional dedicated monitoring wells with known screen intervals. As noted above, FCGMA will evaluate projects that help to fill these critical data gaps through the FCGMA board process developed to solicit and prioritize projects in the LPVB. Additionally, FCGMA will continue to seek grant and stakeholder funding to fill data gaps.

6.2.2.2 Water Level Measurements: Temporal Data Gap

The DWR Monitoring Protocols Best Management Practices (DWR 2016a) states the following:

> Groundwater elevation data … should approximate conditions at a discrete period in time. Therefore, all groundwater levels in a basin should be collected within as short a time as possible, preferably within a 1-to-2-week period.

The DWR Monitoring Networks Best Management Practices (DWR 2016b) states the following:

> Groundwater levels will be collected during the middle of October and March for comparative reporting purposes.

Currently, groundwater elevation measurements are scheduled according to these criteria in CMWD and Ventura County Waterworks District (VCWWD) monitoring wells with pressure transducers. However, the monitoring network also includes agricultural and domestic production wells that are not equipped with pressure transducers (FCGMA 2019). Not all of these wells are sampled at regular intervals. To minimize the effects of temporal data gaps in the future, it would be necessary to expand the collection of groundwater elevation data, to occur in all of the wells within a 2-week window during the key reporting periods of mid-March and mid-October. The recommended collection windows are October 9–22 in the fall and March 9–22 in the spring.

Additionally, as funding becomes available, pressure transducers should be added to wells in the groundwater monitoring network. Pressure transducer records provide the high-temporal-resolution data that allows for a better understanding of water level dynamics in the wells related to groundwater production, groundwater management activities, and climatic influence.

6.2.2.3 Groundwater Quality Monitoring

Groundwater quality monitoring is conducted on at least an annual basis by UWCD, VCWPD, and CMWD. The GSP monitoring well network identified 49 wells that were to be monitored for groundwater quality. Thirteen of these wells were mis-identified in the GSP as wells that were regularly monitored for water quality. The majority these wells, 11 of the 13 wells, are key wells located in the ELPMA. FCGMA will coordinate with CMWD to determine the appropriate responsible agency and water quality sampling schedule for these wells in the future.

The spatial distribution of the current set of monitoring wells is considered sufficient to determine trends in groundwater quality; however, FCGMA continues to evaluate opportunities to include additional monitoring wells. Functionality of the Water Level Monitoring Network

While data gaps remain in the LPVB, the spatial and temporal coverage of the existing groundwater monitoring network is sufficient to provide an understanding of representative water level conditions for the FCA, Epworth Gravels, and LAS of the WLPMA. FCGMA anticipates evaluating opportunities to fill these data gaps over the next 5 years as part of implementing the GSP and Judgment.

6.3 Functionality of Additional Monitoring Network

FCGMA will monitor subsidence in the LPVB using DWR's TRE ALTAMIRA InSAR data. Updates are provided annually with point data and raster interpolations of total vertical displacement since June 13, 2015, and annual vertical displacement rates. This data will be used in conjunction with groundwater elevation data to monitor land subsidence with relation to groundwater extraction.

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7 Fox Canyon Groundwater Management Agency Authorities and Enforcement Actions

7.1 Actions Taken by the Agency

This section describes relevant actions taken by FCGMA and includes a summary of regulations or ordinances related to the GSP, per GSP Emergency Regulations Section 356.4(g). As a groundwater management agency established by the California Legislature in 1982 with the Fox Canyon Groundwater Management Agency Act, FCGMA adopted many ordinances and regulations related to managing the Basin prior to adoption of the GSP in December 2019 and submittal in January 2020.

This section describes the ordinances and resolutions adopted since adoption of the GSP, which are summarized in Table 7-1, Summary of Actions Taken by the Agency. These ordinances and resolutions can be grouped into the following general actions to advance groundwater sustainability and implement the GSP.

Table 7-1. Summary of Actions Taken by the Agency

Date Adopted	Regulatory Action[26]	Description
10/28/2020	Resolution No. 2020-05 Imposing a Fee on Groundwater Extractions to Establish a Reserve Fund to be Used to Pay the Cost and Expenses of Actions and Proceedings Related to FCGMA's Groundwater Sustainability Program	Imposed a new $20 per AF fee on all but de minimis pumpers for legal expenses related to actions and proceedings related to FCGMA's GSP implementation.
10/2/2020	Resolution No. 2020-07 Increasing Tiered Groundwater Extraction Surcharge Rates.	Increased the surcharge rate to $1,549 for extractions that exceed a pumper's extraction allocation.
12/14/2020	An Ordinance to Establish an Extraction Allocation System for the Las Posas Valley Groundwater Basin	Established a new extraction allocation system needed to sustainably manage the Basin.
2/24/2021	An Ordinance to Amend the Ordinance to Establish an Allocation System for the Las Posas Valley Basin	Amended ordinance to correct a typo.
2/24/2021	An Ordinance to Adjust extraction Allocations in the Las Posas Valley Basin to Facilitate the Transition from Calendar Year to Water Year Reporting of Groundwater Extractions	Established the process to transition from Agency's traditional calendar year extraction reporting to reporting by water year.
3/24/2021	An Ordinance to Exempt Domestic Operators from the Requirement that Flowmeters be Equipped with Advanced Metering Infrastructure (AMI) Telemetry	Exempts domestic pumpers that extract 2 AF or less per year with specified maximum pump discharge and horsepower from Agency's AMI requirements.

[26] Ordinances and resolutions are available at www.fcgma.org.

Table 7-1. Summary of Actions Taken by the Agency

Date Adopted	Regulatory Action[26]	Description
5/25/2022	Ordinance 8.10 to Amend the Fox Canyon Groundwater Management Agency Ordinance Code Relating to Reporting Extractions	Requires monthly extraction reporting by M&I and domestic pumpers, in addition to agricultural pumpers, for wells required to be equipped with AMI.
7/10/2023	Judgment in Las Posas Valley Water Rights Coalition, et al., v. Fox Canyon Groundwater Management Agency, Santa Barbara Supreme Court Case No. VENC100509700	The Judgment adjudicates all groundwater rights in the Las Posas Valley Groundwater Basin and provides for the Basin's sustainable management pursuant to SGMA. The LPV Judgment appoints FCGMA as the Watermaster to implement and administer the LPV Judgment. FCGMA remains responsible for implementing and complying with SGMA and the Fox Canyon Groundwater Management Agency Act.
9/28/2022	Resolution No. 2022-05 Increasing Fee on Groundwater Extractions to Fund the Costs of a Groundwater Sustainability Program.	Increased the groundwater sustainability fee to $29 per AF (except de minimis pumpers) to fund the costs of the groundwater sustainability program.
10/26/2022	Resolution No. 2022-06 Increasing the Tiered Groundwater Extraction Surcharge Rates.	Increased the surcharge rate to $1,841 for extractions that exceed a pumper's allocation.
12/15/2023	Resolution No. 2023-03 Levying a Basin Assessment on Water Right Holders in the Las Posas Valley Groundwater Basin for Fiscal Year 2023-24.	Levies a Basin Assessment of $64 per AF of Annual Allocation on Water Rights Holders to fund the Watermaster's management of the Basin.
4/24/2024	Resolution No. 2024-03 Increasing Tiered Groundwater Extraction Surcharge Rates	Increased the surcharge rate to $1,929 for extractions that exceed a pumper's allocation.

7.1.1 Extraction Reporting

FCGMA implemented several ordinances to improve extraction reporting. These include transition from FCGMA's traditional calendar year reporting to reporting by water year; modified reporting requirements for mutual water companies, special districts, and municipalities for groundwater or in lieu deliveries for agricultural use outside of the Basin; exempting de minimis domestic pumpers from FCGMA's advanced metering infrastructure (AMI) requirements; and requiring monthly extraction reporting by all pumpers required to equip wells with AMI.

7.1.2 Extraction Allocations

Regulating extraction allocations is the primary management action available to FCGMA for managing groundwater demand in the Basin. FCGMA's previous allocation system needed to be replaced to sustainably manage the Basin and a new allocation system was developed over several years concurrent with development of the GSP. The new allocation ordinance was adopted in December 2020 and became effective on October 1, 2021. FCGMA amended the ordinance to facilitate transition to the new ordinance. Additionally, FCGMA adopted resolutions increasing tiered groundwater surcharge rates for extractions that exceed allocation. The surcharge provides an economic disincentive to extract groundwater exceeding allocation.

7.1.3 Funding

FCGMA adopted a "groundwater sustainability" regulatory fee on extractions to fund development of the GSP. Subsequent to adoption of the GSP, the fee was increased from $14 per acre-foot to $29 per acre-foot to fund the cost of FCGMA's groundwater sustainability program[27]. FCGMA also adopted a $20 per acre-foot "reserve fee" to fund the cost and expense of legal actions and proceedings brought against FCGMA related to implementation of FCGMA's groundwater sustainability program[28]. Surcharges collected for extractions exceeding allocation are accounted separate from the operating account and are to be used for acquisition of supplemental water or actions to increase the yield of the Basin[29]. Subsequent to the adjudication judgment, FCGMA adopted an ordinance levying a Basin assessment on water rights holders to fund management of the Basin[30].

As described in Section 3.1, Evaluation of Projects and Management Actions, the Judgment adjudicated water rights in the basin and established an allocation system based on those water rights. The Judgment allocations supersede the allocations developed and adopted by FCGMA in 2019.

7.2 Enforcement and Legal Actions Agency

FCGMA has a robust ordinance code and set of resolutions that establish programs for basin management and reporting[31]. These include ordinances and resolutions adopted under both the authority of the FCGMA Act and SGMA. The FCGMA Board has adopted policies and procedures for ordinance code violations, including sending notices of violation and assessing civil penalties, for failure to:

- Register an extraction facility.
- Report a change in owner or operator of an extraction facility within 30 days.
- Submit a semi-annual groundwater extraction statement.
- Install and maintain advanced metering infrastructure (AMI) on an extraction facility, unless exempt.
- Submit monthly reports of extractions from AMI, unless exempt.
- Install a flowmeter prior to pumping groundwater from an extraction facility.
- Report flowmeter failure and repair or replace the flowmeter within the required timeframe.
- Test and calibrate a flowmeter at the required frequency.
- Remit payment of groundwater extraction fees or civil penalties

The FCGMA Board additionally established a tiered surcharge for extractions in excess of extraction allocation.

[27] Resolution No. 2022-05, available at www.fcgma.org.
[28] Established by Resolution No. 2020-05 and extended by Resolution No. 2024-05, available at www.fcgma.org.
[29] Surcharges have been increased twice since adoption of the GSP by Resolution No. 2022-06 and Resolution No. 2024-03, available at www.fcgma.org.
[30] Resolution 2023-03, available at www.fcgma.org.
[31] Ordinances and resolutions are available at www.fcgma.org.

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8 Outreach, Engagement, and Coordination

8.1 Outreach and Engagement

A public outreach and engagement plan was developed for the LPVB GSP (FCGMA 2019). The outreach and engagement plan:

- Discusses FCGMA's decision-making process and how public input and responses will be used.
- Identifies opportunities for public engagement.
- Describes how FCGMA encourages the active involvement of diverse social, cultural, and economic elements of the population in the LPVB; and
- Describes the method FCGMA shall follow to inform the public about progress implementing the plan, including the status of projects and management actions.

Since adopting the GSP for the LPVB in 2019, the FCGMA Board of Directors has continued to prioritize outreach and engagement with interested parties and has followed the elements of the outreach and engagement plan developed for the GSP. Review of the outreach and engagement plan for this First Periodic Evaluation indicates that the methods described for outreach and engagement activities are relevant to GSP implementation and are being used to successfully support interested party involvement in the GSP implementation process.

During the GSP development and adoption process, interested parties expressed an interest in developing additional projects to increase the sustainable yield of the LPVB. FCGMA engaged with interested parties to solicit project descriptions, which were included in the 2022 GSP annual report (FCGMA 2022). In order to assist the FCGMA Board with evaluating the projects, FCGMA collaborated with interested parties to develop a project evaluation criteria checklist and held multiple operations committee meetings at which the project evaluation process was discussed, and project descriptions were refined. This process will allow FCGMA and project proponents to pursue project funding opportunities and has helped the implementation of project and management actions.

FCGMA has provided updates on GSP implementation activities and public participation opportunities to interested parties through direct electronic communications and posts to the FCGMA website. Additional, updates and opportunities for public comment were provided at FCGMA Regular Board meetings, FCGMA Special Board meetings, and FCGMA Board Committee meetings. Meeting agendas and minutes, as well as video recordings of all FCGMA Board meetings and workshops, were made available on the FCGMA website. The Draft Periodic Evaluation of the GSP, was made available for review on the FCGMA website for 45 days. FCGMA encouraged active participation from interested parties through public workshops (August 30, 2023; April 25, 2024; and September 9, 2024).

Additionally, the LPV Judgment established both a Policy Advisory Committee and a Technical Advisory Committee to solicit feedback from interested parties and advise the LPVB Watermaster on decisions that would impact interested parties and beneficial uses and users of groundwater in the LPVB. The Technical Advisory Committee provides additional review of documents developed to support GSP implementation and updates to the sustainable yield of the LPVB. Under the LPV Judgment, the Watermaster and the Technical Advisory Committee have a formal comment and response protocol that will assist the FCGMA Board of Directors, in its role as the Watermaster, to ensure that the beneficial uses and users of groundwater are considered in technical and policy decisions impacting groundwater use in the LPVB.

The TAC and PAC, along with six stakeholders in the LPVB, prepared comments on the Draft Periodic Evaluation. Comment themes focused on data gaps in the monitoring network, numerical modeling, projects and management actions, and DWR's recommended corrective actions. The Draft Periodic Evaluation was revised in response to the comment letters, which are provided in Appendix B, along with the detailed responses to comments. Several of the comments made suggestions for additional work that needs to be done over the upcoming evaluation period. FCGMA, in its role as the Watermaster for the LPVB, has compiled the list of these suggestions and anticipates working with TAC to develop a process to evaluate, prioritize, and accomplish the work that remains to be done to guide the LPVB to sustainability by 2040.

8.2 Groundwater Sustainability Agency Board

The FCGMA Board of Directors holds monthly meetings during which the Board is apprised of ongoing projects and upcoming initiatives that impact groundwater conditions in the basins under its jurisdiction, including the LPVB. Interested parties are informed in advance of each Board meeting via email and the Board meeting schedule is posted on the FCGMA website. Technical updates, consideration of impacts to beneficial uses and users of groundwater, and feedback from interested parties serve as the underpinnings for policy decisions made by the Board.

Since adopting the GSP in 2019, the Board has held 52 regular meetings and 25 special meetings. The topics discussed at these meetings included:

- GSP Implementation
- Grant Opportunities for Projects and Management Actions
- GSP Annual Reports
- GSP Periodic Updates
- Groundwater Allocation Ordinances
- Groundwater Adjudication Proceedings

The Board is composed of members representing the County of Ventura, the United Water Conservation District, the seven small water districts within the FCGMA jurisdiction, the five incorporated cities within the FCGMA jurisdiction, and the farmers. Members of the current Board have served for multiple years and are well informed on the requirements for sustainable management of the LPVB under SGMA.

8.3 Summary of Coordination Between Agencies

FCGMA has a long-standing history of coordination with other agencies in the LPVB, including the Camrosa Water District – Las Posas Basin GSA, the Las Posas Basin Outlying Areas GSA (County of Ventura), Calleguas Municipal Water District, and United Water Conservation District. There are no federally recognized tribal communities, federal lands, or state lands within the LPVB. Coordination between relevant agencies in the LPVB has continued throughout the implementation of the GSP, with FCGMA holding regular meetings to coordinate on projects, grant funding opportunities, land use planning, well permitting, and water management strategies within the LPVB. This coordination is not anticipated to be impacted by the LPVB Judgment, in which FCGMA is designated as the

Watermaster for the LPVB. Because of the history of coordination between agencies that began before SGMA was enacted and is anticipated to continue as FCGMA becomes the Watermaster for the LPVB, no new inter-agency agreements have been required to manage the LPVB since the GSP was adopted. Similarly, no changes were made to the GSP in response to new local requirements by these agencies.

The LPVB shares a basin boundary with both the Oxnard Subbasin to the west, and the PVB to the southwest. FCGMA is the primary GSA, along with Camrosa Water District and the County of Ventura, for these adjacent basins. The GSPs for the PVB, Oxnard Subbasin, and LPVB were all prepared by FCGMA using consistent data, methods, and tools, and the sustainable management criteria for each basin were developed with the consideration of impacts on the adjacent basins. The internal coordination that has been in place since the formation of the FCGMA in 1982 has continued through the first 5 years of GSP implementation. The FCGMA Board considers the impacts of implementation activities and policy decisions on the interested parties in all of the basins within the FCGMA jurisdiction.

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9 Other Information

9.1 Consideration of Adjacent Basins

The LPVB is hydrogeologically connected with the Oxnard Subbasin and PVB. FCGMA is the GSA for both the PVB and Oxnard Subbasin. FCGMA, as the lead GSA for the LPVB, PVB, and Oxnard Subbasin, used a regional approach to determine the combined sustainable yield of all three basins during development of the GSP. The individual sustainable yields and sustainable management criteria for each basin were then established to ensure that each basin is managed with mutually beneficial sustainability goals. DWR found that FCGMA's approach demonstrated an adequate consideration of adjacent basins and subbasins (DWR 2021). FCGMA has not altered this approach as a result of the first periodic evaluation process because implementation of the GSP has not affected the ability of the Oxnard Subbasin or PVB to achieve their respective sustainability goals. FCGMA will continue to manage the LPVB with consideration of impacts to the adjacent basins and, as part of GSP implementation, will continue to evaluate the relationship between groundwater production in the LPVB and groundwater conditions in adjacent basins.

9.2 Challenges Not Previously Discussed

The most significant challenge for successful implementation of the GSP is acquiring funding to fill data gaps, address DWR recommended corrective actions, and construct projects. FCGMA has investigated funding mechanisms to support these efforts and has implemented a replenishment fee to respond to legal challenges. However, development and implementation of replenishment fees sufficient to fund full GSP implementation remains a challenge for the agency.

9.3 Legal Challenges

FCGMA did not take legal action or enforcement in the LPVB in furtherance of the LPVB's sustainability goal. (23 C.C.R. § 356.4(h).) The following discussion describes the lawsuits pending against FCGMA and their effect on FCGMA's implementation of the LPVB GSP and sustainable management of the LPVB.

Las Posas Valley Water rights Coalition, et al. v. Fox Canyon Groundwater Management Agency, Santa Barbara Sup. Ct. Case No. VENC100509700

On July 10, 2023, the Santa Barbara Superior Court entered a statement of decision adopting a judgment in Las Posas Valley Water Rights Coalition, et al. v. Fox Canyon Groundwater Management Agency, Santa Barbara Sup. Ct. Case No. VENC100509700 (Judgment). The Judgment adjudicates all groundwater rights in the LPVB, appoints FCGMA as the Watermaster for the LPVB, and adopts a physical solution that requires FCGMA to prepare new studies and reports designed to maintain an annual operating yield for the LPVB at 40,000 AFY. Although the Judgment has been appealed, the trial court chose not to stay implementation of the Judgment; over the past year, FCGMA has worked to implement the Judgment's several new administrative, fiscal, reporting, and stakeholder processes. Because the Judgment is still being implemented and subject to appellate court review, the effect of the Judgment on FCGMA's implementation of the LPV GSP and sustainable management of the LPV Basin is uncertain at this time.

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10 Summary of Proposed or Completed Revisions to Plan Elements

This first Periodic Evaluation marks an important milestone in FCGMA's continued progress toward meeting the sustainability goal of the LPVB by 2040. The work completed as part of this periodic GSP evaluation has resulted in:

- An expanded suite of projects considered as part of GSP implementation.
- Improvements to the estimate of the sustainable yield of LPVB that accounts for updated understanding of the flows into the ELPMA since the GSP was prepared.
- Revisions to the monitoring network, including the key well network, used to evaluate groundwater conditions and groundwater sustainability in the LPVB.

None of the revisions and improvements made as a result of this Periodic Evaluation warrant amending the GSP for the LPVB.

The key take-aways from this first Periodic Evaluation are the need for dedicated monitoring wells, particularly in the WLPMA, and the need for projects that will bridge the gap between the estimated sustainable yield of the LPVB and the initial Operating Yield of 40,000 AFY defined in the Judgment. FCGMA and interested parties identified additional work to be done between 2025 and 2030 to further improve the understanding and management of the LPVB before the second Periodic Evaluation. The suggestions provided by interested parties and technical experts will be incorporated into a document that can be used to guide funding decisions during the Watermaster budget process. Through an integrated planning and budgeting process that facilitates GSP implementation, FCGMA, as the Watermaster for the LPVB, will continue to advance sustainable management of the LPVB over the upcoming years, in order to reach sustainable management by 2040.

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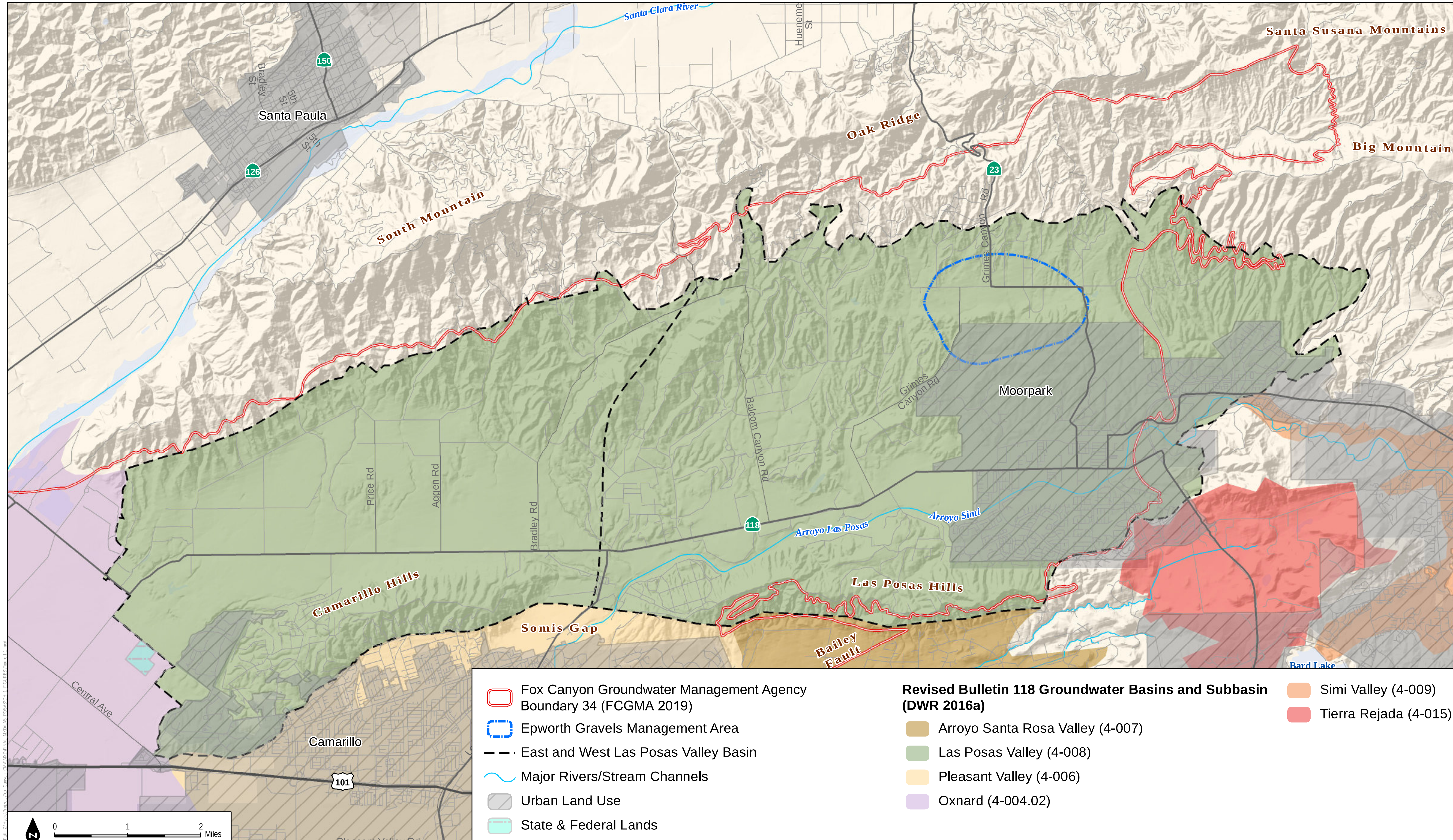

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SOURCE: DWR; County of Ventura

FIGURE 2-1

Vicinity Map for the Las Posas Valley Basin

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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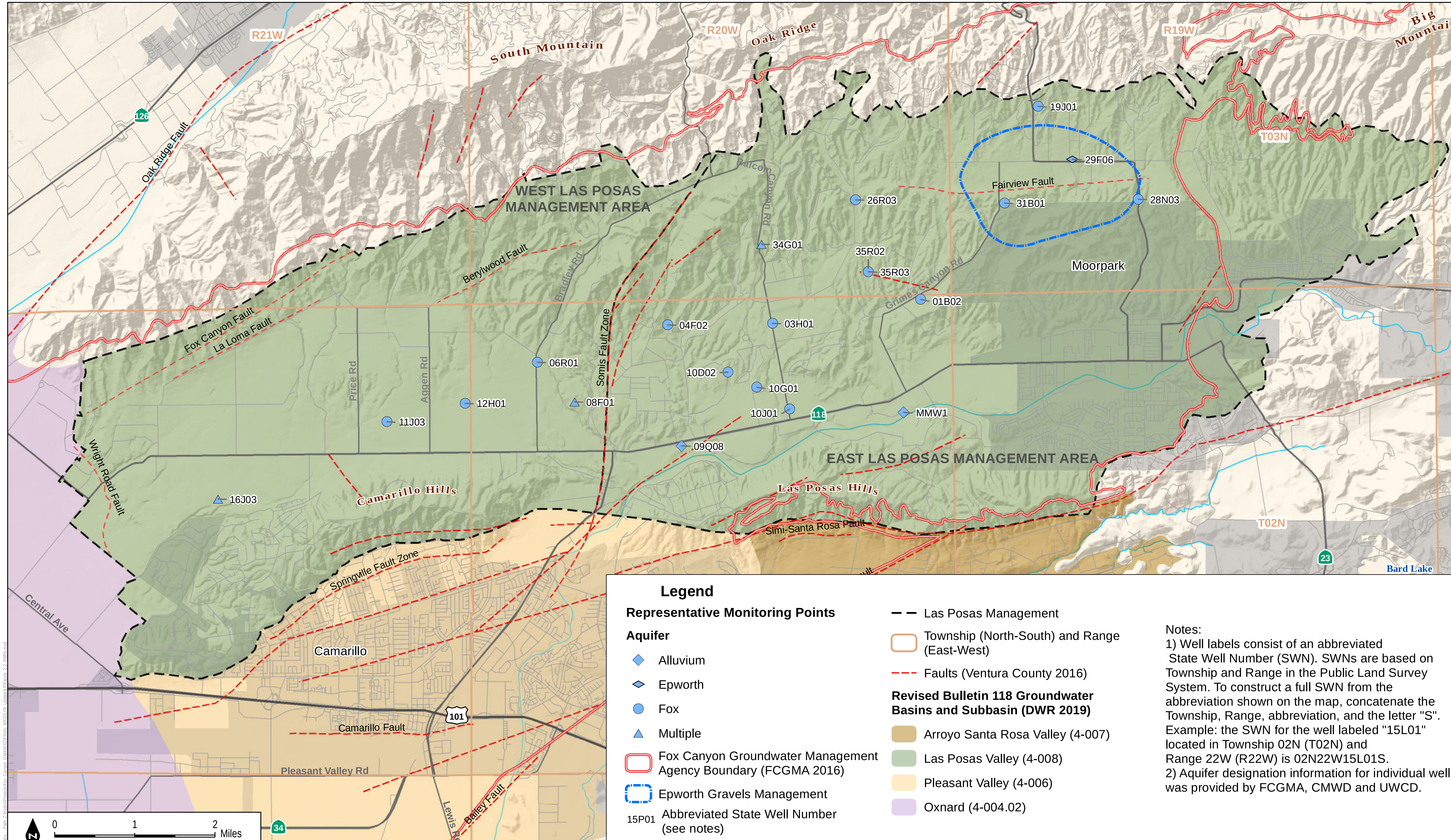

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SOURCE: DWR; Ventura County; UWCD; CMWD

FIGURE 2-2

Representative Monitoring Points in the Las Posas Valley Basin

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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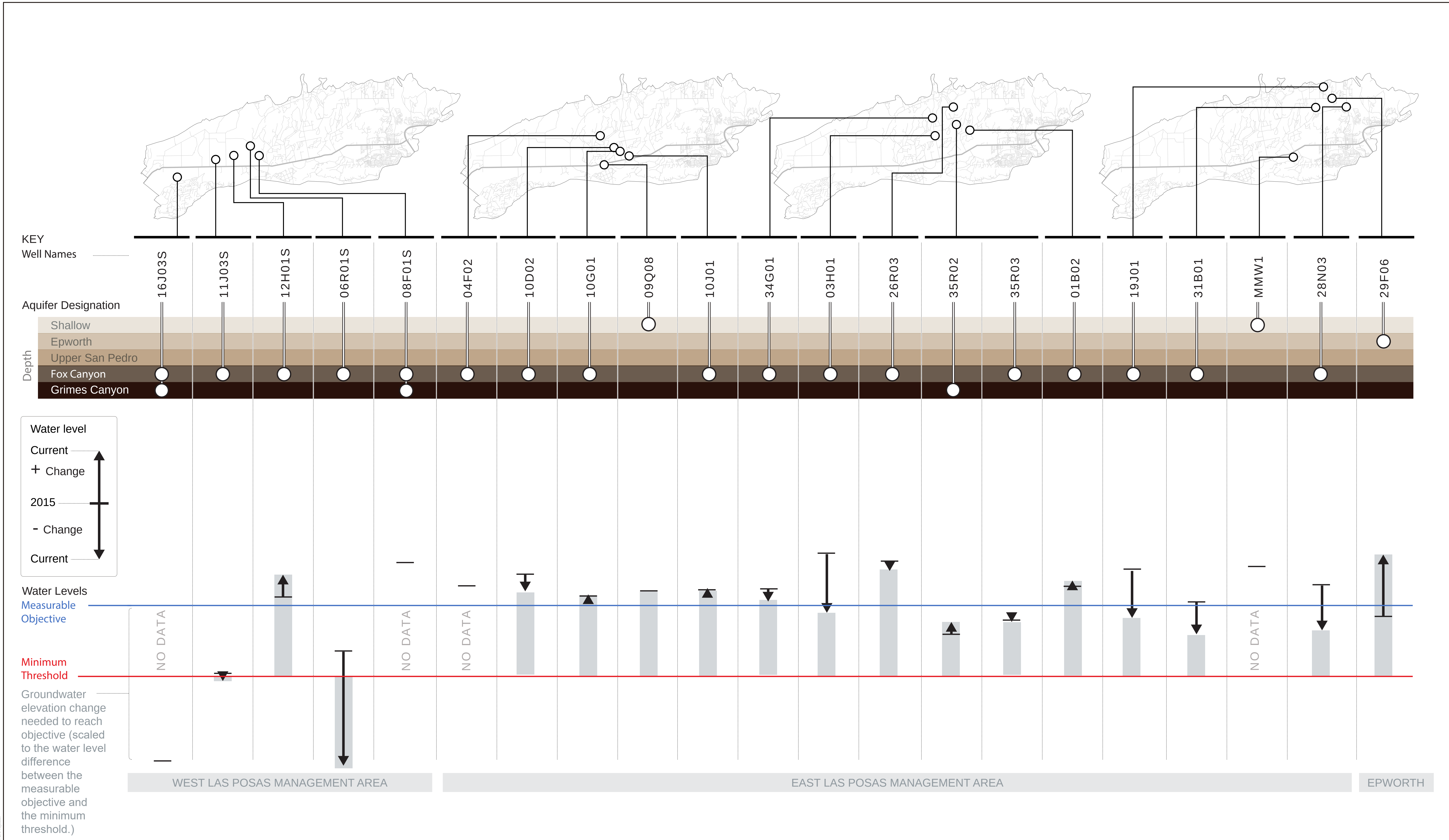

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FIGURE 2-3

Fall 2023 Groundwater Levels Relative to the Minimum Thresholds and Measurable Objectives

First Periodic Evaluation: Groundwater Sustainability Plan for the Las Posas Valley Basin

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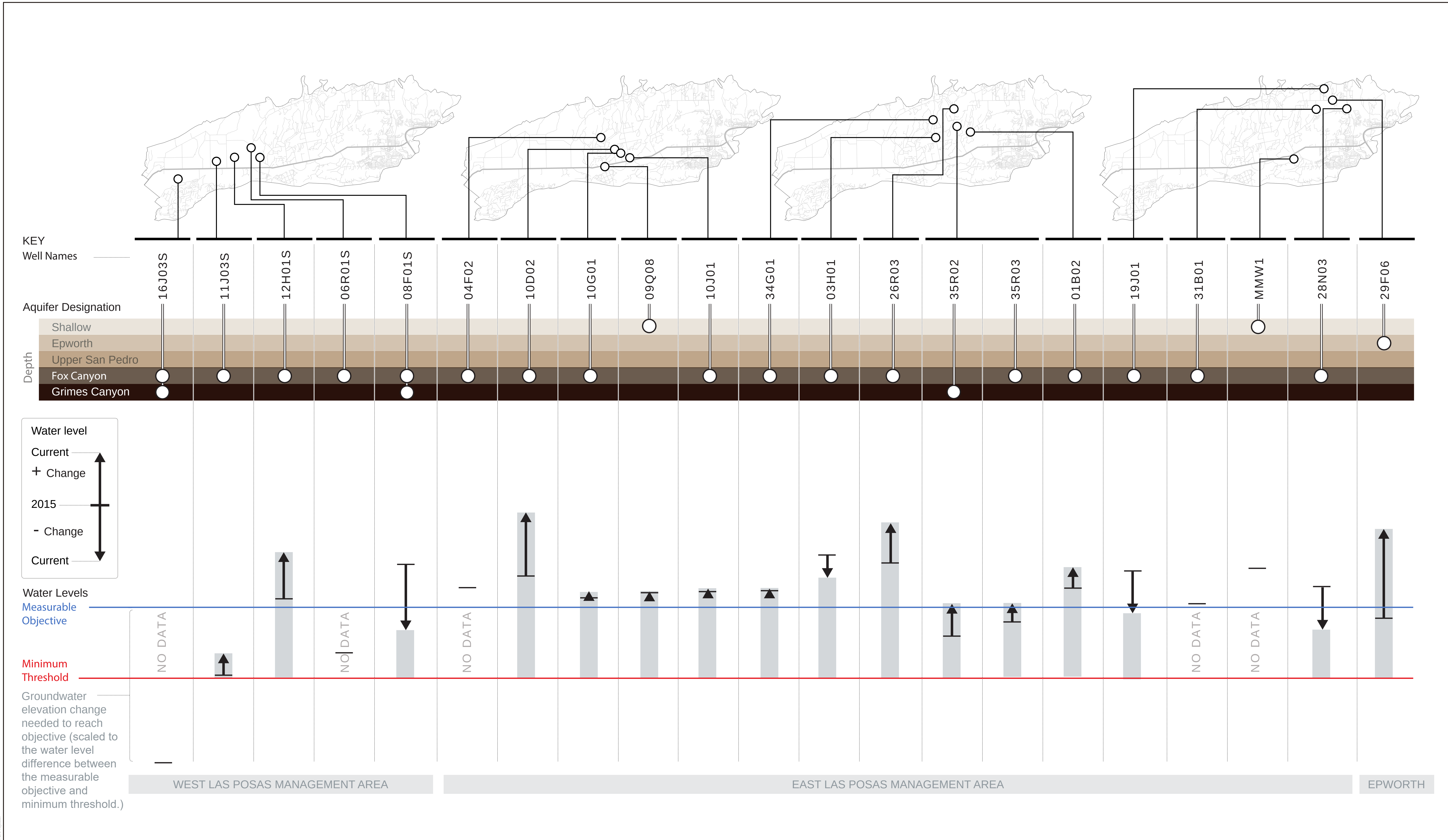

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FIGURE 2-4

Spring 2024 Groundwater Levels Relative to the Minimum Thresholds and Measurable Objectives

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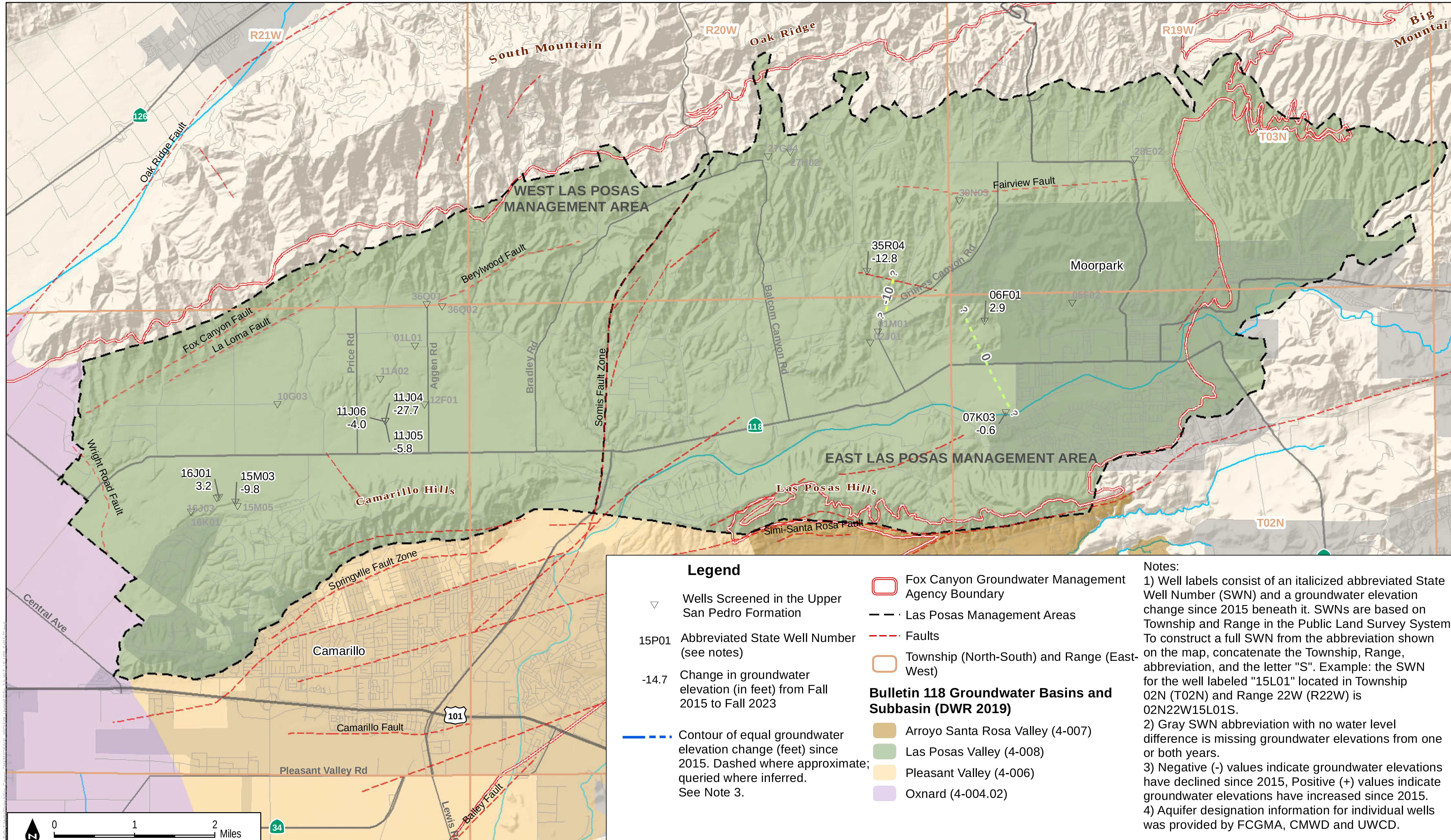

SOURCE: DWR; Ventura County; UWCD; CMWD

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FIGURE 2-5

Upper San Pedro Formation - Groundwater Elevation Changes from Fall 2015 to 2023

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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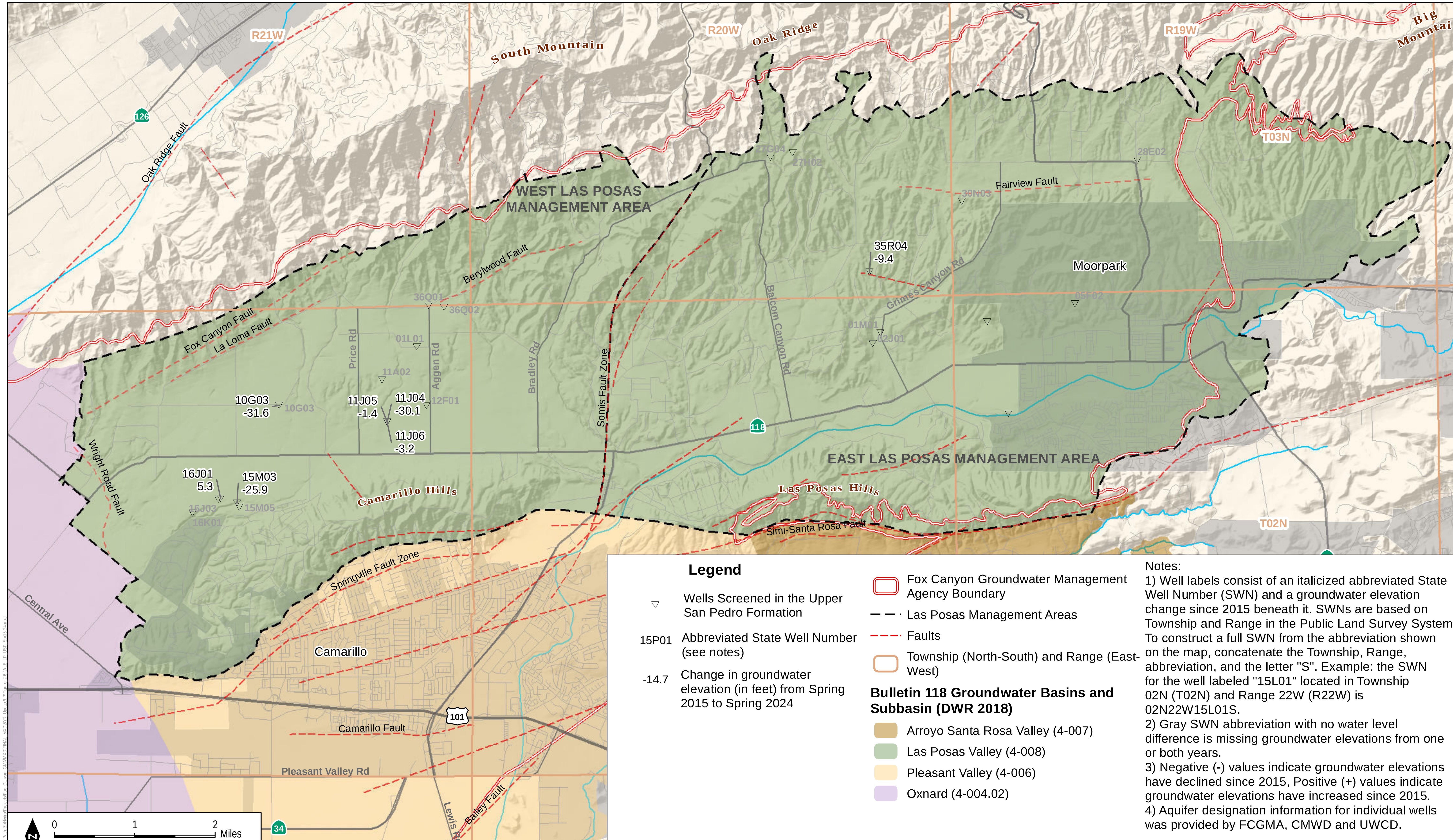

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SOURCE: DWR; Ventura County; UWCD; CMWD

FIGURE 2-6

Upper San Pedro Formation - Groundwater Elevation Changes from Spring 2015 to 2024

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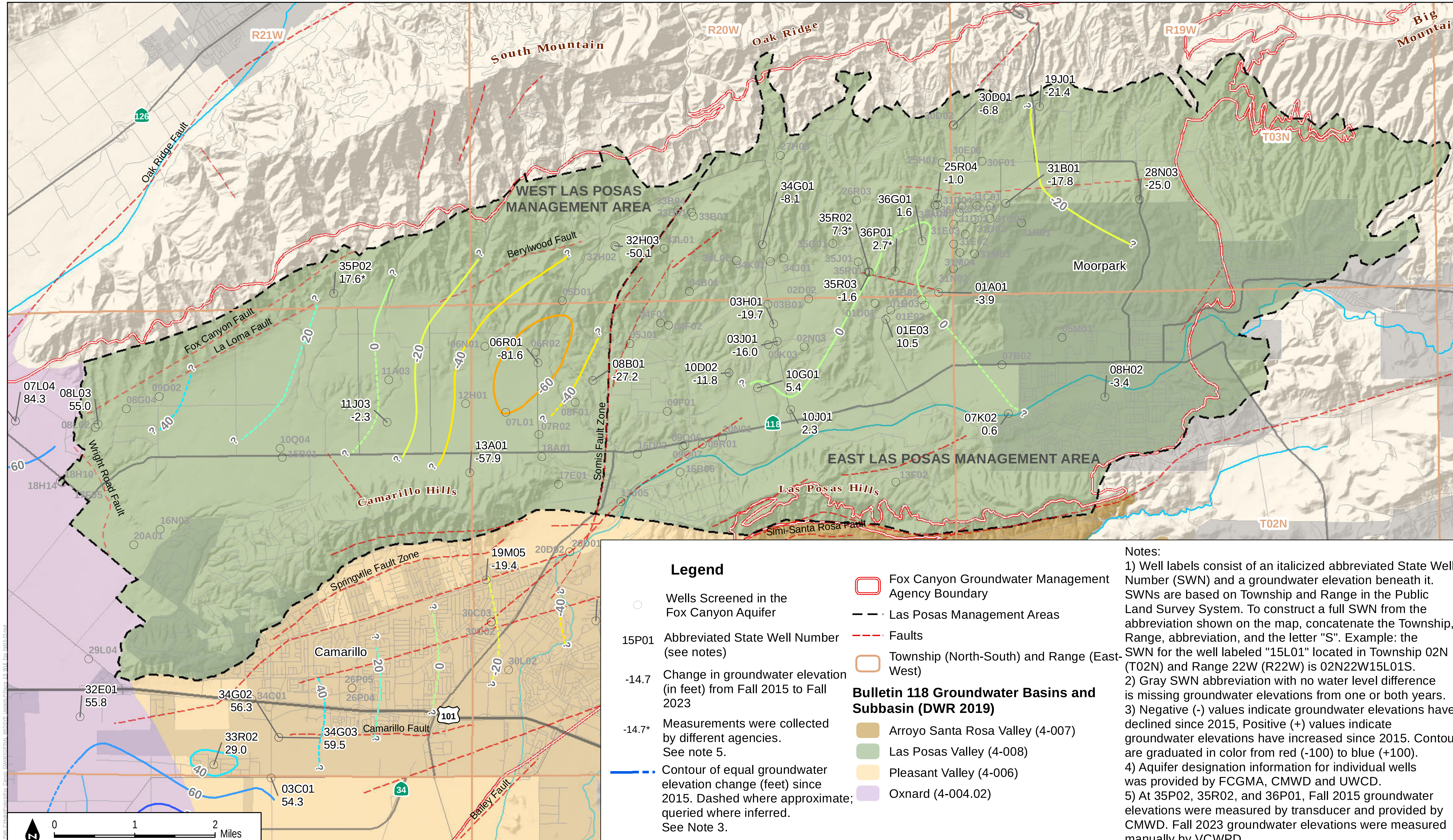

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SOURCE: DWR; Ventura County; UWCD; CMWD

FIGURE 2-7

Fox Canyon Aquifer - Groundwater Elevation Changes from Fall 2015 to 2023

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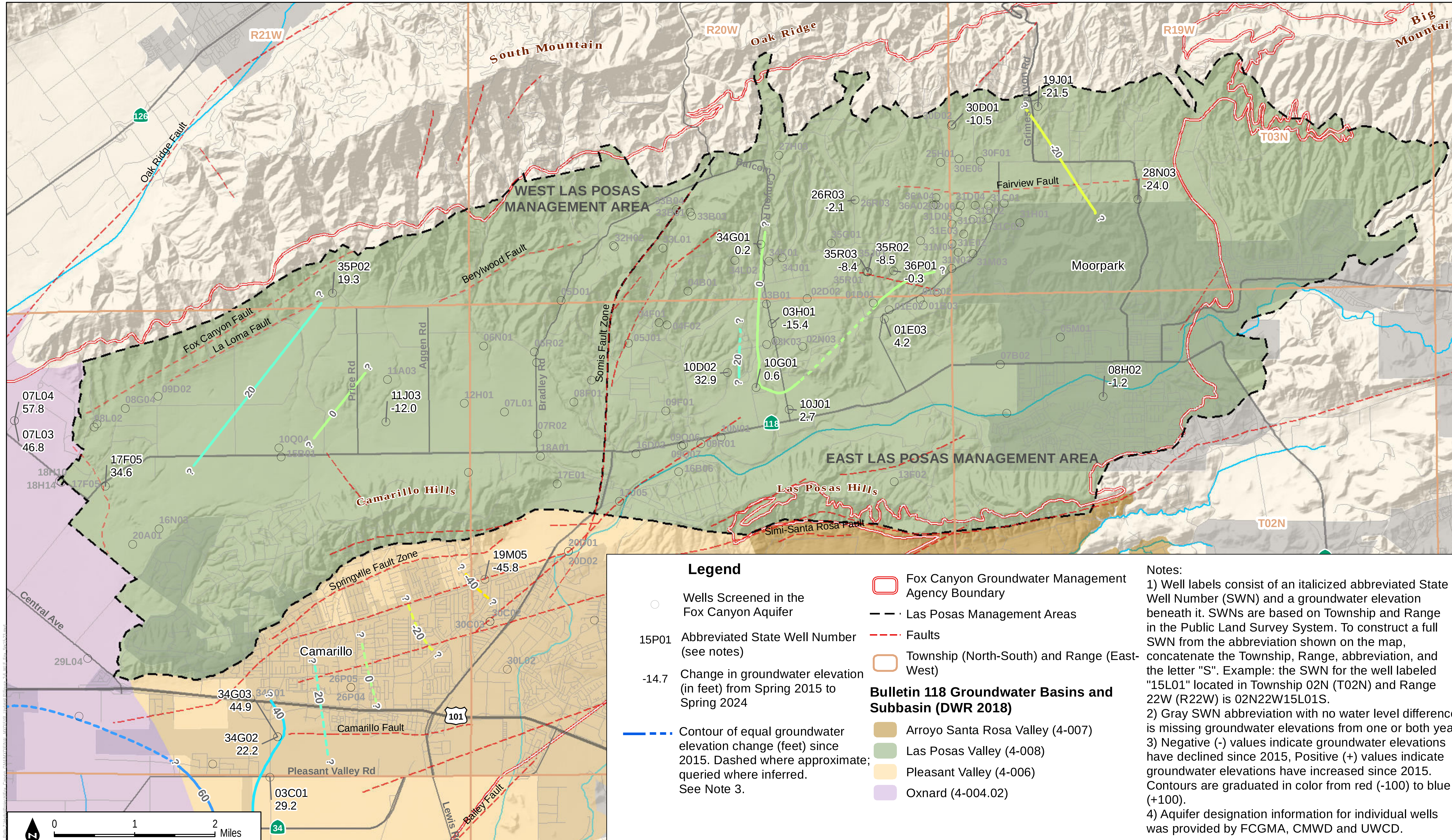

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SOURCE: DWR; Ventura County; UWCD; CMWD

FIGURE 2-8

Fox Canyon Aquifer - Groundwater Elevation Changes from Spring 2015 to 2024

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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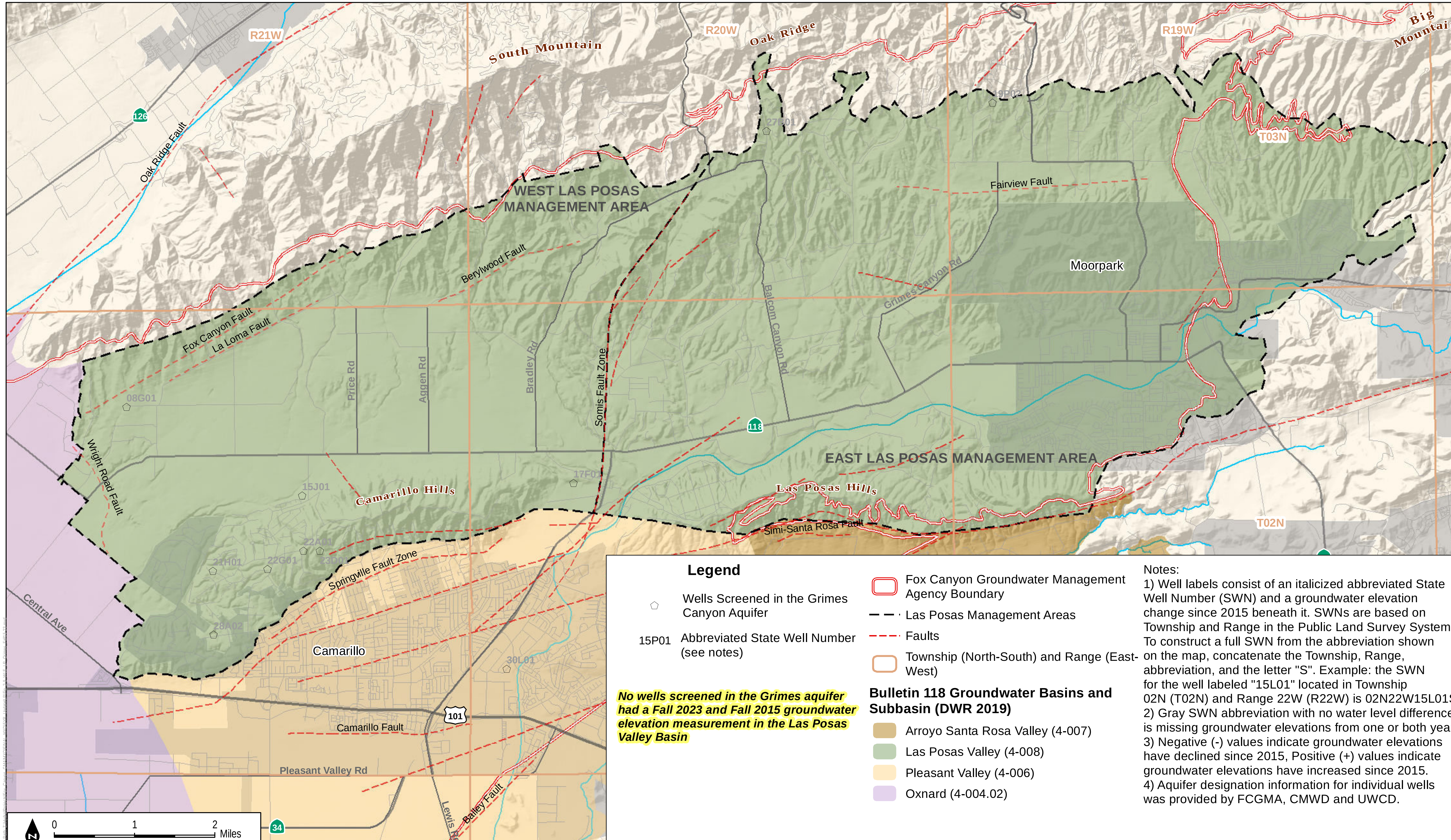

SOURCE: DWR; Ventura County; UWCD; CMWD

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FIGURE 2-9

Grimes Canyon Aquifer - Groundwater Elevation Changes from Fall 2015 to 2023

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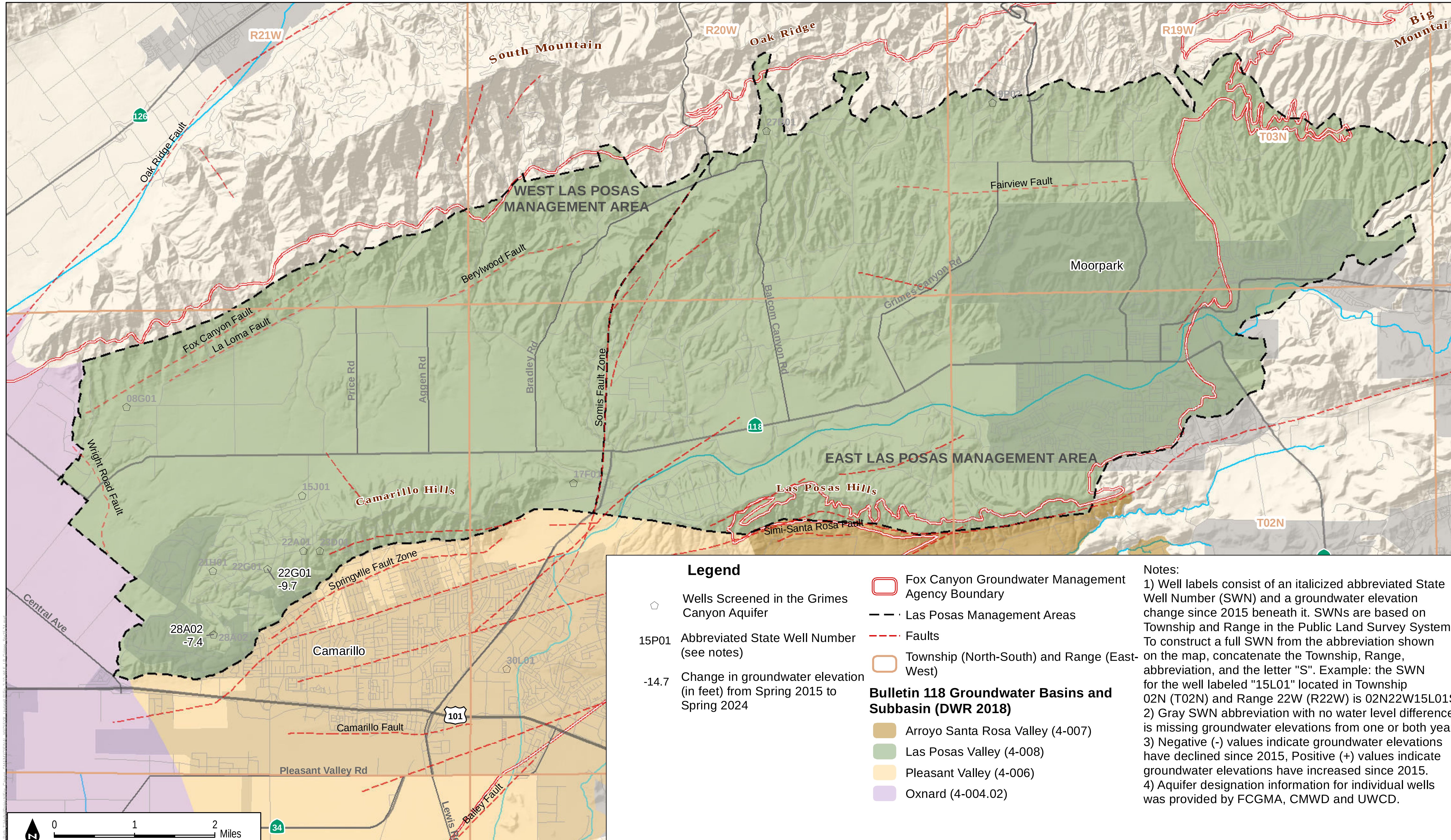

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SOURCE: DWR; Ventura County; UWCD; CMWD

FIGURE 2-10

Grimes Canyon Aquifer - Groundwater Elevation Changes from Spring 2015 to 2024

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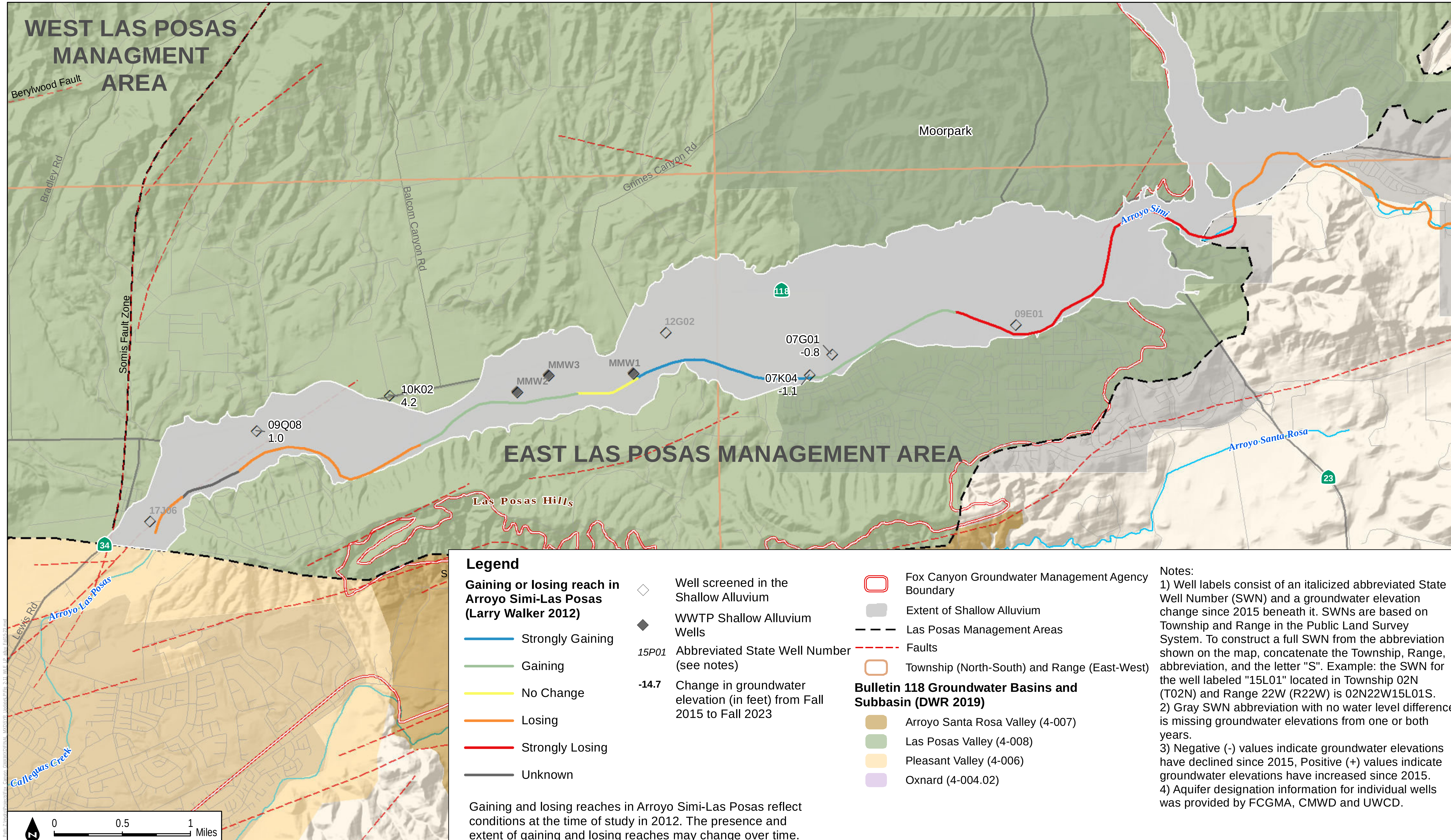

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SOURCE: DWR; Ventura County; UWCD; CMWD

FIGURE 2-11

Shallow Alluvium - Groundwater Elevation Changes from Fall 2015 to 2023

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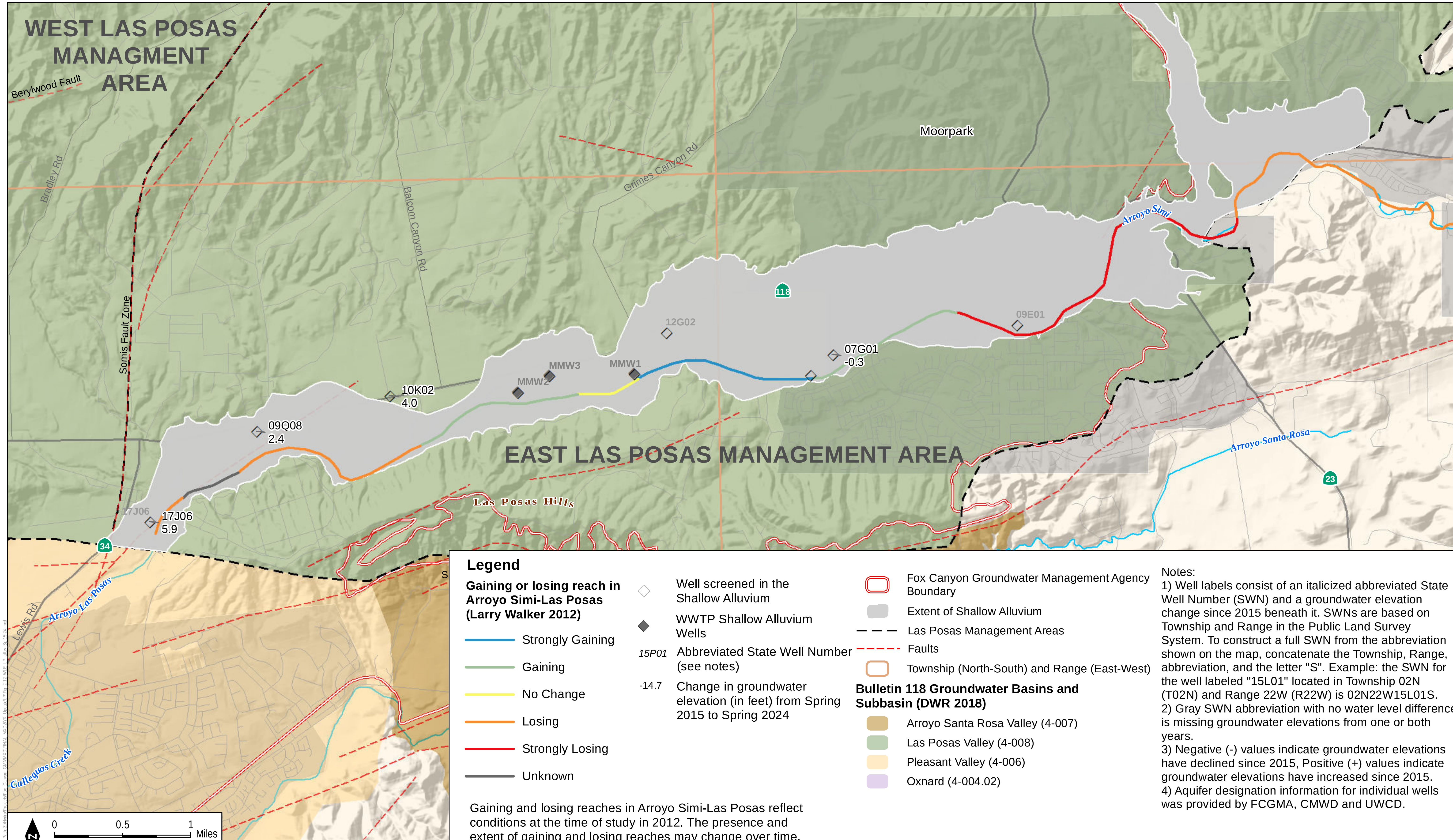

Legend

Gaining or losing reach in Arroyo Simi-Las Posas (Larry Walker 2012)

- Strongly Gaining
- Gaining
- No Change
- Losing
- Strongly Losing
- Unknown

- Well screened in the Shallow Alluvium
- WWTP Shallow Alluvium Wells
- 15P01 Abbreviated State Well Number (see notes)
- -14.7 Change in groundwater elevation (in feet) from Spring 2015 to Spring 2024

- Fox Canyon Groundwater Management Agency Boundary
- Extent of Shallow Alluvium
- Las Posas Management Areas
- Faults
- Township (North-South) and Range (East-West)

Bulletin 118 Groundwater Basins and Subbasin (DWR 2018)

- Arroyo Santa Rosa Valley (4-007)
- Las Posas Valley (4-008)
- Pleasant Valley (4-006)
- Oxnard (4-004.02)

Gaining and losing reaches in Arroyo Simi-Las Posas reflect conditions at the time of study in 2012. The presence and extent of gaining and losing reaches may change over time.

Notes:
1) Well labels consist of an italicized abbreviated State Well Number (SWN) and a groundwater elevation change since 2015 beneath it. SWNs are based on Township and Range in the Public Land Survey System. To construct a full SWN from the abbreviation shown on the map, concatenate the Township, Range, abbreviation, and the letter "S". Example: the SWN for the well labeled "15L01" located in Township 02N (T02N) and Range 22W (R22W) is 02N22W15L01S.
2) Gray SWN abbreviation with no water level difference is missing groundwater elevations from one or both years.
3) Negative (-) values indicate groundwater elevations have declined since 2015, Positive (+) values indicate groundwater elevations have increased since 2015.
4) Aquifer designation information for individual wells was provided by FCGMA, CMWD and UWCD.

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SOURCE: DWR; Ventura County; UWCD; CMWD

FIGURE 2-12

Shallow Alluvium - Groundwater Elevation Changes from Spring 2015 to 2024

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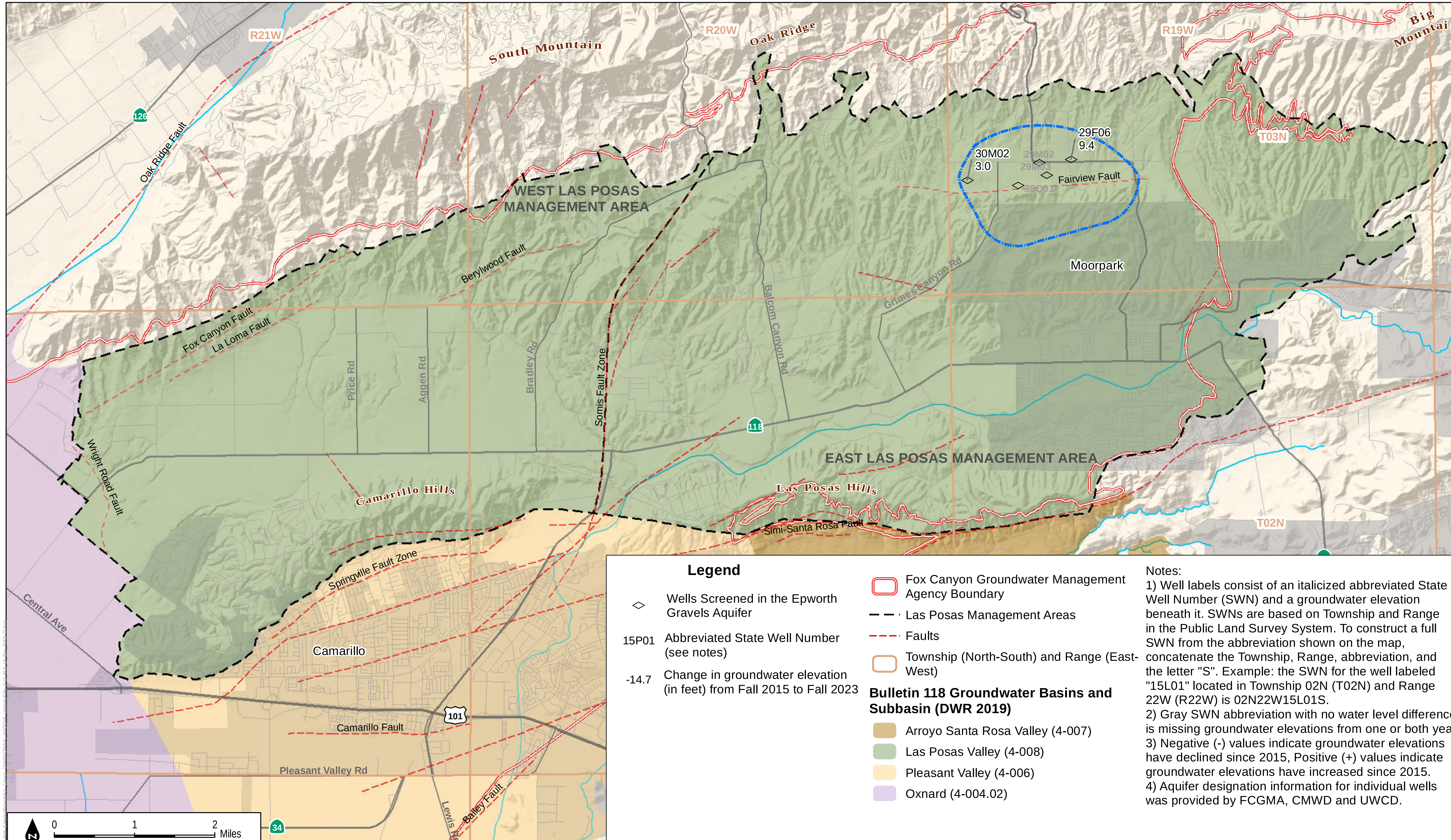

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SOURCE: DWR; Ventura County; UWCD; CMWD

FIGURE 2-13

Epworth Gravels Aquifer - Groundwater Elevation Changes from Fall 2015 to 2023

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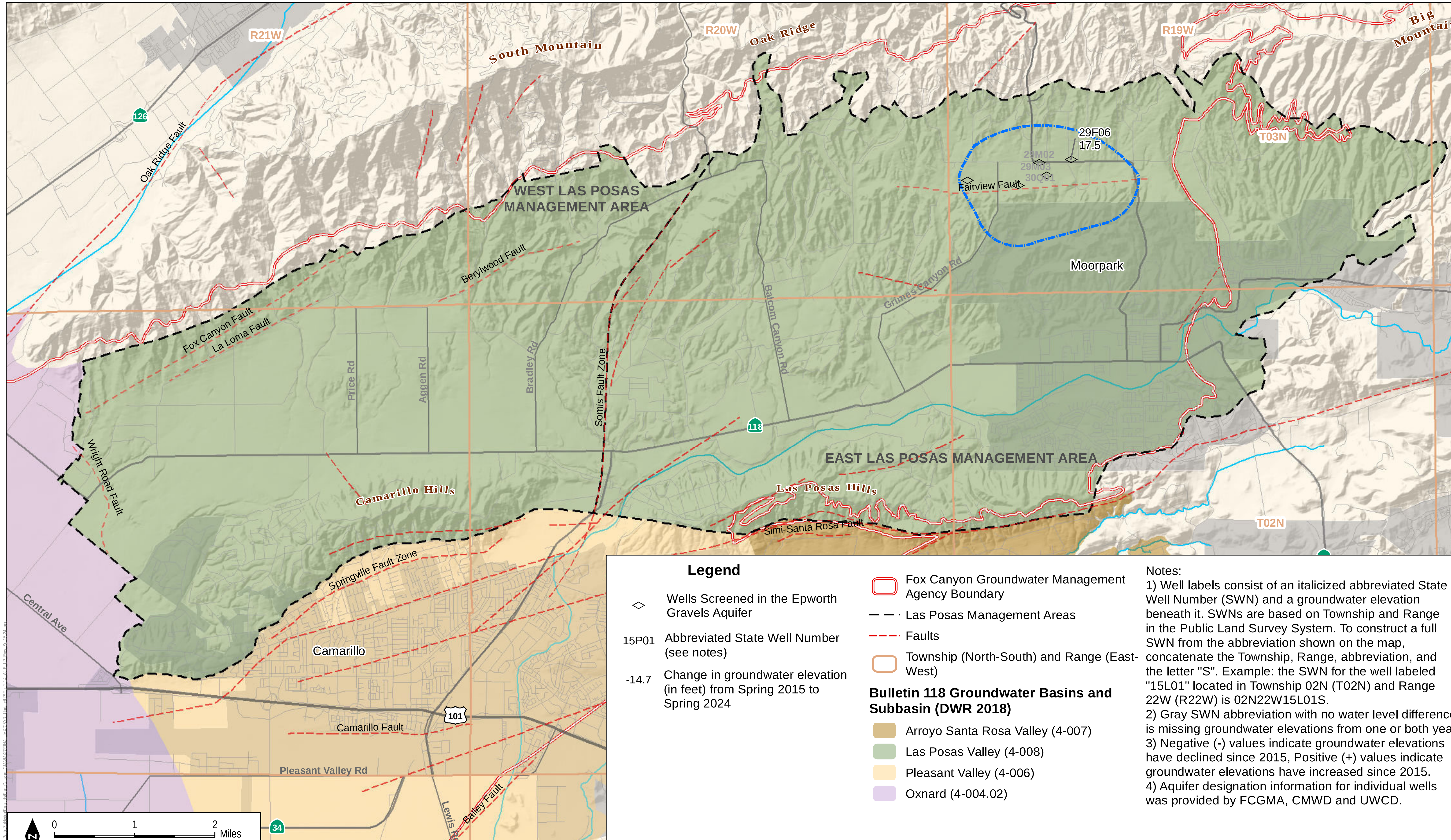

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SOURCE: DWR; Ventura County; UWCD; CMWD

FIGURE 2-14

Epworth Gravels Aquifer - Groundwater Elevation Changes from Spring 2015 to 2024

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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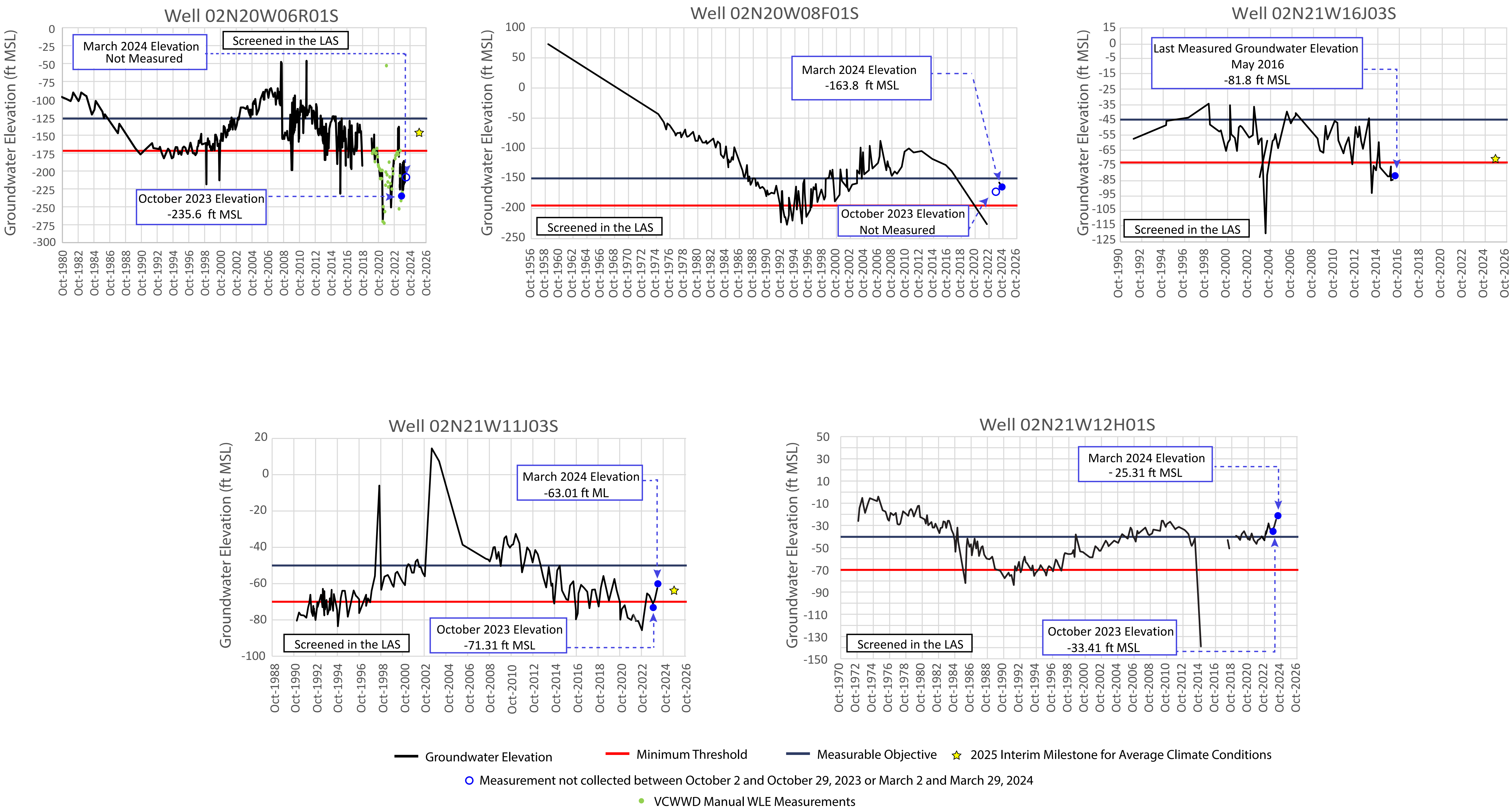

Note: 2025 Interim milestone groundwater elevations are not established for wells where 2015 groundwater elevations were higher than the established minimum thresholds

SOURCE: UWCD, VCWPD

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FIGURE 2-15

Groundwater Elevation Hydrographs for Representative Monitoring Points in the West Las Posas Management Area

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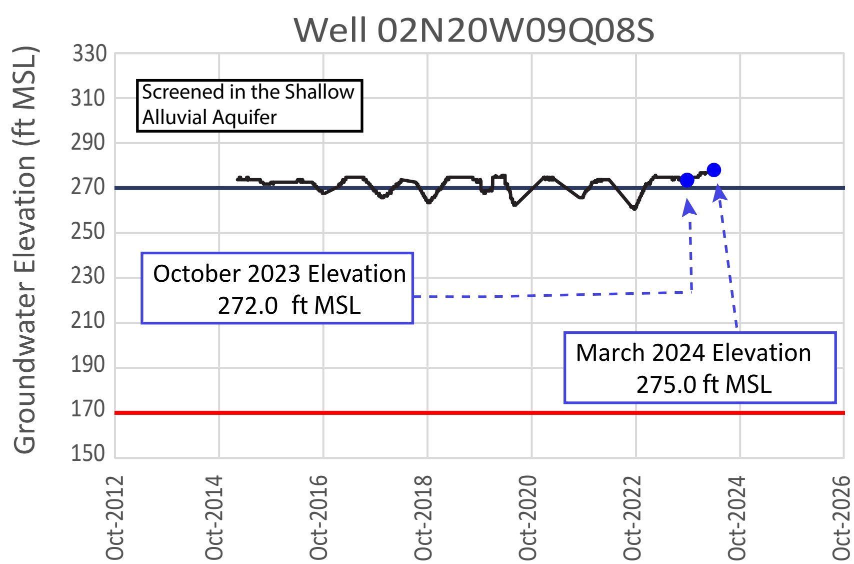

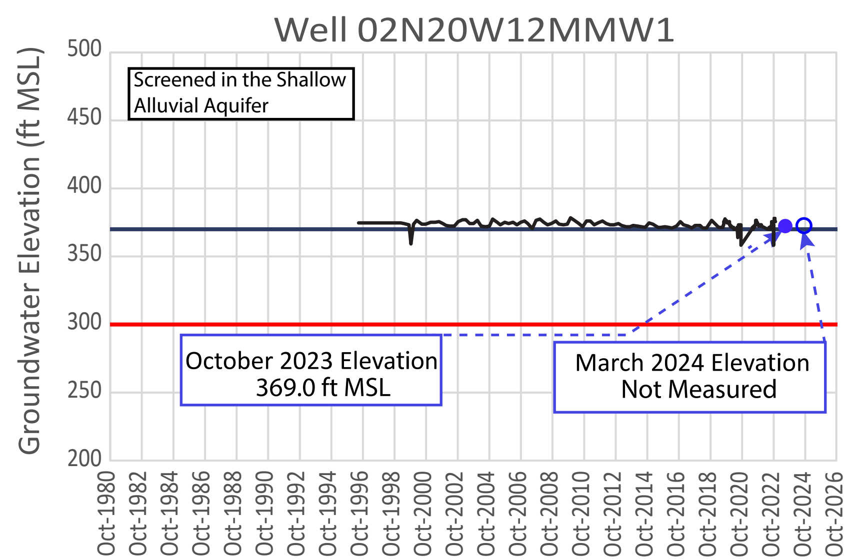

Groundwater Elevation — Minimum Threshold — Measurable Objective — ☆ 2025 Interim Milestone for Average Climate Conditions

Note: 2025 Interim milestone groundwater elevations are not established for wells where 2015 groundwater elevations were higher than the established minimum thresholds

SOURCE: UWCD, VCWPD

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FIGURE 2-16

Groundwater Elevation Hydrographs for ELPMA Representative Monitoring Points Screened in the Shallow Alluvial Aquifer

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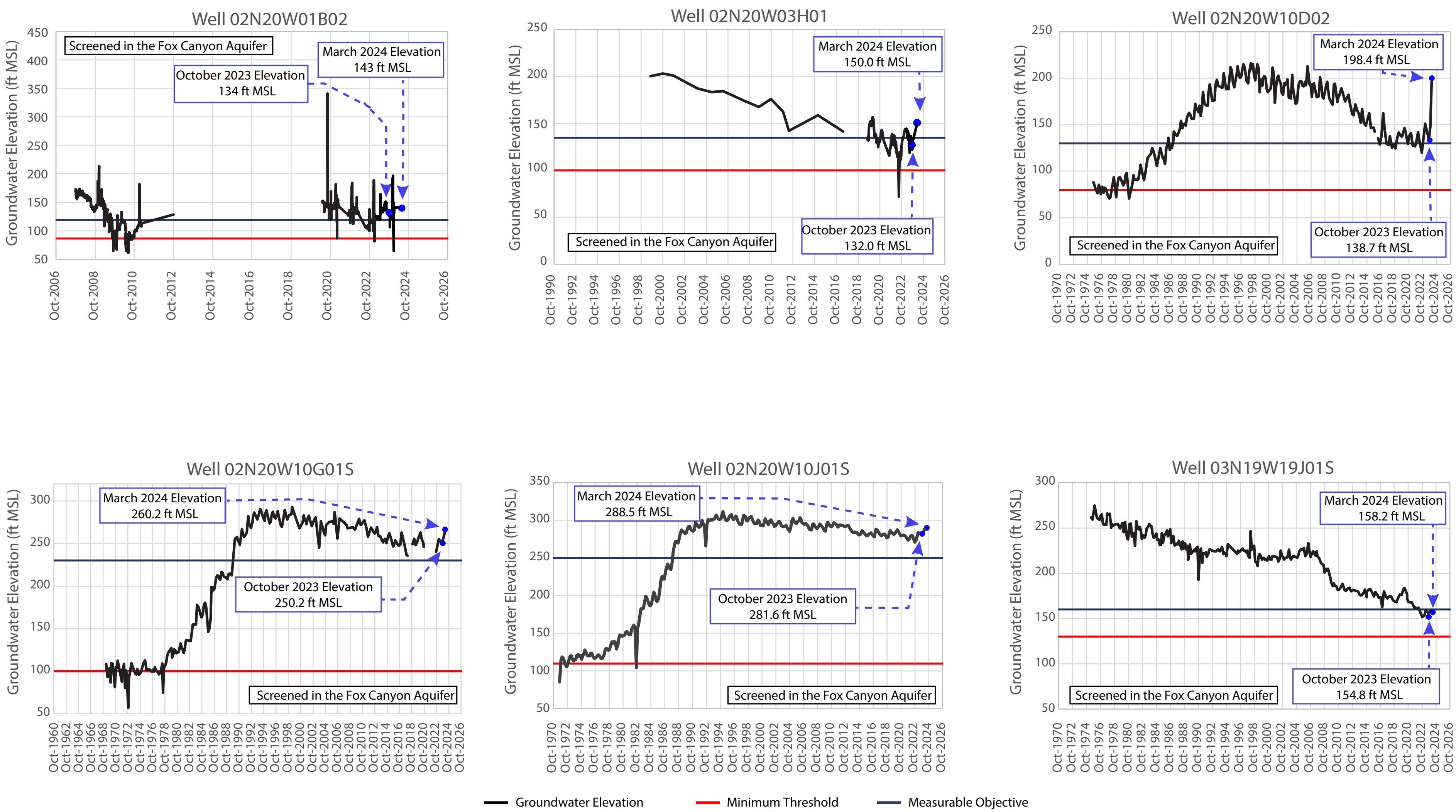

Note: 2025 Interim milestone groundwater elevations are not established for wells where 2015 groundwater elevations were higher than the established minimum thresholds

SOURCE: UWCD, VCWPD

DUDEK

FIGURE 2-17a

Groundwater Elevation Hydrographs for ELPMA Representative Monitoring Points Screened in the FCA

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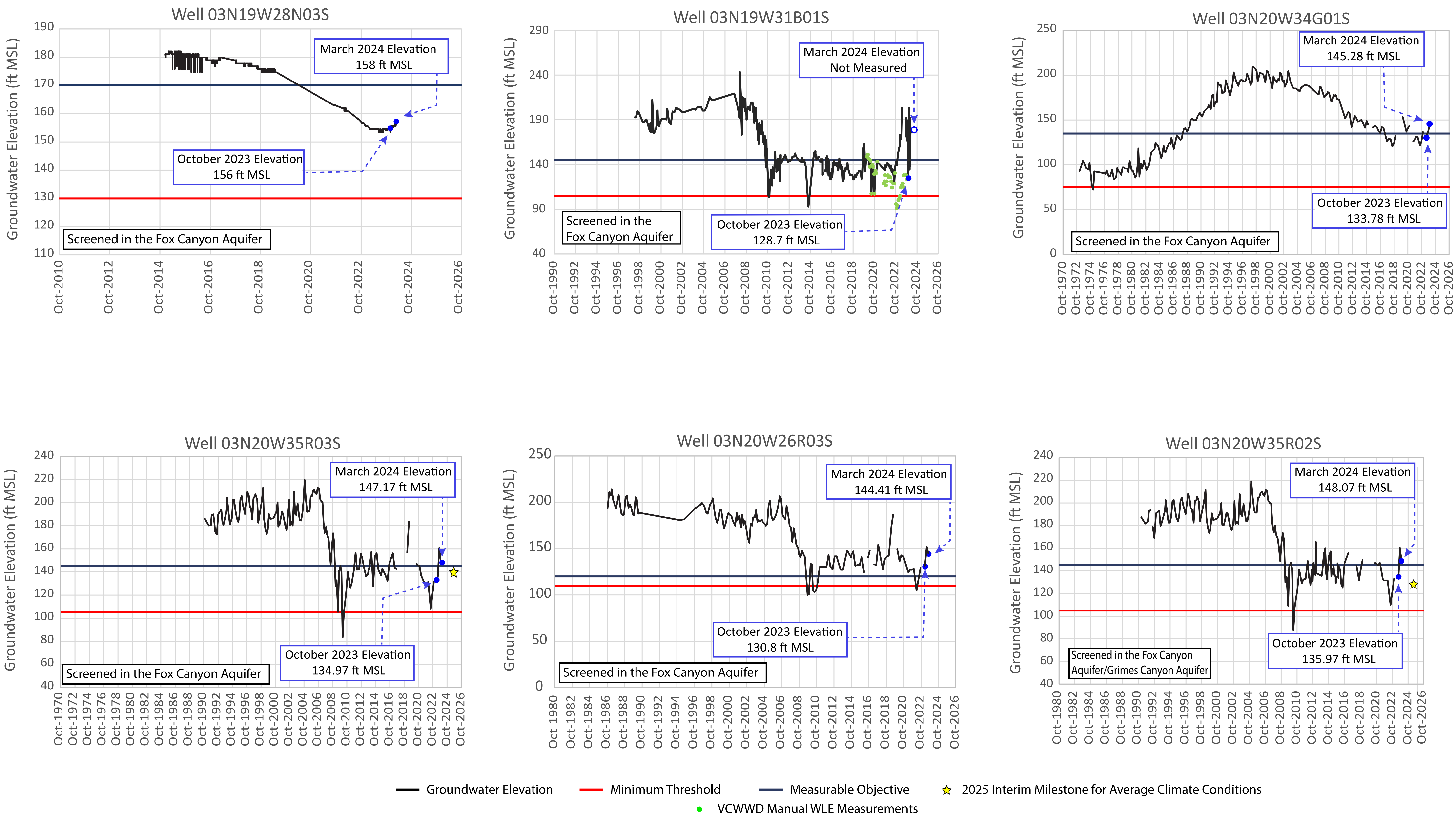

Note: 2025 Interim milestone groundwater elevations are not established for wells where 2015 groundwater elevations were higher than the established minimum thresholds

SOURCE: UWCD, VCWPD

DUDEK

FIGURE 2-17b

Groundwater Elevation Hydrographs for Representative Monitoring Points Screened in the East Las Posas Management Area

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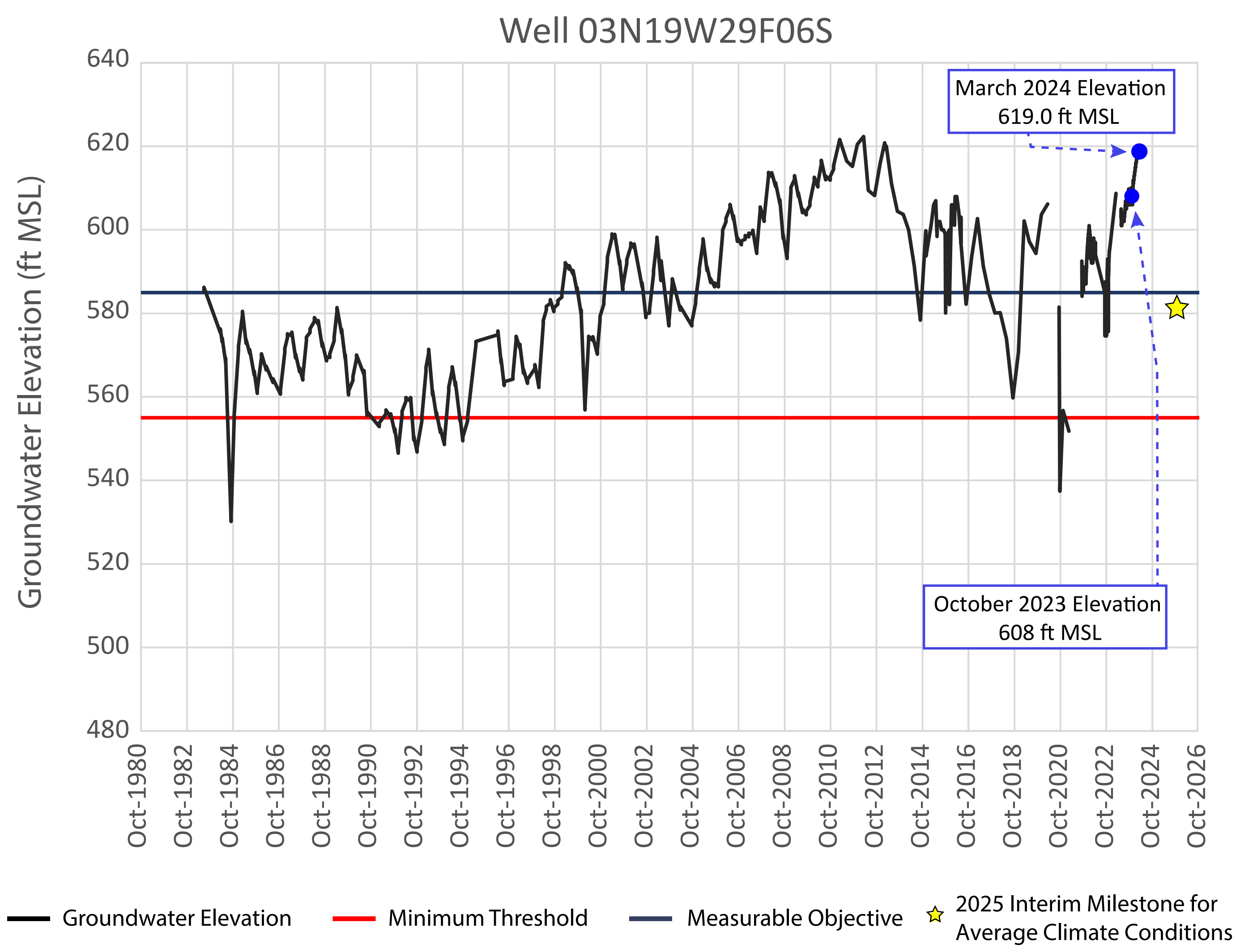

SOURCE: UWCD, VCWPD

FIGURE 2-18

Groundwater Elevation Hydrograph for the Representative Monitoring Points Screened in the Epworth Gravels Aquifer

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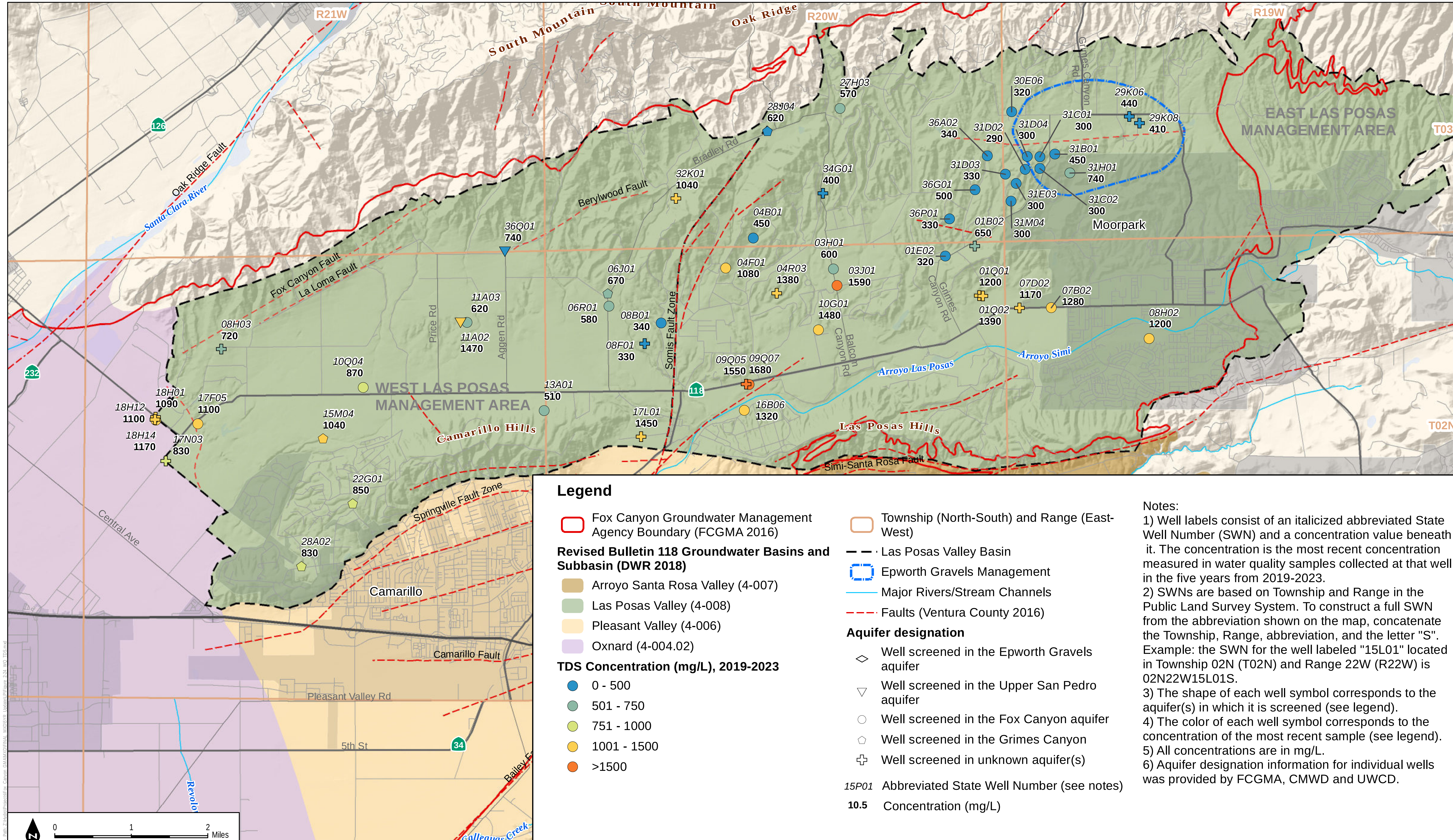

DUDEK

SOURCE: DWR, FCGMA, VCWPD, CMWD, UWCD

FIGURE 2-19

Most Recent TDS (mg/L) Measured 2019-2023

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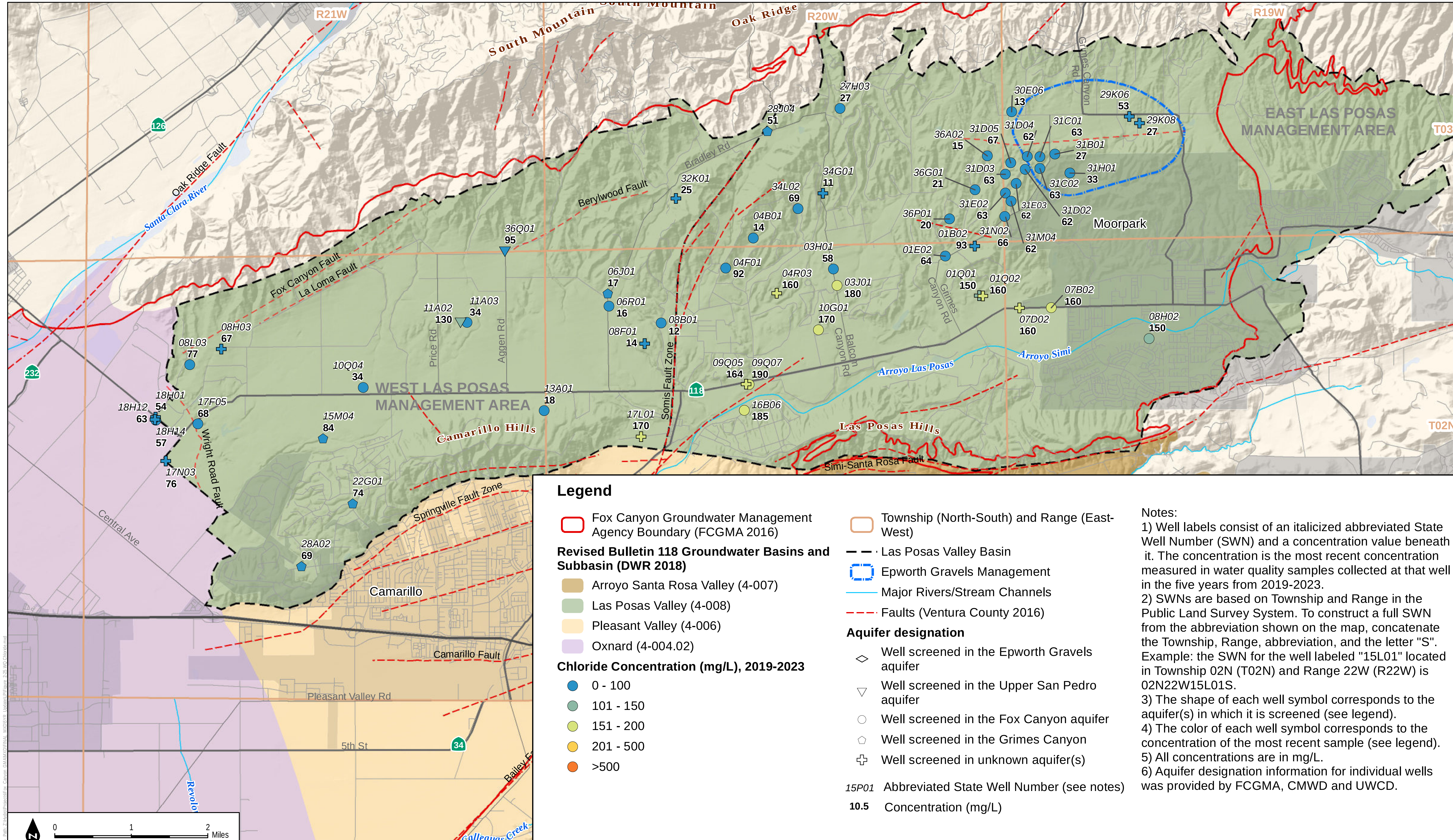

DUDEK

SOURCE: DWR, FCGMA, VCWPD, CMWD, UWCD

FIGURE 2-20
Most Recent Chloride (mg/L) Measured 2019-2023

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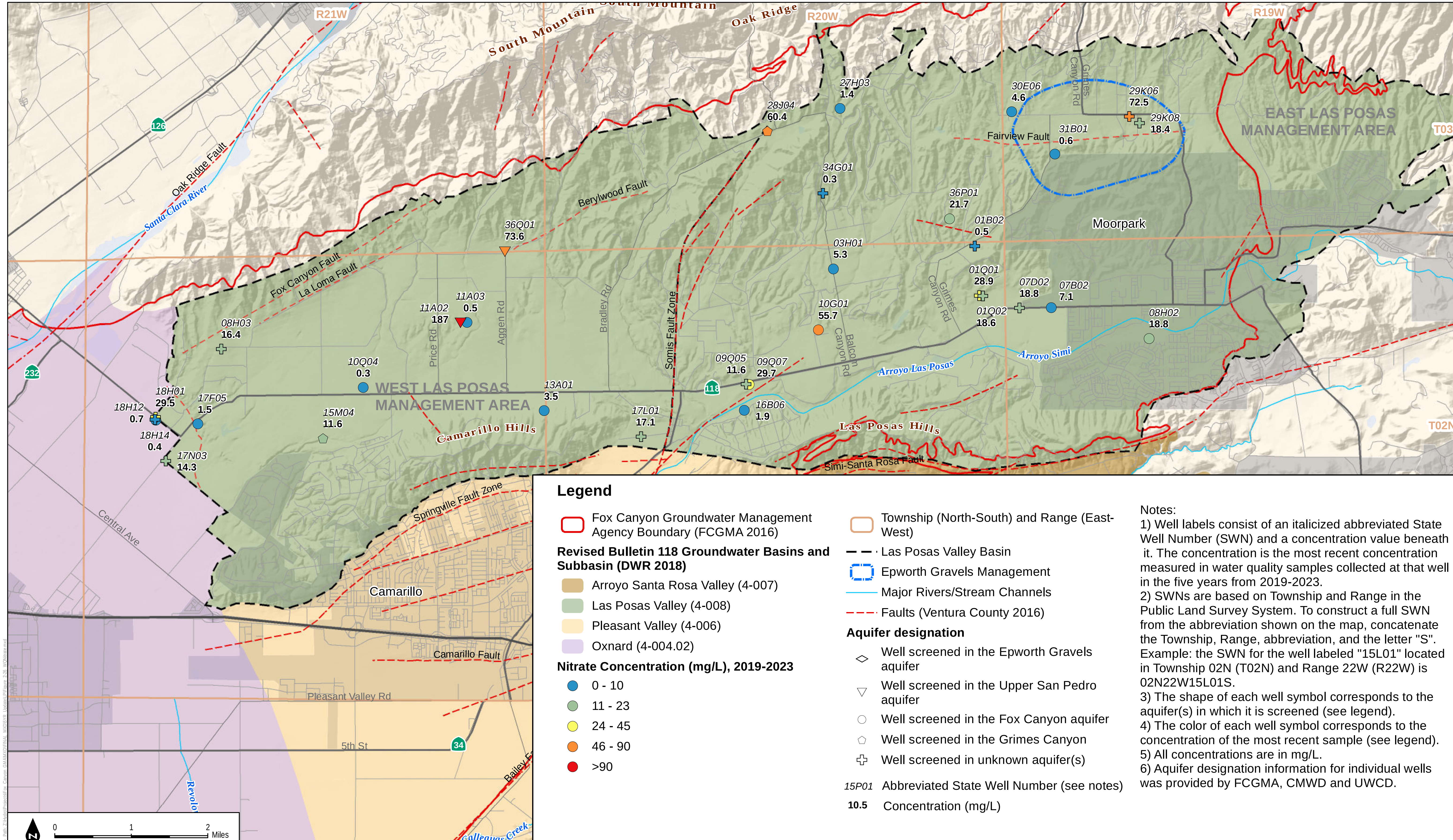

DUDEK

SOURCE: DWR, FCGMA, VCWPD, CMWD, UWCD

FIGURE 2-21

Most Recent Nitrate (mg/L) Measured 2019-2023

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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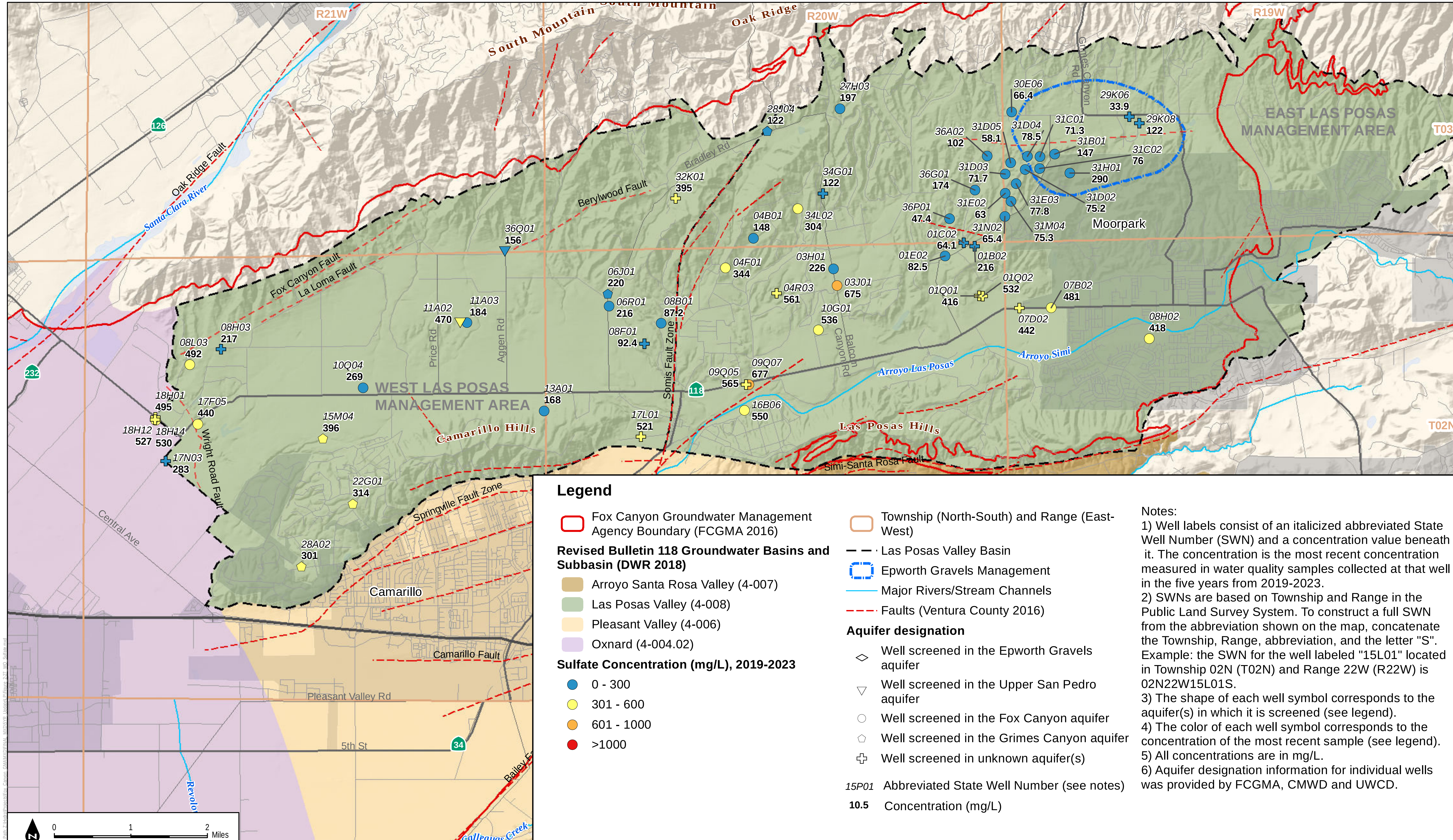

DUDEK

SOURCE: DWR, FCGMA, VCWPD, CMWD, UWCD

FIGURE 2-22

Most Recent Sulfate (mg/L) Measured 2019-2023

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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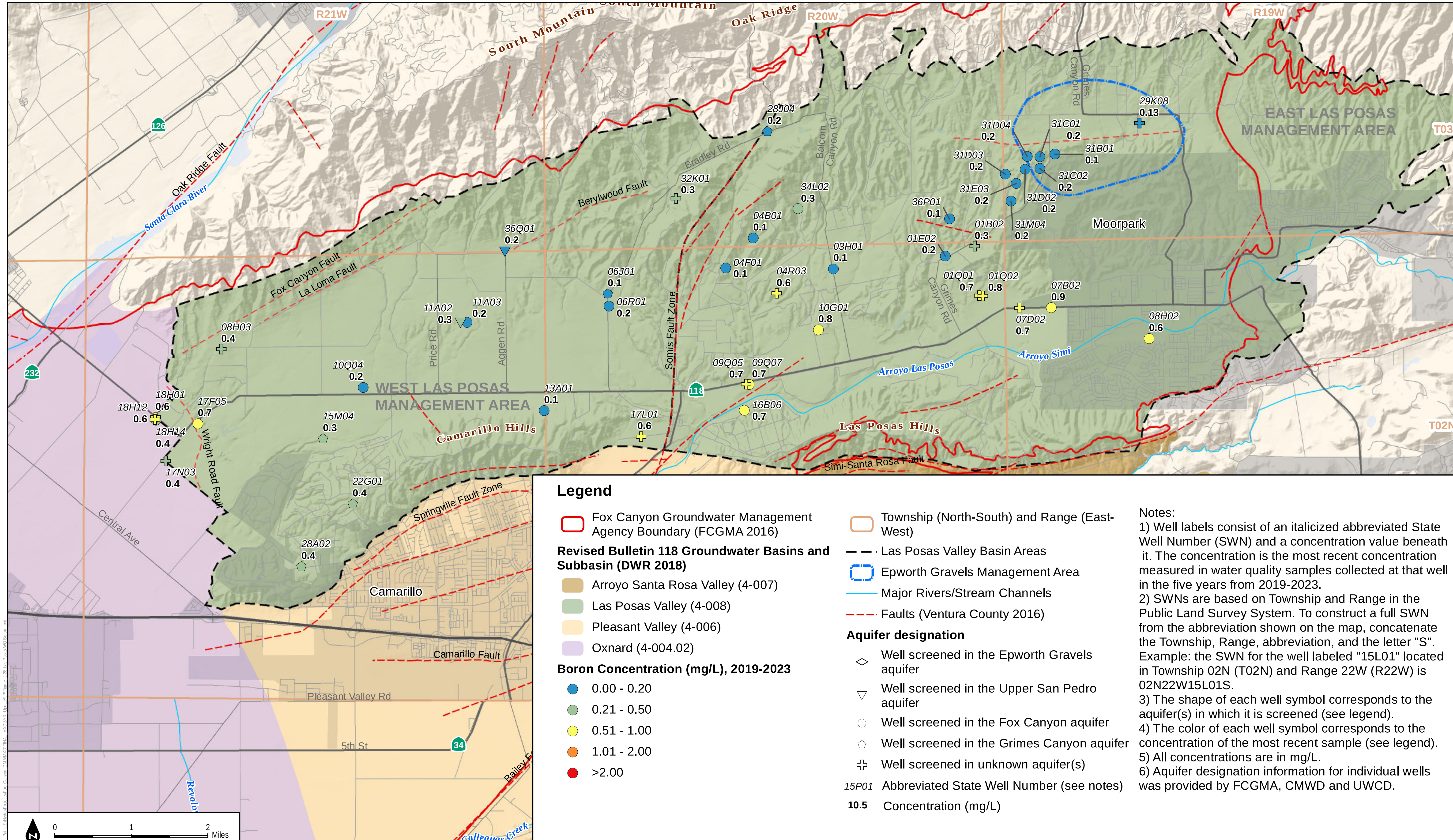

Legend

- Fox Canyon Groundwater Management Agency Boundary (FCGMA 2016)

Revised Bulletin 118 Groundwater Basins and Subbasin (DWR 2018)

- Arroyo Santa Rosa Valley (4-007)
- Las Posas Valley (4-008)
- Pleasant Valley (4-006)
- Oxnard (4-004.02)

Boron Concentration (mg/L), 2019-2023

- 0.00 - 0.20
- 0.21 - 0.50
- 0.51 - 1.00
- 1.01 - 2.00
- >2.00

- Township (North-South) and Range (East-West)
- Las Posas Valley Basin Areas
- Epworth Gravels Management Area
- Major Rivers/Stream Channels
- Faults (Ventura County 2016)

Aquifer designation

- Well screened in the Epworth Gravels aquifer
- Well screened in the Upper San Pedro aquifer
- Well screened in the Fox Canyon aquifer
- Well screened in the Grimes Canyon aquifer
- Well screened in unknown aquifer(s)
- *15P01* Abbreviated State Well Number (see notes)
- **10.5** Concentration (mg/L)

Notes:
1) Well labels consist of an italicized abbreviated State Well Number (SWN) and a concentration value beneath it. The concentration is the most recent concentration measured in water quality samples collected at that well in the five years from 2019-2023.
2) SWNs are based on Township and Range in the Public Land Survey System. To construct a full SWN from the abbreviation shown on the map, concatenate the Township, Range, abbreviation, and the letter "S". Example: the SWN for the well labeled "15L01" located in Township 02N (T02N) and Range 22W (R22W) is 02N22W15L01S.
3) The shape of each well symbol corresponds to the aquifer(s) in which it is screened (see legend).
4) The color of each well symbol corresponds to the concentration of the most recent sample (see legend).
5) All concentrations are in mg/L.
6) Aquifer designation information for individual wells was provided by FCGMA, CMWD and UWCD.

DUDEK

SOURCE: DWR, FCGMA, VCWPD, CMWD, UWCD

FIGURE 2-23

Most Recent Boron (mg/L) Measured 2019-2023

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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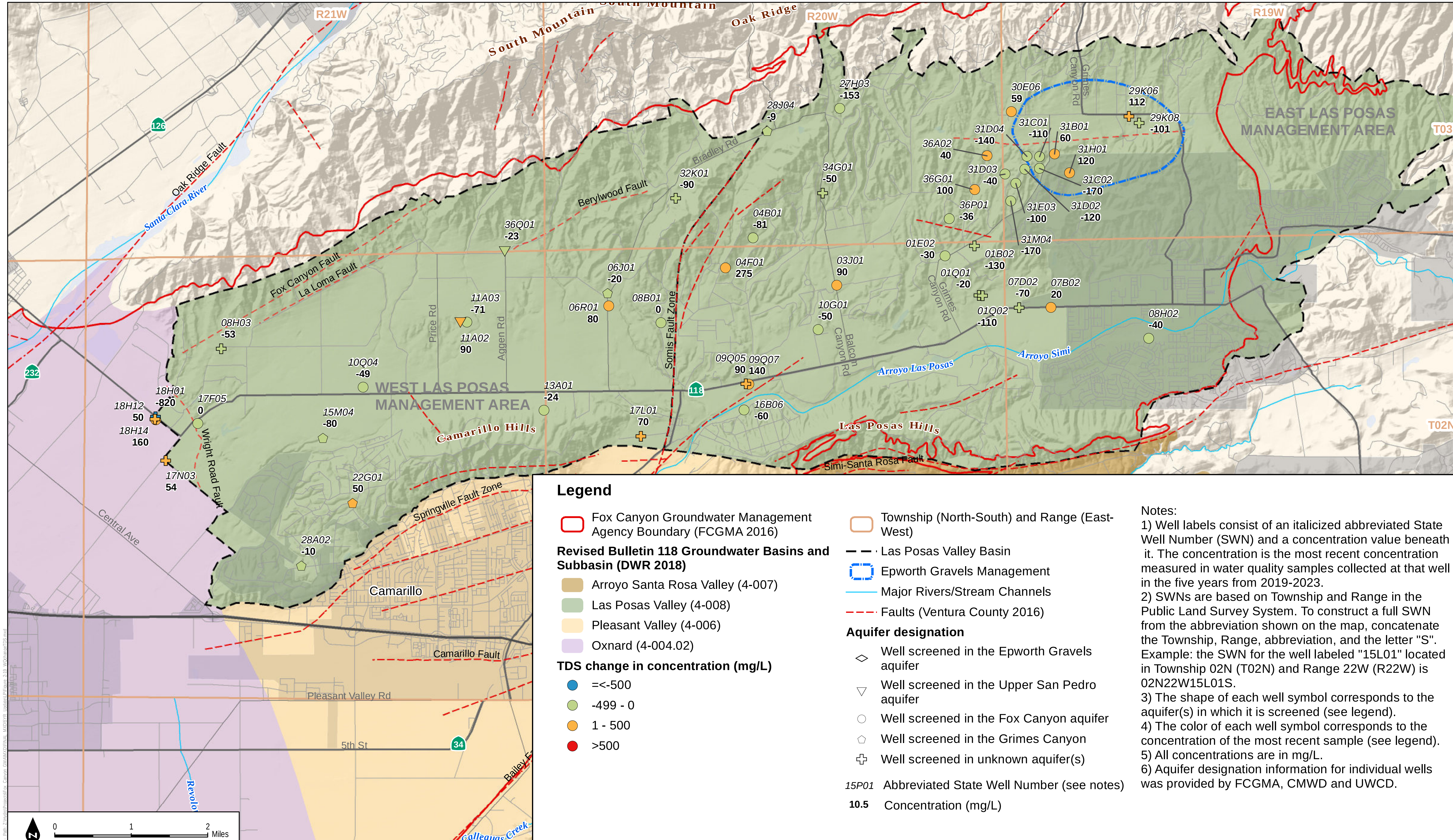

DUDEK

SOURCE: DWR, FCGMA, VCWPD, CMWD, UWCD

FIGURE 2-24

Change in TDS Concentration (mg/L) between the period from 2011-2015 and 2019-2023

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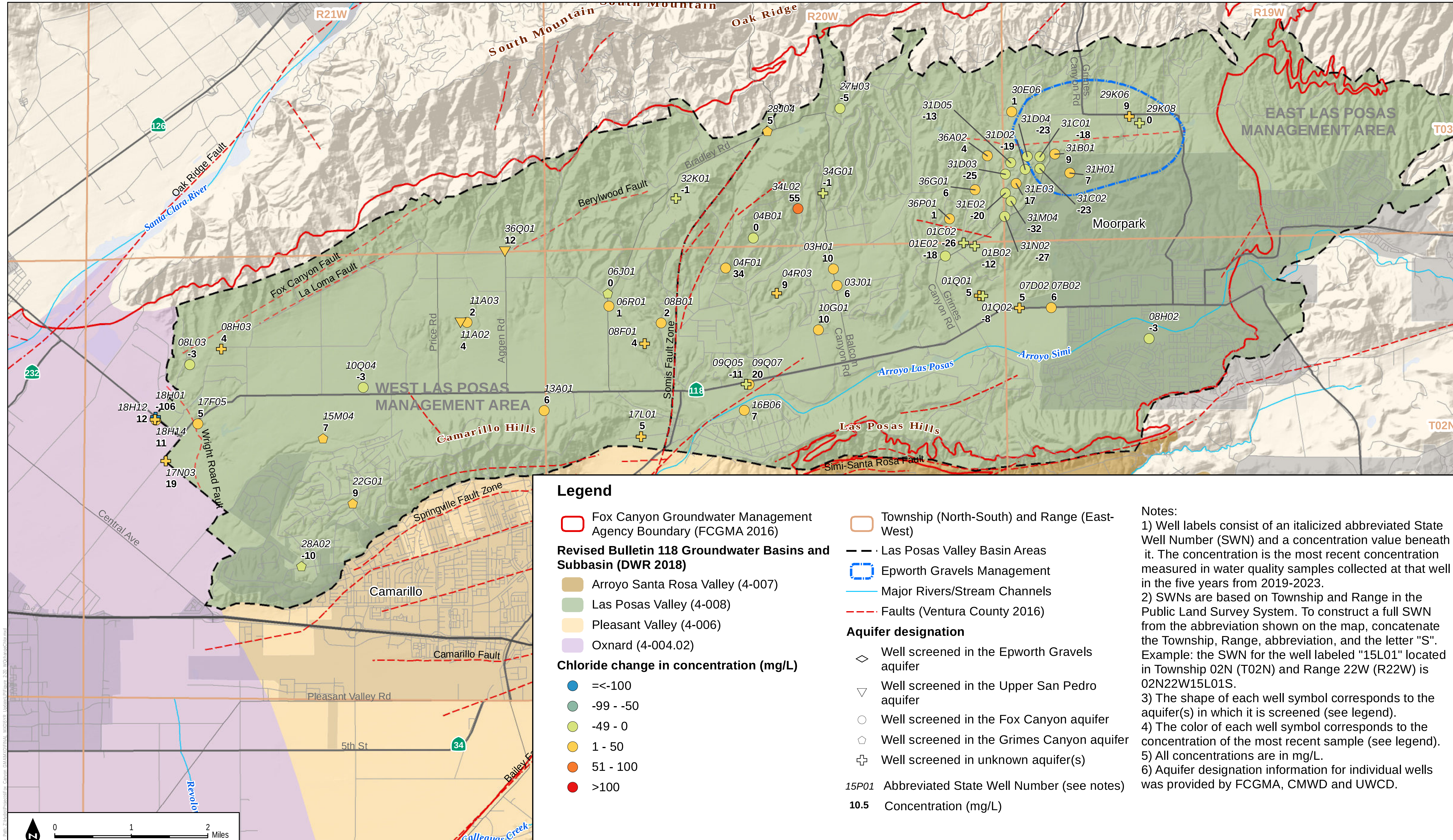

DUDEK

SOURCE: DWR, FCGMA, VCWPD, CMWD, UWCD

FIGURE 2-25

Change in Chloride Concentration (mg/L) between the period from 2011-2015 and 2019-2023

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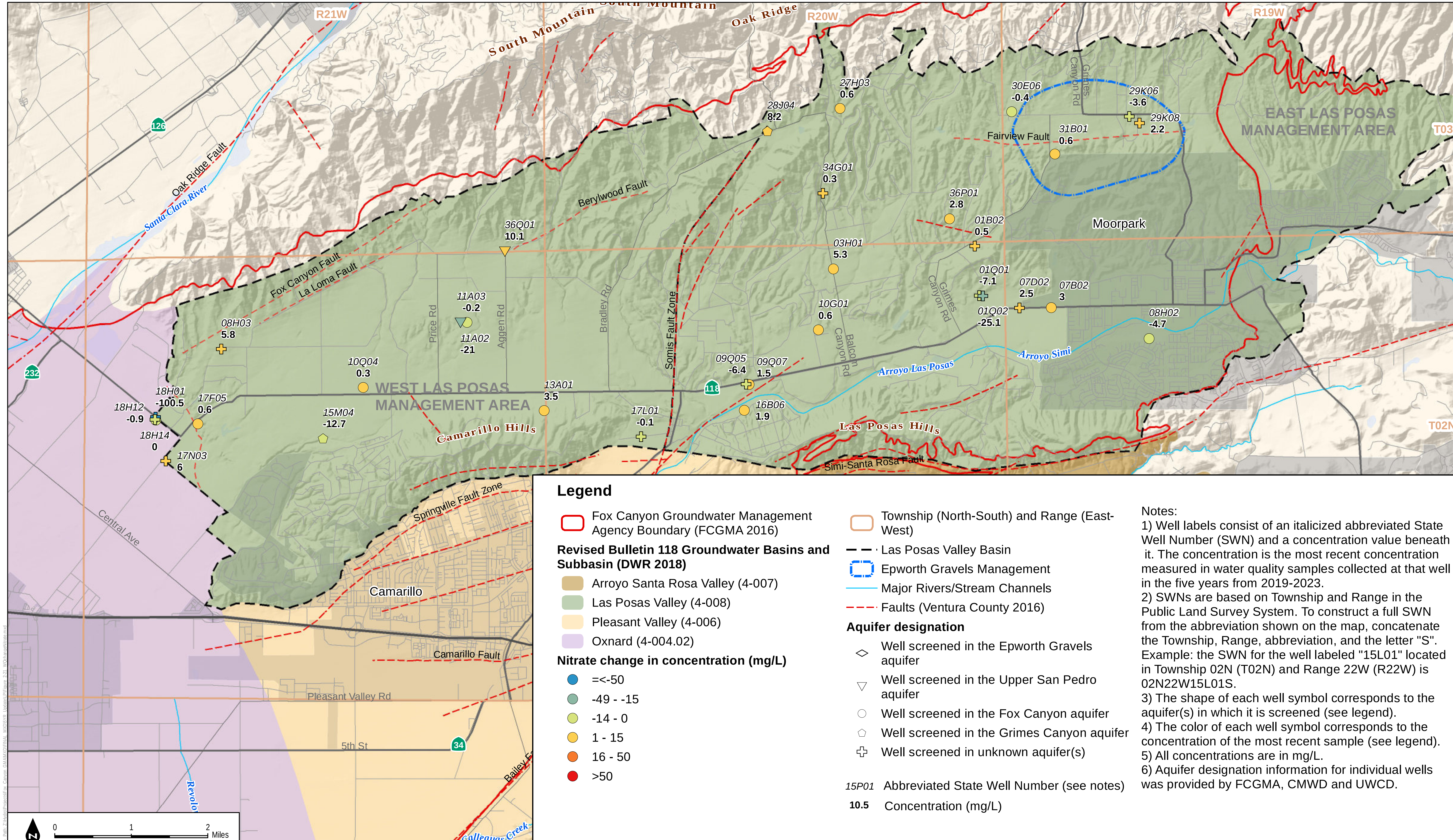

DUDEK

SOURCE: DWR, FCGMA, VCWPD, CMWD, UWCD

FIGURE 2-26

Change in Nitrate Concentration (mg/L) between the period from 2011-2015 and 2019-2023

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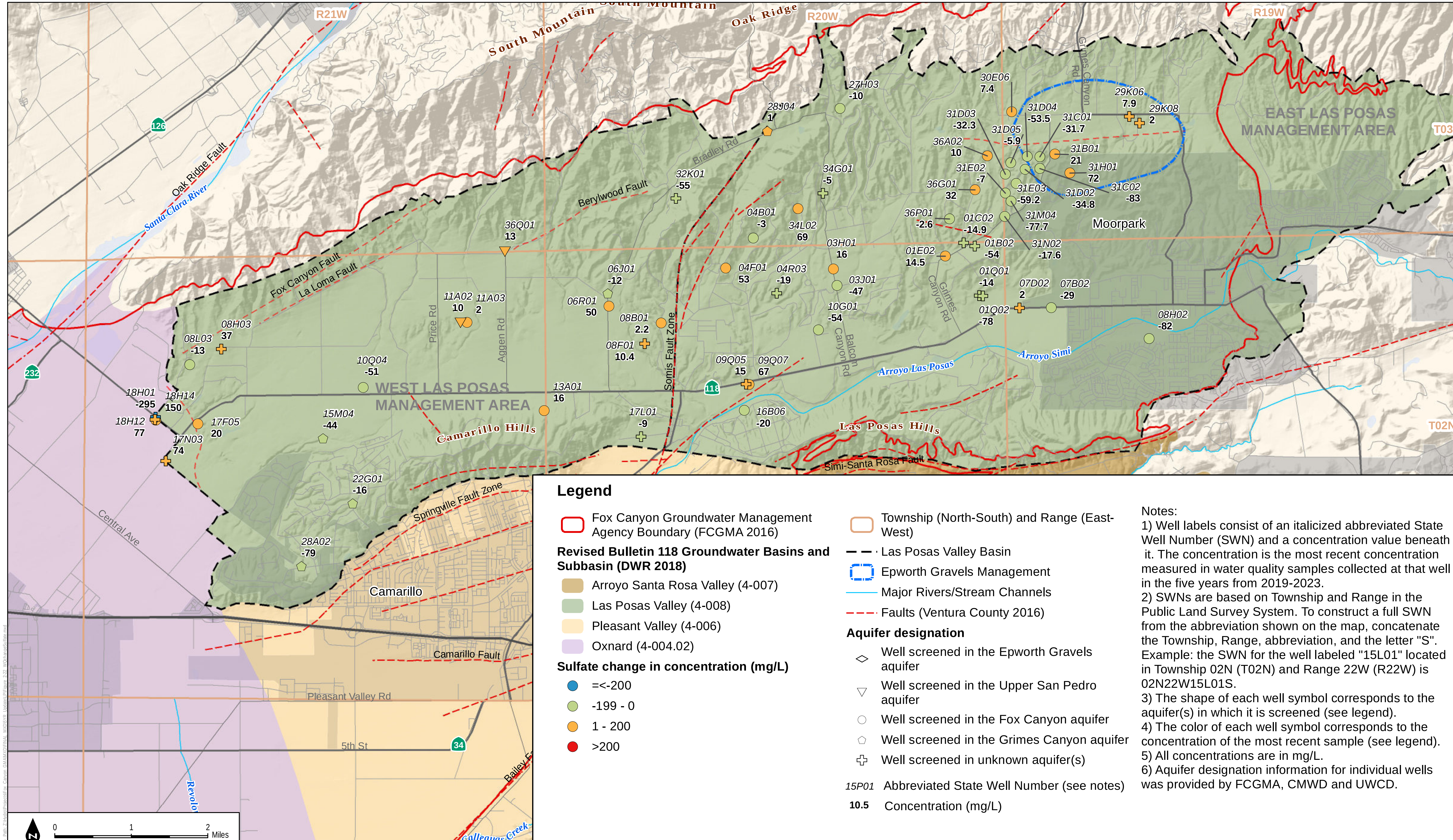

DUDEK

SOURCE: DWR, FCGMA, VCWPD, CMWD, UWCD

FIGURE 2-27

Change in Sulfate Concentration (mg/L) between the period from 2011-2015 and 2019-2023

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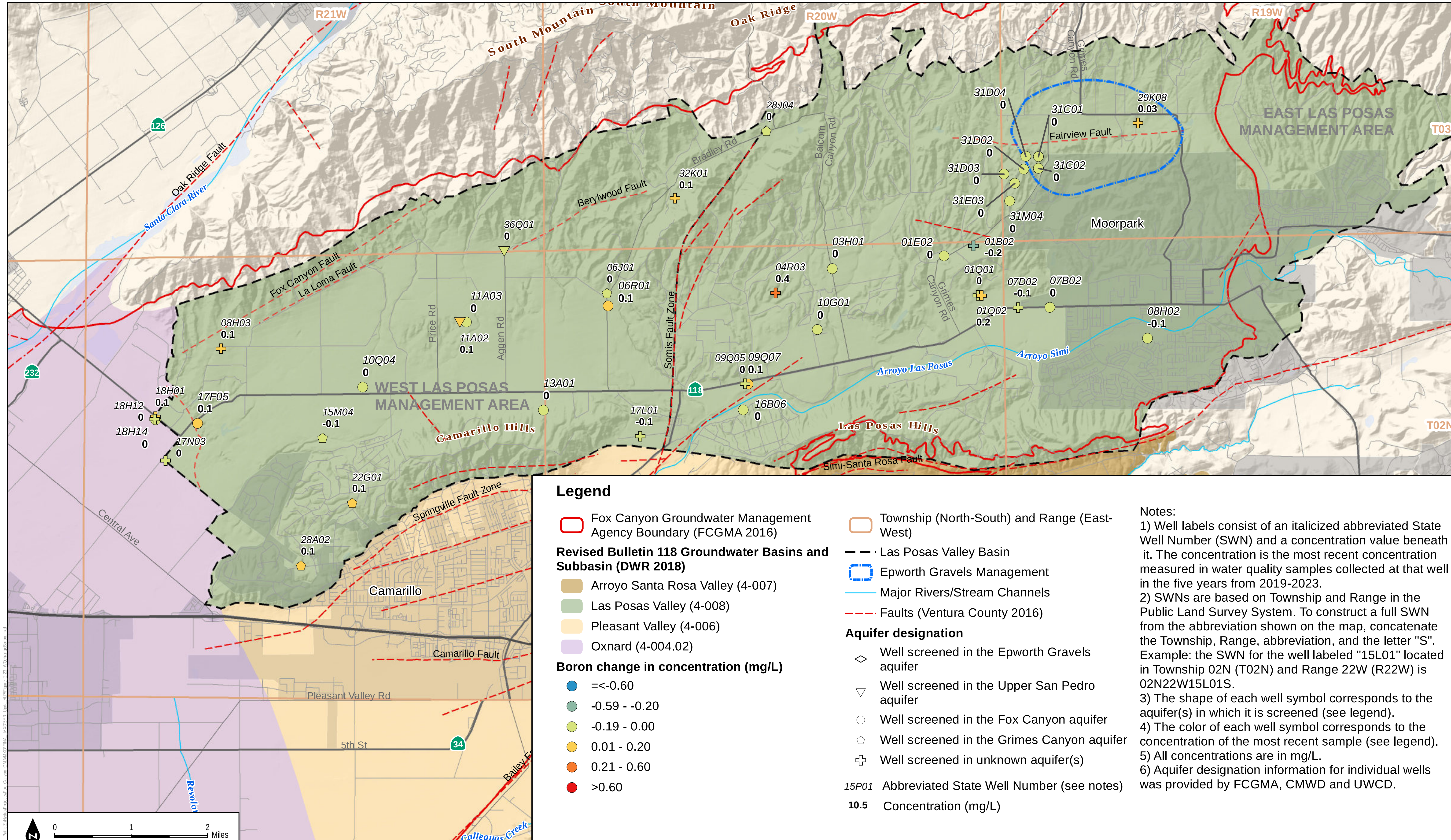

SOURCE: DWR, FCGMA, VCWPD, CMWD, UWCD

FIGURE 2-28

Change in Boron Concentration (mg/L) between the period from 2011-2015 and 2019-2023

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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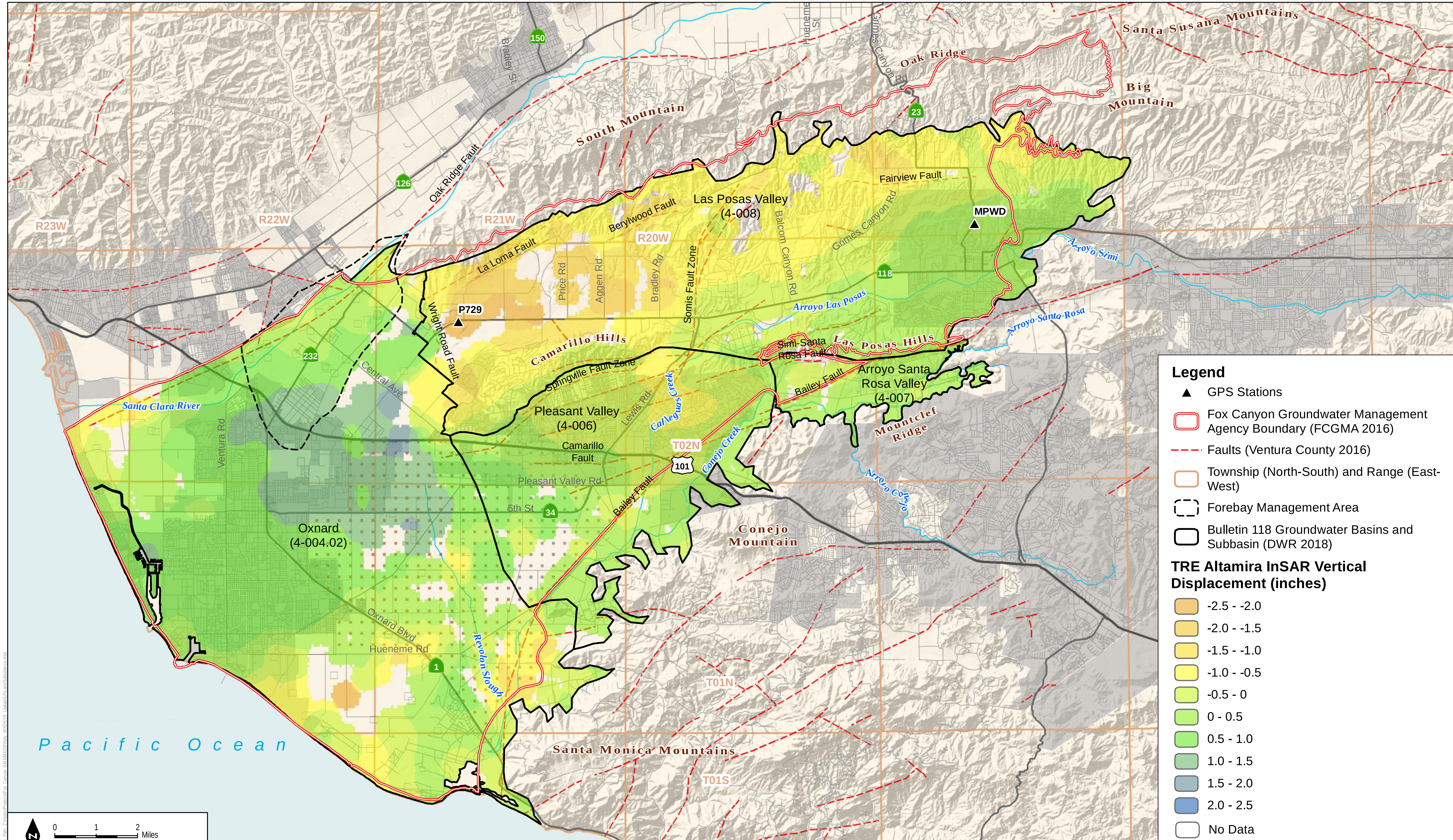

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD

FIGURE 2-29

Land Subsidence June 2015 to January 2024

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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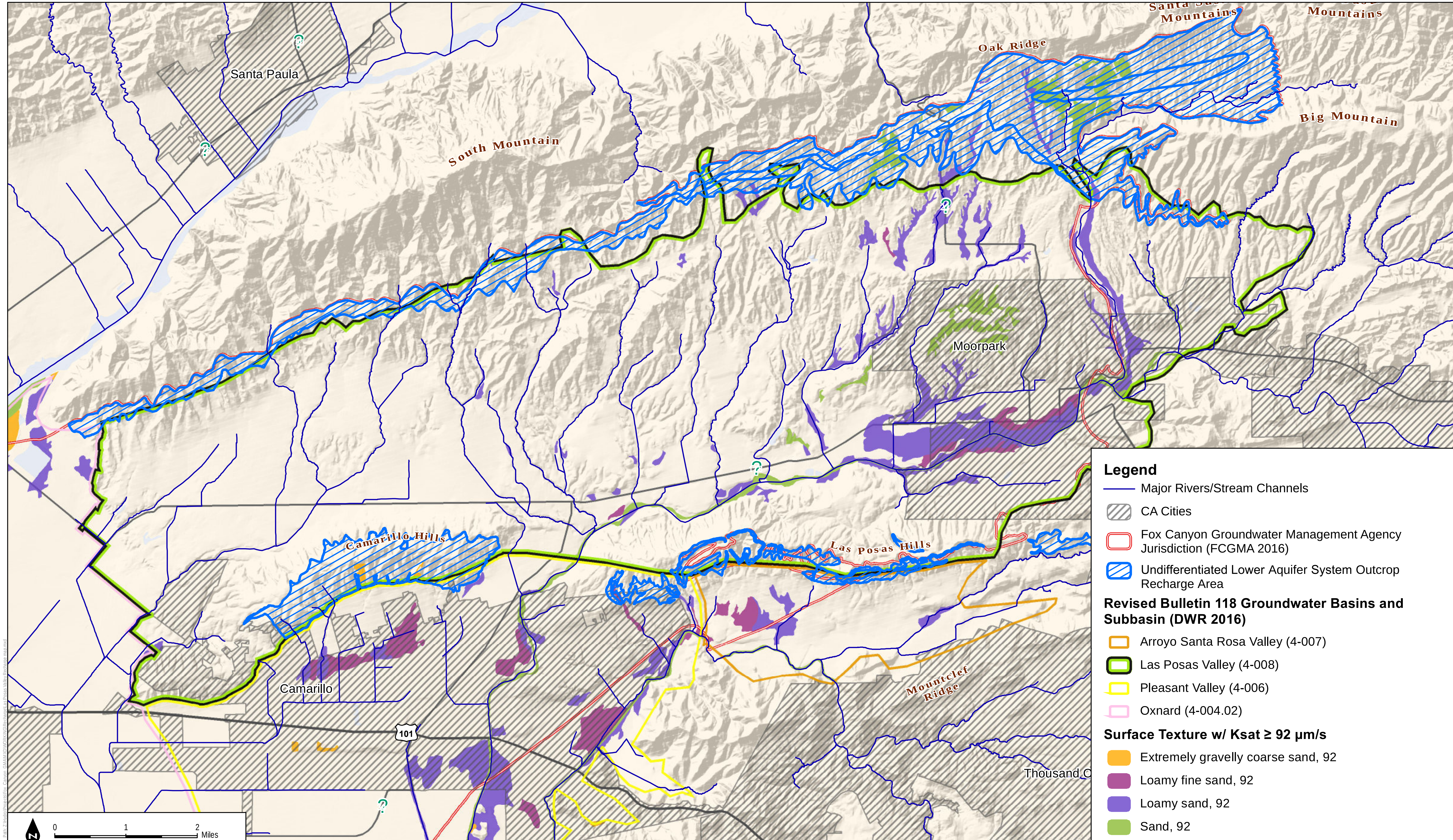

SOURCE: DWR, USGS, NRCS

Figure 4-1

Las Posas Valley Potential Recharge Areas

DUDEK

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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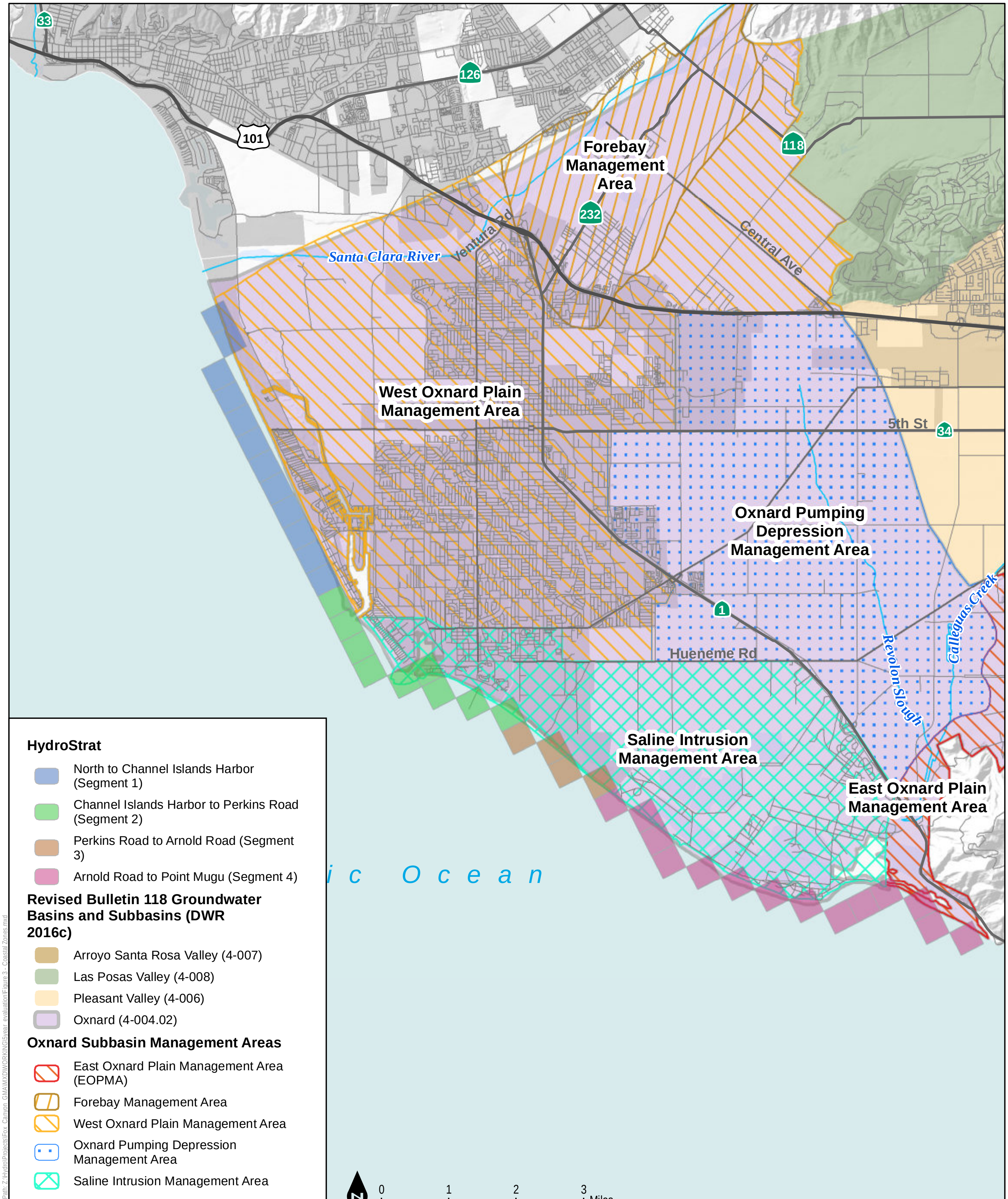

SOURCE: DWR; County of Ventura; FCGMA

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FIGURE 5-1

Modeled Seawater Flux Coastal Segments

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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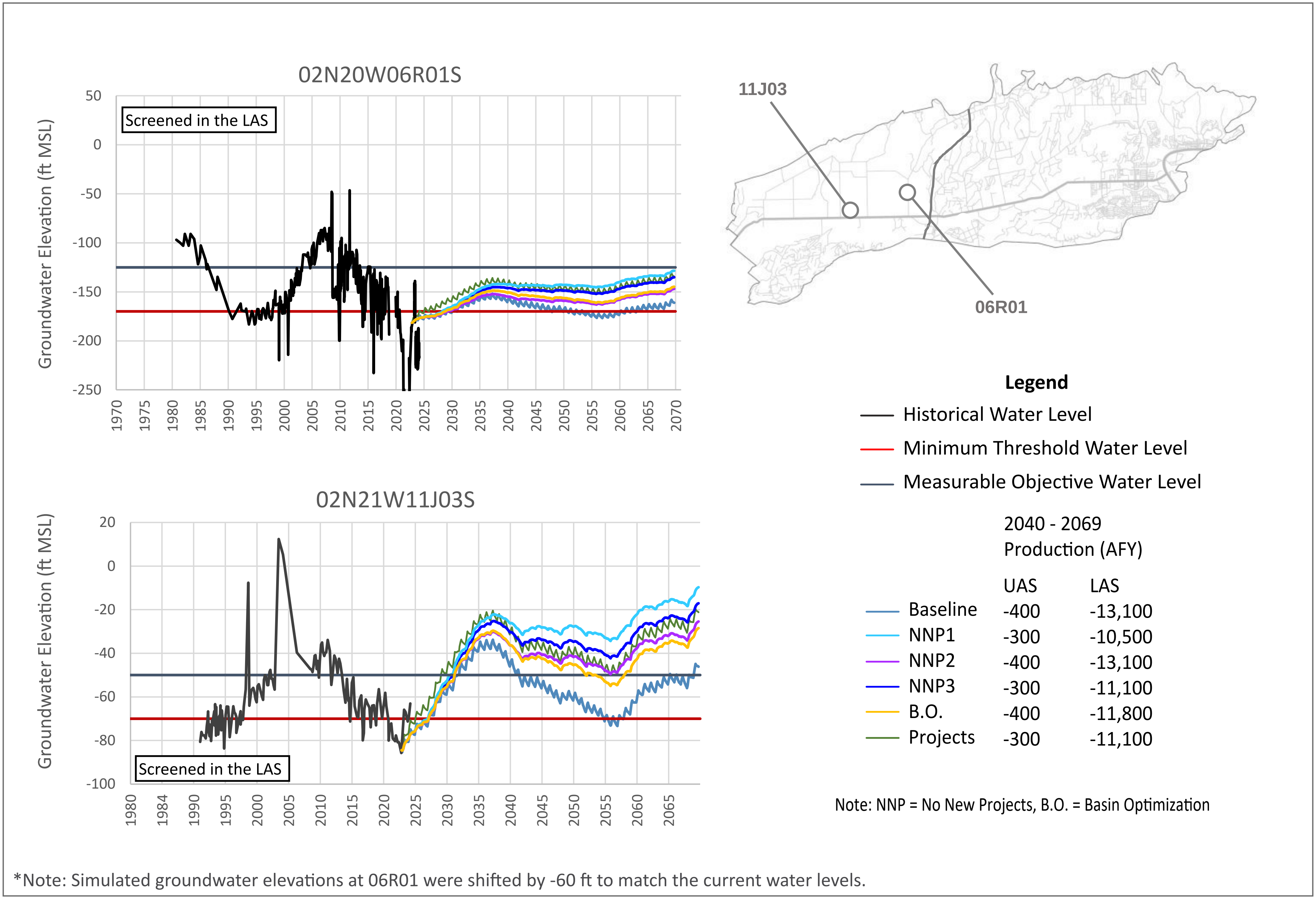

FIGURE 5-2a

Key Well Hydrographs in the West Las Posas Management Area

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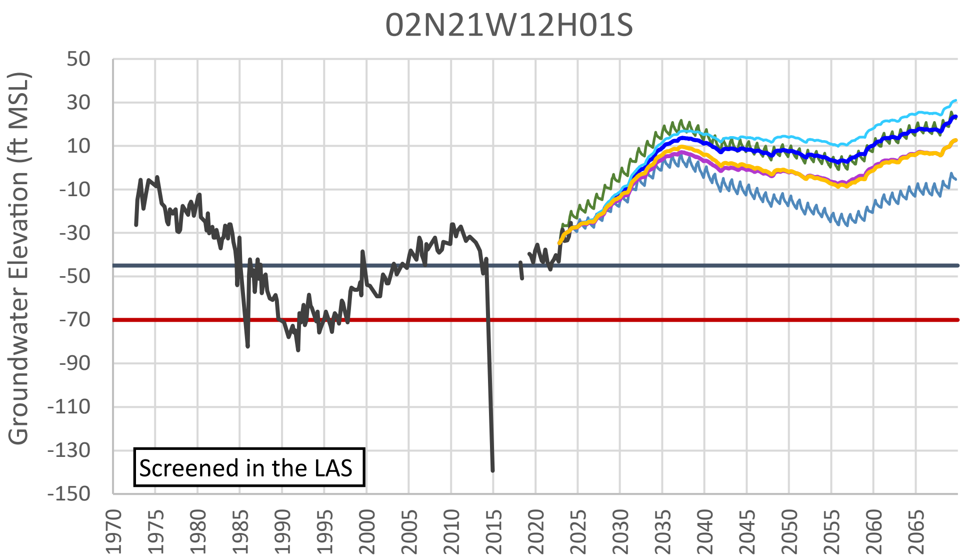

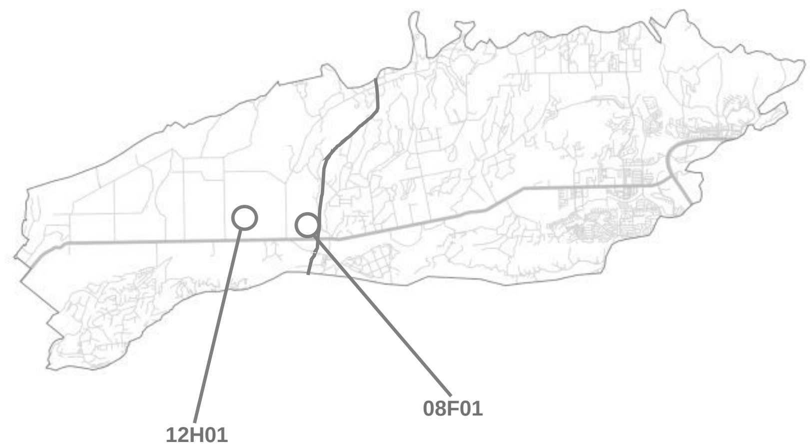

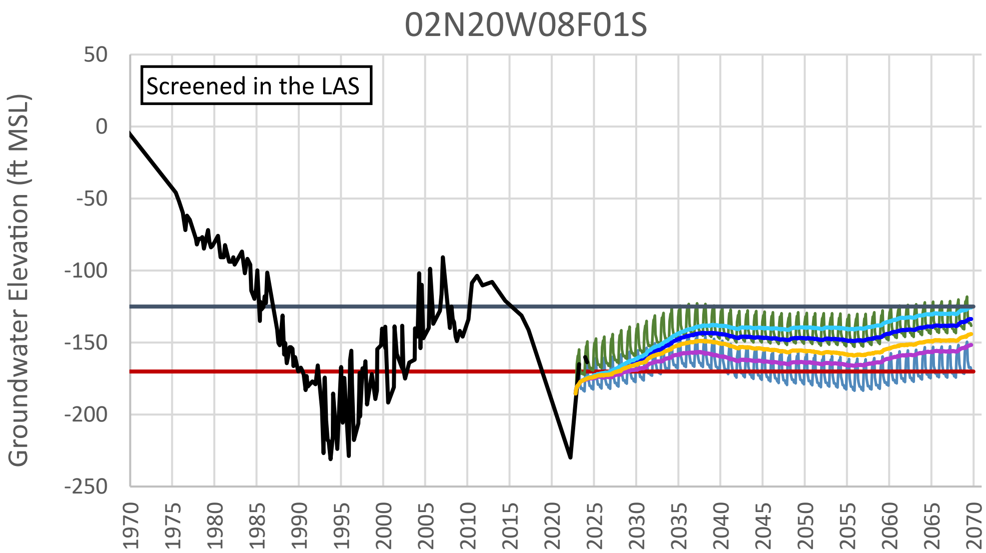

Legend

- Historical Water Level
- Minimum Threshold Water Level
- Measurable Objective Water Level

	2040 - 2069 Production (AFY)	
	UAS	LAS
Baseline	-400	-13,100
NNP1	-300	-10,500
NNP2	-400	-13,100
NNP3	-300	-11,100
B.O.	-400	-11,800
Projects	-300	-11,100

Note: NNP = No New Projects, B.O. = Basin Optimization

*Note: Simulated groundwater elevations at 12H01 were shifted by +70 ft to match the current water levels.

DUDEK

FIGURE 5-2b

Key Well Hydrographs in the West Las Posas Management Area

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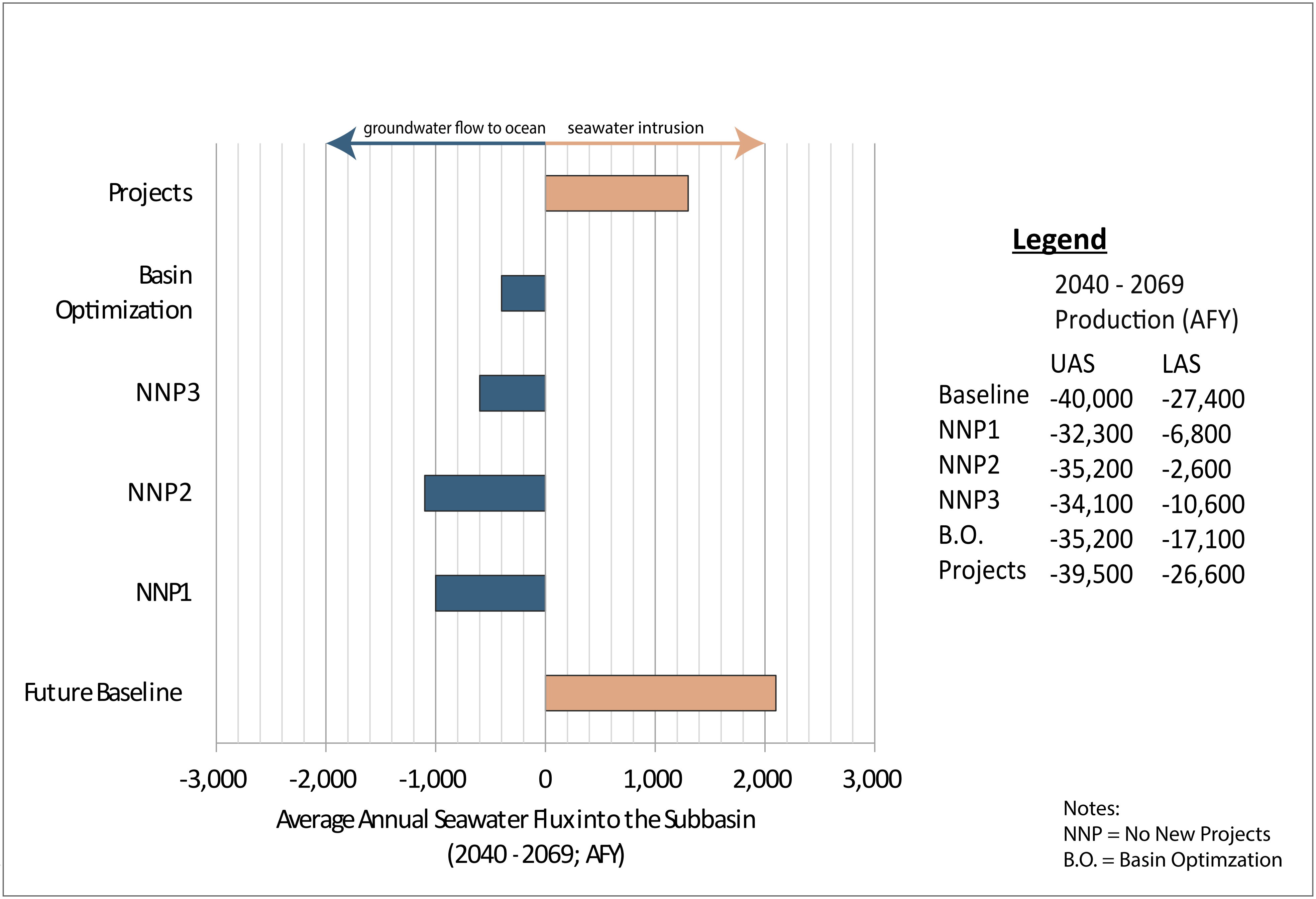

SOURCE: UWCD

FIGURE 5-3

Seawater Flux in the UAS: Future Model Scenarios without UWCD's EBB Project

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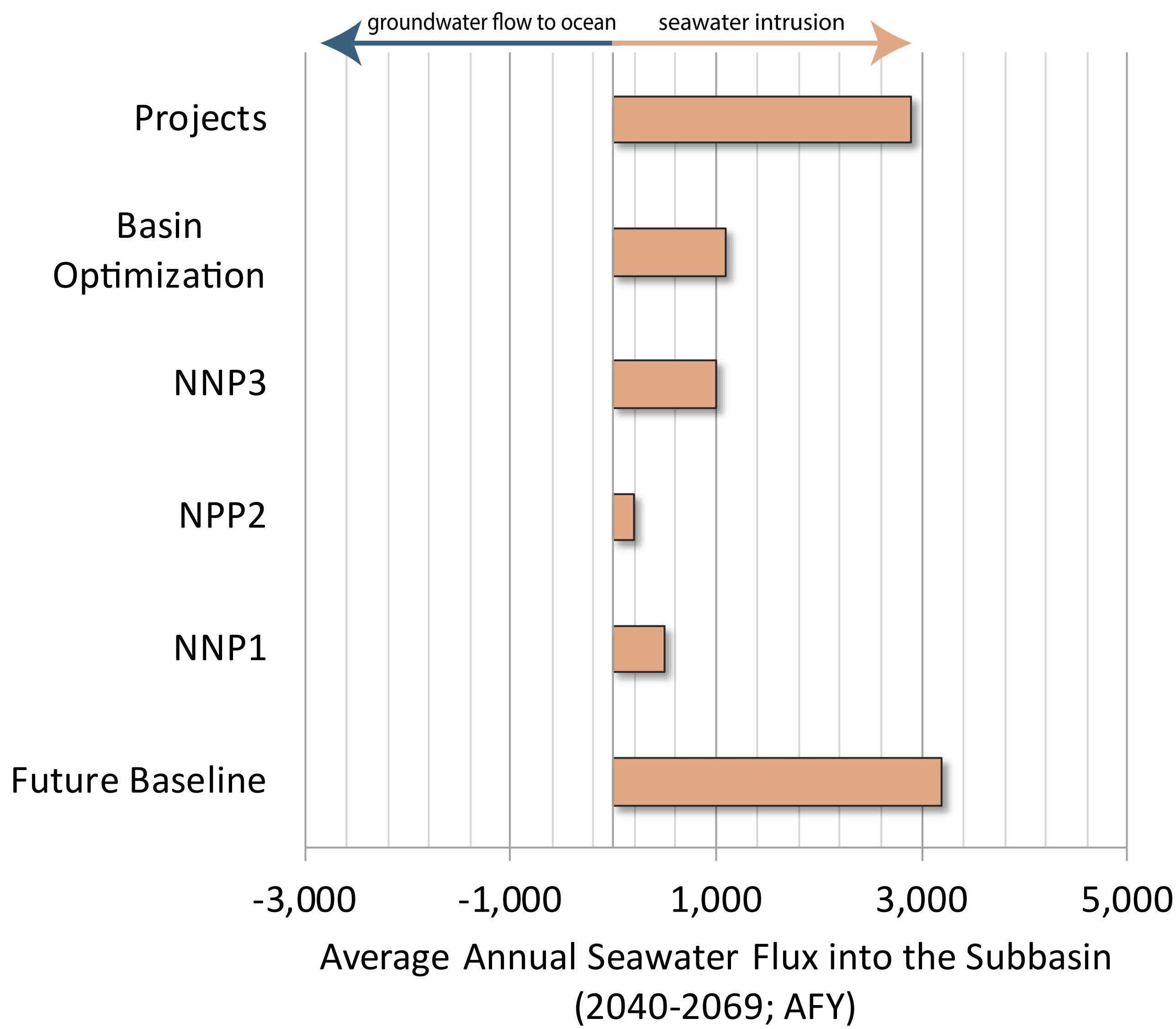

Legend

	2040 - 2069 Production (AFY)	
	UAS	LAS
Baseline	-40,000	-27,400
NNP1	-32,300	-6,800
NNP2	-35,200	-2,600
NNP3	-34,100	-10,600
B.O.	-35,200	-17,100
Projects	-39,500	-26,600

Notes:
NNP = No New Projects
B.O. = Basin Optimzation

SOURCE: UWCD

DUDEK

FIGURE 5-4

Seawater Flux in the LAS: Future Model Scenarios without UWCD's EBB Project

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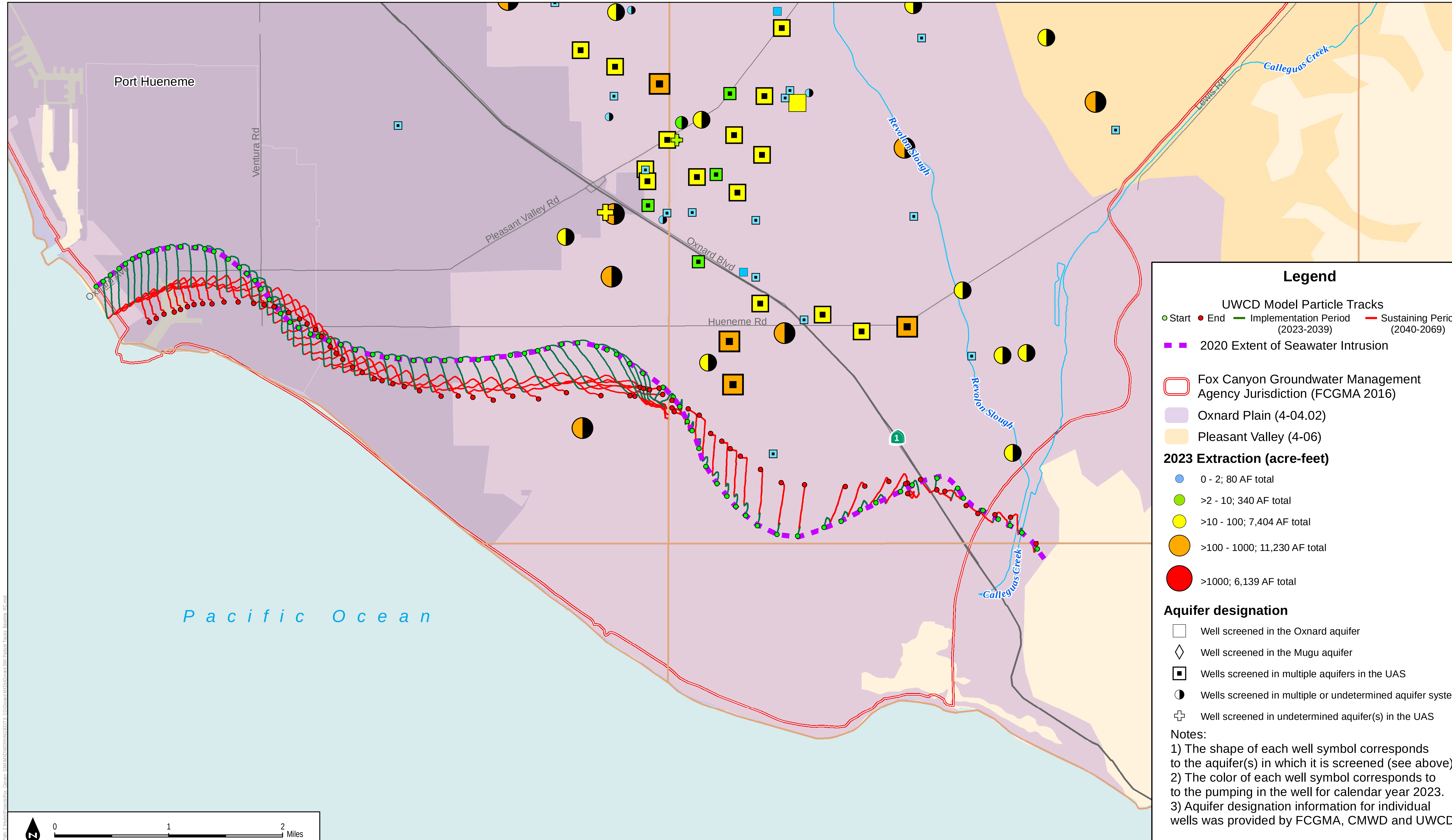

SOURCE: DWR; Ventura County; UWCD; CMWD
1930-1979 Climate Period; 2070 Climate Change Factor

Figure 5-5
UWCD Model Particle Tracks, Oxnard Aquifer, Future Baseline

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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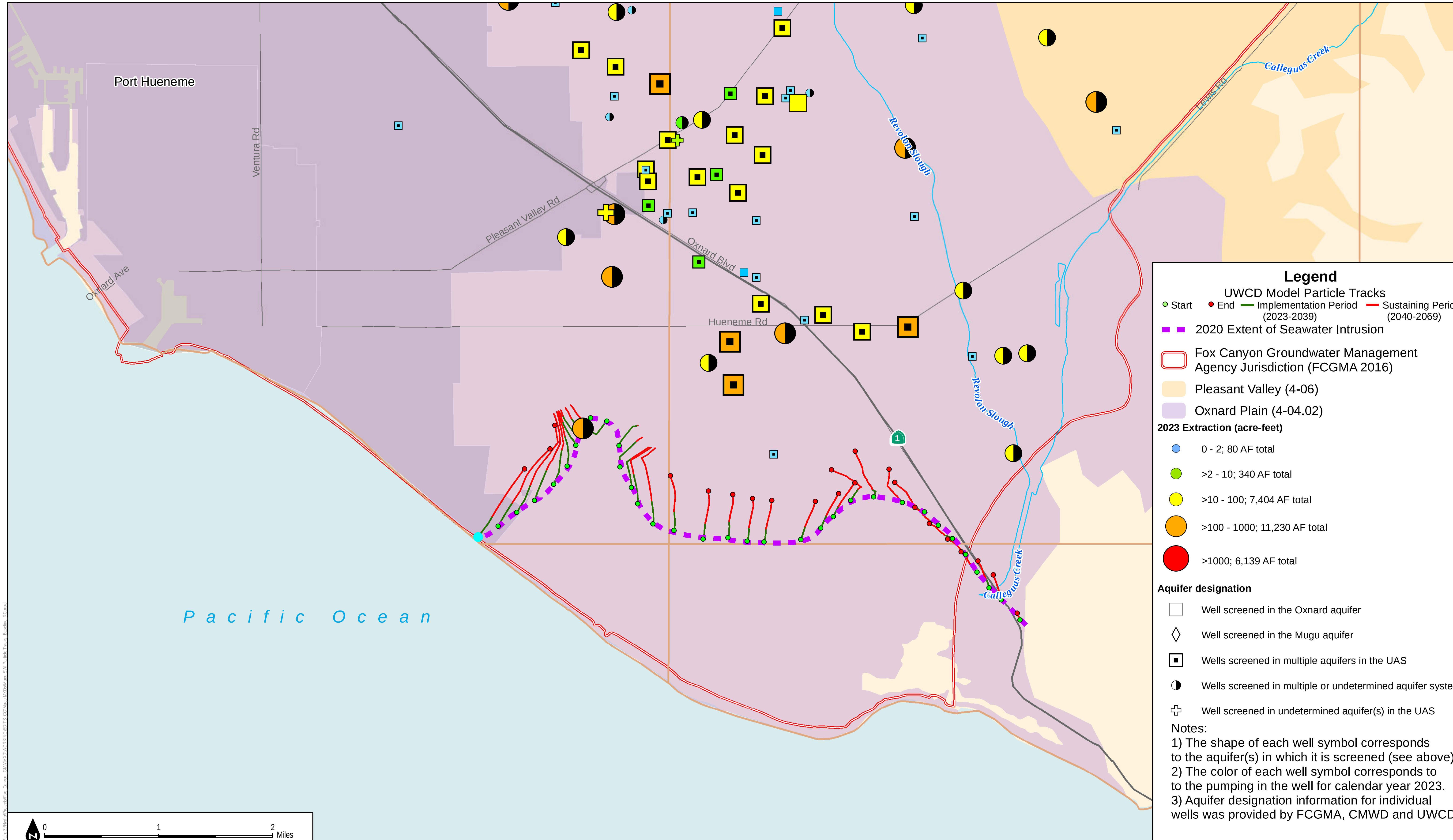

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
Climate Period 1930-1979; Climate Change Factor 2070

Figure 5-6
UWCD Model Particle Tracks, Mugu Aquifer, Future Baseline

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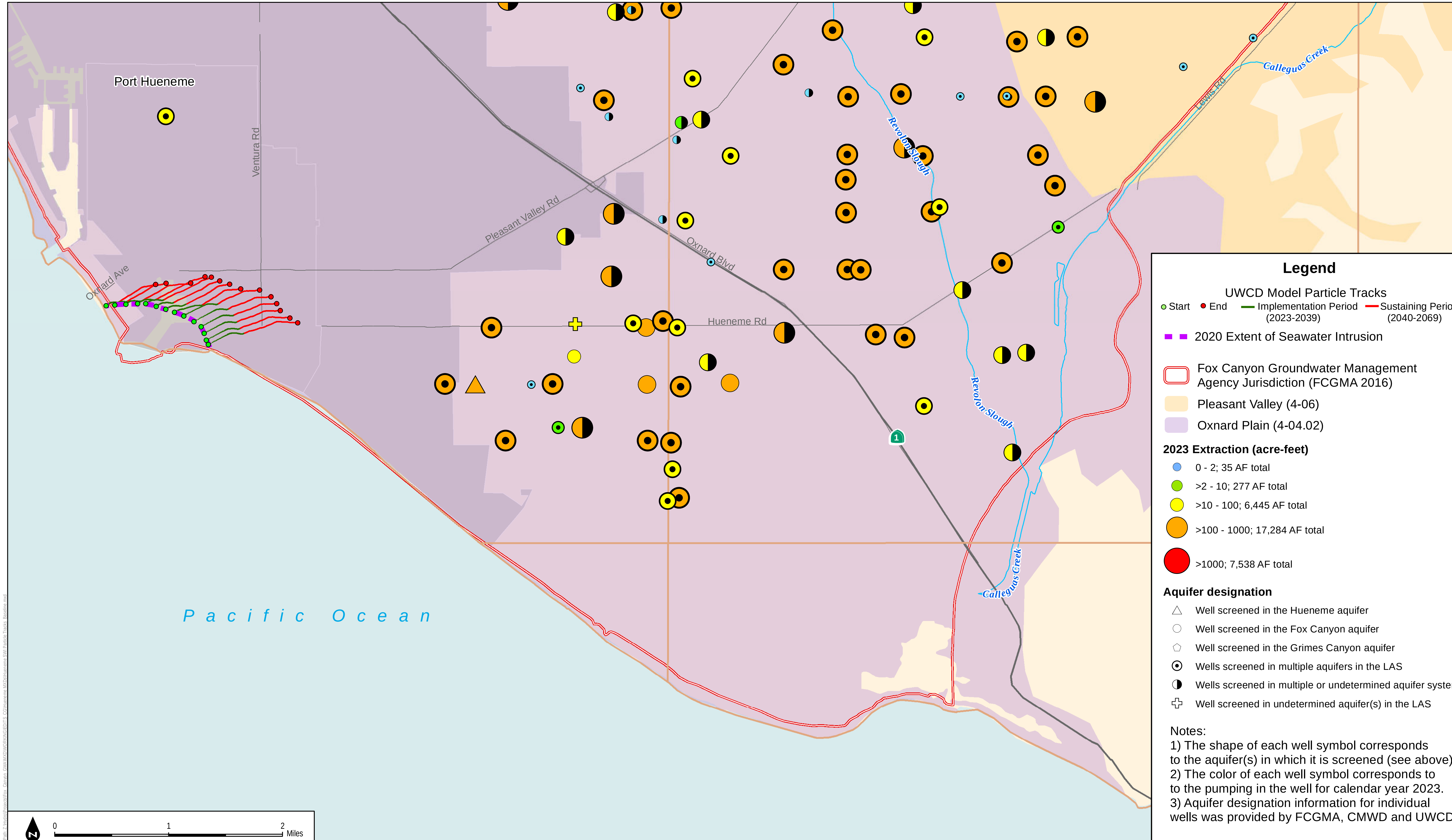

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
Climate Period 1930-1979; Climate Change Factor 2070

Figure 5-7
UWCD Model Particle Tracks, Hueneme Aquifer, Future Baseline

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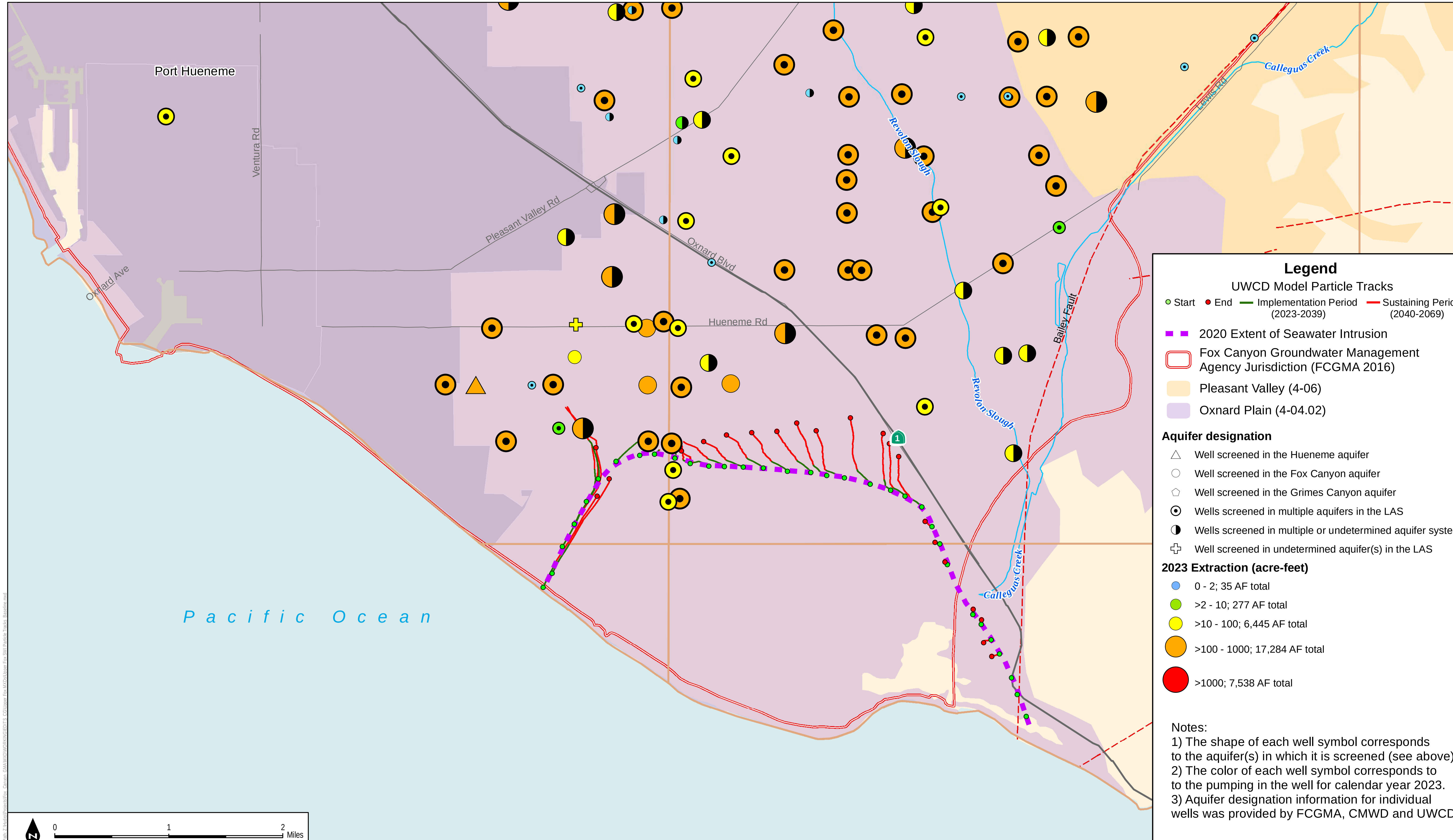

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
1930-1979 Climate Period; 2070 Climate Change Factor

Figure 5-8
UWCD Model Particle Tracks, Upper Fox Canyon Aquifer, Future Baseline

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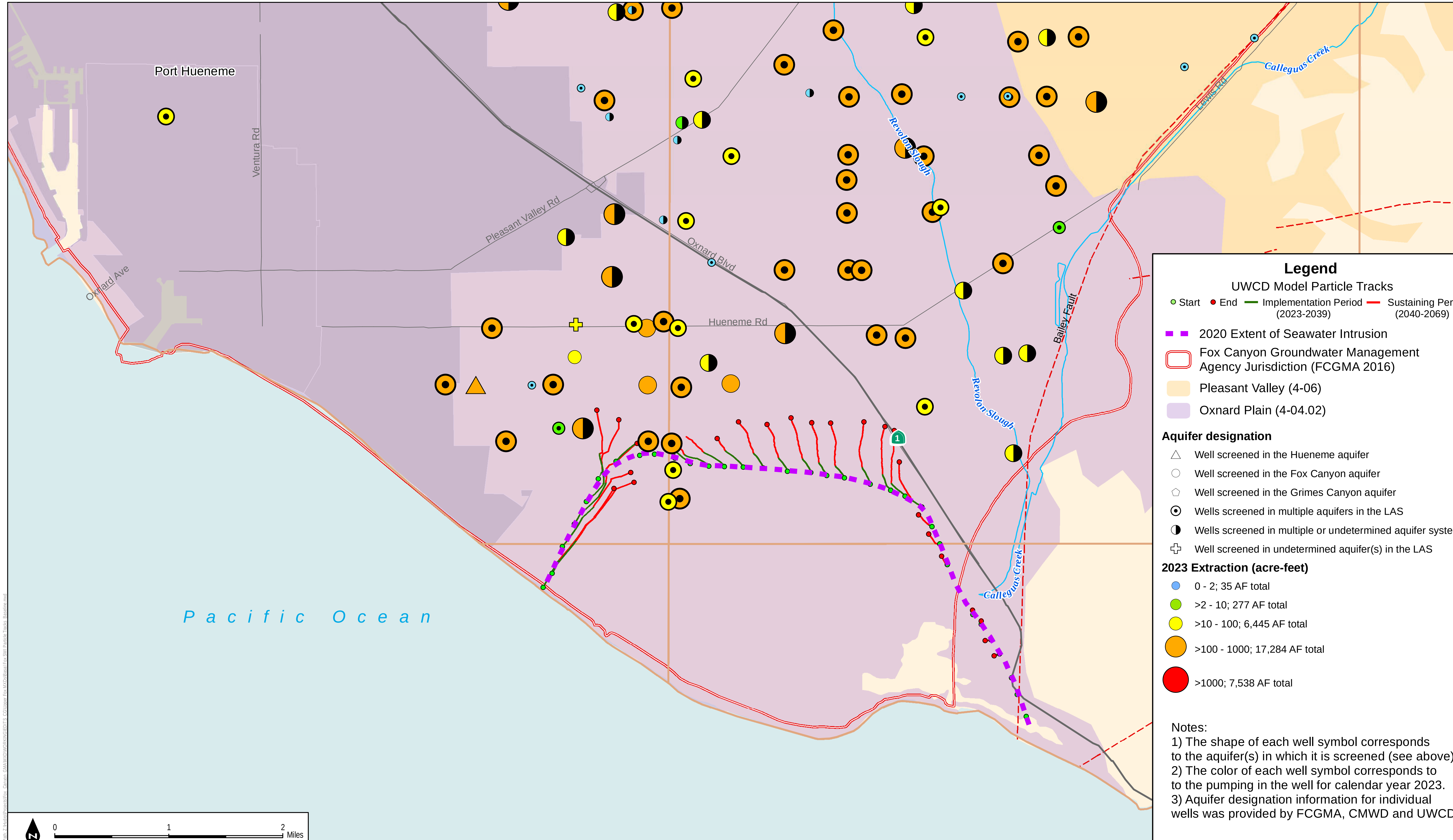

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
1930-1979 Climate Period; 2070 Climate Change Factor

Figure 5-9
UWCD Model Particle Tracks, Basal Fox Canyon Aquifer, Future Baseline

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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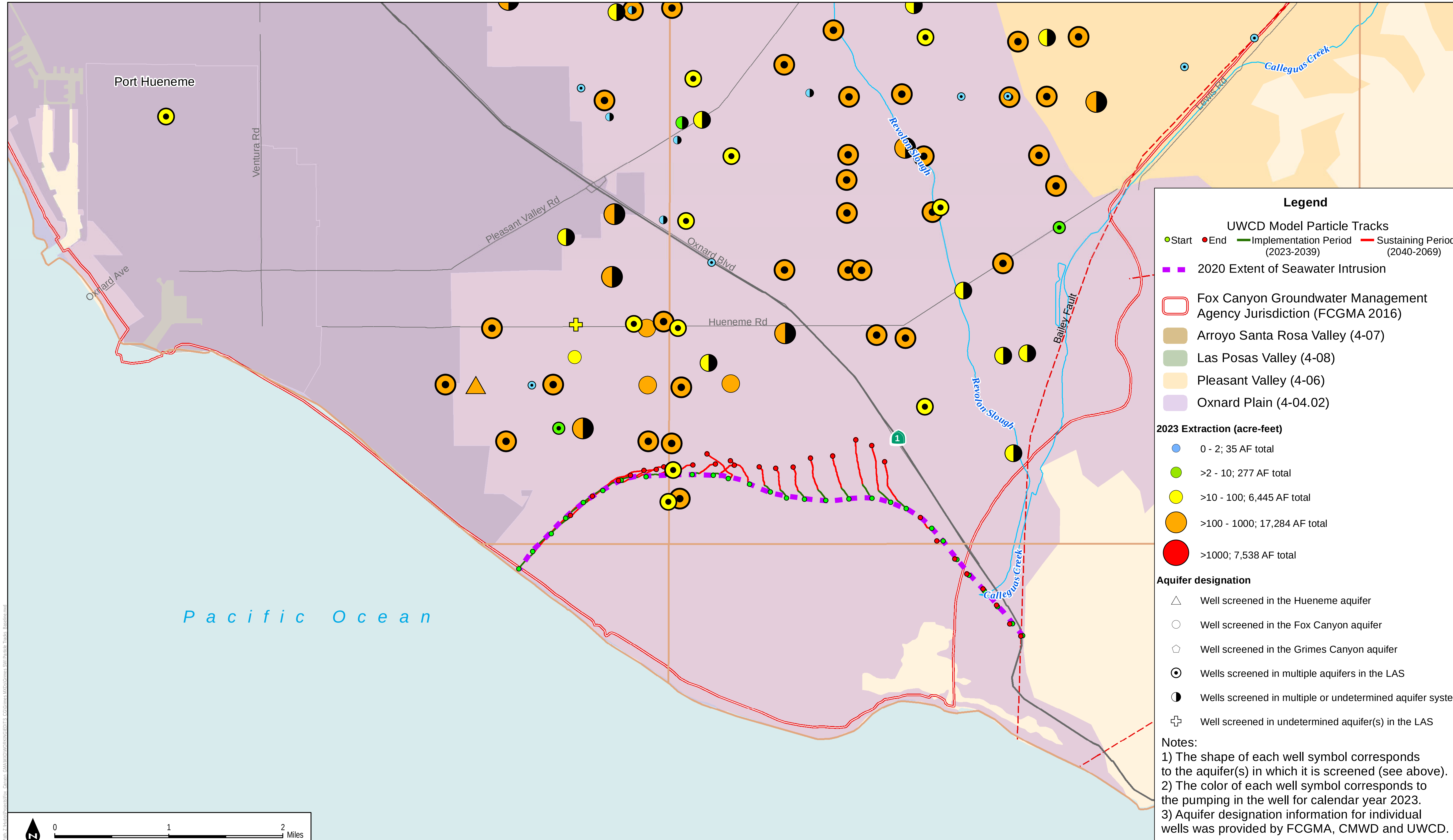

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
1930-1979 Climate Period; 2070 Climate Change Factor

Figure 5-10
UWCD Model Particle Tracks, Grimes Canyon Aquifer, Future Baseline

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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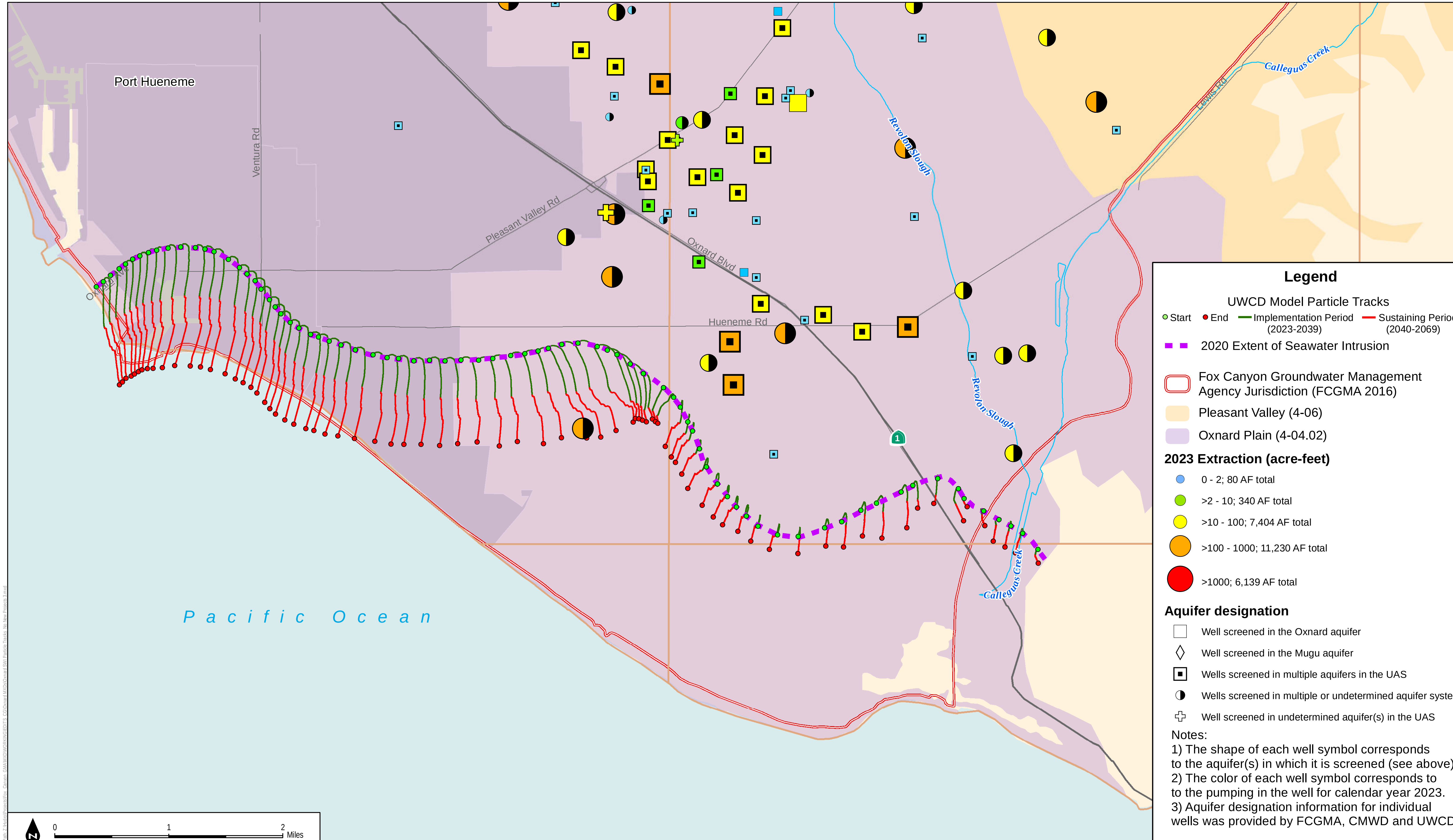

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
1930-1979 Climate Period; 2070 Climate Change Factor

Figure 5-11
UWCD Model Particle Tracks, Oxnard Aquifer, NNP3

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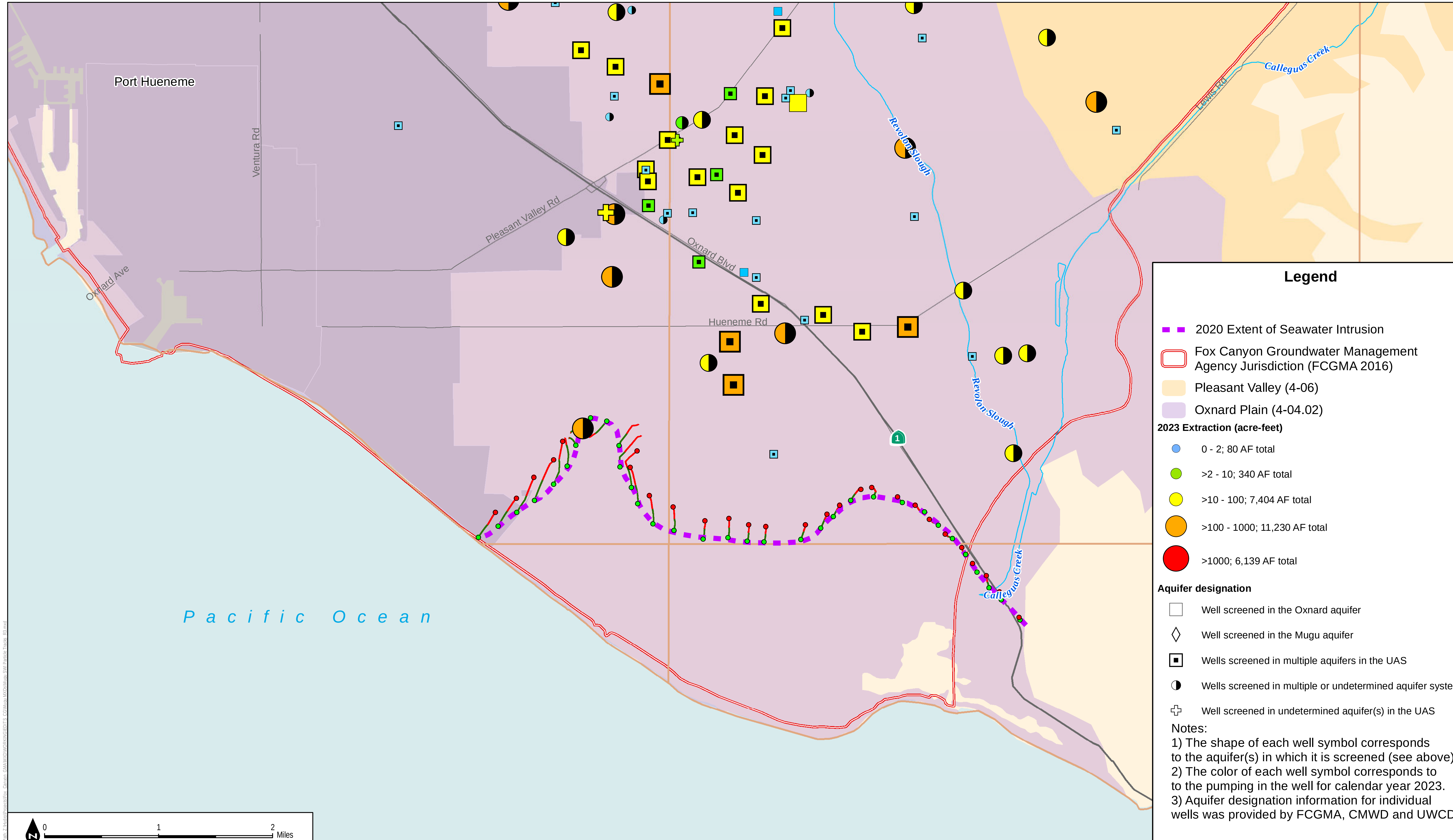

SOURCE: DWR; Ventura County; UWCD; CMWD
Climate Period 1930-1979; Climate Change Factor 2070

DUDEK

Figure 5-12
UWCD Model Particle Tracks, Mugu Aquifer, NNP3

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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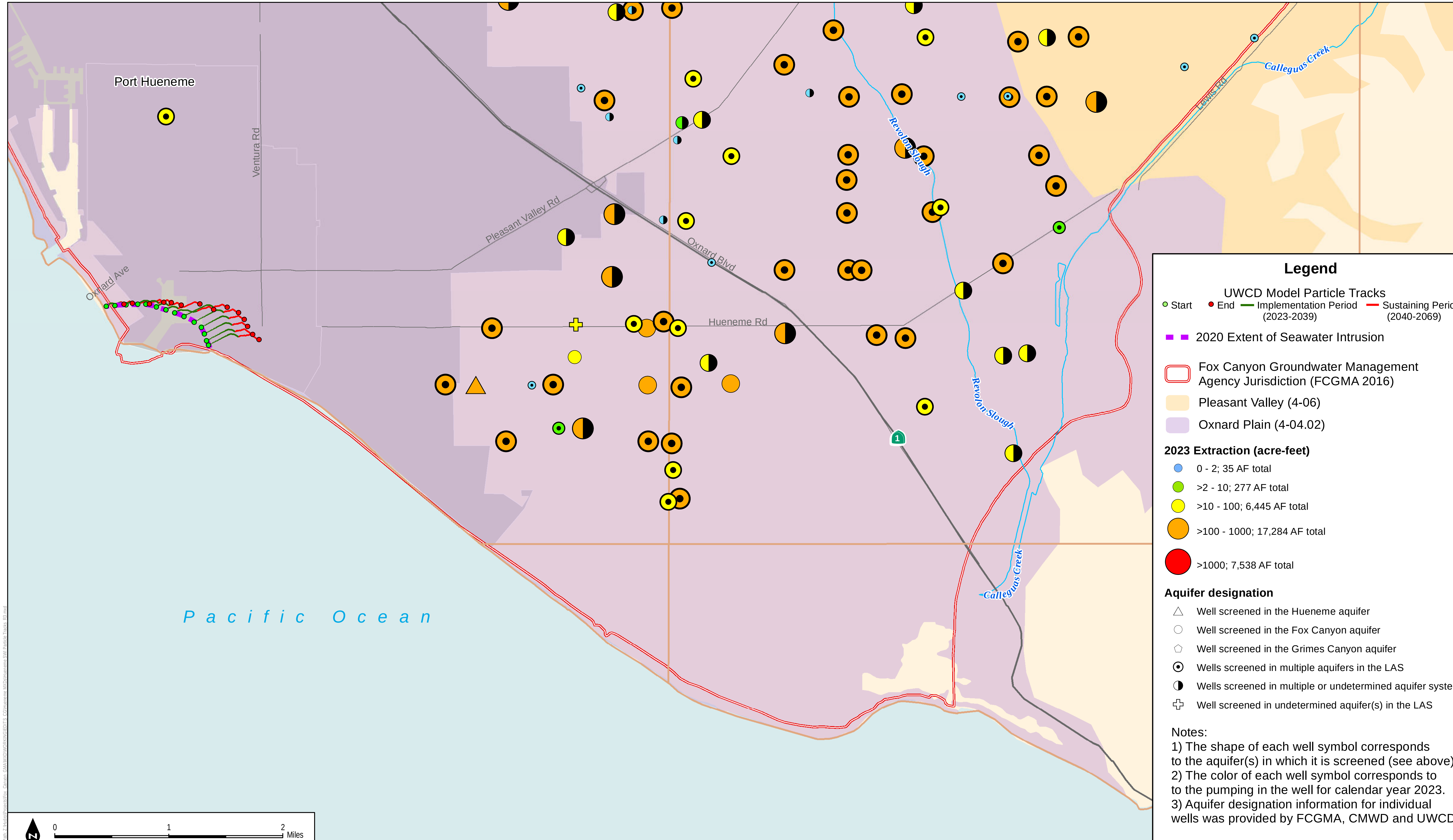

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
Climate Period 1930-1979; Climate Change Factor 2070

Figure 5-13
UWCD Model Particle Tracks, Hueneme Aquifer, NNP3

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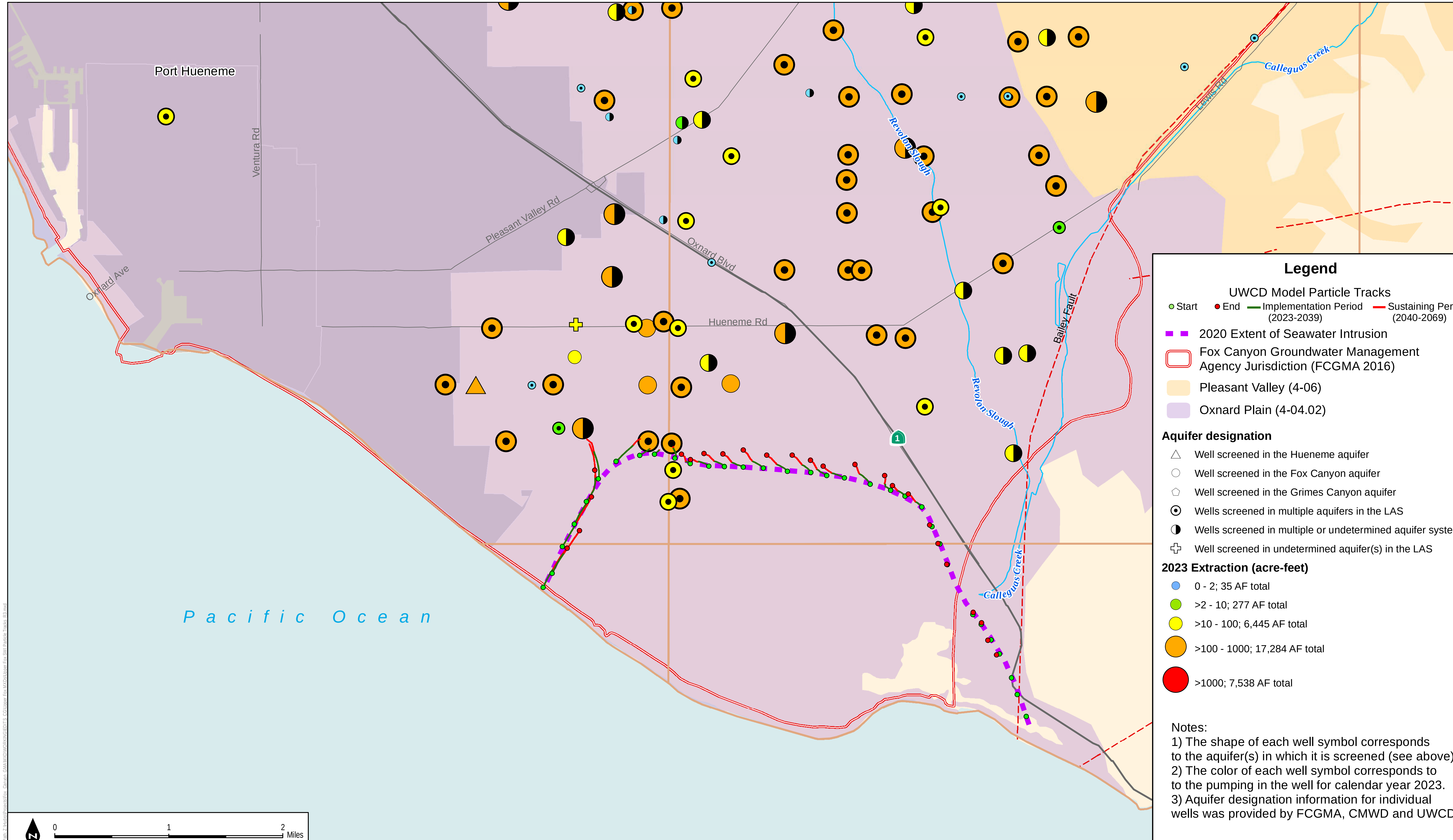

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
1930-1979 Climate Period; 2070 Climate Change Factor

Figure 5-14
UWCD Model Particle Tracks, Upper Fox Canyon Aquifer, NNP3

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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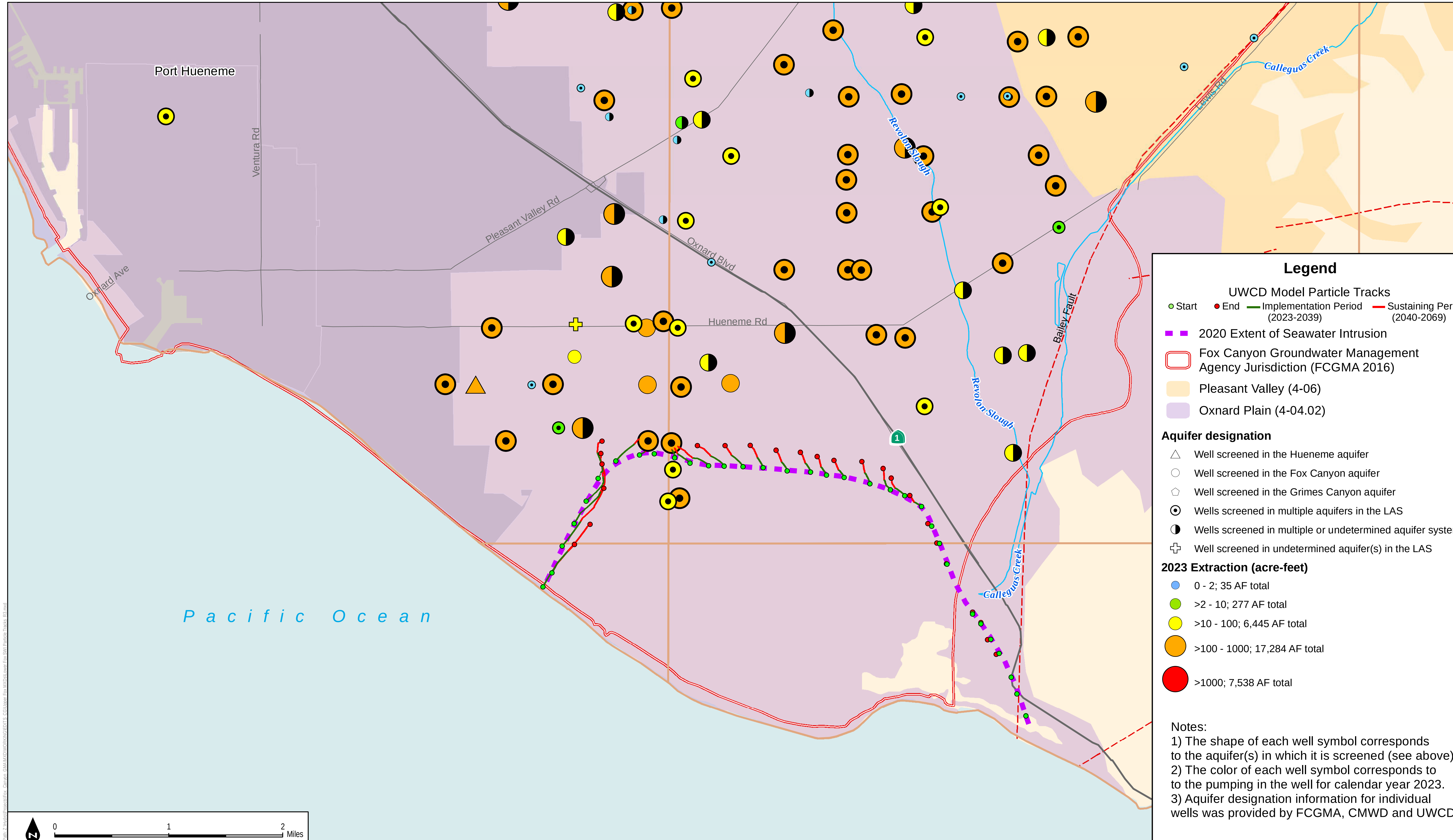

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
1930-1979 Climate Period; 2070 Climate Change Factor

Figure 5-15
UWCD Model Particle Tracks, Basal Fox Canyon Aquifer, NNP3

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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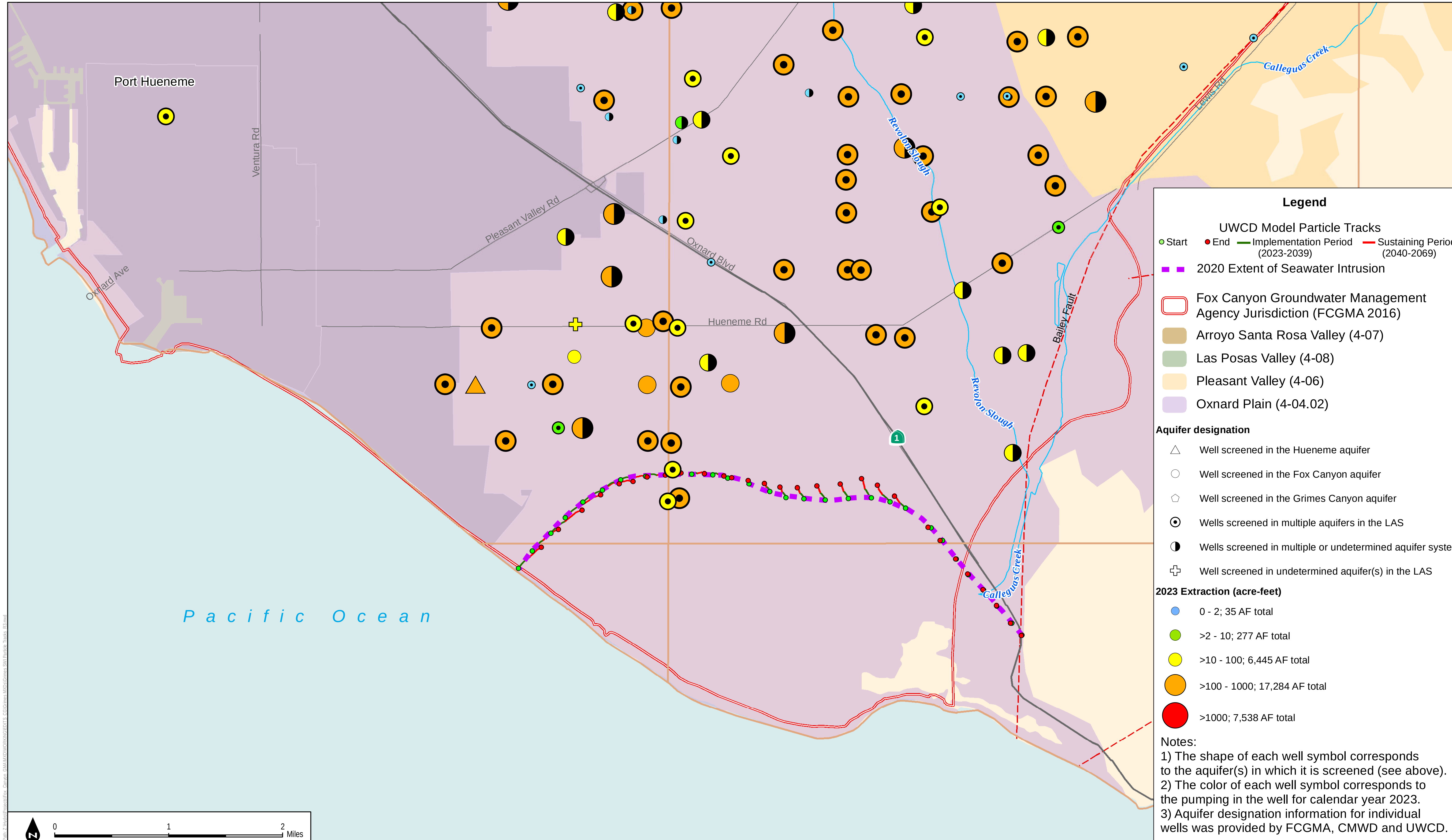

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
1930-1979 Climate Period; 2070 Climate Change Factor

Figure 5-16
UWCD Model Particle Tracks, Grimes Canyon Aquifer, NNP3

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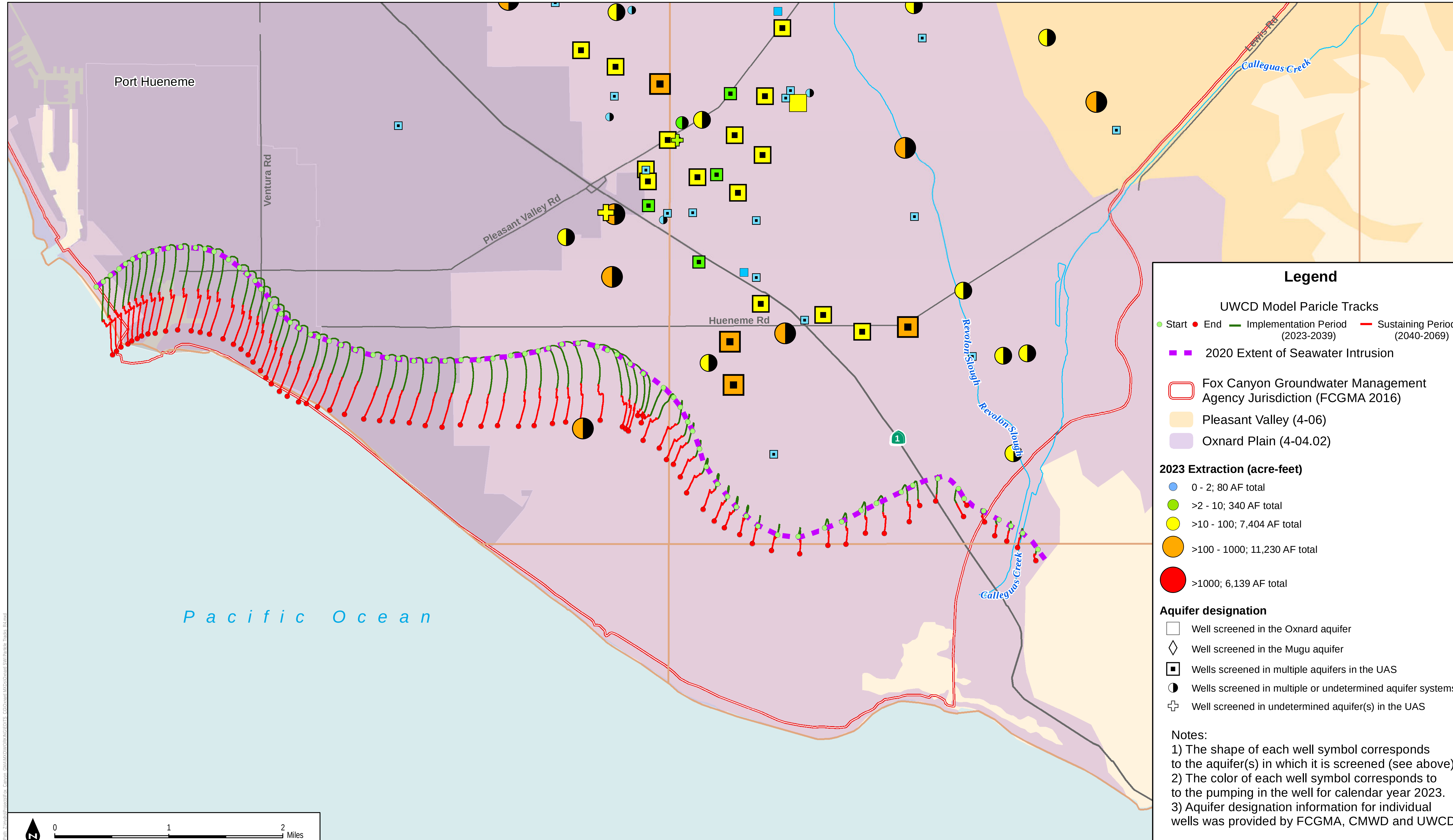

SOURCE: DWR; Ventura County; UWCD; CMWD
1930-1979 Climate Period; 2070 Climate Change Factor

Figure 5-17
UWCD Model Particle Tracks, Oxnard Aquifer, Basin Optimization

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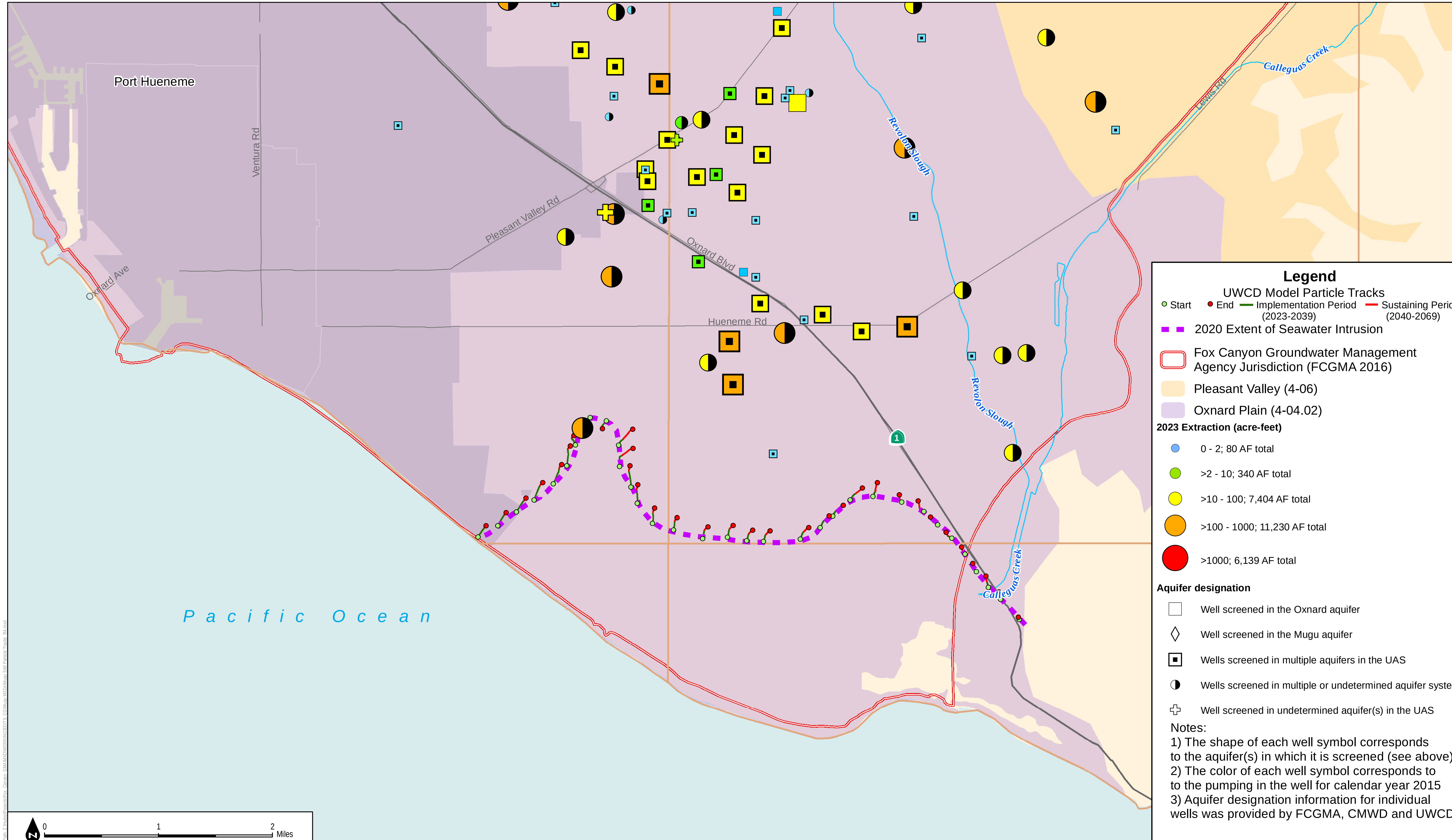

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
Climate Period 1930-1979; Climate Change Factor 2070

Figure 5-18
UWCD Model Particle Tracks, Mugu Aquifer, Basin Optimization

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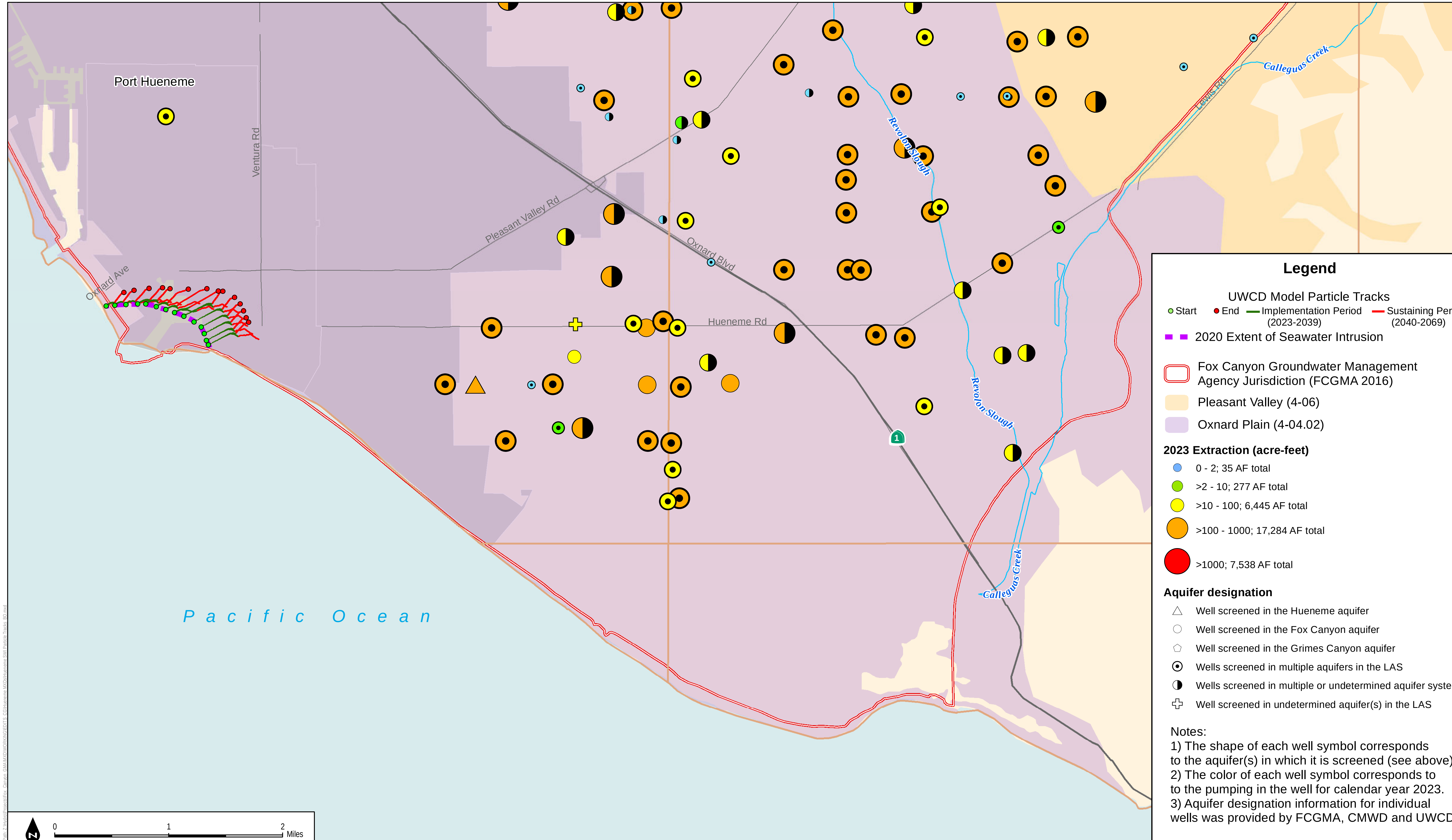

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
Climate Period 1930-1979; Climate Change Factor 2070

Figure 5-19
UWCD Particle Tracks, Hueneme Aquifer, Basin Optimization

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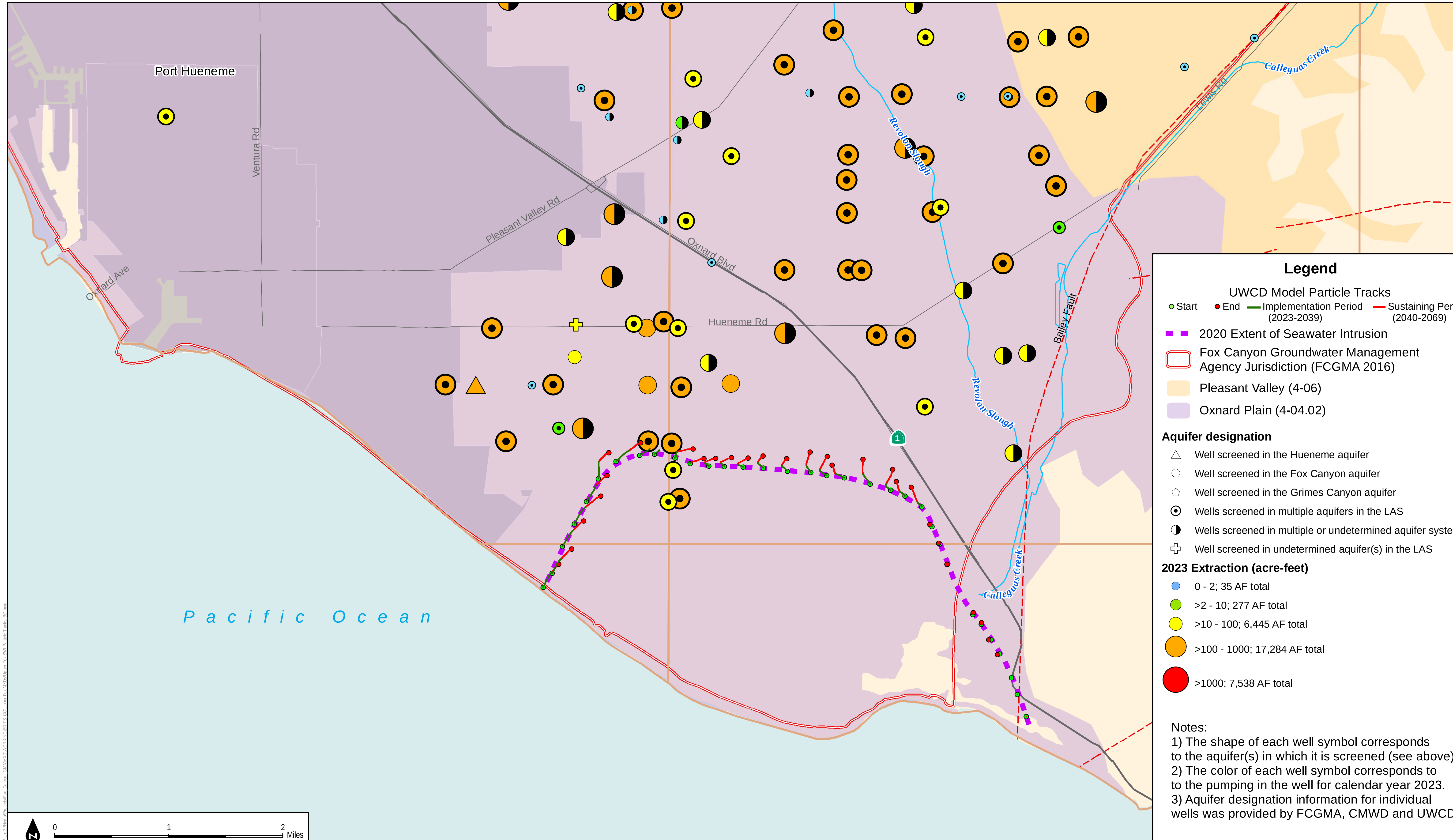

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
1930-1979 Climate Period; 2070 Climate Change Factor

Figure 5-20
UWCD Model Particle Tracks, Upper Fox Canyon Aquifer, Basin Optimization

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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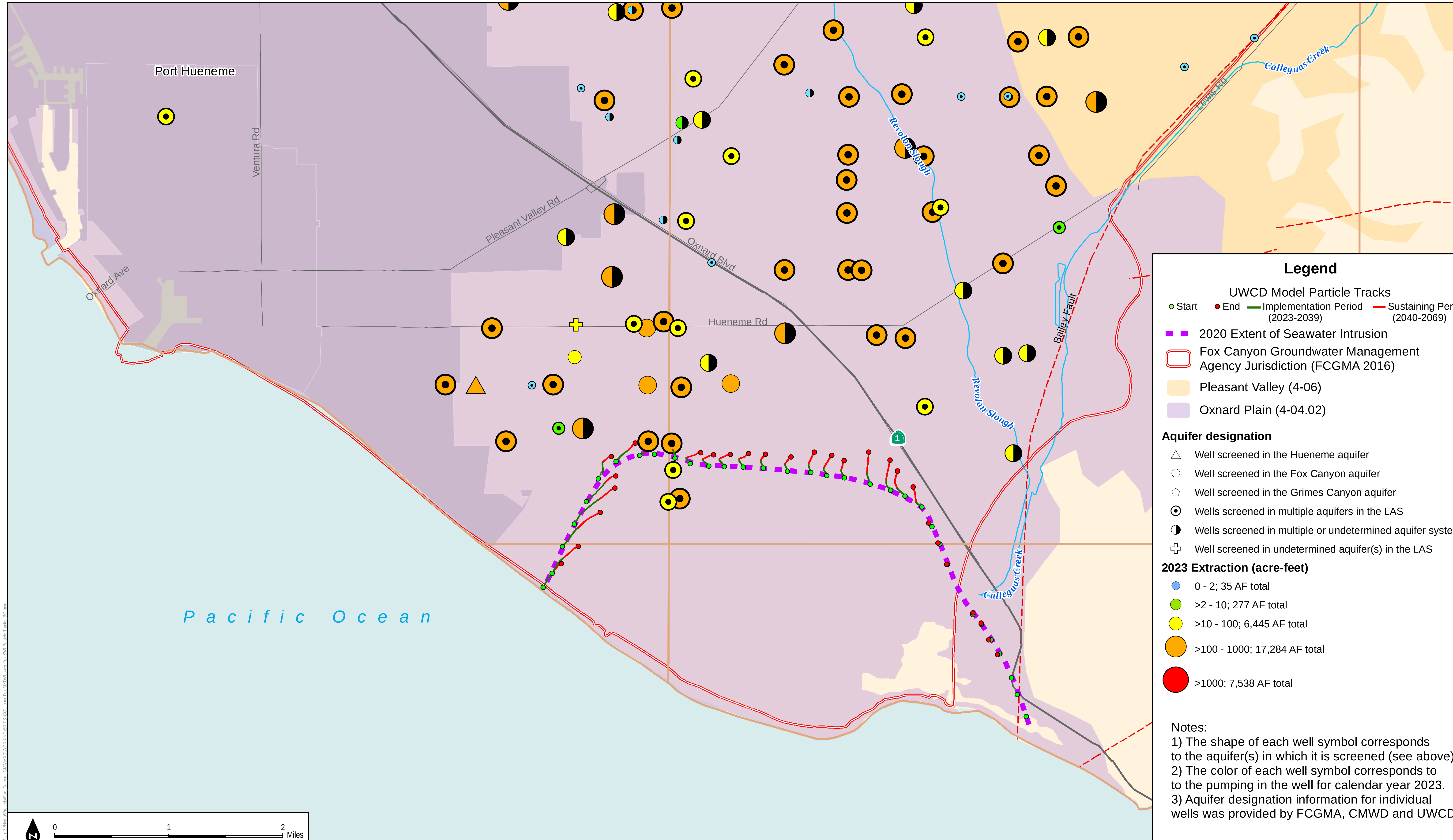

SOURCE: DWR; Ventura County; UWCD; CMWD
1930-1979 Climate Period; 2070 Climate Change Factor

DUDEK

Figure 5-21
UWCD Model Particle Tracks, Basal Fox Canyon Aquifer, Basin Optimization

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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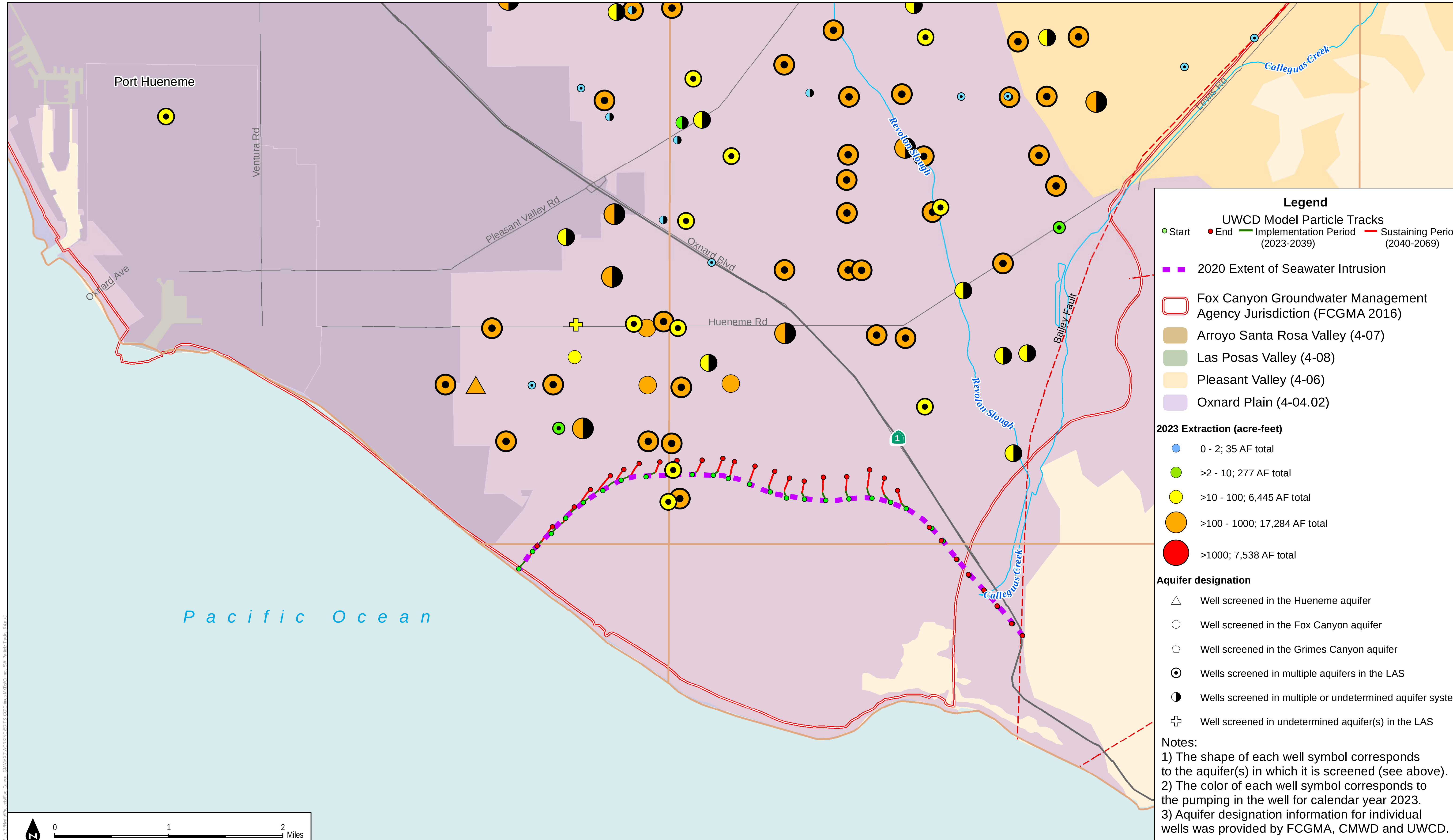

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
1930-1979 Climate Period; 2070 Climate Change Factor

Figure 5-22
UWCD Model Particle Tracks, Grimes Canyon Aquifer, Basin Optimization

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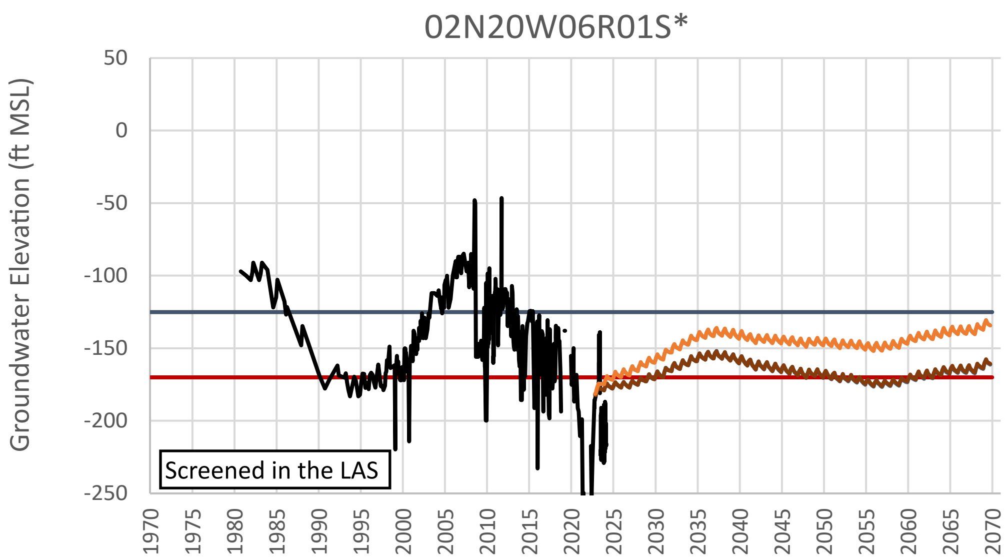

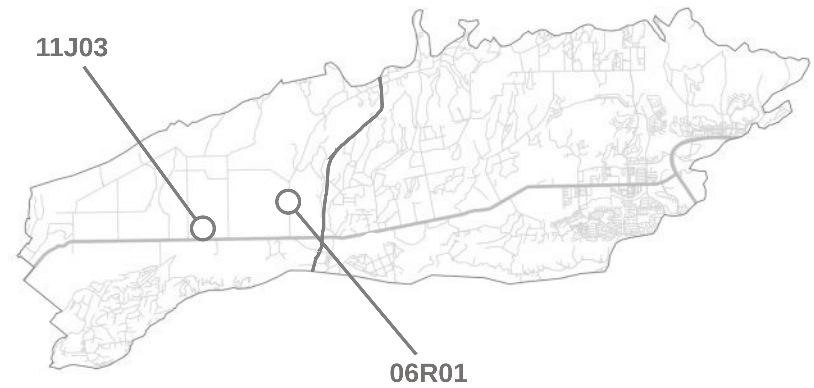

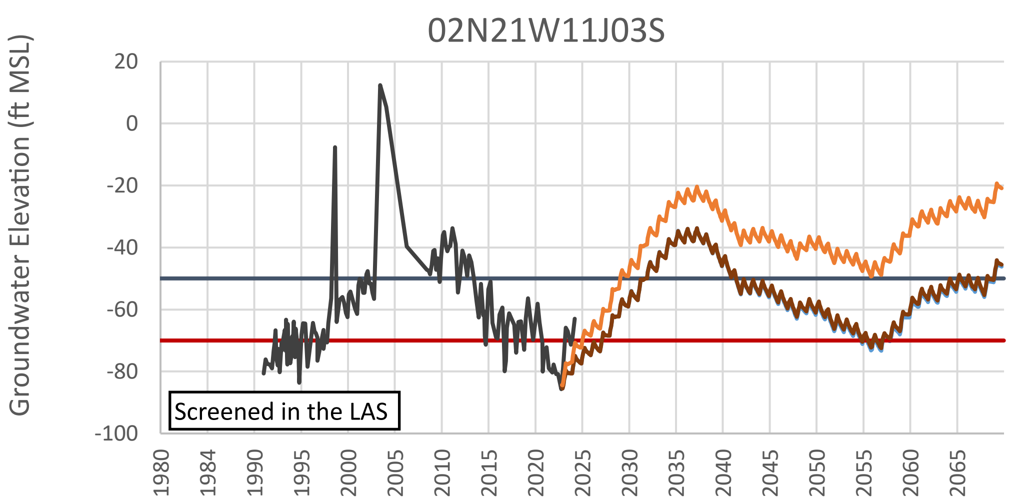

Legend

- Historical Water Level
- Minimum Threshold Water Level
- Measurable Objective Water Level

	2040 - 2069 Production (AFY) UAS	LAS
Baseline	-400	-13,100
Baseline w EBB	-400	-13,100
Projects	-300	-11,100
Projects w EBB	-300	-11,100

Note: EBB = Extraction Barrier Brackish Water Treatment Project

*Note: Simulated groundwater elevations at 06R01 were shifted by -60 ft to match the current water levels.

FIGURE 5-23a

Key Well Hydrographs in the West Las Posas Management Area

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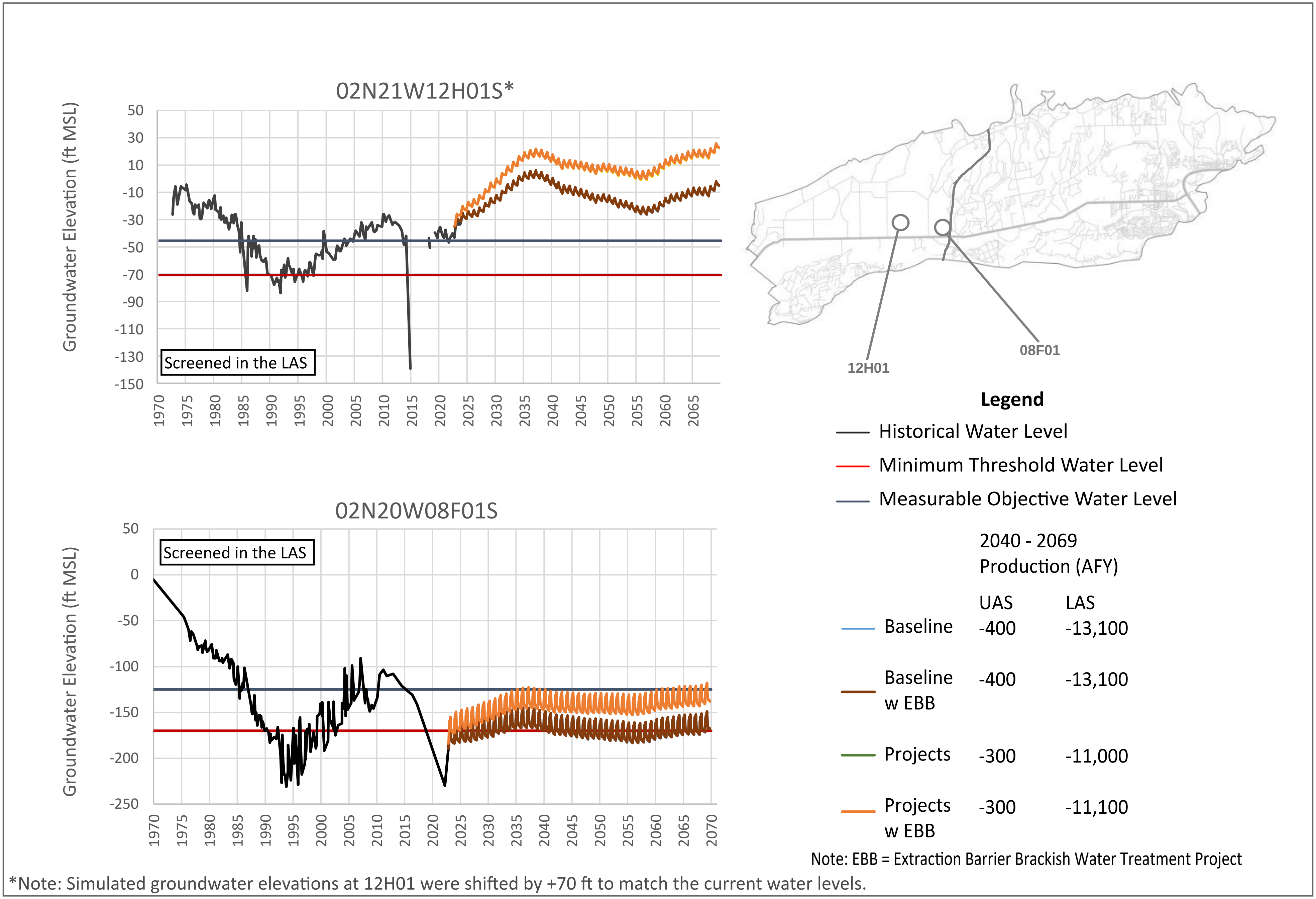

FIGURE 5-23b

Key Well Hydrographs in the West Las Posas Management Area

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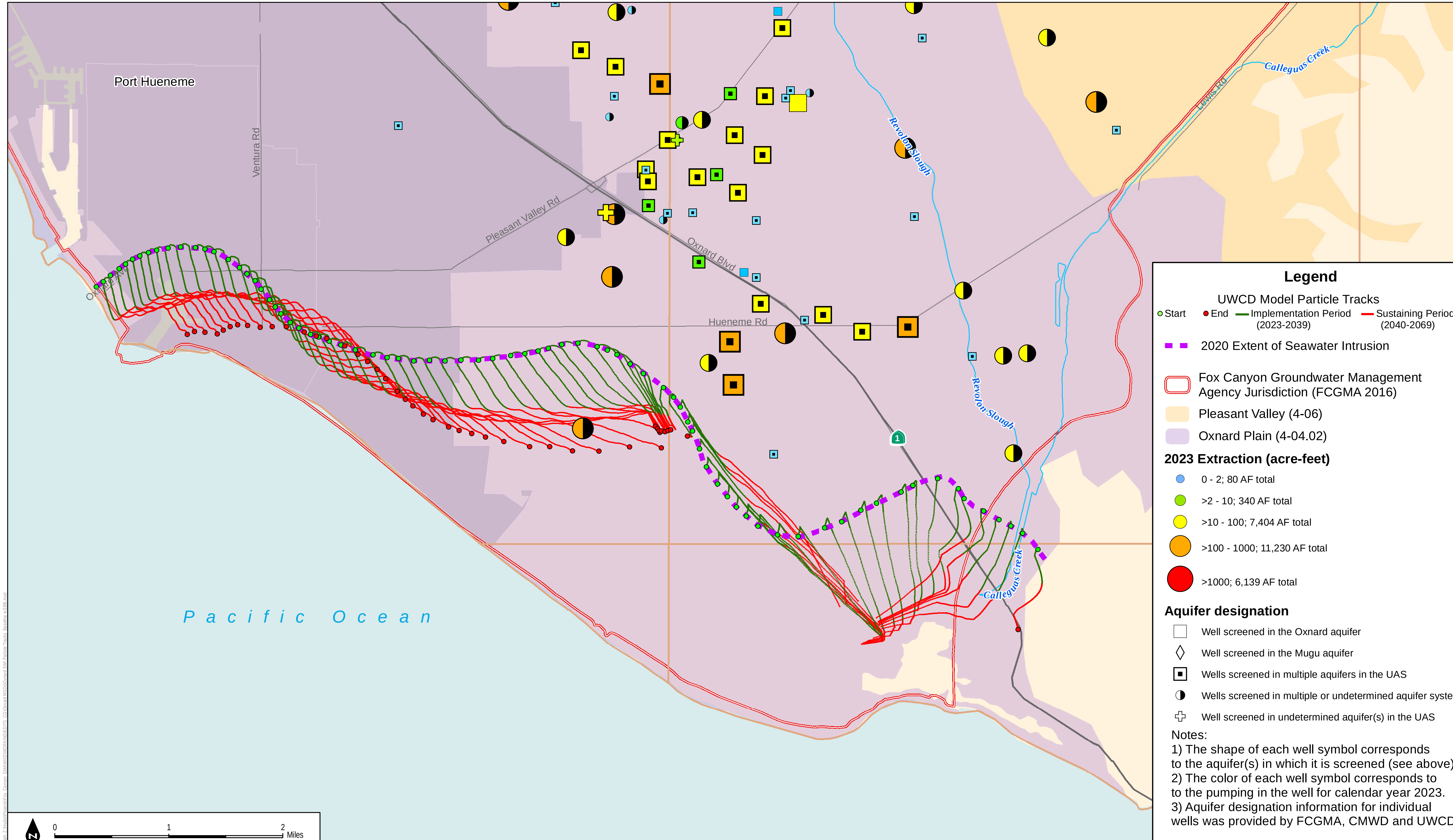

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
1930-1979 Climate Period; 2070 Climate Change Factor

Figure 5-24
UWCD Model Particle Tracks, Oxnard Aquifer, Future Baseline with EBB

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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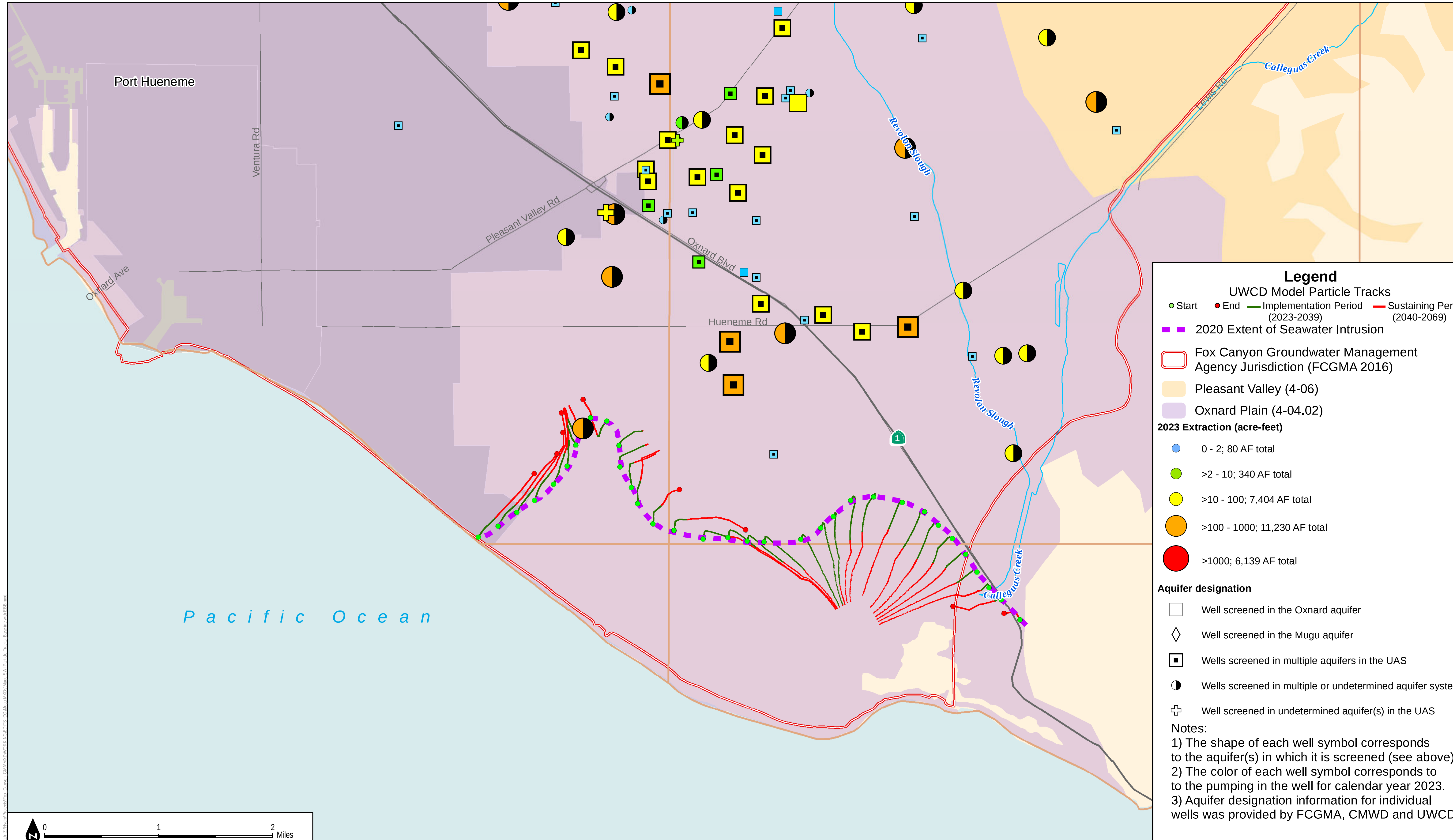

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
Climate Period 1930-1979; Climate Change Factor 2070

Figure 5-25
UWCD Model Particle Tracks, Mugu Aquifer, Future Baseline with EBB

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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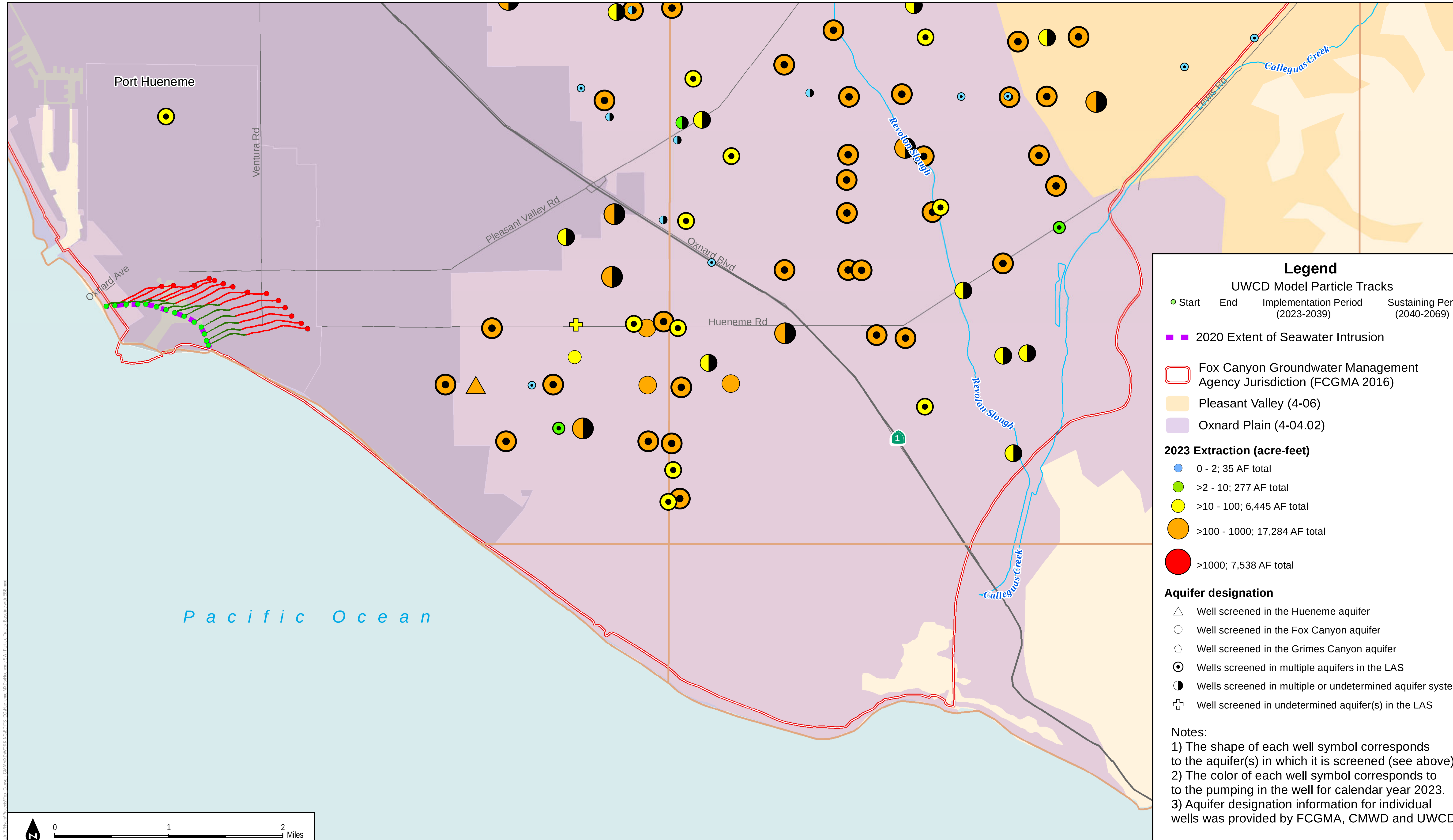

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
Climate Period 1930-1979; Climate Change Factor 2070

Figure 5-26
UWCD Model Particle Tracks, Hueneme Aquifer, Future Baseline with EBB

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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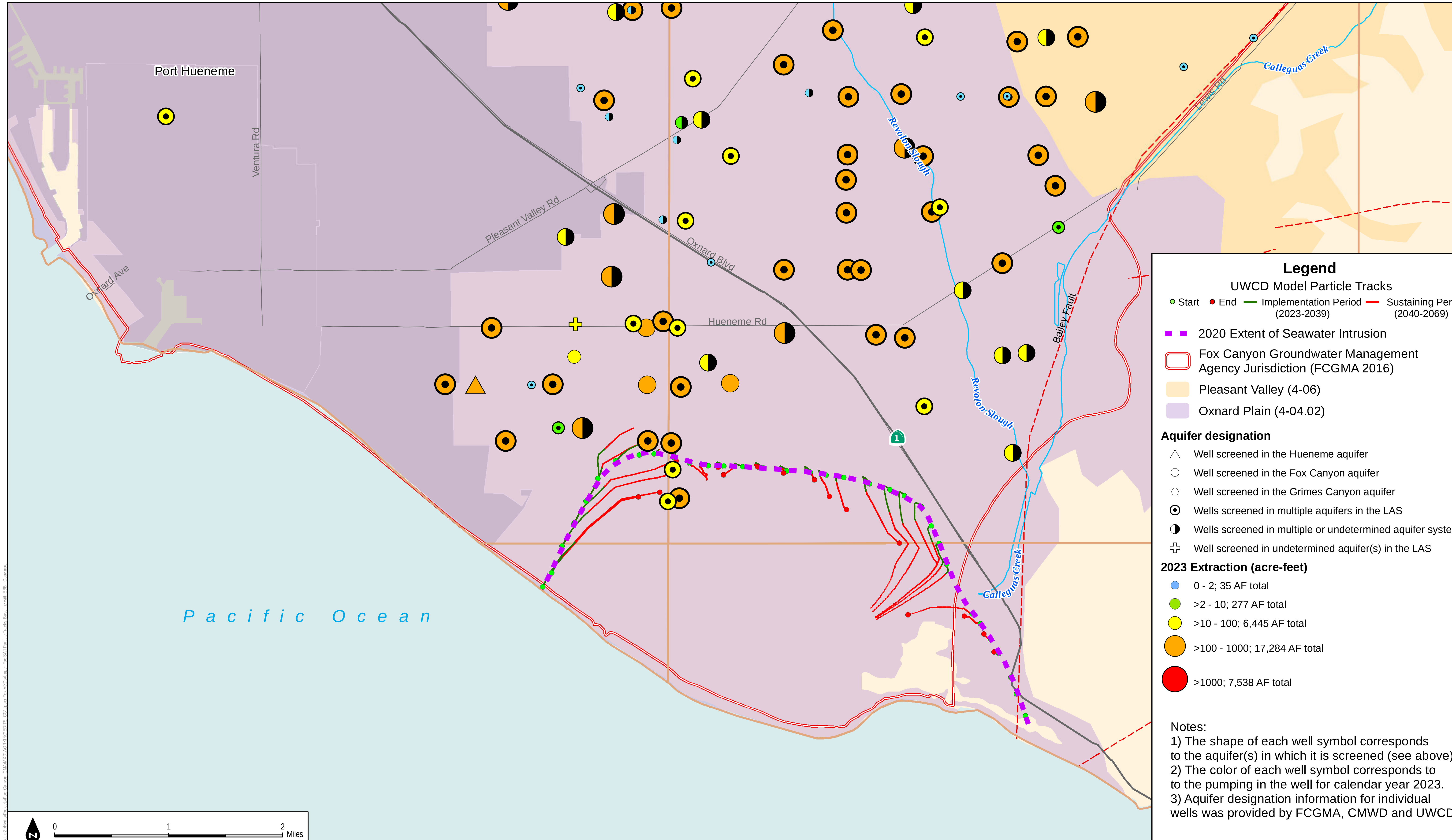

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
1930-1979 Climate Period; 2070 Climate Change Factor

Figure 5-27
UWCD Model Particle Tracks, Upper Fox Canyon Aquifer, Future Baseline

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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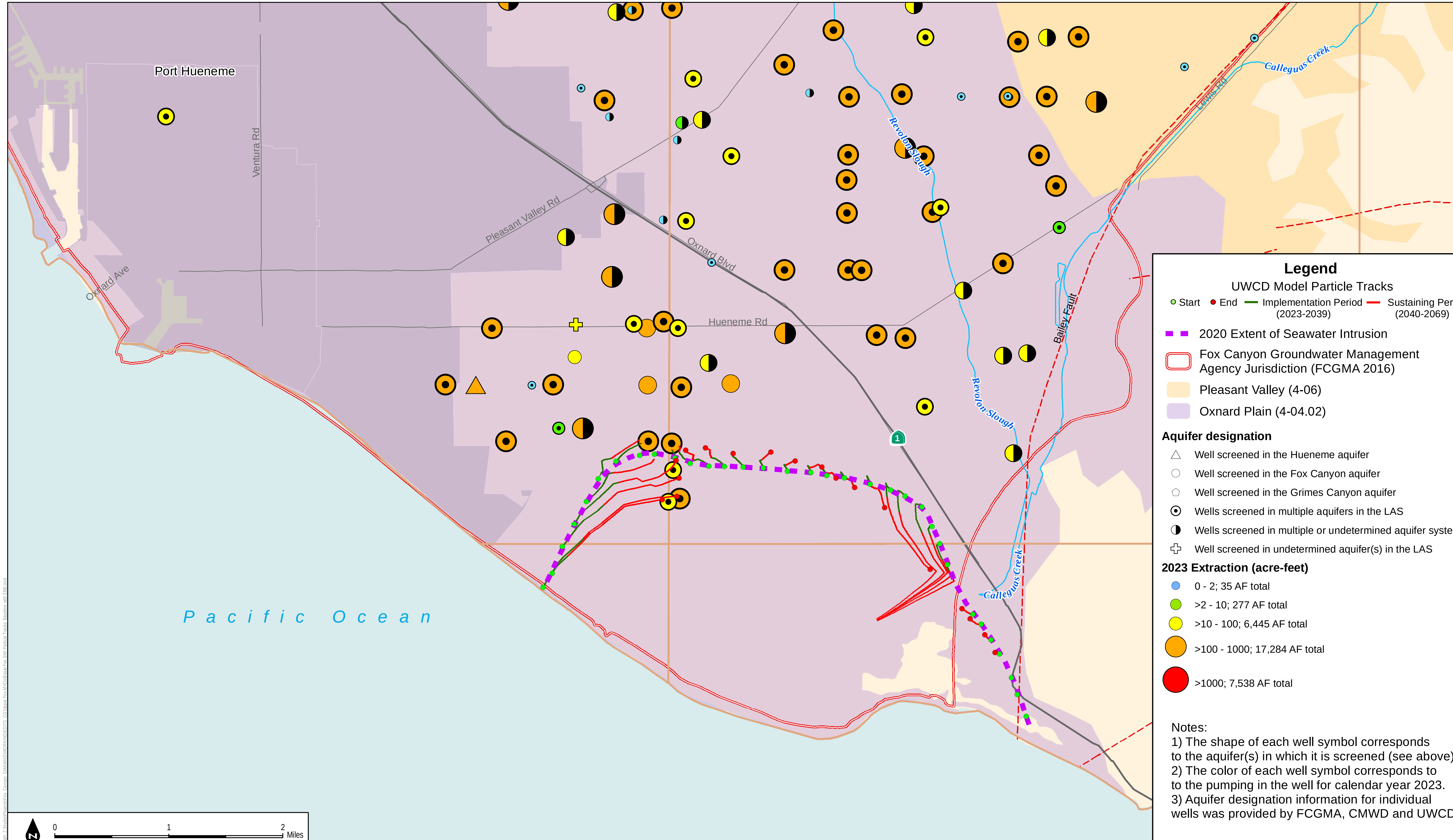

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
1930-1979 Climate Period; 2070 Climate Change Factor

Figure 5-28
UWCD Model Particle Tracks, Basal Fox Canyon Aquifer, Future Baseline

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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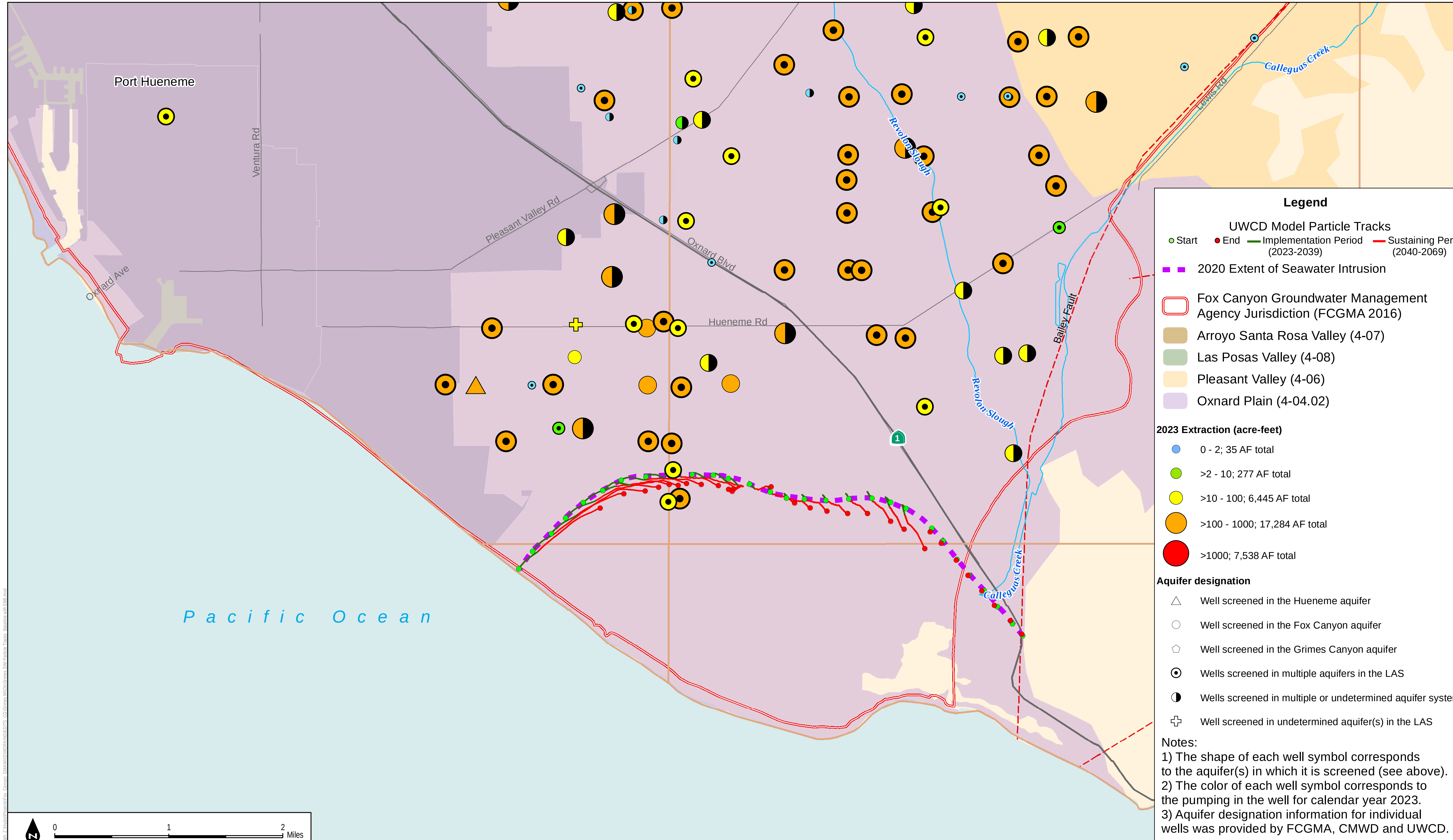

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
1930-1979 Climate Period; 2070 Climate Change Factor

Figure 5-29
UWCD Model Particle Tracks, Grimes Canyon Aquifer, Baseline with EBB Scenario

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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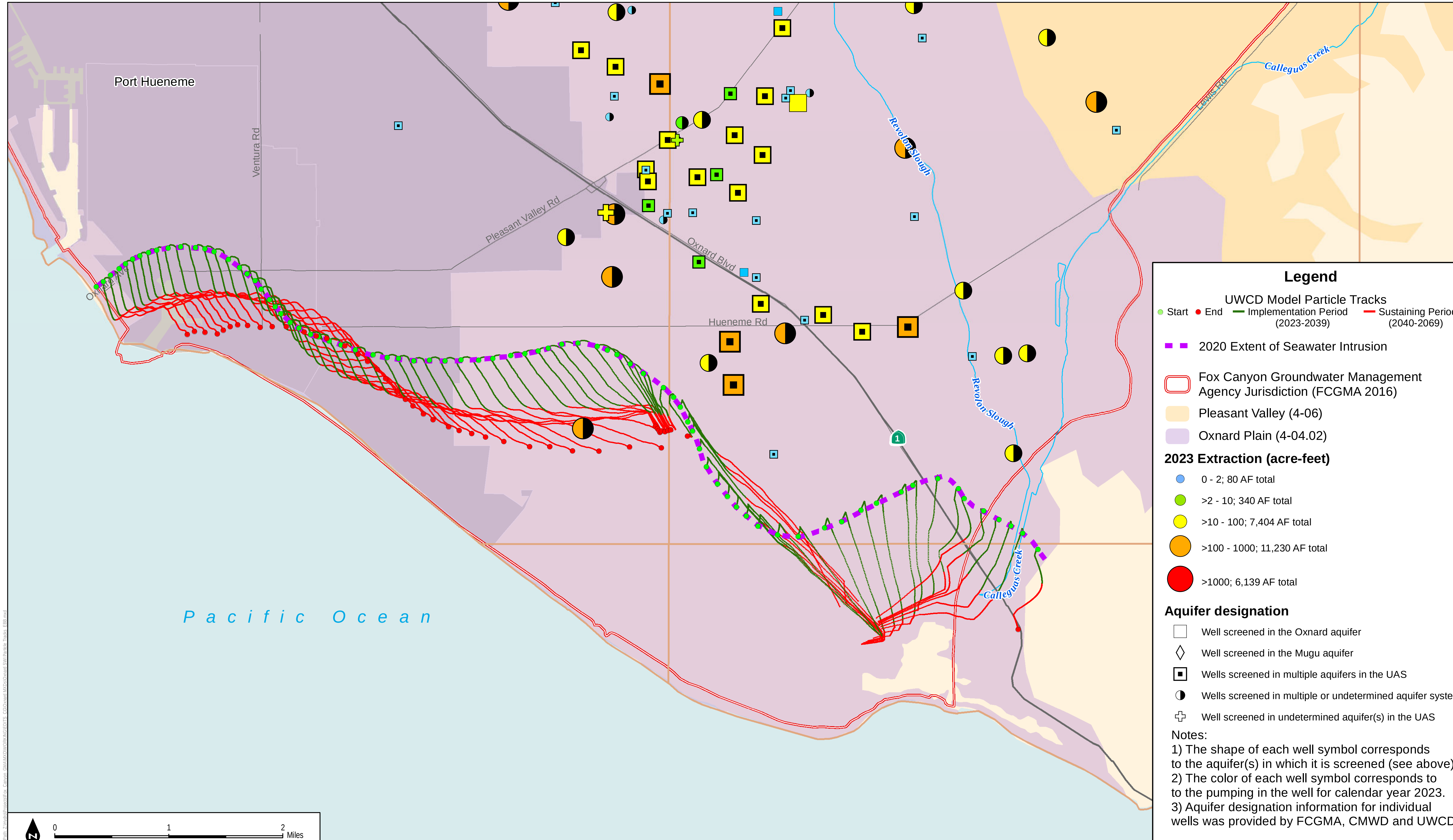

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
1930-1979 Climate Period; 2070 Climate Change Factor

Figure 5-30
UWCD Model Particle Tracks, Oxnard Aquifer, Projects with EBB

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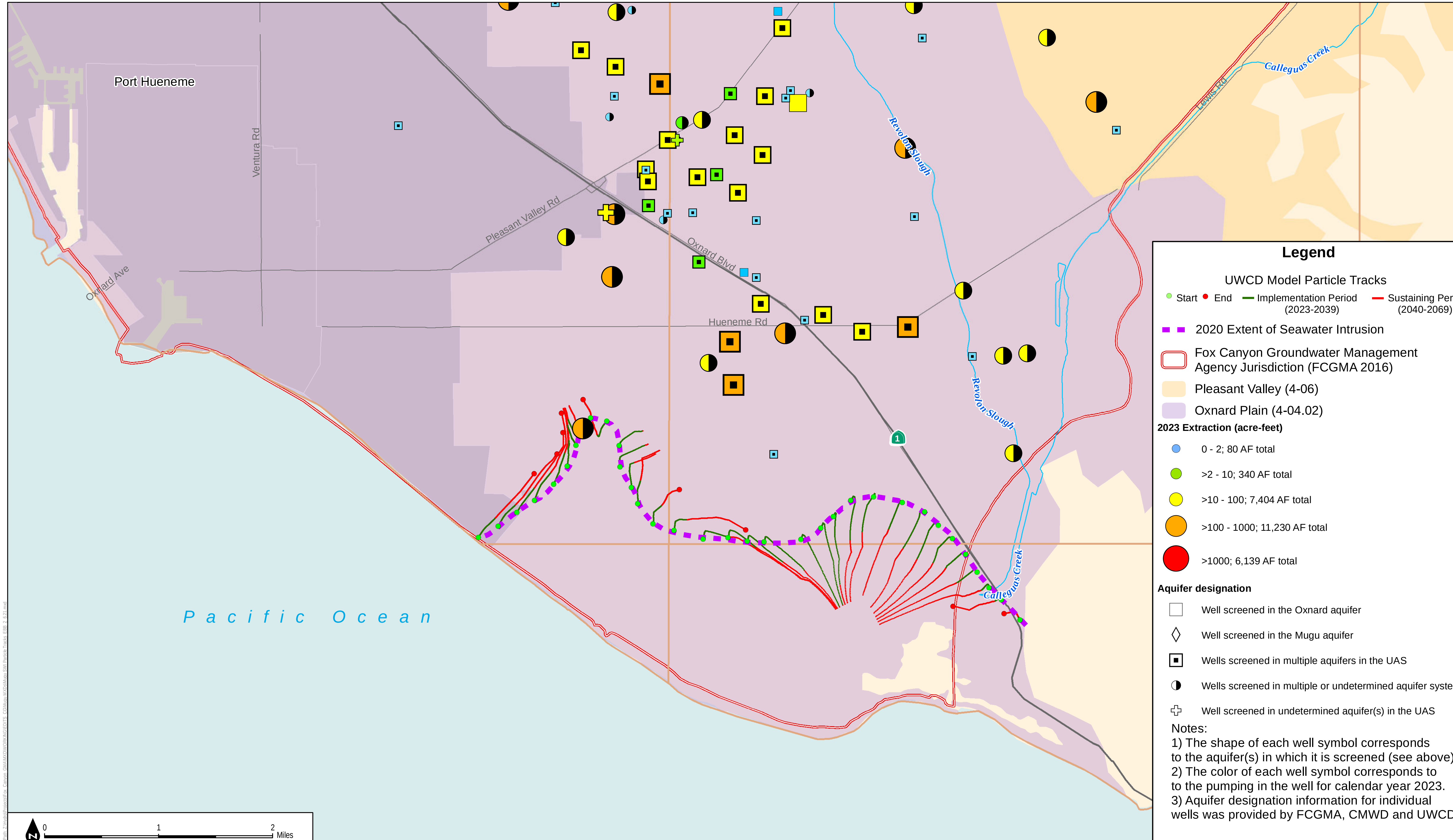

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
Climate Period 1930-1979; Climate Change Factor 2070

Figure 5-31
UWCD Model Particle Tracks, Mugu Aquifer, Projects with EBB

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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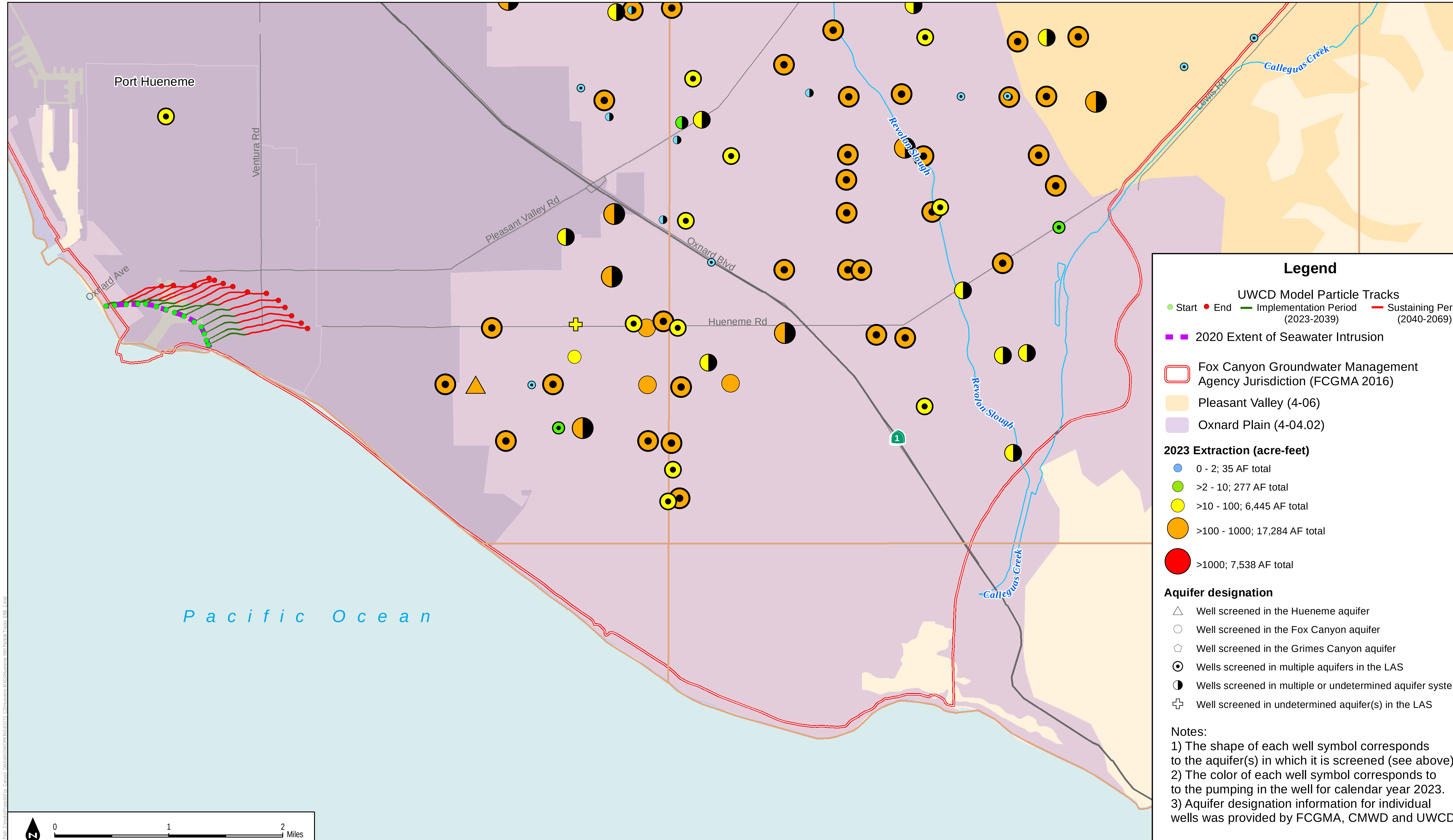

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SOURCE: DWR; Ventura County; UWCD; CMWD
Climate Period 1930-1979; Climate Change Factor 2070

Figure 5-32
UWCD Model Particle Tracks, Hueneme Aquifer, Projects with EBB

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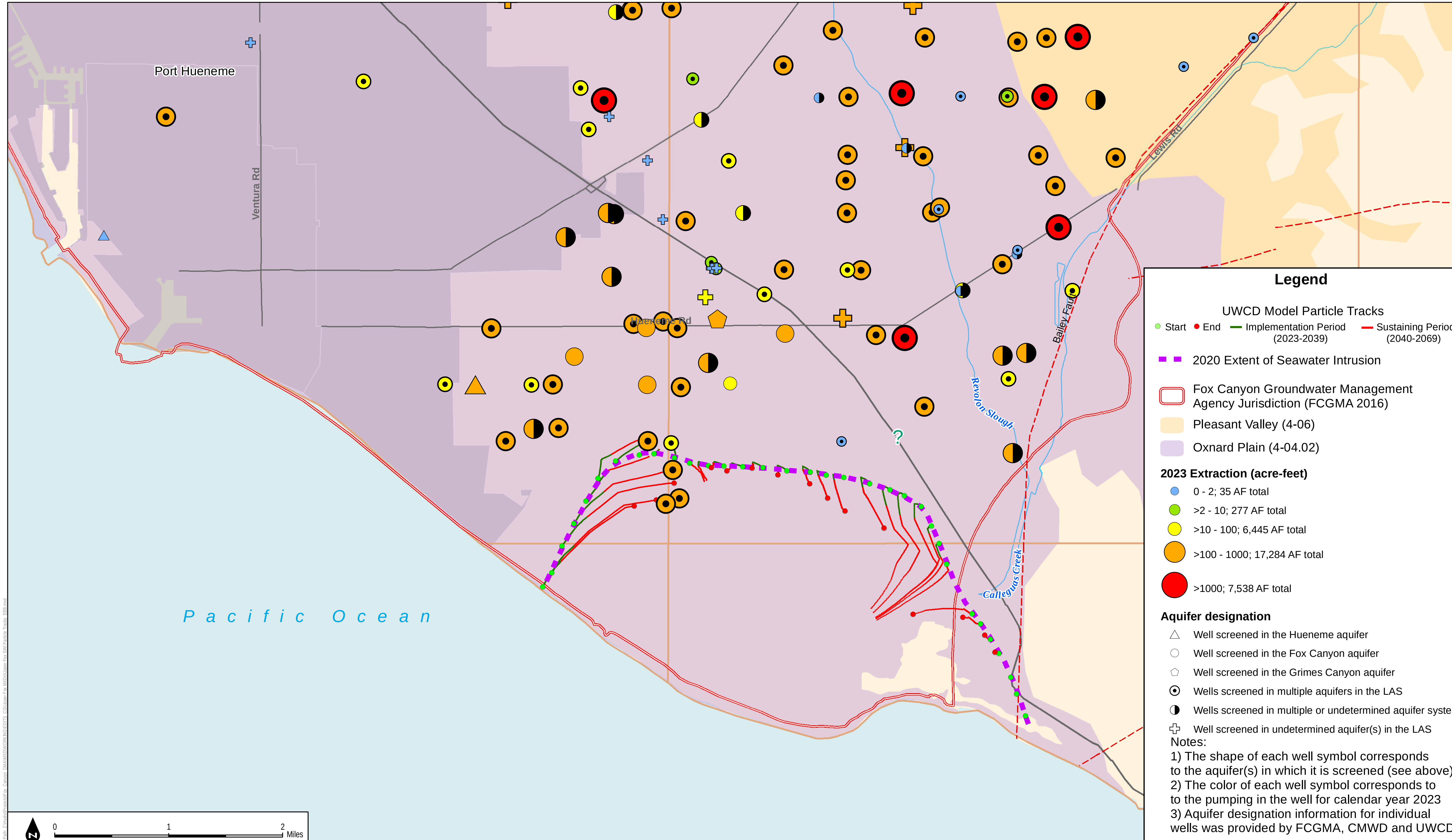

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
1930-1979 Climate Period; 2070 Climate Change Factor

Figure 5-33
UWCD Model Particle Tracks, Upper Fox Canyon Aquifer, Projects with EBB

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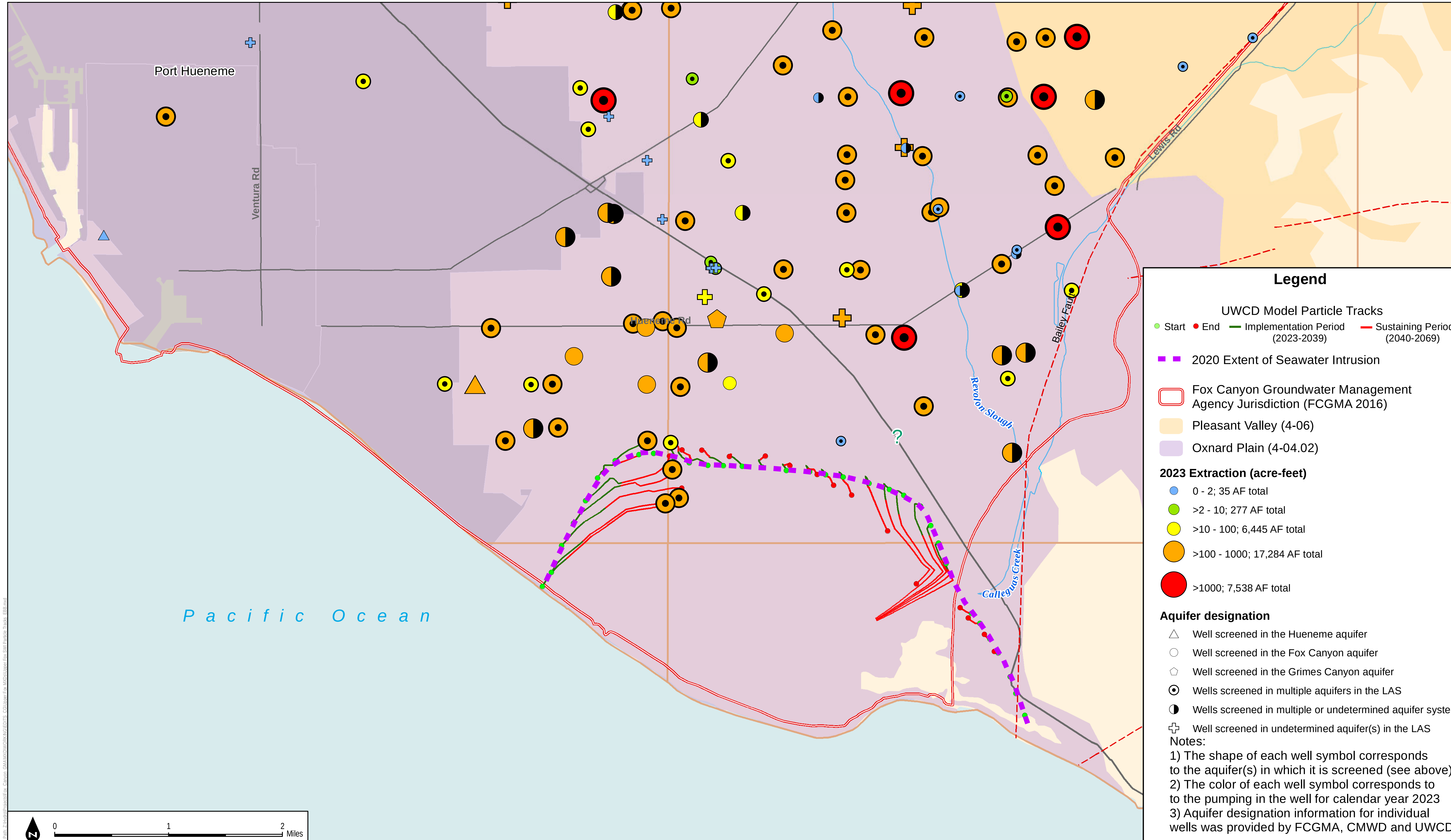

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD
1930-1979 Climate Period; 2070 Climate Change Factor

Figure 5-34
UWCD Model Particle Tracks, Basal Fox Canyon Aquifer, Projects with EBB

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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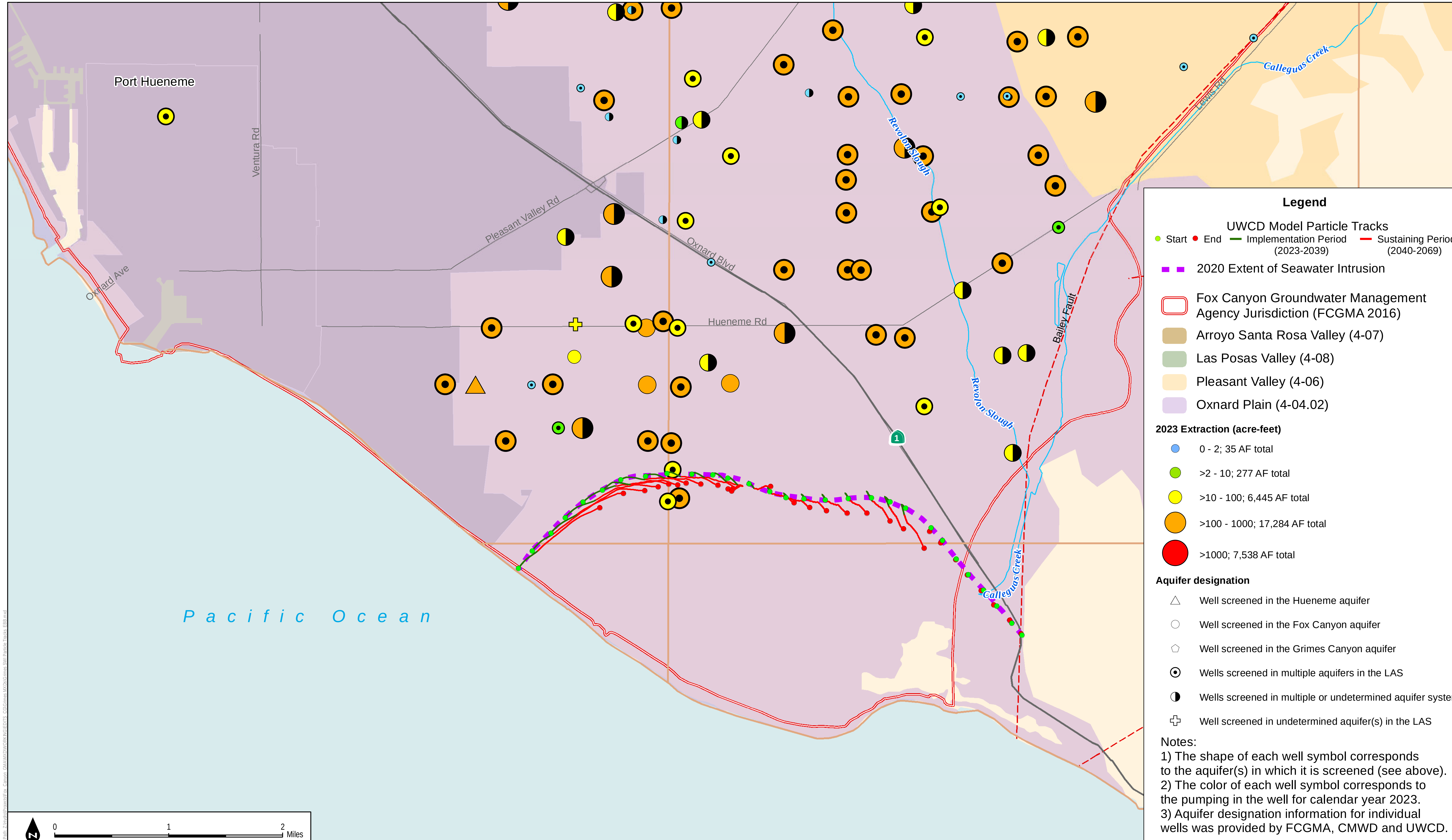

SOURCE: DWR; Ventura County; UWCD; CMWD
1930-1979 Climate Period; 2070 Climate Change Factor

DUDEK

Figure 5-35
UWCD Model Particle Tracks, Grimes Canyon Aquifer, Projects with EBB

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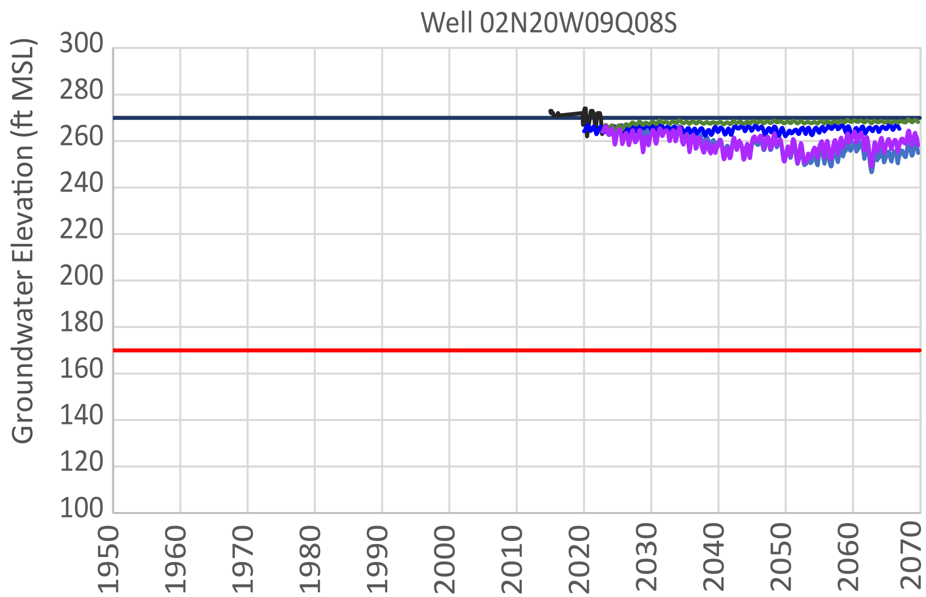

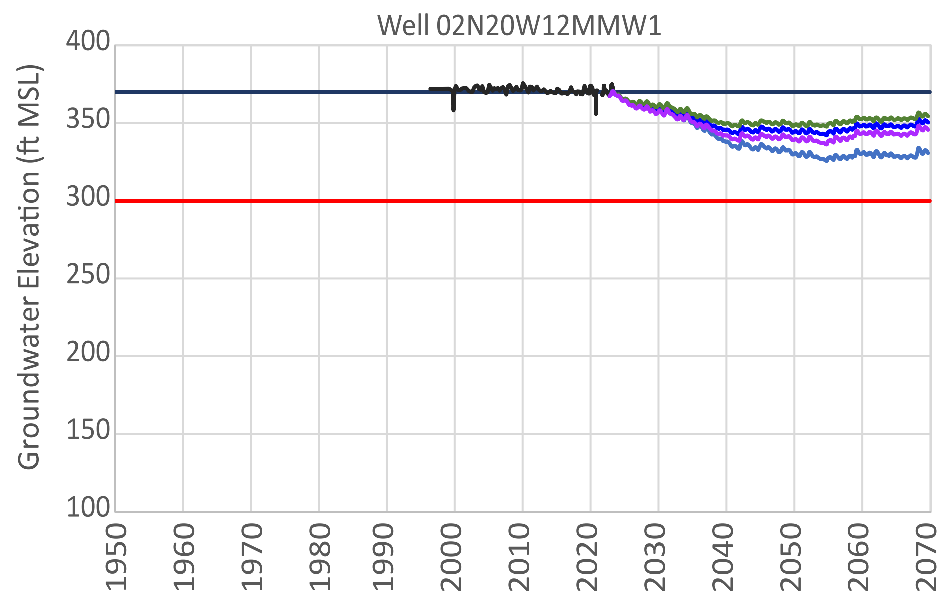

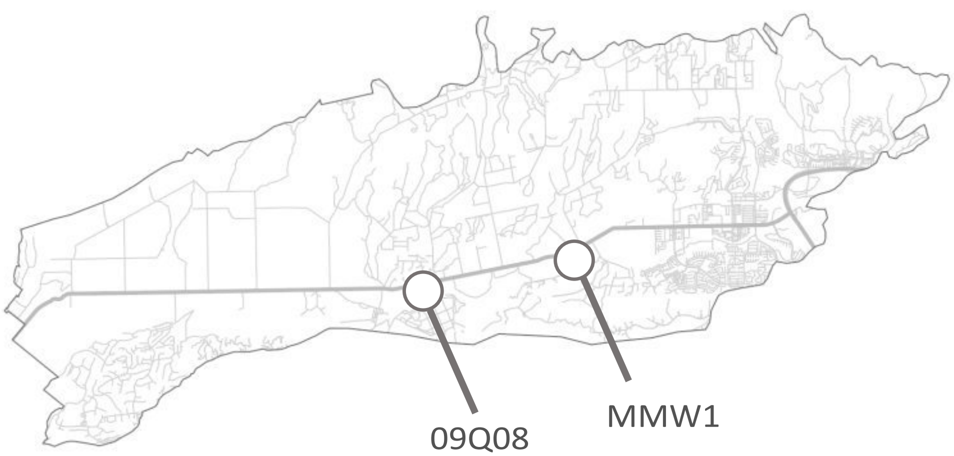

Legend

- Historical Water Level
- Minimum Threshold Water Level
- Measurable Objective Water Level

	2040 - 2069 Production (AFY)	
	Epworth	ELPMA
Future Baseline	-1,470	-21,070
NNP1	-1,330	-19,230
NNP2	-1,330	-19,230
Projects	-1,330	-19,230

Note: NNP = No New Projects

FIGURE 5-36a

Key Well Hydrographs in the East Las Posas Management Area - Shallow Alluvial Aquifer

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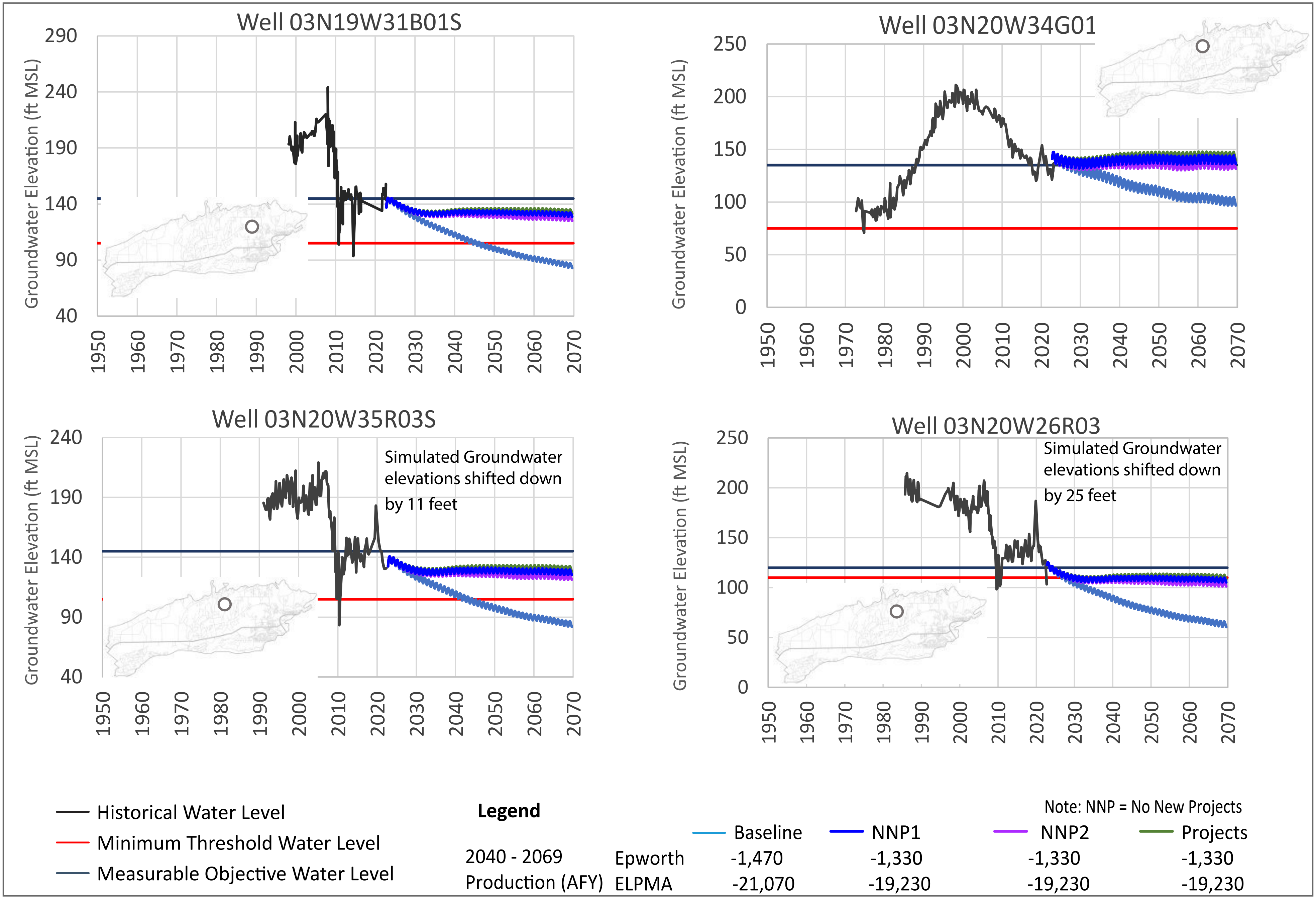

FIGURE 5-36b

Key Well Hydrographs in the East Las Posas Management Area - Fox Canyon Aquifer

Groundwater Sustainability Plan for the Las Posas Valley Basin: First Periodic Evaluation

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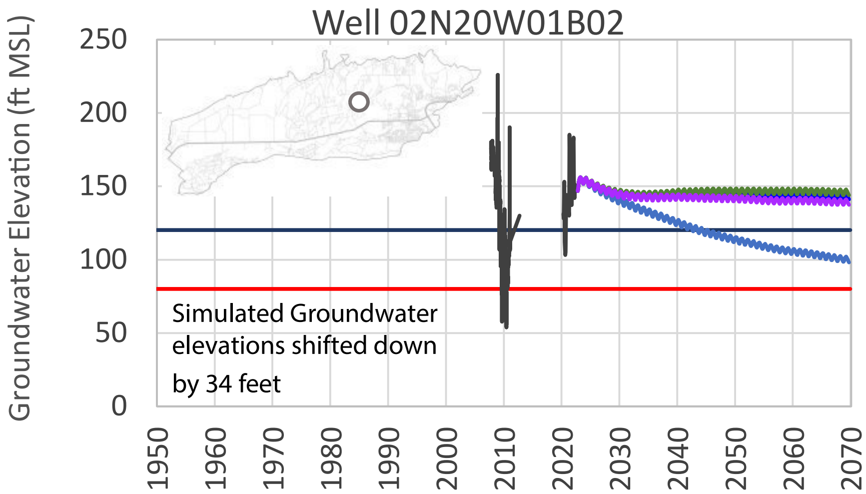

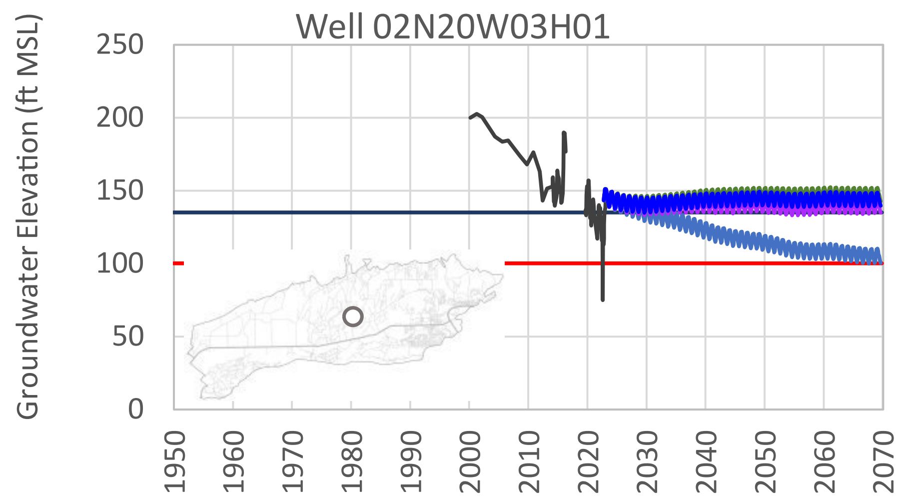

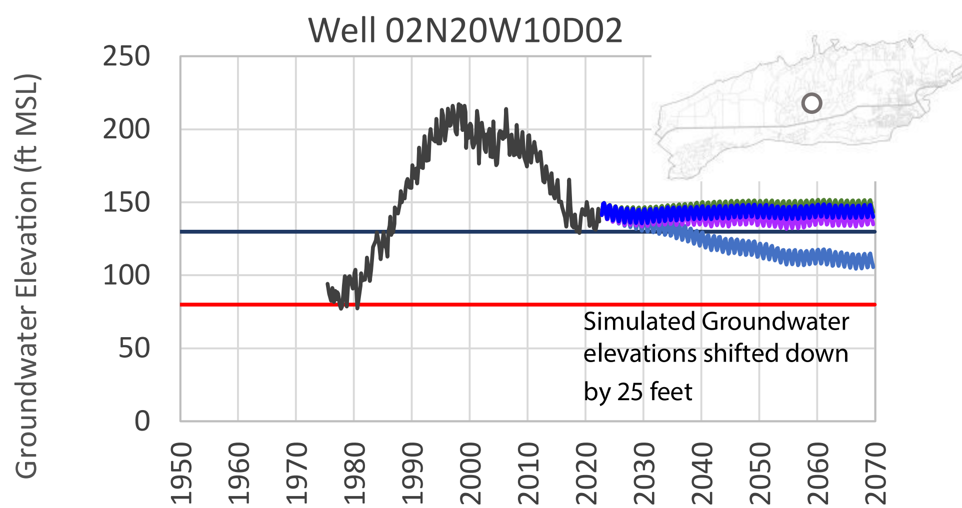

Legend

- Historical Water Level
- Minimum Threshold Water Level
- Measurable Objective Water Level

	2040 - 2069 Production (AFY)	
	Epworth	ELPMA
Future Baseline	-1,470	-21,070
NNP1	-1,330	-19,230
NNP2	-1,330	-19,230
Projects	-1,330	-19,230

Note: NNP = No New Projects

FIGURE 5-36c

Key Well Hydrographs in the East Las Posas Management Area - Fox Canyon Aquifer

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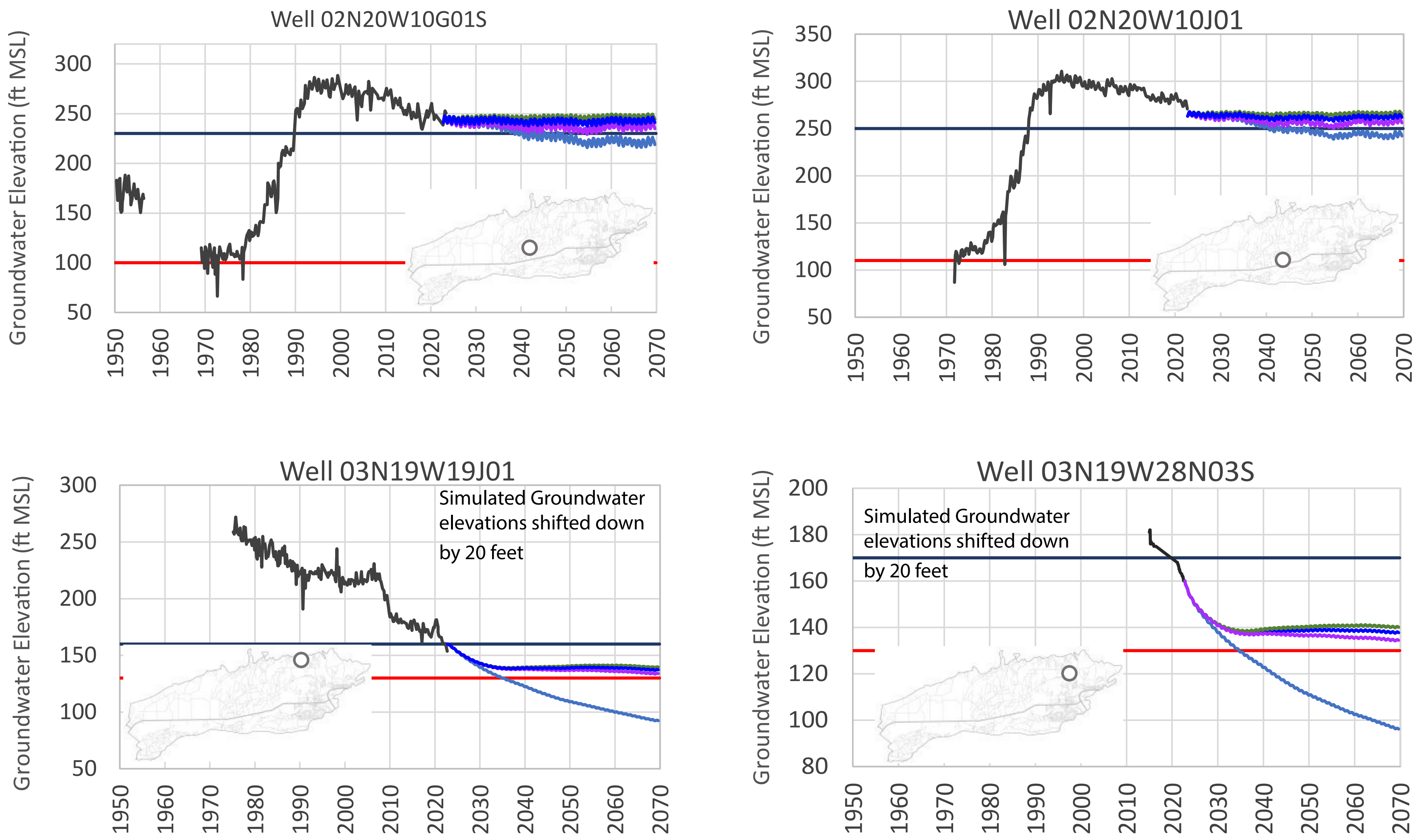

Historical Water Level
Minimum Threshold Water Level
Measurable Objective Water Level

Legend

Note: NNP = No New Projects

2040 - 2069 Production (AFY)		Baseline	NNP1	NNP2	Projects
	Epworth	-1,470	-1,330	-1,330	-1,330
	ELPMA	-21,070	-19,230	-19,230	-19,230

FIGURE 5-36d

Key Well Hydrographs in the East Las Posas Management Area - Fox Canyon Aquifer

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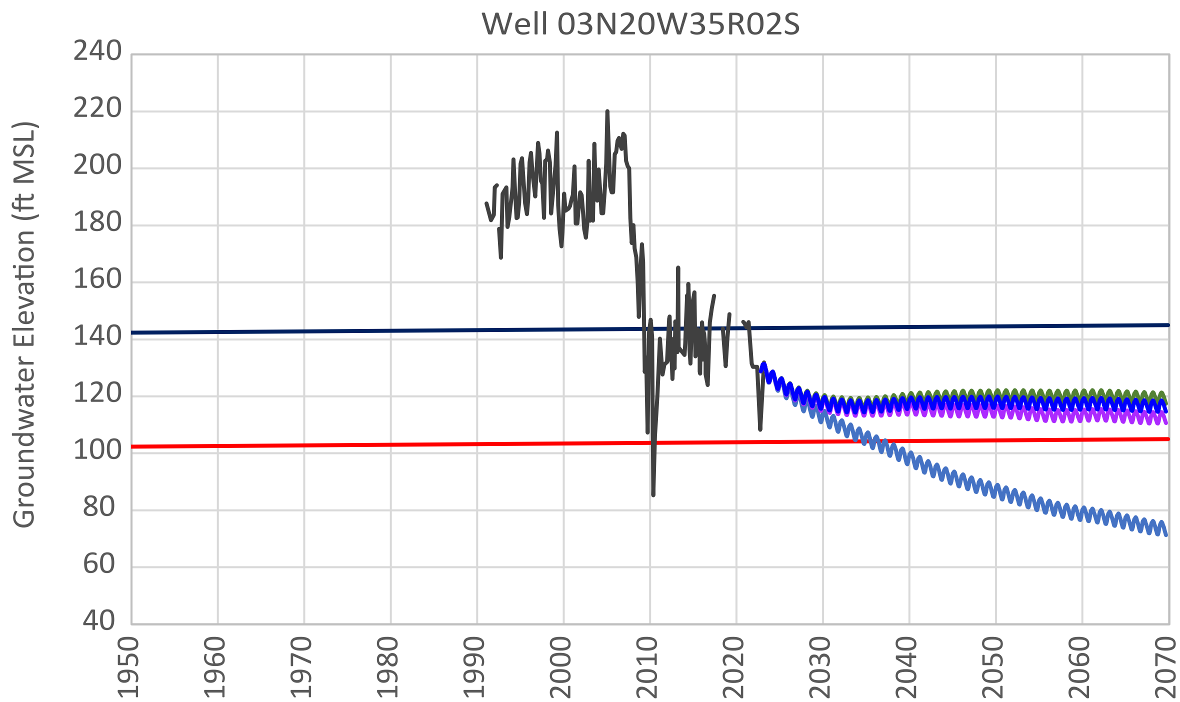

Legend

- Historical Water Level
- Minimum Threshold Water Level
- Measurable Objective Water Level

	2040 - 2069 Production (AFY)	
	ELPMA	Epworth Gravels
Future Baseline	-1,470	-21,070
NNP1	-1,330	-19,230
NNP2	-1,330	-19,230
Projects	-1,330	-19,230

Note: NNP = No New Projects

Note: Simulated Groundwater elevations shifted down by 23 feet

FIGURE 5-36e

Key Well Hydrographs in the East Las Posas Management Area - Fox Canyon Aquifer

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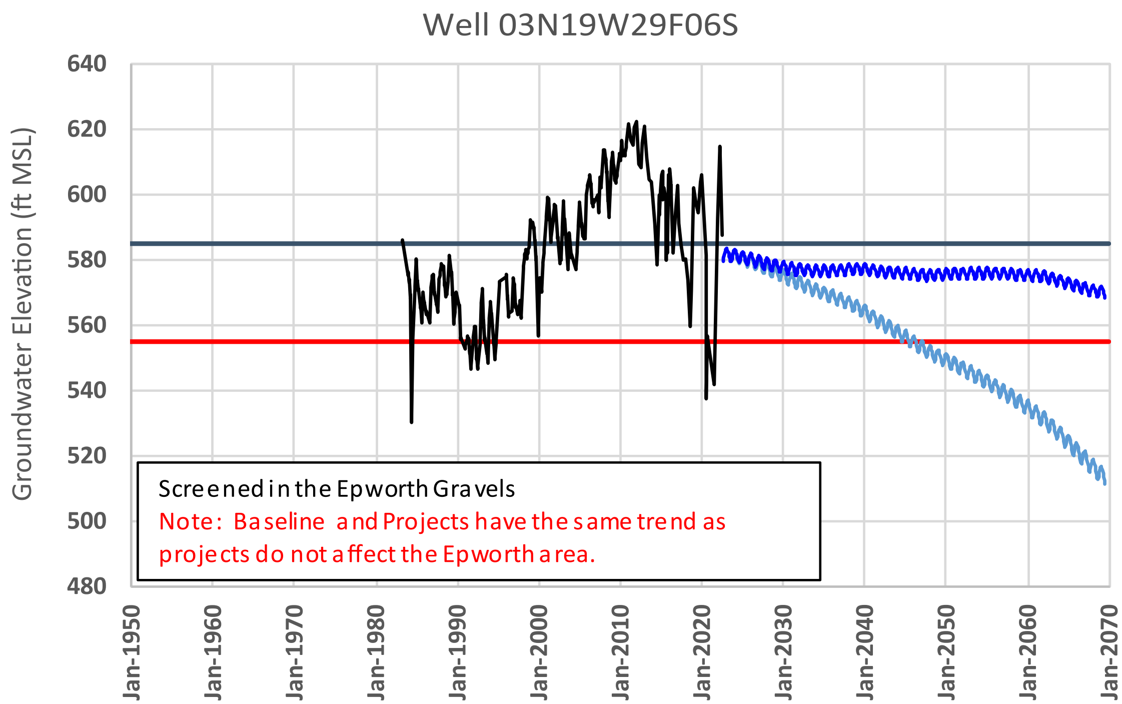

Legend

- Historical Water Level
- Minimum Threshold Water Level
- Measurable Objective Water Level

	2040 - 2069 Production (AFY) Epworth	ELPMA
Future Baseline	-1,470	-21,070
NNP1	-1,330	-19,230
NNP2	-1,330	-19,230
Projects	-1,330	-19,230

Note: NNP = No New Projects

FIGURE 5-37

Key Well Hydrographs in the Epworth Gravels Management Area

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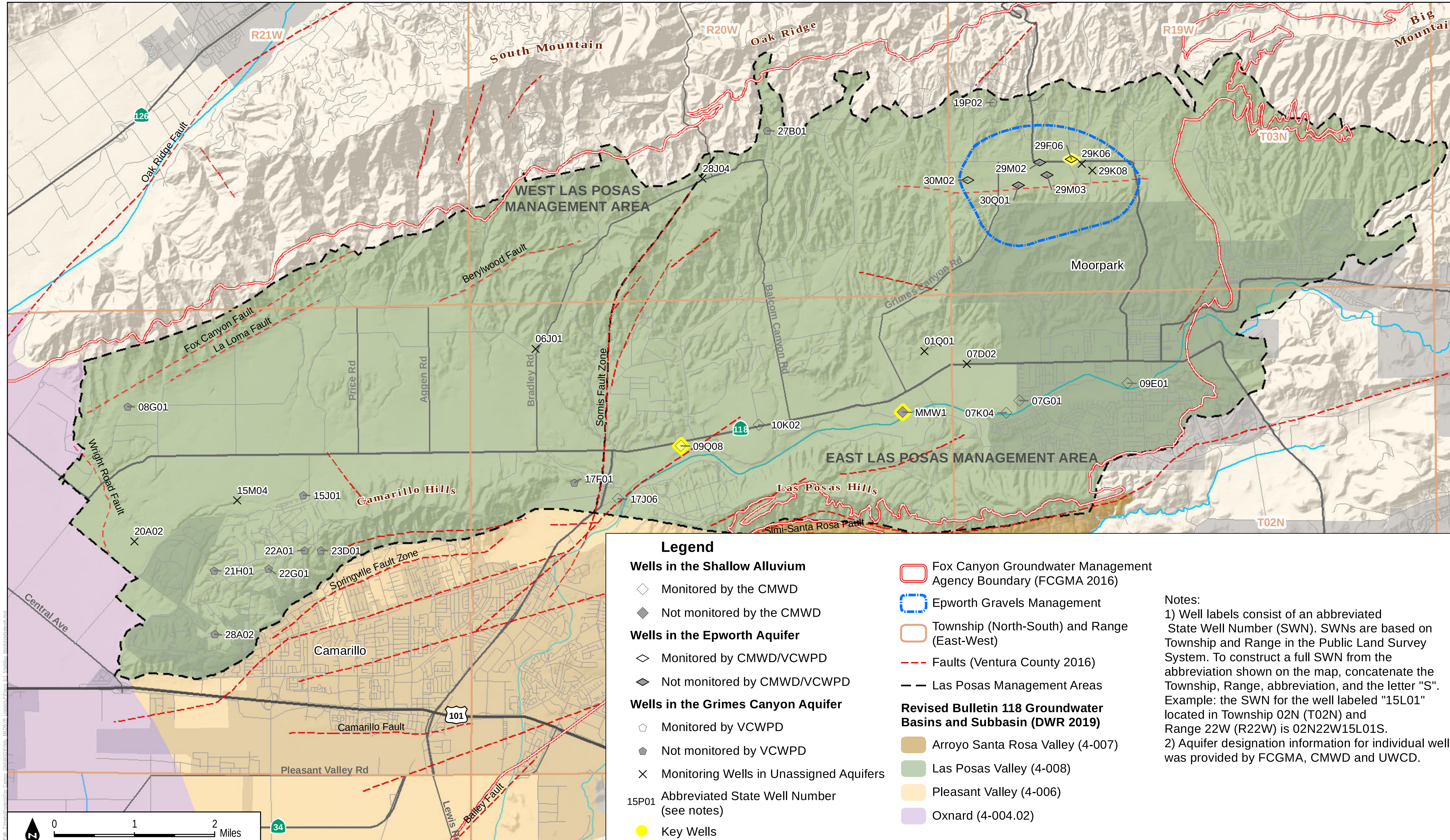

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD

FIGURE 6-1

Monitoring and Non-Monitoring Wells Screened in the Shallow Alluvial Aquifer, Epworth Gravels, and Grimes Canyon Aquifer in the Las Posas Valley Basin

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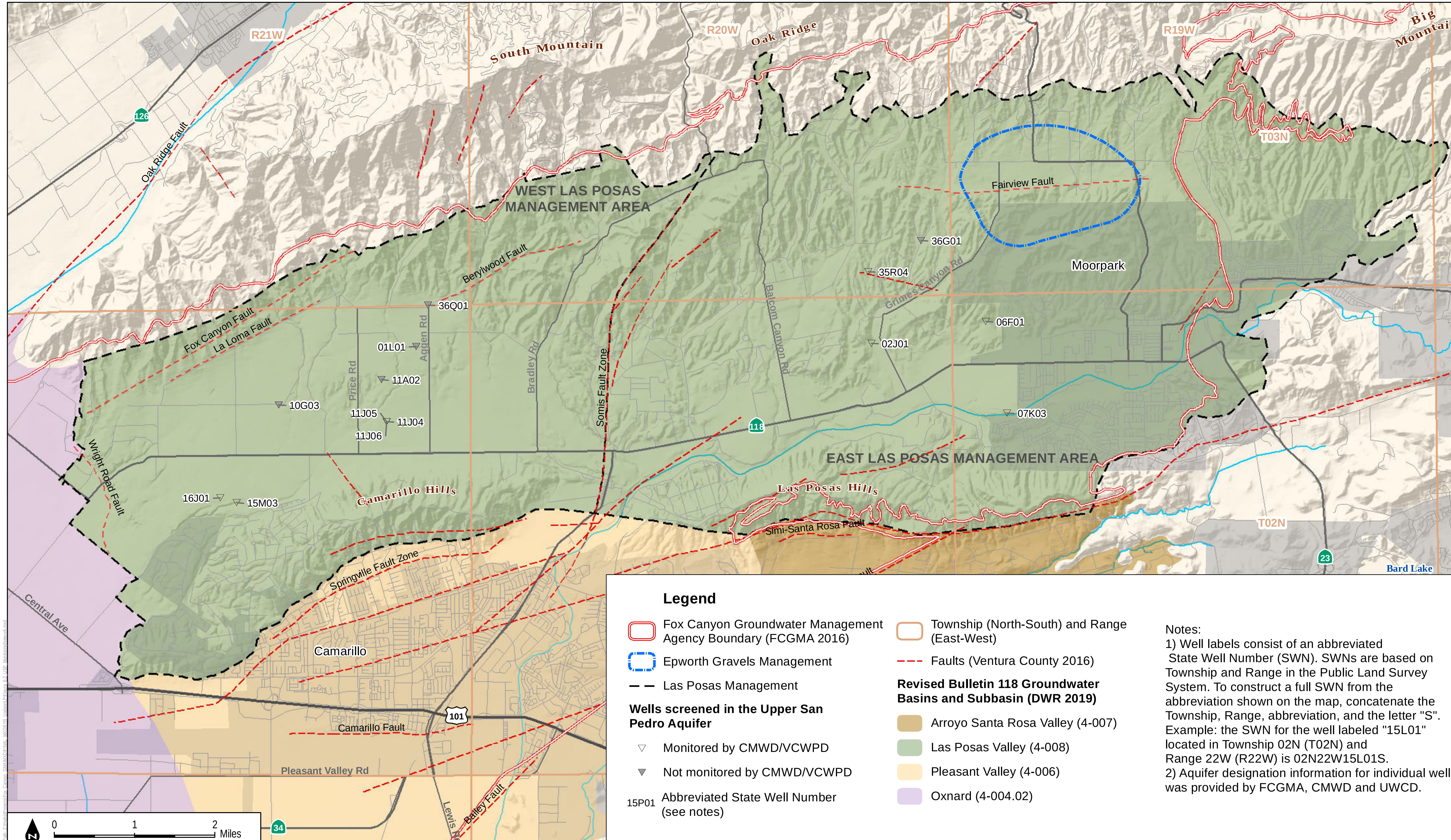

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD

FIGURE 6-2

Monitoring Wells Screened in the Upper San Pedro Aquifer in the Las Posas Valley Basin

Groundwater Sustainability Plan for the Las Posas Valley Basin: First 5-Year Evaluation

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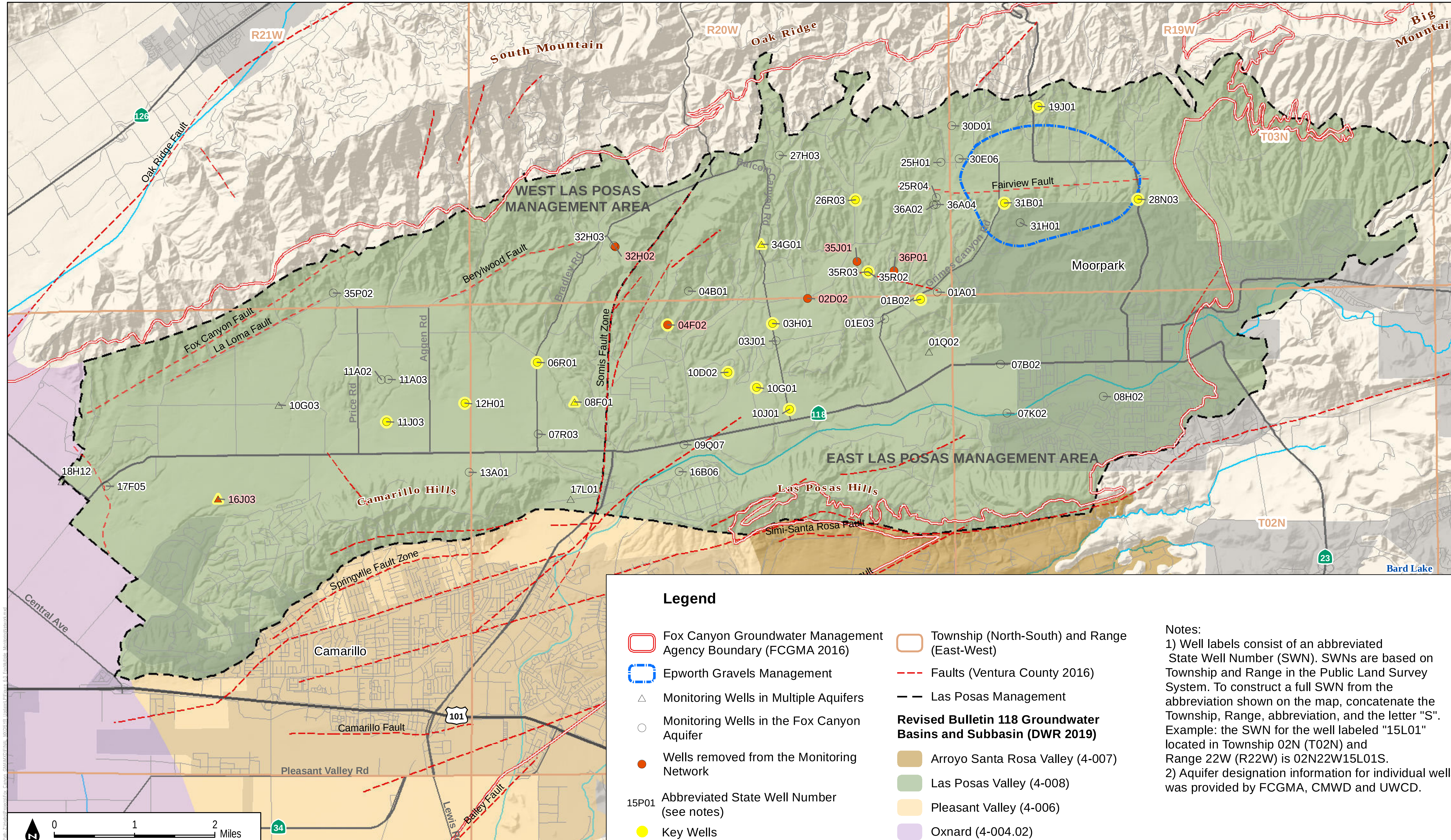

DUDEK

SOURCE: DWR; Ventura County; UWCD; CMWD

FIGURE 6-3

Monitoring Wells Screened in the Fox Canyon Aquifer in the Las Posas Valley Basin

Groundwater Sustainability Plan for the Las Posas Valley Basin: First 5-Year Evaluation

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Appendix A

Investigation of the Relationship Between Native Flows in Arroyo Simi-Las Posas and Potential Groundwater Dependent Ecosystems

A.1 Department of Water Resources Recommended Corrective Action

In its approval of the Las Posas Valley Basin (LPVB) Groundwater Sustainability Plan (GSP), the California Department of Water Resources provided one recommended corrective action related to groundwater-surface water connections in the East Las Posas Management Area (ELPMA) (DWR 2022):

> Investigate the hydraulic connectivity of the Arroyo Simi-Las Posas, shallow aquifers, and principal aquifer to understand the reliance of the potential GDEs [groundwater-dependent ecosystems] on the native flow and depletion of interconnected surface water bodies. Also, identify specific locations where Arroyo Simi-Las Posas is connected to the underlying aquifer and conduct necessary investigation to quantify the depletion of interconnected surface water along with the timing of depletions.
>
> Provide a schedule detailing when and how the data gaps identified in the GSP related to shallow groundwater monitoring near surface water bodies will be fulfilled and confirm the identification of potential GDEs.

In order to refine the understanding of the surface water and groundwater conditions that contributed to the development of vegetation and in-stream habitat on Arroyo Simi-Las Posas and address the question of the reliance of the potential GDEs on the native flow in Arroyo Simi-Las Posas, Fox Canyon Groundwater Management Agency conducted an additional review of historical aerial photographs, groundwater production rates, and groundwater elevations.

A.2 Historical Aerial Photograph Review

Ventura County aerial photographs indicate that Arroyo Simi-Las Posas in the LPVB was dry prior to the 1970s (FCGMA 2019). By 2016, however, vegetation lined much of the reach of Arroyo Las Posas within the LPVB, and, in several places, vegetation density exceeded 75% (Figure A1). For the Periodic Evaluation, Fox Canyon Groundwater Management Agency reviewed a series of aerial photographs from 1969 through 2023 to examine the timing of vegetation growth along Arroyo Simi Las Posas and changes since the GSP was prepared (Figures A2 through A5). Review of the 2023 aerial photograph indicates that there has been little change in vegetation location and density since 2016 (Figure A2). This is consistent with the depth to groundwater measured in well MMW-1, a shallow well adjacent to Arroyo Las Posas, which has remained at approximately 31 feet below ground surface (ft bgs) since 2016 (Figure A2). Additionally, between 2014 and 2023 the greenness and water content of the vegetation along the upstream reaches of Arroyo Las Posas, as measured with the normalized difference vegetation index (NDVI) and normalized difference moisture index, has increased (TNC 2024).

Between 1994 and 2013, aerial photos show that vegetation location along Arroyo Las Posas is similar to the location mapped in 2016 (Figures A3 and A4). Depth to groundwater in well MMW-1 was approximately 28 ft bgs in 2003, and 31 ft bgs in 2013. Depth to groundwater was first measured in well MMW-1 in 1996. For earlier measurements of depth to groundwater in the vicinity of Arroyo Las Posas, this review relies on well 02N20W12G02, which, for the period of overlap in the record, was approximately 2 feet shallower than the water level in well MMW-1. In 1994, the depth to groundwater in well 02N20W12G02 was approximately 24 ft bgs (Figure A4).

In contrast to the period from 1994 through 2023, when vegetation coverage is relatively stable, the vegetation coverage in Arroyo Las Posas is greatly reduced in 1985 relative to the later period of time. Only the upstream areas of the Arroyo have visible vegetation in the 1985 aerial photos, whereas the downstream areas remain dry (Figure A4). This reflects the onset of vegetation growth along the Arroyo resulting from non-native flows consisting of discharges from the Simi Valley Water Quality Control Plant, dewatering wells operated by the City of Simi Valley, and discharges from the Moorpark Wastewater Treatment Plant percolation ponds adjacent to Arroyo Simi–Las Posas. Discharge from the Simi Valley Water Quality Control Plant is estimated to have averaged 9,936 AFY from 1985 to 2015 and ranged from 8,506 to 11,171 AFY (FCGMA 2019). Discharge from Simi Valley dewatering operations is estimated to have averaged 1,618 AFY from 1985 to 2015 and ranged from 0 to 1,949 AFY (FCGMA 2019). Flow in the Arroyo was ephemeral in 1985. The groundwater elevation in well 02N20W12G02 was approximately 28 ft bgs in 1985.

Prior to 1985, there was no naturally occurring vegetation adjacent to Arroyo Las Posas and flow in the Arroyo was ephemeral (Figure A5). The groundwater elevation in well 02N20W12G02 was approximately 28 ft bgs in 1985. In 1979 the depth to groundwater was approximately 50 ft bgs, and in 1969 the depth to groundwater was approximately 70 ft bgs. The trends in groundwater elevation, vegetation density, and location of vegetation all demonstrate that the potential GDEs on Arroyo Las Posas are not dependent on native flow in the Arroyo, as discussed in the GSP. Instead, these potential GDEs are reliant on the surface water infiltration and, potentially, higher groundwater elevations that occurred since the onset of non-native discharges to the Arroyo upstream of LPVB.

A.3 Groundwater Production

Between 1985 and 2023 calendar year groundwater production rates in the ELPMA of the LPVB ranged from 11,935 AF, in 1996, to 30,315 in 2007 (Figure A6). On average, groundwater production rates were approximately 6,800 AFY lower between 1985 and 2006 than they were between 2007 and 2022 (Figure A6). Between 2007 and 2022, during the time of higher groundwater production rates, the depth to groundwater in well MMW-1, adjacent to Arroyo Las Posas, ranged from 24 to 43 ft bgs. Between 1996 and 2007, when groundwater production rates were lower, the depth to groundwater in well MMW-1 ranged from 25 to 42 ft bgs, which is effectively the same range as was measured between 2007 and 2022. This indicates that the observed increase in groundwater production in the principal aquifers of the ELPMA since 2007 has not impacted the groundwater level in the shallow alluvial aquifer adjacent to the Arroyo near well MMW-1.

The groundwater elevation in the shallow alluvial aquifer well 20N20W09Q08S, which is downstream of well MMW-1, has a declining trend in fall water levels between 2016 and 2022 (Figure A6). This trend is not correlated with changes in groundwater production, although it may reflect the combined influences of groundwater production, drought, and declining dry season discharges to the Arroyo.

A.4 Conclusions

The Arroyo Simi-Las Posas, shallow aquifer is hydraulically connected to the principal aquifer in the ELPMA, as demonstrated by long-term trends in groundwater elevation. However, the potential GDEs in the ELPMA do not rely on native flow, but rather on upstream surface water discharges to the Arroyo. Depletion of interconnected surface water bodies has not occurred in relation to current groundwater production. Depletion of interconnected surface water bodies could occur in the future if upstream surface water discharges decrease.

FCGMA has actively sought funding for additional monitoring wells to further characterize the interconnections between the shallow alluvial aquifer and the underlying principal aquifer. As funding becomes available data gaps identified in the GSP related to shallow groundwater monitoring near surface water bodies will be fulfilled.

A.5 References

DWR. 2022. Statement of Findings Regarding the Approval of the Las Posas Valley Basin Groundwater Sustainability Plan. January 13, 2022. Online Access: https://sgma.water.ca.gov/portal/gsp/assessments/18.

FCGMA (Fox Canyon Groundwater Management Agency). 2019. Groundwater Sustainability Plan for the Las Posas Valley Basin. Available online: https://fcgma.org/groundwater-sustainability-plans-gsps/.

TNC (The Nature Conservancy) 2024. GDE Pulse Data Viewer. Accessed June 2, 2024: https://gde.codefornature.org/#/map.

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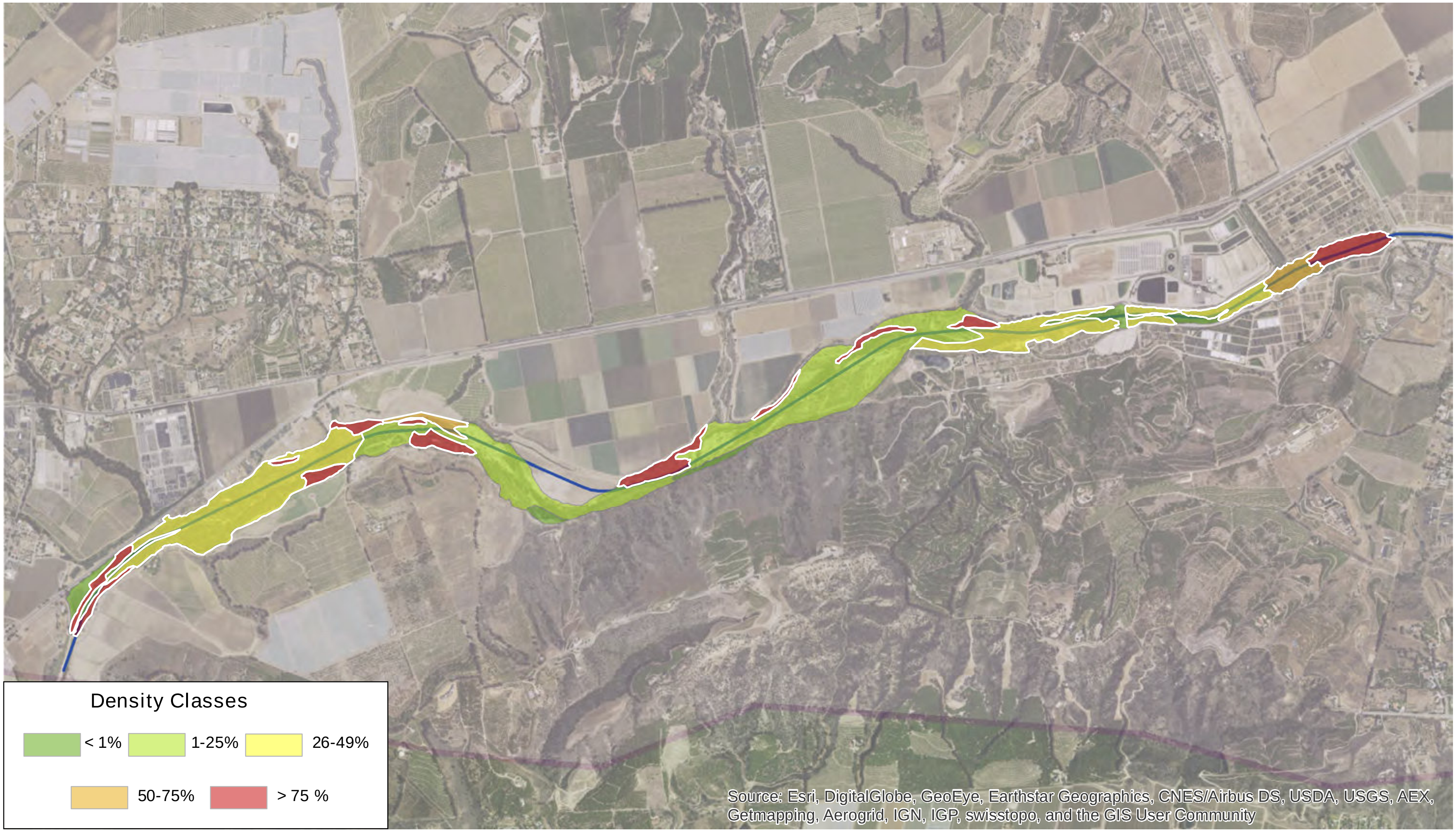

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FIGURE A1

Arroyo Las Posas Vegetation Density

5-Year Evaluation of the Groundwater Sustainability Plan for the Las Posas Valley Basin

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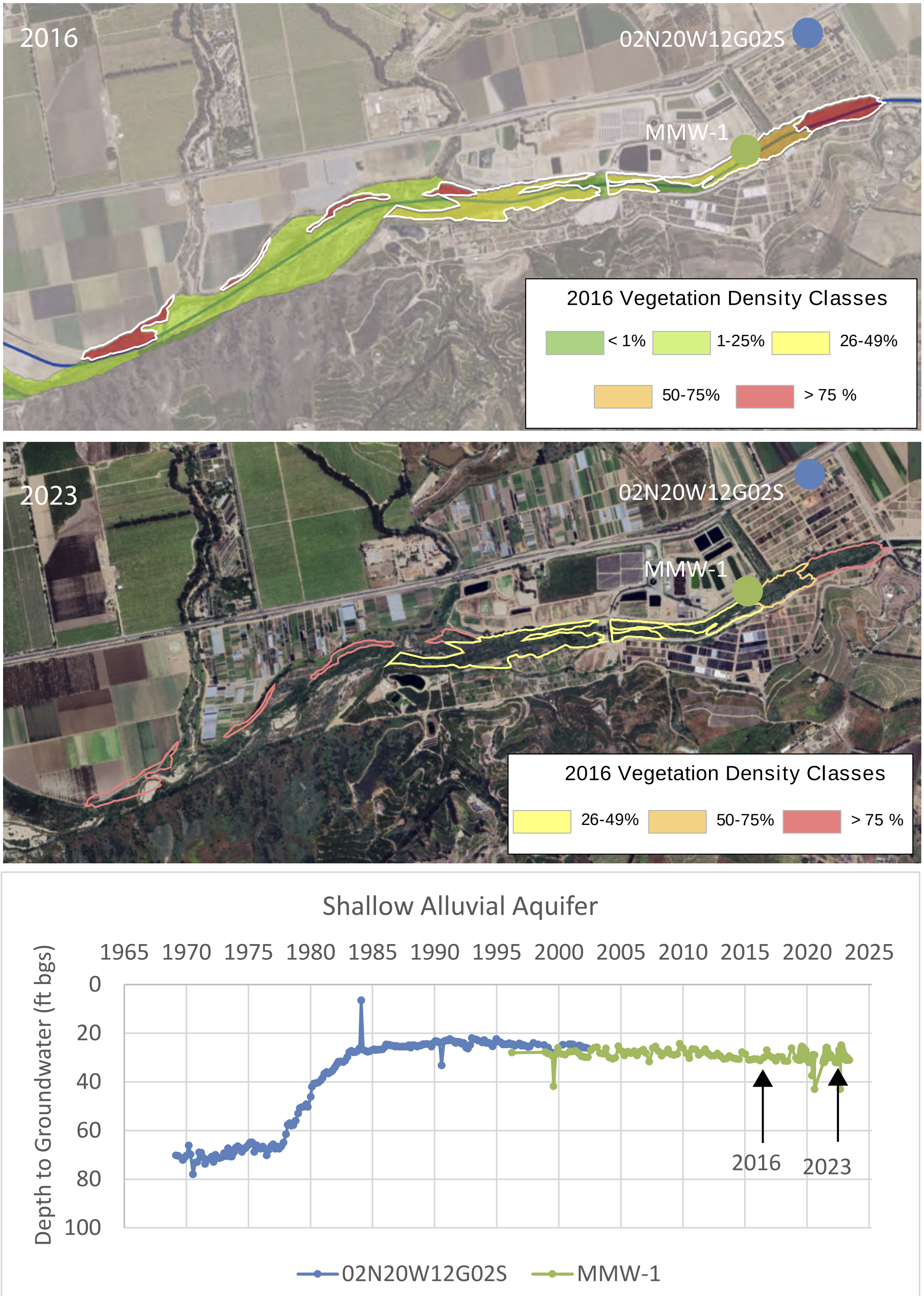

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SOURCE:

FIGURE A2

Vegetation Density and Depth to Groundwater 2018 to 2023

5-Year Evaluation of the Groundwater Sustainability Plan for the Las Posas Valley Basin

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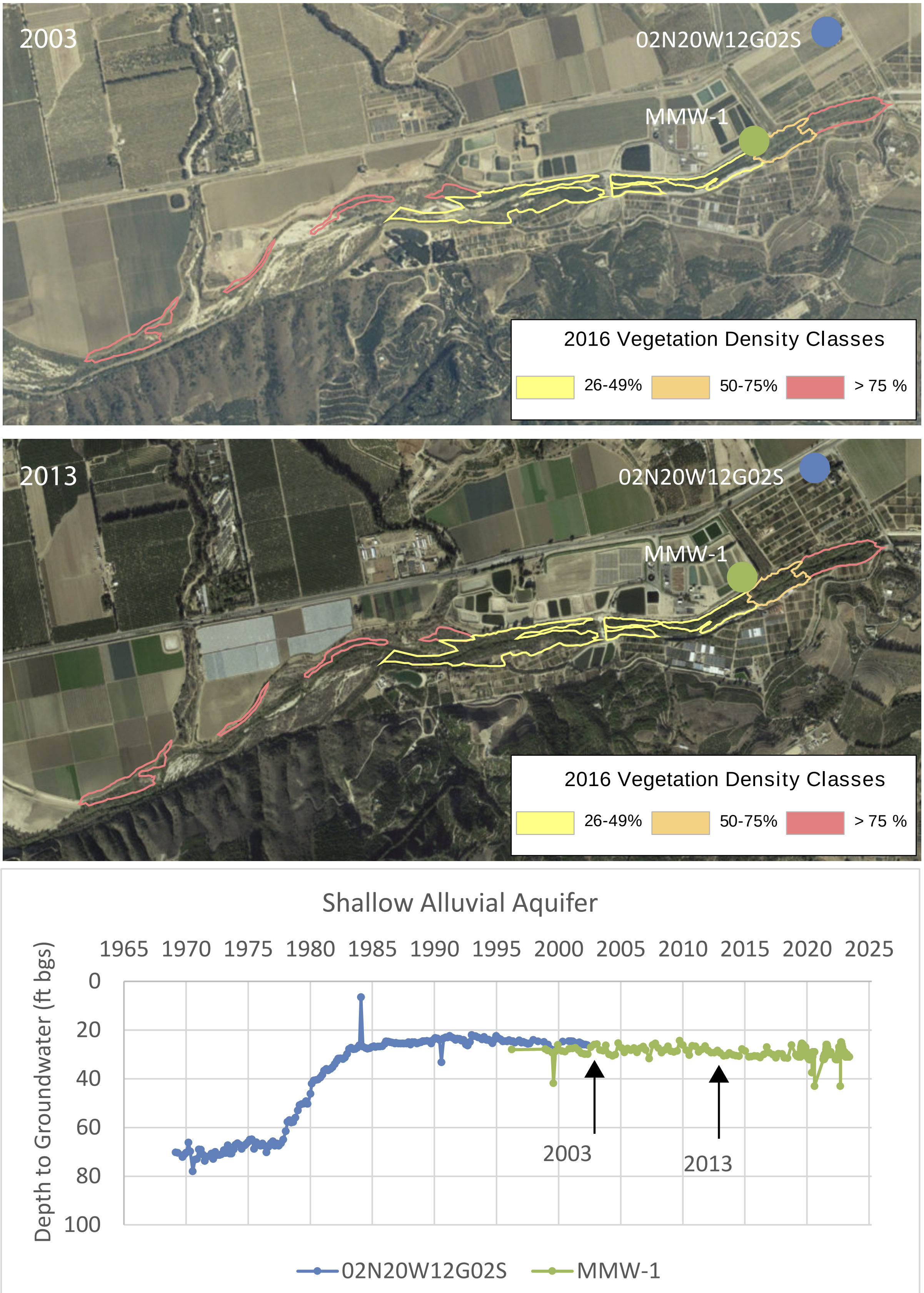

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SOURCE:

FIGURE A3

Vegetation Density and Depth to Groundwater 2003 to 2013

5-Year Evaluation of the Groundwater Sustainability Plan for the Las Posas Valley Basin

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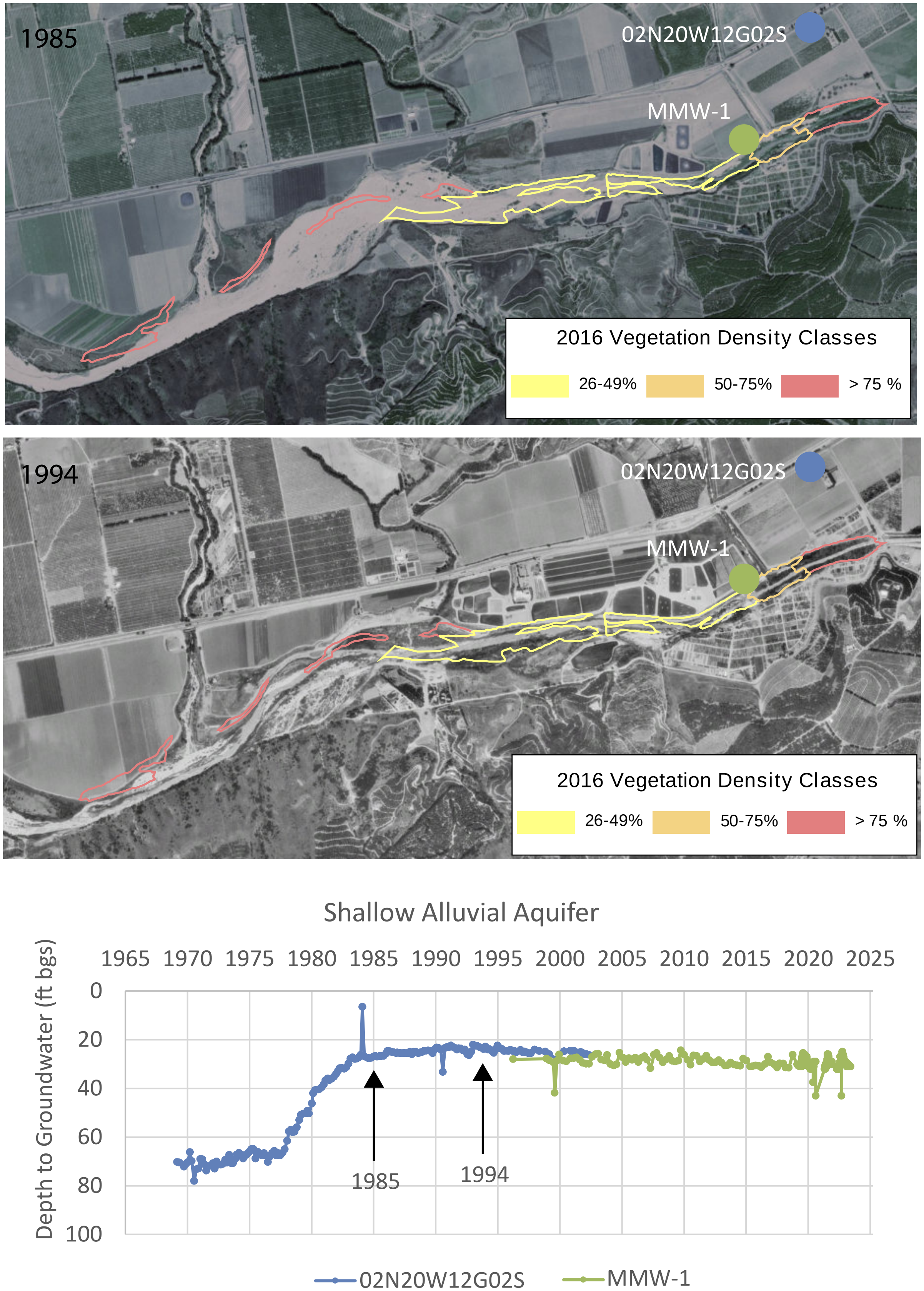

SOURCE:

FIGURE A4

Vegetation Density and Depth to Groundwater 1985 to 1994

5-Year Evaluation of the Groundwater Sustainability Plan for the Las Posas Valley Basin

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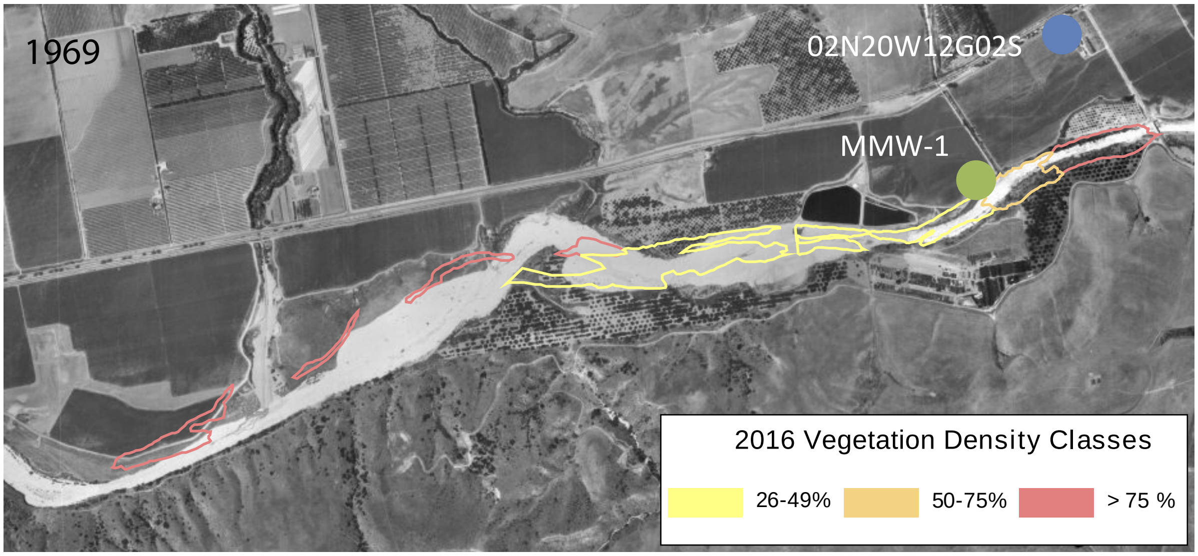

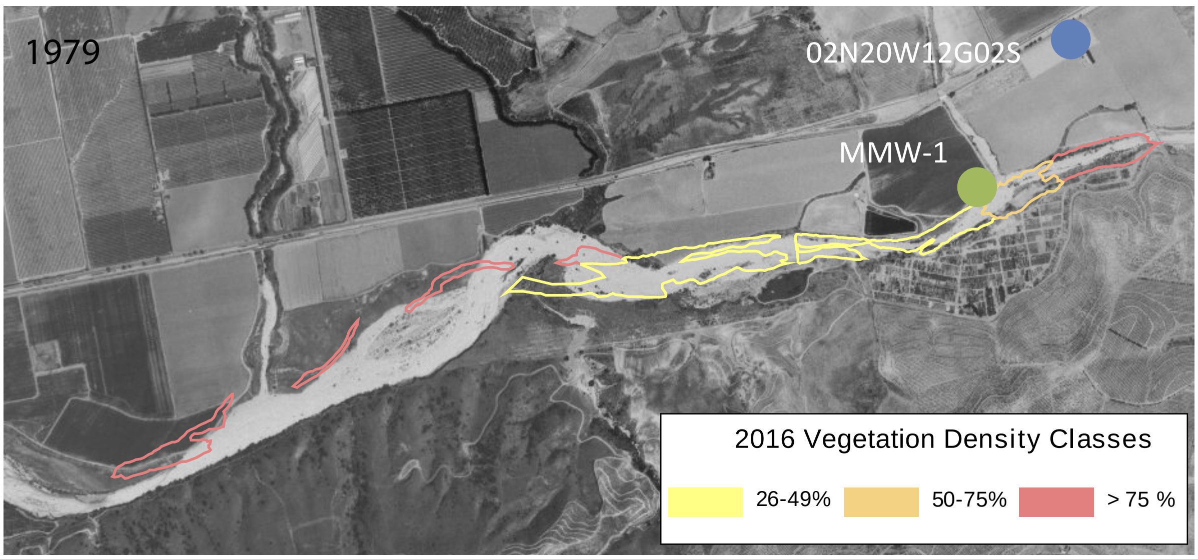

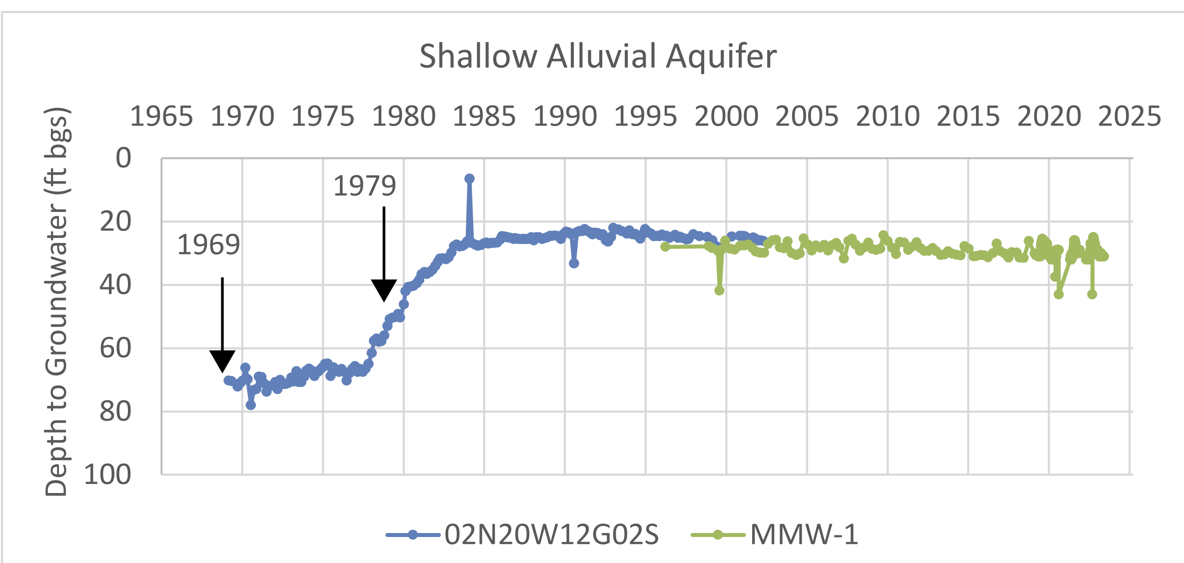

SOURCE:

FIGURE A5

Vegetation Density and Depth to Groundwater 1969 to 1979

5-Year Evaluation of the Groundwater Sustainability Plan for the Las Posas Valley Basin

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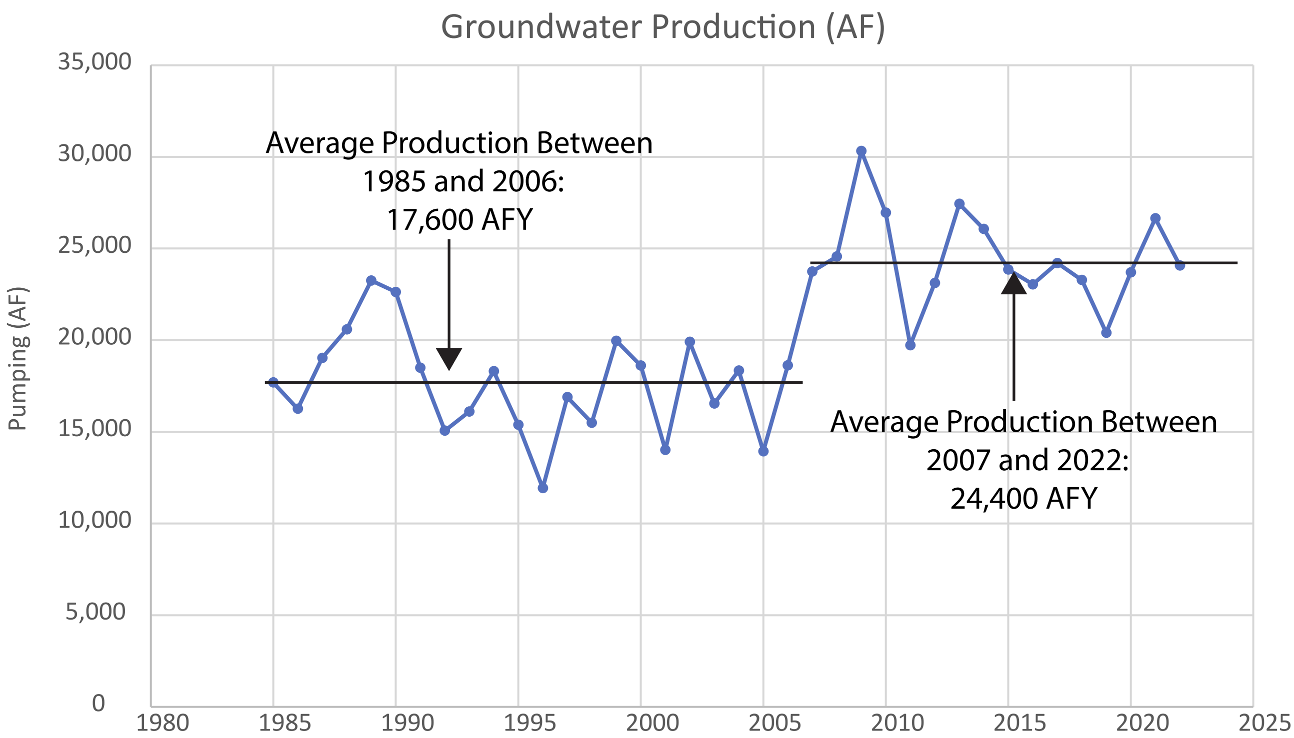
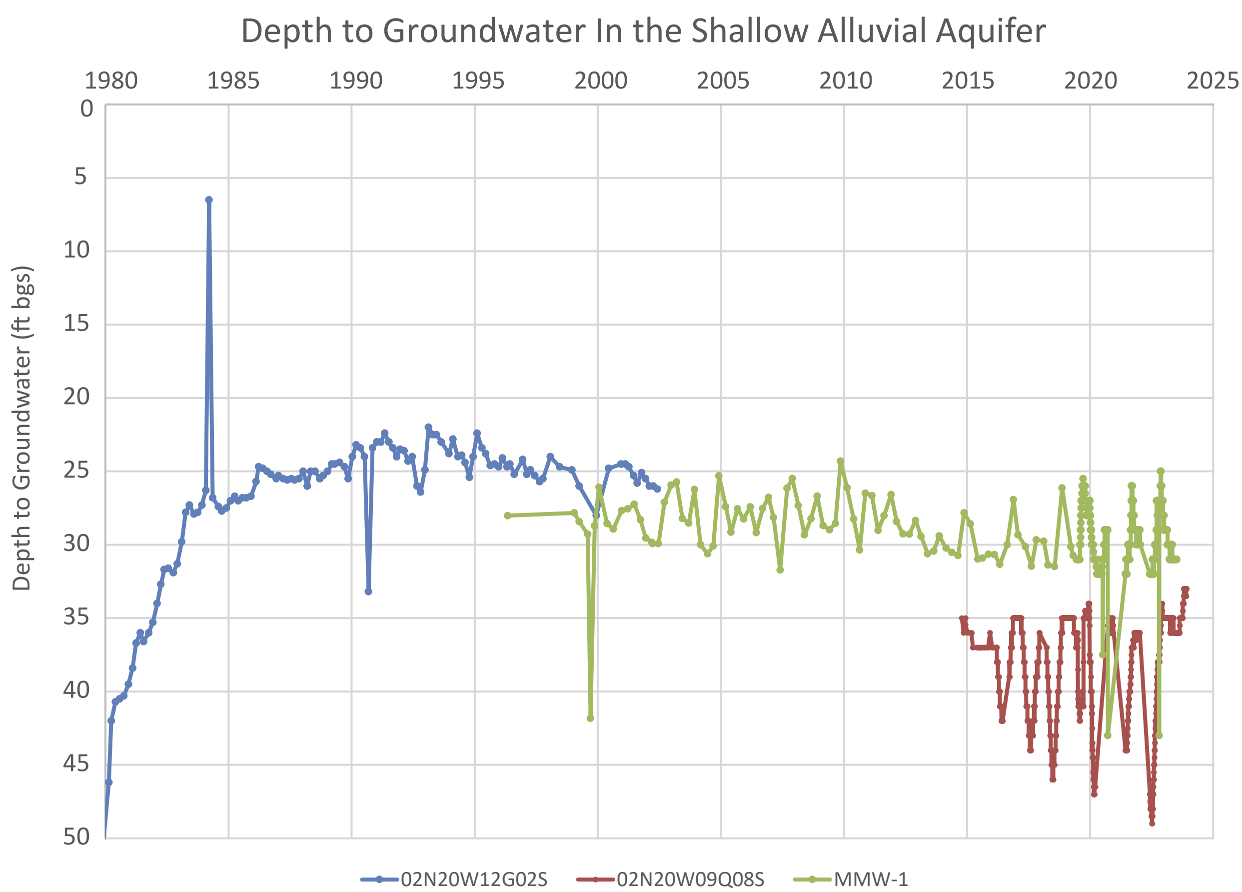


Note: Groundwater production shown for 1985 thorugh 2020 is calendar-year production, whereas 2021 and 2022 are water-year production.
FCGMA switched from calendar year to water year reporting after the GSP was submitted.



SOURCE:

DUDEK

FIGURE A6

Groundwater Production and Water Level Trends 1985 to 2022

5-Year Evaluation of the Groundwater Sustainability Plan for the Las Posas Valley Basin

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Appendix B
Comments on the Draft Periodic Evaluation

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Basin	Letter Number	Commentor	Comment	Response
LPVB	1	Christopher Anacker	Although I won't be able to attend the workshops, I do wonder whether the planning includes or can include overall earthquake resilience of the water system by creating a set of operations or procedures to be implemented post-earthquake in the area, should it ever occur.	The planning requested is beyond the scope of this document, which is limited to a review of the implementation of the groundwater sustainability plan. FCGMA, which is a groundwater management agency, does not have the independent authority to prepare this regional document addressing the resilience of the overall water system. However the comment is noted and FCGMA supports the regional collaboration that has occurred and continues to occur in order to improve water resiliency in response to natural disasters, including earthquakes. Calleguas Municipal Water District, United Water Conservation District, and others have prepared water resilience plans to address some of these concerns.
LPVB	1	Christopher Anacker	Infrastructure Vulnerability, since Earthquakes can significantly impact water infrastructure, such as: Damage to wells, pipelines, and treatment facilities Disruption of power supply needed for pumping and treatment Potential contamination of groundwater sources due to damaged infrastructure	Same as above.
LPVB	1	Christopher Anacker	Water Supply Resilience and how earthquake activity might affect: Groundwater availability and quality post-earthquake The ability to extract and distribute water in emergency situations Potential changes in aquifer properties or groundwater flow patterns	This is a good question that is not currently addressed in the document, because it is beyond the scope of the document. The evaluation is focused on the progress made toward sustainable groundwater resource use over the last five years.
LPVB	1	Christopher Anacker	Subsidence and Liquefaction, looking at Earthquake-induced ground movements that can exacerbate issues related to: Land subsidence, which may already be a concern due to groundwater extraction Soil liquefaction, particularly in areas with high groundwater tables	The GSP evaluation is focused on the relationship between groundwater extraction and land subsidence. The potential for subsidence or liquefaction as a result of an earthquake is beyond the scope of this document.
LPVB	1	Christopher Anacker	Interconnected Surface Water as seismic activity could potentially alter: The relationship between groundwater and surface water bodies Streamflow patterns and groundwater recharge rates	In the event that an earthquake impacts the relationship between groundwater and surface water in the basins, future plan updates will have to incorporate those changes into an updated hydrogeological conceptual model.
LPVB	1	Christopher Anacker	Long-term Sustainability that incorporates earthquake considerations to ensure:The resilience of water supply systems in the face of natural disastersThe ability to maintain sustainable groundwater management practices evenafter seismic events	The planning requested is beyond the scope of this document, which is limited to a review of the implementation of the groundwater sustainability plan. FCGMA, which is a groundwater management agency, does not have the independent authority to prepare this regional document addressing the resilience of the overall water system. However the comment is noted and FCGMA supports the regional collaboration that has occurred and continues to occur in order to improve water resiliency in response to natural disasters, including earthquakes. Calleguas Municipal Water District, United Water Conservation District, and others have prepared water resilience plans to address some of these concerns
LPVB	1	Christopher Anacker	Monitoring and Data Collection that include provisions for: Monitoring wells and other data collection systems that can withstand seismic activity Rapid assessment of groundwater conditions following an earthquake	Many of the monitoring wells have pressure transducers that record groundwater elevations regularly and will provide the most complete record of groundwater response to earthquakes.
LPVB	2	VCFB	On behalf of the Farm Bureau of Ventura County, we appreciate the opportunity to provide comments on the 5-Year Groundwater Sustainability Plan (GSP) Evaluation Draft Documents for the Oxnard, Pleasant Valley, and Las Posas Valley subbasins. We commend the Agency's efforts to manage groundwater sustainably, and we would like to emphasize key areas of concern and offer suggestions to help support Ventura County's agricultural community, which is the backbone of our local economy.	Noted. Thank you for your comment.

Basin	Letter Number	Commentor	Comment	Response
LPVB	2	VCFB	1. Long-Term Hydrologic Trends and Agricultural Resilience The evaluation notes that much of the implementation period was marked by below average rainfall, compounding issues like saltwater intrusion. While the wetter years of 2023 and 2024 brought temporary relief, we cannot rely on sporadic wet periods to offset prolonged droughts. Agriculture in Ventura County is especially vulnerable to groundwater shortages, as it relies heavily on stable water supplies to maintain productivity. We recommend that the Agency adopt a forward-thinking approach by investing in infrastructure that improves water storage and capture during wet years. For example, expanding recharge basins and stormwater capture systems would help retain water locally, benefiting both agriculture and the broader community during future dry cycles.	Agreed. The agency has been collaborating with stakeholders and local agencies to develop additional projects to capture surface water when it's available and evaluate how to optimize the use of available water resources.
LPVB	2	VCFB	2. Infrastructure Investment as a Collaborative Solution While we understand the Agency's focus on demand management, infrastructure projects such as water recycling, desalination, and expanded recharge facilities must be prioritized to ensure a sustainable water future. Delays in these projects put undue pressure on agricultural operations, which could face disproportionate impacts from reduced groundwater availability. Instead of focusing solely on restrictions, a balanced approach that encourages infrastructure investment will help maintain agricultural productivity while advancing groundwater sustainability goals.Collaboration between the Agency, local governments, and the agricultural community is crucial to move these projects forward. For example, streamlined permitting processes and the development of public-private partnerships can accelerate the construction of water infrastructure, ensuring that vital projects are completed in a timely manner. This type of collaboration also helps avoid the need for more stringent groundwater extraction limits, which would have severe economic consequences for farmers.	A discussion of demand management is a required component of the GSP evaluation and is one way, of many, to bring the basin into sustainability. However, the agency supports project development to limit the need for demand management. As noted above, the agency has been collaborating with stakeholders and local agencies to develop additional projects to capture surface water when it's available and evaluate how to optimize the use of available water resources.
LPVB	2	VCFB	3. Avoiding Unintended Financial Burdens on Farmers As we look toward future management actions, it is essential to minimize the financial burden placed on farmers. Agriculture already operates on narrow margins, and the cost of implementing water conservation measures, purchasing water, or paying for infrastructure upgrades could be prohibitive for many growers. We strongly encourage the Agency to consider funding models that do not pass excessive costs onto farmers. Options such as state or federal grants, low-interest financing, and cost-sharing agreements should be explored to fund water infrastructure projects. This approach will help ensure that farmers are not forced to bear the full financial responsibility for groundwater sustainability, which could otherwise lead to reduced agricultural output, job losses, and pose nation-side food security risks.	Noted. Thank you for your comment.
LPVB	2	VCFB	4. Addressing Saltwater Intrusion Proactively The issue of saltwater intrusion, particularly in the lower aquifers, is critical. We support the Agency's long-term projects, such as the Extraction Barrier and Brackish Water Treatment initiative.	Noted. FCGMA supports project development to limit the need for demand management and agrees that UWCD's EBB project has the potential to create additional long-term water supplies within the basins.
LPVB	2	VCFB	5. Economic Impact on Agriculture Groundwater management decisions must consider the broader economic impacts on agriculture, which is essential to nationwide food security. Farmers face increasing costs for logistics, labor, and inputs, and additional costs associated with groundwater management could push many operations into financial distress. We encourage the Agency to conduct a more detailed analysis of the economic implications of proposed projects and management actions. For instance, measures that raise water costs or limit water availability need to be carefully balanced to avoid unintended consequences such as decreased crop yields or the loss of farmland.	Noted. As projects move forward, additional economic analysis of each project will need to be developed to provide stakeholders and the Board with the information required to make informed determinations on cost-effectiveness.
LPVB	2	VCFB	6. Pilot Development of Thoughtful Demand Management for Farmers Over the next five years, it is critical to explore demand management options that allow farmers to stay in business while balancing water availability as a compliment to large scale infrastructure projects. Recognizing the long timelines and potential challenges of implementing large infrastructure projects, we encourage the Agency to consider temporary, flexible solutions to help farmers adapt to water variability. One such option is an incentive-based program for the temporary fallowing of land, where farmers can	The GSP includes a project on temporary fallowing. Additional projects are listed in the periodic evaluation. As noted above, the agency has also been collaborating with stakeholders and local agencies to develop additional projects to capture surface water when it's available and evaluate how to optimize the use of available water resources.

Basin	Letter Number	Commentor	Comment	Response
			voluntarily reduce water use during critical shortages and resume operations when water is more abundant. A program like this would allow farmers to hedge against the uncertainties of project implementation. If major projects face delays—whether due to permitting challenges, economic viability issues, or legal hurdles—farmers need alternatives to aggressive water-use restrictions. Financially incentivizing the temporary fallowing of land provides a safety net, allowing them to make strategic decisions about water usage without being forced to abandon farming altogether. Additionally, farmers could be encouraged to transition to less water-intensive crops during periods of drought. By providing financial support and technical assistance for these transitions, the Agency can help farmers mitigate the risks associated with water shortages while continuing to contribute to the region's agricultural economy. This type of demand management moves away from a "zero-sum" approach that pits different water users against each other in a closed basin. Instead, it offers a flexible, winwin solution that allows farmers to respond to changing conditions without jeopardizing their livelihoods. While implementation of these ideas is not feasible in the next fiveyears, planning and development could be undertaken including grant-funding cycles such at the Sustainable Agricultural Land Conservation program funded by Department of Conservation. Planning and stakeholder engagement would be essential to ensure that a wide variety of views and edge cases are explored for the purposes of developing a thoughtful and equitable system.	
LPVB	2	VCFB	7. The Need for Certainty and Predictability Given the complexities surrounding water management and the ongoing litigation, it is essential that farmers have a degree of certainty and predictability as they plan for their operations over the coming years. Pending litigation has the potential to drag on for years, and any resulting decisions could reshape the regulatory landscape multiple timesthroughout that period. This introduces considerable uncertainty for farmers, who rely on stable water availability to sustain their businesses.To manage this uncertainty, it is crucial that the Agency provides farmers with a framework for continuity in water management, regardless of the legal outcomes. Whether the basin continues to be governed by a Groundwater Sustainability Plan (GSP), whether proposed projects are completed on time, or whether the litigation results insignificant changes, there must be a clear, rational path forward to avoid destabilizing agriculture in the region.Moreover, this continuity is not just about the immediate future but about ensuring that farmers can continue planning long-term investments in their operations. Sudden, unpredictable changes could force them to make costly adjustments or even abandon farming altogether, which would have a lasting negative impact on the local economy and national food supply. Offering a more predictable environment will allow farmers to adapt in a way that maintains agricultural viability while addressing water management needs.	Noted. The agency remains committed to providing a clear management framework, informed and shaped by stakeholders, to minimize uncertainty and instability.
LPVB	2	VCFB	8. Agriculture's Voice As the various plans outline proposed projects and emphasize stakeholder inclusion in the prioritization process, it is crucial that the agricultural community plays an active, consistent role. Agriculture is a key stakeholder with distinct economic challenges and operational limitations that differ significantly from those of urban areas like cities and municipalities. Without consistent representation and input from farmers, there's a risk that decisions may not fully reflect the needs and realities of the agricultural sector. Inclusion must be more than a procedural step; it should be a genuine partnership where growers' perspectives are fully considered and integrated into decision-making. Farmers operate on thin margins, and decisions about water allocation, infrastructure improvements, and project prioritization will directly impact their ability to continue farming. Solutions should not disproportionately burden agriculture but instead support their ability to produce food while contributing to sustainable water management. For instance, the agricultural sector's reliance on groundwater must be factored into discussions about addressing saline intrusion or allocating resources for improvements. Unlike urban areas, where	Noted. The agency remains committed to involving all stakeholders in management decisions, and recognizes the importance of agricultural stakeholders in the basins. Agricultural stakeholders regularly participate in Board committee planning meetings and provide comments at Board meetings.

Basin	Letter Number	Commentor	Comment	Response
			adjustments to water usage may be easier, farming operations are less flexible, making it essential that proposed projects accommodate these constraints.	
LPVB	3	ZMWC	1. Zone Mutual Water Company Infrastructure Improvement Project: a. While Zone is moving forward with the infrastructure improvements described in the evaluation report, there are potential legal issues that may prohibit or limit Zone's ability to wheel in-lieu water to non-shareholders. These issues need to be studied along with other opportunities to deliver in-lieu water and move water between West Las Posas Management Areas (WLPMA) and East Las Posas Management Area (ELPMA). The most cost-effective and beneficial method(s) should be identified through this process. We encourage coordination and collaboration on this topic.	Agreed. FCGMA remains committed to ongoing coordination and collaboration with other agencies and interested parties in the LPVB.
LPVB	3	ZMWC	b. Regarding the 500 AFY of water savings associated with this project, this benefit should not be included in the future water supplies for the Projects Scenario at this time. The water savings would be retained as carryover or leased to other water right holders for the benefit of Zone shareholders unless the Watermaster creates a financial mechanism to make Zone whole. We encourage coordination and collaboration on this topic.	Noted. The project was modeled as meeting an additional 500 AFY of demand to examine the impacts on regional groundwater levels. The actual use of this project water may differ from the model.
LPVB	3	ZMWC	2. Nexus Between Sustainable Management of the WLPMA and Oxnard Subbasin: While assessment of impacts on adjacent basins is clearly required under SGMA, the framing and analysis of WLPMA pumping impacts on the Oxnard Basin and the WLPMA sustainable yield estimation approach seem problematic for multiple reasons. First the analysis has not isolated the impact of WLPMA pumping on seawater intrusion for technical evaluation and consideration in policy making. How can policymakers make sound policy, if the relationship between WLPMA pumping and its incremental effect on seawater intrusion under various management scenarios has not been quantified and vetted? Second, the analysis of the interaction between WLPMA and the Oxnard Subbasin appears to ignore the fact that numerous WLPMA groundwater pumpers pay pump fees to UWCD.	The GSP evaluation focuses on the progress made toward sustainability over the first five years of GSP implementation. Additional evaluation of project impacts and costs will be required to provide sufficient information to the Board to make policy decisions.
LPVB	3	ZMWC	3. Modeling: a. Review of the modeling for the WLPMA cannot be completed at this time because documentation of the Coastal Plan model is not yet available. Technical Advisory Committee (TAC) review should be completed before adopting the periodic evaluation report. b. Zone is concerned that the two models for the Basin no longer agree on the nature of the WLPMA/ELPMA boundary. We support the recommendation for further review of this issue in consultation with the TAC.	UWCD provided extensive model documentation for the version of the model used for the GSP. UWCD is currently working on the supplemental documentation to cover the changes made since the GSP. As of the time this comment response matrix was prepared, UWCD has not yet finalized this supplemental documentation.
LPVB	3	ZMWC	4. Missing Monitoring Data: There are a notable number of unavailable groundwater level and quality measurements during period since GSP adoption. It is critical that data be collected to evaluate status relative to the sustainable management criteria and more generally understand groundwater conditions. It is noted that FCGMA does not collect data itself and, instead, relies on other entities monitoring programs for data. It is recommended that FCGMA coordinate with the monitoring entities to find the most cost-effective solution to ensure that data is collected for future GSP annual reports and periodic evaluations.	Monitoring data are critical to the successful implementation of the GSP. The agency will continue to work with its partner agencies who collect the data. Additionally, the agency will continue to seek funding for new dedicated monitoring wells to address data gaps.
LPVB	3	ZMWC	5. Groundwater Dependent Ecosystems (GDEs): The vegetation found along Arroyo Simi/Las Posas was recruited and is sustained by discharges from two wastewater plants and City of Simi Valley dewatering wells. Zone is concerned that the framing of GDE issue appears to leave the door open making groundwater users responsible for sustaining the vegetation along Arroyo Simi/Las Posas. The framing of this issue needs to be reworked to emphasize that effects on vegetation attributable to reductions in discharges shall not be considered an SGMA undesirable result in the GSP. Similarly, we are concerned about paying to study vegetation that was recruited and is sustained by wastewater and dewatering well discharges	The appendix to the GSP evaluation clarifies that the vegetation along Arroyo Simi Las Posas is not a GDE. However, the agency is committed to seeking funding for additional monitoring wells throughout the LPVB, including ones along Arroyo Simi-Las Posas to be able to gather the data to prove to DWR that the vegetation on Arroyo Simi-Las Posas is dependent on infiltrating surface water rather than interconnected groundwater.
LPVB	4	DNWC	If the purpose of DUDEK's work is to review current groundwater conditions, assess GSP implementation and evaluate sustainable yield for an audience of hydrologically trained persons, perhaps it has accomplished what it has set out to do.	Noted. Thank you for your comment.

Basin	Letter Number	Commentor	Comment	Response
LPVB	4	DNWC	If, however, as I believe, its role is to marry the technical components it outlines with the Policy and engagement of the GMA in a report that clarifies what is going on in the Las Posas Basin and inform the landowners of current conditions of the Basin, it falls short for the following reasons:	Noted. Thank you for your comment.
LPVB	4	DNWC	(1) The Report does not address the continued serious lack of information and data for the period evaluated.	FCGMA disagrees. The report specifically discusses the missing data and need to fill data gaps (see sections 4.2, 6.2, 6.3, and 9.2). Data are collected for all the wells in the LPVB that were identified in the GSP and are still accessible. However, the agency will continue to work with the agencies that collect the data and seek funding for additional dedicated monitoring wells to close the data gaps over time.
LPVB	4	DNWC	(2) Data from key wells was not accessible and suitable replacements were not found in the five year period update. There are not data gaps – there are data chasms.	As noted above, the report specifically discusses the missing data and need to fill data gaps (see sections 4.2, 6.2, 6.3, and 9.2). Data are collected for all the wells in the LPVB that were identified in the GSP and are still accessible. However, the agency will continue to work with the agencies that collect the data and seek funding for additional dedicated monitoring wells to close the data gaps over time.
LPVB	4	DNWC	(3) There is no explanation as to why private well data was not obtained that could have been used to help fill the significant gaps in the well data.	As noted above, data are collected for all the wells in the LPVB that were identified in the GSP and are still accessible. However, the agency will continue to work with the agencies that collect the data and seek funding for additional dedicated monitoring wells to close the data gaps over time.
LPVB	4	DNWC	(4) The Draft Report does not explain why DUDEK's (the GMA's) safe yield for the Basin is 27,600 – 34,000 acre feet, which is not consistent with the GMA and other parties to the Adjudication stipulated safe yield of 36,000 acre feet nor consistent with the Court judgment allocated operational safe yield of 42,851 acre feet.	The sustainable yield under SGMA is not the same as the safe yield determined in the adjudication or the operational safe yield. Work will be done under the Basin Optimization Yield Study to determine the potential increase in sustainable yield based on projects proposed for the LPVB, and the need for groundwater production rampdowns to achieve sustainability by 2040.
LPVB	4	DNWC	(5) The Draft Report's states that the Las Posas Valley Basis is not currently experiencing undesirable results however the next sentence states that: "the West Las Posas Management Area experienced undesirable results . . . ."	The language in the report has been revised to state "Groundwater elevations in the LPVB indicate that it is not currently experiencing undesirable results, in part because spring 2024 groundwater elevation data were not available for one key well in the eastern part of the WLPMA. Groundwater elevations at this well were consistently below the minimum threshold in prior monitoring events, which, under the definitions established in the GSP, indicated that the WLPMA experienced undesirable results during the first five years of the GSP implementation although the WLPMA did experience undesirable results over the first five years of GSP implementation."
LPVB	4	DNWC	(6) Most importantly, for any nonscientific reader, it puts the five-year period being evaluated in no historical context. All farmers know intuitively, and because they produced records for, and have reviewed the Master Disclosure Record, that during the period from roughly 2010 to 2022, the area was in drought. Moreover, there was little recharge during that period by the United Water Conservation District ("UWCD") in its spreading grounds that replenish, at least, the shallow wells in the West Las Posas Valley.	A discussion of climate has been added to section 2.2
LPVB	4	DNWC	(7) Conversely, the winters of 2022 and 2023 were wet – extremely wet – and the recharge by UWCD was extraordinary (reportedly 270,000 acre feet). This recharge impacted the Western end of the Las Posas Basin, significantly. Whether all the data is available for the winter of 2022 or only a portion of the data is available, the Draft Report must review what data is available to date to provide a realistic assessment of the basin. To ignore data that does exist and to fail to mention these significant, if not historic events, leaves a reader to challenge the efficacy of any conclusions the Draft Report may contain	A discussion of climate has been added to section 2.2
LPVB	5	CMWD	Calleguas Municipal Water District (Calleguas) appreciates the opportunity to provide comments on the above-referenced document. As the imported water supplier for the Las Posas Basin and the operator of the Las Posas Aquifer Storage and Recovery (ASR) Wellfield, long-term sustainability of the Basin is important to Calleguas. The first periodic evaluation of the Las Posas Valley Basin (LPVB) Groundwater Sustainability Plan (GSP) is an important milestone on the path to that sustainability. We offer these	Noted. Thank you for your comment.

Basin	Letter Number	Commentor	Comment	Response
			comments in the spirt of fostering increased coordination and collaboration in the planning necessary to achieving the shared goals of the Sustainable Groundwater Management Act (SGMA) and the Judgment in the Las Posas Valley Water Rights Coalition, et al., v. Fox Canyon Groundwater Management Agency groundwater rights adjudication case (Judgment).	
LPVB	5	CMWD	1. Analysis of Effects of Minimum Thresholds (MTs) on Beneficial Users in ELPMA (Section 2.2.1.2 (pp. 7-8) and Table 2-1): Since the first drafts of the GSP, Calleguas has consistently commented on the inadequacy of the impact analysis of the MTs in the northern portion of the East Las Posas Management Agency (ELPMA) on beneficial uses and users. The Department of Water Resources (DWR) also recognized the insufficiency of the analysis and issued a recommended corrective action in its GSP approval: “Discuss the potential effects of the minimum thresholds and measurable objectives on beneficial uses and users of groundwater, particularly in the areas where groundwater levels will be maintained below 2015 and historical low levels. Provide an evaluation of the groundwater level and storage conditions when the groundwater storage loss will be 20 percent compared to 2015 conditions in the ELPMA and the Epworth Gravels Management Area, and, based on the result of the evaluation, discuss the effects of such conditions on beneficial users and users.” The analysis presented in Section 2.2.1.2 (pp. 7-8) and Table 2-1 of the periodic evaluation remains inadequate and does not address the DWR recommended corrective action for the following reasons:	Noted. Thank you for your comment.
LPVB	5	CMWD	A. Calleguas ASR Wells are Incorrectly Classified as Agricultural Wells: In reference to Table 2-1, the 2nd paragraph of Section 2.2.1.2 (p. 7) states: “The depth and groundwater production rates from the wells in this area indicate that they are agricultural wells…”. In fact, 10 of the 22 wells listed in Table 2-1 are Calleguas ASR wells.	The text has been corrected: "FCGMA reviewed well screen intervals and groundwater production in areas of the ELPMA that are prone to conversion from confined to unconfined conditions. The depth and groundwater production rates from the wells in this area indicate that they are agricultural wells There are 22 wells in this area. Of these, 10 are CMWD ASR wells. The depth and groundwater production rates from the remaining wells indicate that they are agricultural wells and are not domestic or de minimis wells that produce less than 2 acre-feet per year (AFY)."
LPVB	5	CMWD	B. The Analysis is Based on Incorrect Data: The top perforation elevation of 13 of the 22 wells in Table 2-1 for which data was readily available was reviewed and it was determined that the values for 12 of the 13 wells evaluated are incorrect, including all 10 ASR wells included in the table. The errors average 48 feet and range from 10 to 364 feet. Using the correct elevations for the 12 wells with erroneous top perforation elevations would add three wells to the list of wells with a projected groundwater elevation below the top of the screen. Based on the above findings, it is possible that some wells may have also been omitted from Table 2-1 due to incorrect well screen elevation data.	The table and text have been corrected to reflect the correct screen intervals.
LPVB	5	CMWD	C. Analysis of Effects Does not Consider Impacts on ASR Storage and Recovery Operations: Given that analysis incorrectly assumes all wells are agricultural, the analysis does not consider or evaluate potential effects on the Calleguas ASRwellfields. For the analysis to be complete and consistent with SGMA, the impact of the MTs on Calleguas ASR storage and recovery operations needs to be fully evaluated to determine whether the decreased storage and recovery capacity issignificant and unreasonable.Considerations for ASR wells include the introduction of air into the aquifer, which causes geochemical reactions (precipitation of minerals that clog the well screen); substantial increase in microbiological growth (biological growth thatclogs the wells screens); and loss of aquifer storage capacity (air trapped in the aquifer that takes up pore space and/or dissolves into the groundwater, causing operational challenges). Calleguas was already experiencing symptoms of theseproblems during GSP development (four of nine ASR wells had already experienced aquifer conversion from confined to unconfined conditions) Calleguas is concerned that these problems will be exacerbated and impact additional ASR wells if groundwater levels are allowed to decline to the MTs. In our May 21, 2019 comment letter on the Draft GSP, we estimated groundwater level decline to the MT would cause an estimated 45% decline in ASR pumping capacity relative to its initial operational capability (a 35% decline relative to the 2015 operational capability). To further exacerbate this problem, the aquifer is predicted to	The analysis is independent of well type. The FCGMA board of directors identified loss of 20% of 2015 storage as significant and unreasonable during the development of the GSP. The evaluation will provide additional information to the FCGMA board of directors to asses whether that definition is still appropriate.

Basin	Letter Number	Commentor	Comment	Response
			become unconfined in the vicinity of at least six additional ASR wells, for a cumulative impact on 10 out of the 19 ASR wells with aquifer conversion. This would result in undesirable effects on a critical emergency water supply for the vast majority of Ventura County's urban water users. Again, the impact of the MTs on Calleguas ASR storage and recovery operations must be fully evaluated for MT impacts on beneficial uses and users to be complete and consistent with SGMA.	
LPVB	5	CMWD	D. The Analysis Does not Consider All Potential Significant and Unreasonable Effects: The analysis assumes that significant effects will not manifest until the static groundwater level drops below the top of the screen in a well and that pumping can be sustained with pump placements in the screen interval. These assumptions are contrary to the generally accepted well design principle of setting the well pump above the screen and maintaining pumping levels above the top of screen to avoid pump bowl or screen abrasion, sand production, cascading water, and accelerated fouling (Glotfelty, 2019 – Art of Water Wells).Wells with partially desaturated screens commonly experience increased fouling rates (sometimes very rapid), which causes significant loss of production, the need for premature rehabilitation efforts, and the need for premature well replacement. The analysis should consider these effects on all well types and Fox Canyon Groundwater Management Authority (FCGMA) should determine, with stakeholder input, whether they are significant and unreasonable.	The analysis doesn't assume anything about the onset of significant and unreasonable impacts, but simply compares the anticipate water level at the minimum threshold to known construction information for reference. We agree that stakeholder input is critical to determining significant and unreasonable impacts.
LPVB	5	CMWD	E. The Analysis Does Not Consider All Wells that May Potentially Experience Significant and Unreasonable Effects: The Table 2-1 wells are limited to those wells located in the area where the Fox Canyon Aquifer (FCA) is predicted to convert from confined to unconfined ("conversion area"). As explained above, potentially significant and unreasonable effects can manifest in wells before the static groundwater level drops below the top of the screen, which may occur in wells located outside of the conversion area, including Calleguas ASR wells. The area of analysis should also be extended outside of the conversion area.	The extent of the analysis was based on DWR's recommended corrective action.
LPVB	5	CMWD	In the spirt of fostering increased coordination and collaboration in the planning necessary to achieving the shared goals of the SGMA and the Judgment, Calleguas recommends that a full analysis of the effects of the MTs on beneficial uses and users be completed with Las Posas Basin Watermaster Technical Advisory Committee (TAC) and Policy Advisory Committee (PAC) consultation. This approach would ensure that all potentially affected well owners clearly understand what impacts they should anticipate given the existing MTs so they can provide input as to whether those impacts are significant and unreasonable and whether MT modifications are warranted. This process would provide relevant information to inform GSP Project No. 9 (Feasibility Study to Identify Possible Supplemental Water Supply Sources for the Northern East Las Posas Management Area).	Noted. This coordination can take place now that the TAC has formed and can be incorporated into the development of the Basin Optimization Plan and Basin Optimization Yield Study.
LPVB	5	CMWD	2. Model Differences:Calleguas is concerned that the United Water Conservation District model and Calleguas model no longer agree on the nature of the West Las Posas Management Area/ELPMA boundary. We support the recommendation for further review of this issue in consultation with the TAC. We also recommend including Calleguas in the process so that potential modifications to the ELPMA model can be considered by Calleguas.	Noted. Thank you for your comment.
LPVB	5	CMWD	3. Monitoring Network Coordination Needed: There are a notable number of unavailable groundwater level and quality measurements since GSP adoption. It is critical that data be collected to evaluate status relative to the sustainable management criteria and more generally understand groundwater conditions. It is noted that FCGMA does not collect data itself and, instead, relies on other entities' monitoring programs for data, including Calleguas's. Unfortunately, other than data requests, FCGMA has never reached out to Calleguas to discuss its monitoring activities and whether those activities will meet the needs of the GSP monitoring network. This has unfortunately led to a number of incorrect assumptions in the GSP monitoring network and periodic evaluation that are inconsistent with actual monitoring activities. Specific inconsistencies are provided in comments below. It is recommended that FCGMA coordinate with the monitoring entities, including Calleguas, to address these issues and find the most cost-effective solutions to ensure data is collected for future GSP annual reports and periodic evaluations. Calleguas is ready and willing to participate in coordination efforts.	Monitoring data are critical to the successful implementation of the GSP. The agency will continue to work with its partner agencies who collect the data. Additionally, the agency will continue to seek funding for new dedicated monitoring wells to address data gaps.

Basin	Letter Number	Commentor	Comment	Response
LPVB	5	CMWD	4. Revisions to Calleguas Monitoring Network (Section 6.1 and Table 6-2):A. The text states, "Four of the wells have been removed from the monitoringnetwork because they were either destroyed or CMWD had recurring access issues." Calleguas has not had access issues. The following are clarificationsconcerning the wells listed in Table 6-2:i. Well 03N20W32H02S has been dry for numerous years. Calleguas continues to check the well for water and will reinstall a transducer if water returns. Consider retaining this well in monitoring network pending increasing groundwater levels.ii. Well 02N20W02D02S was destroyed by the owner.iii. Well 03N20W36P01S has a transducer stuck in the sounding tube. The transducer will be reinstalled the next time the well pump is removed.iv. Well 03N20W35J01S is continuing to be monitored with a transducer. However, the groundwater levels are considered anomalous. It is recommended that this well be removed from the monitoring network due to anomalous data.v. Well 02N20W01B02 (ASR #3) is noted as being added to the monitoring network in Table 6-2. This is not correct. This well was already included in the monitoring network in the GSP. Table 6-2 also says there is no water quality sampling for this well, which is not correct. Water quality samples are collected to satisfy State Water Resources Control Board (SWRCB) Division of Drinking Water (DDW) requirements and are available from Calleguas or from the SWRCB website.	These suggestions have been incorporated into the text
LPVB	5	CMWD	B. Consideration should be given to incorporating the three multi-level monitoring wells constructed by Calleguas in the ELPMA into the monitoring network. These monitoring well nests/clusters provide valuable aquifer specific data, including much needed data for the Grimes Canyon Aquifer (GCA) at one location. Data from these wells are already provided to FCGMA by Calleguas on a regular basis.	These have been added to the discussion and the tables for inclusion in the monitoring network.
LPVB	5	CMWD	5. Changes to Calleguas Monitoring Network (Table 6-3):A. Table 6-3 indicates that several wells are "no longer monitored" for water quality. It is noted that Calleguas has never sampled these wells (except once for monitoring wells immediately following construction). FCGMA incorrectly assumed that Calleguas was sampling these wells.B. Well 02N19W06F01S is an agricultural well, not a monitoring well.C. Well 02N20W09Q08S is a monitoring well, not a municipal well.	Table has been changed.
LPVB	5	CMWD	6. Groundwater Level Temporal Data Gaps (Section 6.2.2.2): A. The text states, "Currently, groundwater elevation measurements are not scheduled according to these criteria because FCGMA relies on monitoring by several other agencies. To minimize the effects of this type of temporal data gap in the future, it would be necessary to coordinate the collection of groundwater elevation data, so it occurs within a two-week window during the key reporting periods of mid-March and mid-October. The recommended collection windows are October 9–22 in the fall and March 9–22 in the spring." Calleguas and Ventura County Waterworks District (VCWWD) have transducers installed in all the wells in their monitoring network. The only reason data may be missing for these wells during the fall and spring two-week windows is if a transducer has failed or is pending reinstallation. FCGMA is encouraged to coordinate with Calleguas and VCWWD to facilitate an approach for collecting manual groundwater level measurements in these cases to address its fall and spring window data needs.	Text has been revised to recognize where transducers are already installed.
LPVB	5	CMWD	B. The text states, "Additionally, as funding becomes available, pressure transducers should be added to wells in the groundwater monitoring network." Calleguas and VCWWD already have transducers installed in all the wells in their monitoring network.	Text has been revised to recognize where transducers are already installed.
LPVB	5	CMWD	C. The text states, "Since adoption of the GSP, 13 wells that were to be monitored for groundwater quality are no longer monitored for groundwater quality. The majority these wells, 11 of the 13 wells, are representative monitoring wells located in the ELPMA." It is noted that Calleguas never committed to sample the wells in its monitoring network, other than ASR wells, which are sampled to comply with SWRCB DDW requirements. Calleguas is willing to help facilitate FCGMA efforts to sample these wells.	Text has been revised.
LPVB	5	CMWD	7. New Data For ELPMA (Section 4.1.1.1) and Hydrogeologic Conceptual Model (HCM) Data Gaps (Section 4.2 and Table 4-1):	Text has been revised.

Basin	Letter Number	Commentor	Comment	Response
			The text on page 51 states, “No new information is available that would improve or update the understanding of the hydrogeologic conceptual model of the ELPMA and Epworth Gravels Management Area.” Similarly, the text on pp. 52-53 and Table 4-1 states that no additional information has been collected to address HCM data gaps. It is noted that Calleguas has constructed three multi-level groundwater monitoring wells, which provides new stratigraphic data for the hydrostratigraphic model. In particular, 03N19W30E07 is a nested monitoring well that provides data to better characterize the Epworth, FCA, and GCA in northern ELPMA and 02N20W11B01-3 is a clustered monitoring well that provides data to better characterize the Upper San Pedro Formation and FCA south of the Moorpark Anticline in the ELPMA. In addition, groundwater level data collected from these wells can be used to characterize vertical gradients. These data should be incorporated into the HCM.	
LPVB	6	Steve Scholle	Upon a quick look at Table 2-2 on page 11 of the Agency’s LPV 5-Year GSP Evaluation Draft Document, I noticed in the West Los Posas Basin (WLPB) the Minimum Threshold (MT) for wells 02N21W11J03S and 02N21W1201S is -70’ Below Sea Level (BSL) and the Measurable Objective (MO) is -50’ BSL and -45’ BSL respectively. Our well is located in the middle of the WLPB. Data on our wells since 2001, shows the static water level readings (SWL) has never been as high as -50’ BSL and rarely gets as high as -70 BSL. My comment is: The MO's & MT’s for those two monitoring wells is incorrect. The Agency’s LPV 5-Year GSP Evaluation Document should clearly state that insufficient data was available at the time the original GSP was drafted and the MO’s and MT’s for the WLPB will be revised as new data sets are collected. Therefore, blaming the WLPB has undesirable results due to SWL being below the MO and MT is in error.	The minimum thresholds and measurable objectives were selected at representative monitoring points, or "key wells." The two key wells at which the minimum thresholds and measurable objectives were selected have had groundwater elevations above the measurable objectives historically. These thresholds are appropriate in these wells, and are consistent with thresholds that are protective of Oxnard's ability to meet it's sustainability goal. These thresholds are not directly applied to any individual private well, and the GSP recognizes the variability in groundwater elevation in the WLPMA. The water levels at the individual private well is understood to differ from the key wells as it is likely screened in different aquifers.
LPVB	7	TAC	Comment / Recommendation 1: Inconsistent Groundwater MonitoringTAC members all noted and commented on the inconsistency of groundwater elevation and water quality monitoring in the LPVB. Specifically, expected and necessary groundwater elevation and water quality measurement events have been routinely missed since adoption of the GSP. It is critical that these basic data be collected frequently and consistently as without them it is not possible to evaluate conditions in the Basin relative to sustainable management criteria with certainty. The TAC recognizes that the Watermaster relies on partner agencies for groundwater monitoring in many cases and cannot control the data collection programs of those agencies. However, the inconsistent data collection that has occurred as a result of this approach thus far presents a problem that is too large for the Watermaster not to address as quickly and effectively as possible. The TAC is concerned that important interpretations and statements regarding groundwater sustainability presented in the Draft GSP Evaluation are based on limited data (in some cases as little as one or two data points). These interpretations include evaluations of basin-wide, aquifer specific, and management area groundwater conditions, comparisons to minimum thresholds for groundwater sustainability, and conclusions regarding the effectiveness of groundwater management in the LPVB. The TAC questions whether the interpretations can be relied upon given that they are based on such limited and inconsistent data.	The Watermaster agrees that the monitoring in LPVB can be improved. The Watermaster will work with partner agencies to formalize an agreement to monitor critical wells and will continue to pursue funding mechanisms to fill data gaps and install additional dedicated monitoring wells, if possible.
LPVB	7	TAC	To address this inconsistent groundwater monitoring problem the TAC recommends the following: 1. Appropriately caveat interpretations, comparisons, and conclusions that rely on limited and inconsistently collected data (see detailed comments in the attached table for references to specific text passages).	The text has been revised to reflect this comment.
LPVB	7	TAC	2. Either establish agreements with partner agencies to consistently, correctly, and routinely collect the groundwater elevation and water quality data required to adequately assess groundwater conditions and progress towards sustainability or begin perform these monitoring responsibilities using Watermaster staff.	The Watermaster will work with partner agencies to establish agreements to ensure appropriate data is collected

Basin	Letter Number	Commentor	Comment	Response
LPVB	7	TAC	3. Fast track the projects in the GSP and Draft GSP Evaluation that include construction of monitoring wells and instrumentation of those and other monitoring wells with transducers (Projects 7 and 8, respectively). The Draft GSP Evaluation alluded to delays in implementation of these projects occurred because the Watermaster did not receive requested grant funds. The TAC recommends identifying alternative funding sources for this critical component of successful sustainable groundwater management. If alternative funding sources cannot be secured, consider requesting Technical Support Services (TSS) from DWR. The DWR TSS program was designed to provide field activity support, including monitoring well installation, groundwater level monitoring training, and other relevant assistance.	Noted. The Watermaster plans to develop estimated costs and a spending plan, with committee consultation, to include in Watermaster's annual budget for funding through basin assessments. Watermaster staff continues to work to secure funding that can be used to install dedicated monitoring wells and fill data gaps.
LPVB	7	TAC	4. Expand the existing monitoring network by including private wells when and where necessary. While private, active, pumping wells are not perfect for groundwater elevation and water quality monitoring, they are a reasonable means of expanding monitoring networks into areas where dedicated monitoring wells don't exist and providing redundancy for existing monitored wells.	The overall monitoring network includes all wells that are screened in individual aquifers, in conformance with SGMA. This includes private production wells. As discussed in response to recommendation 2, Watermaster will work take steps to improve routine groundwater monitoring.a72
LPVB	7	TAC	Comment / Recommendation 2: Boundary Condition Differences in West and East Management Area Models The Draft GSP Evaluation indicates that the model used to simulate conditions in the West Las Posas Management Area (WLPMA), the Coastal Plain Model, developed, maintained, and employed by United Water Conservation District (UWCD) was recently modified. The extent and nature of these modifications was not described in detail in the Draft GSP Evaluation, but TAC review did note that a potentially significant change was made to the boundary condition used to represent the Somis Fault, which separates the WLPMA from the East Las Posas Management Area (ELPMA). This component of the Coastal Plain Model that is important to the representation of groundwater flow in the LPVB was changed from a no-flow boundary condition to a partial general head boundary condition. This change means the Coastal Plain Model used for the Draft GSP Evaluation allowed flow from the WLPMA to the ELPMA.	Noted. Thank you for your comment.
LPVB	7	TAC	The Draft GSP Evaluation indicates that the limited groundwater elevation information in this area of the LPVB implies limited groundwater flow across the Somis Fault and that gradients suggest that if flow occurs it is from ELPMA to WLPMA. Unfortunately, further exploration of the effects of the change to the Coastal Plain Model are not included in the document.	UWCD is currently working on the supplemental documentation to cover the changes made since the GSP. As of the time this comment response matrix was prepared, As of the time this comment response matrix was prepared, UWCD has not yet finalized this supplemental documentation.
LPVB	7	TAC	The ELPMA model used to simulate conditions in the ELPMA maintains a no-flow boundary along the Somis Fault, which the TAC assumes results in potentially significant differences in simulated groundwater flow across the WLPMA/ELPMA boundary in the two models. However, the differences between the flow conditions and water budgets in the two models is not described in the Draft GSP Evaluation. The TAC is concerned that the difference in the representation of this boundary between the two LPVB management areas signifies a problematic discrepancy in simulated groundwater flow and budgets within the LPVB.	Water budgets are provided for each management area. These budgets are similar to those presented in the GSP, and changes to the VCRGFM do not manifest in large changes to the sustainable yield estimate of the WLPMA. Watermaster will continue to work with the TAC to improve the understanding of the potential impact of management actions and projects in the LPVB.
LPVB	7	TAC	The Draft GSP Evaluation does indicate that the Watermaster plans to coordinate with UWCD and the TAC to better align the representation of this boundary condition in advance of the Basin Optimization Yield Study. However, the Draft GSP Evaluation relies on simulations using these two models to assess the adequacy of the GSP to meet the sustainability goal of the LPVB, including the effect of projects and management actions and estimating historical changes in groundwater storage, effects of reductions in groundwater production, and sustainable yield for each management area.	The current models used for the WLPMA and ELPMA are the best available tools for assessing the impacts of projects and management actions. The TAC rightly points to areas where these models can be improved for future use.
LPVB	7	TAC	The TAC also notes that the Draft GSP Evaluation includes references to multiple documents that include additional information regarding the changes to the Coastal Plain Model. However, these references are either not yet available for review or the information included in them is not included in the Draft GSP Evaluation.	UWCD is currently working on the supplemental documentation to cover the changes made since the GSP. As of the time this comment response matrix was prepared, UWCD has not yet finalized this supplemental documentation.
LPVB	7	TAC	The TAC recommends the following regarding this model discrepancy: 1. Add detailed information relating to the changes to the Coastal Plain Model. This should include maps showing the area of changed Somis Fault boundary conditions, volumes of flow between the two management areas, comparison to the version of the model used in the original GSP, etc. This additional detail should be aimed at providing information to alleviate concerns regarding the apparent inconsistency between the two models.	Watermaster has forwarded TAC's recommendation to UWCD. UWCD is currently working on the supplemental documentation to cover the changes made since the GSP. As of the time this comment response matrix was prepared, UWCD has not yet provided a date on which the supplemental documentation will be made available.

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LPVB	7	TAC	2. Include relevant information on the changes to the Coastal Plain Model in the Draft GSP Evaluation, not simply as references to other documents. Stakeholders and interested parties should not have to read reports for other basins to access information related to important components of the LPVB GSP Evaluation.	See above response.
LPVB	7	TAC	3. Assess and document the differences in simulated flow and water budgets across the Somis Fault between the two models and include this information in the GSP Evaluation.	Water budgets are provided for each management area. These budgets are similar to those presented in the GSP, and changes to the VCRGFM do not manifest in large changes to the sustainable yield estimate of the WLPMA. Watermaster will continue to work with the TAC to improve the understanding of the potential impact of management actions and projects in the LPVB.
LPVB	7	TAC	4. Advance the coordination with UWCD and the TAC to develop agreement on the representation of this boundary in the two models. The coordination of this boundary between the two models should not wait until after the GSP is amended. The analyses in the amended GSP should be consistent with the Basin Optimization Yield Study.	Noted. Thank you for your comment.
LPVB	7	TAC	Comment / Recommendation 3: Relationship Between Oxnard Subbasin and Sustainability in the WLPMA The TAC is concerned that the methods used to date to assess the effects of pumping in the WLPMA on seawater intrusion conditions in the Oxnard Subbasin lack scientific rigor. The Draft GSP Evaluation presented model scenarios that included simultaneous changes in pumping volumes in the WLPMA, both Oxnard aquifers, and the Pleasant Valley Basin. The results of these simulations were then compared to a baseline scenario and the changes to simulated seawater intrusion in the Oxnard Subbasin were used to evaluate effects on sustainable yield in the WLPMA. However, the changes to pumping volumes in the scenarios appeared to be relatively arbitrary and the TAC is concerned that the resulting sustainable yield estimates for the WLPMA are similarly arbitrary.	The connection between the WLPMA and the Oxnard Subbasin was established with rigorous scientific evaluation and review prior to SGMA. The evaluation does not seek to quantify the impact of pumping in one basin on another. Rather, it follows SGMA and the GSP by acknowledging the interconnectedness of the Oxnard Subbasin and WLPMA. The WLPMA sustainability yield was estimated with appropriate scientific rigor through numerical flow modeling.
LPVB	7	TAC	The TAC recommends developing model scenarios that limit changes to single variables to assess the impacts of those variables on sustainability. This could include scenarios wherein pumping in the Oxnard Subbasin and Pleasant Valley Subbasin are held constant while pumping in WLPMA is varied. Comparison of the results of such simulations could then be compared to the baseline to evaluate changes in seawater intrusion in the Oxnard Subbasin, thereby developing a relationship between pumping volume in WLPMA and seawater intrusion. Similar scenarios with reductions in pumping in only the Oxnard Subbasin and only the Pleasant Valley Basin could also be conducted to isolate the effects of changes in pumping in those basins on seawater intrusion. Estimates of the effects of pumping reductions in each individual basin could then be used to more precisely identify the sustainable yield in each basin.	This is a good recommendation for future work.
LPVB	7	TAC	Comment / Recommendation 4: Respond Completely to all Elements of the DWR Recommended Corrective ActionsThe DWR recommended corrective actions (RCAs) all include multiple requests for additional information, and the responses did not always provide all the requested information. For instance, the RCA 2 requests discussion of the potential effects of the minimum thresholds and measurable objectives on beneficial uses and users ofgroundwater. However, the sections of the Draft GSP Evaluation intended to respond to this RCA may not adequately respond to this request. The discussion that is included is somewhat vague about the beneficial uses and users and includes errors, as detailed in the specific comments in the attached table. This is true for other RCA responses as well, as documented in the attached table	The text has been clarified and revised, where appropriate, to further explain the responses to DWR's recommended corrective actions. The revised text is responsive to DWR's RCA.
LPVB	7	TAC	The TAC recommends carefully reviewing the entirety of each RCA and identifying each component of DWR's request and including responses. The TAC believes that it is better to acknowledge each element of the RCA, even if there is insufficient information to completely address the request. In such cases it would be appropriate to indicate how the Watermaster plans to address the RCA in the future.	Agreed. The text has been clarified and revised, where appropriate, to further explain the responses to DWR's recommended corrective actions.
LPVB	7	TAC	Comment / Recommendation 5: Check Entire Document for Consistency of Language and Content The TAC noted variability in the Draft GSP Evaluation relating to use of language when presenting important conclusions and between tables and text. The TAC review specifically noted sections of text that presented the same information but used different language that was sometimes less certain and/or impactful. Instances of passive and uncertain terminology in important conclusions were also observed.	Noted. Revised where appropriate.

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LPVB	7	TAC	The TAC recommends the authors review the detailed comments in the attached table and perform a thorough review of the document to maintain consistent content and impact throughout.	Noted. The text and tables of the GSP evaluation have been revised, where appropriate, in response to TAC comments provided in the table attached to the recommendation report. The detailed responses to the comments in the table are listed below.
LPVB	7	TAC_BB-TC-1	Interpretations presented in the document that are based on limited data (in some cases as little as one or two data points), should be appropriately caveated and, as discussed in other comments, steps should be taken to better coordinate with monitoring partners to reduce the frequency of missing data.	Noted. Text has been revised where appropriate. As discussed in previous responses, Watermaster will work to formalize agreements with monitoring partners to improve monitoring data.
LPVB	7	TAC_BB-TC-2	There are a notable number of unavailable groundwater level and quality measurements during period since GSP adoption. It is critical that data be collected to evaluate status relative to the sustainable management criteria and more generally understand groundwater conditions. It is noted that FCGMA does not collect data itself and, instead, relies on other entities monitoring programs for data. To date, it does not appear that FCGMA has formalized arrangements with the monitoring entities. It is recommended that FCGMA coordinate with the monitoring entities communicate FCGMA's data needs and formalize agreements. In cases where themonitoring entities cannot commit to providing certain data or if monitoring locations are no longer available or accessible, FCGMA should take steps to address those gaps.	The Watermaster agrees that the monitoring in LPVB can be improved. The Watermaster will work with partner agencies to formalize an agreement to monitor critical wells and will continue to pursue funding mechanisms to install additional dedicated monitoring wells and fill data gaps, if possible.
LPVB	7	TAC_BB-TC-3a	Based on Figure 2-4, there does not appear to be any 2024 groundwater level measurements in the western half of the WLPMA. Therefore, it is unclear what data the quoted sentence is based upon	Figure 2-4 only shows the water level changes in the key wells relative to groundwater elevations in 2015, the minimum thresholds, and measurable objectives. Groundwater elevations are measured in wells throughout the monitoring network. The quoted sentence is based on figures 2-7 and 2-8
LPVB	7	TAC_BB-TC-3b	Based on Figure 2-4, there is one well indicating a higher groundwater level in 2024 and one indicating a lower groundwater level in the eastern half of the WLPMA. Therefore, it is unclear what data this statement is based upon.	See above response.
LPVB	7	TAC_BB-TC-3c	Consider instead distinguishing between changes in the pumping depression in the southeastern corner of the WLPMA versus the remainder of the management area, with groundwater levels appearing to be lower in former and higher in the latter.	Text has been revised.
LPVB	7	TAC_BB-TC-4	Consideration should be given to enhancing the RMP network (per review of Figure 2-2): ▪ Western WLPMA – there is no RMP for the Fox Canyon Aquifer ▪ WLPMA and ELPMA – both areas lack GCA RMPs (potential candidate RPM well is 03N19W30E07-D) ▪ Epworth Gravels – only one RPM (potential candidate for additional RMPs include 03N19W30M02 and 03N19W30E07-S)	Noted. These areas are identified in the GSP. FCGMA will investigate the inclusion of the recommended wells as RMPs.
LPVB	7	TAC_BB-TC-5	While Zone Mutual Water Company (Zone) is moving forward with the infrastructure improvements described in the evaluation report, Zone has indicated there are potential legal issues that may prohibit or limit Zone's ability to wheel water to non-shareholders. These issues need to be studied along with other opportunities for moving water between WLPMA and ELPMA. Regarding the 500 AFY of water savings associated with converting from scheduled deliveries to on-demand deliveries, this benefit should not be included in the future water supplies for the Projects Scenario because that water savings will be retained as carryover or leased to other water right holders for the benefit of Zone shareholders unless Watermaster creates a financial mechanism to make Zone whole.	Noted. The project description was solicited as part of the FCGMA Board project prioritization process that commenced prior to formation of the TAC. The project description provided by the project proponent was used to incorporate the project into the model for the GSP evaluation. Revisions to the project description are planned for the Basin Optimization Plan.
LPVB	7	TAC_BB-TC-6	This statement is incorrect. 10 of the 22 wells are Calleguas ASR wells.	Text has been revised
LPVB	7	TAC_BB-TC-7	The reviewer checked the top perforation elevation of 13 of the 22 wells in Table 2-1 for which data was readily available and found 12/13 to be incorrect, with errors averaging 48 feet ranging from 10 to 364 feet. Using the correct elevations for the twelve wells reviewed would add three wells to the number of wells with a projected groundwater elevation below the top of the screen. Based on these findings, a full QC of this table is warranted	Table values were revised.
LPVB	7	TAC_BB-TC-8	The analysis implies that significant effects will not manifest until the static groundwater level drops below the top of the screen in a well. The analysis also implicitly assumes that pumping can be sustained with pump placements in the screen interval. These assumptions are inconsistent with the generally accepted	The FCGMA board determined in the GSP that a loss of 20% or more of storage beyond the 2015 level in critical areas of the ELPMA constitutes a significant and unreasonable impact to the area. The analysis in the draft GSP Evaluation

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			well design principle of pump placement above the top of screen to avoid pump bowl or screen abrasion, sand production, cascading water, and accelerated fouling (Glotfelty, 2019 - Art of Water Wells). Wells with partially desaturated screens commonly experience increased fouling rates (sometimes very rapid), which causes significant loss of production, premature well rehabilitation, and premature well replacement. Text should be added to explain why these effects are not considered in the analysis.	evaluates well screens and projected water levels, but not significant effects to production. The column label in Table 2-1 has been revised to "Projected Water Level Below 50% of the Well Screen." The previous label incorrectly used the word "production."
LPVB	7	TAC_BB-TC-9	Given that 10 of the 22 wells identified in Table 2-1 are Calleguas ASR wells, the analysis should address potential effects on storage and recovery operations of the Calleguas ASR well fields.	The Watermaster is a member of the Calleguas ASR Study Group that will develop a Calleguas ASR Project Operations Plan. Future evaluations will include information from this effort.
LPVB	7	TAC_BB-TC-10	Another potential explanation for decrease greenness could be vegetation removal during high flow events during the 2023 and 2023 wet seasons. Air photos could be reviewed to assess this.	Text has been added to note this.
LPVB	7	TAC_BB-TC-11	These statements are incorrect. The project would ensure that existing inflows continue, which maintains status quo, as opposed to adding water to the ELPMA water balance.	Revised.
LPVB	7	TAC_BB-TC-12	These statements appear to be in conflict. Please provide information about anticipated reductions in groundwater demand vs. reduction in imported water purchases. In other words, what is the anticipated net benefit to the ELPMA water balance?	Text has been revised to remove the reference to reducing groundwater demands.
LPVB	7	TAC_BB-TC-13	Calleguas has constructed three multi-level groundwater monitoring wells, which provides new stratigraphic data for the hydrostratigraphic model. In particular, 03N19W30E07 is a nested monitoring well that provides data to better characterize the Epworth, FCA, and GCA in northern ELPMA and 02N20W11B01-3 is a clustered monitoring well that provides data better characterize the Upper San Pedro Formation and FCA south of the Moorpark Anticline in the ELPMA. In addition, groundwater level data collected from these wells can be used to characterize vertical gradients. These data should be incorporated into the Hydrogeologic Conceptual Model	Text has been added to the hydrogeologic conceptual model section noting the construction of these wells.
LPVB	7	TAC_BB-TC-14	Text states that no additional information has been collected to address data gaps. Please see prior comment. New data from Calleguas' multi-level groundwater monitoring wells helps address the data gaps listed in Table 4-1.	Text has been revised.
LPVB	7	TAC_BB-TC-15	Review of the modeling for the WLPMA cannot not be completed at this time because documentation of the Coastal Plan model is not yet available. Based on review of the GSP evaluation, there are several issues with the Coastal Plain model that appear worthy of further review in consultation with the TAC. Additional items worthy of further review may be identified after documentation review. The issues identified based on the GSP evaluation review include (1) conversion of the WLPMA-ELPMA model boundary from no-flow to general head, (2) inconsistency between the model LAS water balance (Table 2-4b), which indicates little to no underflow from the Oxnard Subbasin into WLPMA in contrast with spring groundwater elevation contours in the annual reports that suggest there is underflow from the Oxnard Subbasin into WLPMA; (3) groundwater exchange between Pleasant Valley Basin and WLPMA; and (4) groundwater exchange between ELPMA and WLPMA.	Noted. Thank you for your comment.
LPVB	7	TAC_BB-TC-16	While assessment of impacts on adjacent basins is clearly required under SGMA, the framing and analysis of WLPMA impact on Oxnard Basin and the approach to estimating WLPMA sustainable yield seem problematic for multiple reasons. First the analysis has not isolated the impact of WLPMA pumping on seawater intrusion for technical evaluation and consideration in policy making. Second, the analysis of the interaction between WLPMA and the Oxnard Subbasin appears to ignore the fact that numerous WLPMA groundwater pumpers pay pump fees to UWCD. This is evident in the discussion of the underflows from Oxnard Subbasin into WLPMA, which are characterized as a "losses of underflow recharge" to the Oxnard Subbasin. The implication is that WLPMA is taking water away from the Oxnard Subbasin, when, in fact, many pumpers have paid for the benefit of underflow from UCWD's recharge operations. Consideration should be given to reframing analysis of WLPMA impacts on seawater intrusion and WLPMA sustainable yield to account for underflow that is paid for by WLPMA extraction fees paid to UWCD and additional analysis that isolates the actual influence of WLPMA pumping on seawater intrusion.	The term "loss" has been replaced in this section by the term "difference" to remove an unintended value judgement in the draft.

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LPVB	7	TAC_BB-TC-17	Regarding the Future Baseline with EBB scenario, the text states "These results indicate that groundwater production at the average 2016 to 2022 rates in the Oxnard Subbasin, PVB, and WLPMA may be sustainable ifUWCD's EBB project is implemented at a 10,000 AFY production scale." It is unclear how this scenario can be considered sustainable for the WLPMA because Figures 5-23a and b show minimum threshold exceedances for this scenario.	Noted. The text has been revised to include this observation. The minimum threshold may need to be shifted in WLPMA, as well as at the coast, if EBB is implemented.
LPVB	7	TAC_BB-TC-18	Please incorporate the table produced for TAC titled "Summary of Annual Discharges Simulated in the East Las Posas Model (2040-2069 Average" into the evaluation report in this section as it provides important context for technical evaluation of the scenarios.	Table was added.
LPVB	7	TAC_BB-TC-19	Average ELPMA pumping 2021-2022 value of 23,800 incorrectly includes Epworth Gravels pumping and should be reduced to 23,400 (see Table 4-4). After making that correction, the amount of extraction in excess of the upper estimate of sustainable yield becomes 1,900 AFY and should be updated.	Text has been revised.
LPVB	7	TAC_BB-TC-20	The 2021-2022 average annual extractions from the Epworth Gravels is incorrectly reported as approximately 900 AFY and being approximately 450 AFY lower than the estimated upper end of the sustainable yield. Per Table 4-4, the 2021-2022 average annual extractions should be approximately 460 AFY, which is approximately 890 AFY lower than the estimated upper end of the sustainable yield.	Text has been revised.
LPVB	7	TAC_BB-TC-21	Consideration should be given to incorporating the three multi-level monitoring wells constructed by Calleguas in the ELPMA into the monitoring network. These monitoring well nests/clusters provide valuable aquifer specific data, including much needed data for the Grimes Canyon Aquifer at one location. Data from these wells are already provided to FCGMA by Calleguas MWD on a regular basis.	Text has been revised.
LPVB	7	TAC_BB-TC-22	Calleguas has not had access issues. The following are clarifications concerning the wells listed in Table 6-2: ▪ Well 03N20W32H02S has been dry for numerous years. Calleguas continues to check the well for water and will reinstall a transducer if water returns. Consider retaining in monitoring network pending increasing groundwater levels. ▪ Well 02N20W02D02S was destroyed by the owner. ▪ Well 03N20W36P01S has a transducer stuck in the sounding tube. The transducer will be reinstalled the next time the well pump is removed. ▪ Well 03N20W35J01S is continuing to be monitored with a transducer. However, the groundwater levels are considered anomalous. It is recommended that this well be removed from the monitoring network due to anomalous data. ▪ Well 02N20W01B02 is noted as being added to the monitoring network in Table 6-2. This is not correct. This well was already included in the monitoring network in the GSP. Table 6-2 says no water quality sampling. This is not correct. Water quality samples are collected according to satisfy Division of Drinking Water requirements and are available from Calleguas or from the SWRCB website. Calleguas has added its three multilevel groundwater monitoring wells to its monitoring network.	These suggestions have been incorporated into the text
LPVB	7	TAC_BB-TC-23	Table 6-3 indicates that several wells are "no longer monitored" for water quality. It is noted that Calleguas has never sampled these wells (except once for monitoring wells immediately following construction). FCGMA incorrectly assumed that Calleguas was sampling these wells. Well 02N19W06F01S is an agricultural well, not a monitoring well. Well 02N20W09Q08S is a monitoring well, not a municipal well.	Table has been changed and text has been revised.
LPVB	7	TAC_BB-TC-24	Calleguas and VCWWD have transducers installed in all the wells in their monitoring network. The only reason data may be missing for these wells during the fall and spring two-week windows is if a transducer has failed and is pending reinstallation. FCGMA is encouraged to coordinate with Calleguas and VCWWD to facilitate determine an approach for collection of manual groundwater level measurements to address the fall and spring window data needs.	Text has been revised to recognize where transducers are already installed.
LPVB	7	TAC_BB-TC-25	It is noted that Calleguas and VCWWD already have transducers installed in all the wells in their monitoring network.	Text has been revised to recognize where transducers are already installed.

Basin	Letter Number	Commentor	Comment	Response
LPVB	7	TAC_BB-TC-26	As noted in comment BB-TC-23, Calleguas never committed to sample the wells in its monitoring network, other than ASR wells, which are sampled to comply with Division of Drinking Water requirements.	Table has been changed and text has been revised.
LPVB	7	TAC_BB-TC-27	Consideration should be given to reevaluating data gaps in consultation with TAC after FCGMA staff have met and conferred with the monitoring entities.	Noted. This suggestion has been added to the list of coordination activities to be performed in the upcoming years.
LPVB	7	TAC_BB-TC-28a	1.Consideration should be given to including groundwater level contour maps. Perhaps the annual report figures could be compiled into an appendix.	Noted. The focus of this evaluation is on the progress toward implementation. Contour maps are generated annually and included in the annual reports, which are available online at the FCGMA and DWR websites.
LPVB	7	TAC_BB-TC-28b	2.Consideration should be given to including discussion concerning whether there were any notable changes in the spatial distribution of pumping in the management areas.	Noted. This is a good suggestion for incorporation into the annual reports.
LPVB	7	TAC_BB-EC-1	The reviewer noticed a number of incorrect figure and table number references in the text. Consider QC'ing.	Text, figures, and tables have been QC'd.
LPVB	7	TAC_BB-EC-2	Wells 18H12 and 17L01 (WLPMA) and 01Q02 (ELPMA) are depicted as RMP/Key Wells but are not identified as such in the GSP and are not listed in Table 2-2.	Figure has been revised
LPVB	7	TAC_BB-EC-3	RMP/Key Well 35R02 is missing on Figure 2-2.	Figure has been revised
LPVB	7	TAC_BB-EC-4	per Table 2-2 and the GSP, there are 15 (13 FCA and 2 Shallow Aquifer).	Revised.
LPVB	7	TAC_BB-EC-5	These figures are a clever approach to communicating status relative to the SMCs. However, while the graphics in the lower half of the figures are intuitive, they are misleading because the scale for each well is different. This is most evident in the fact that the distance between the MO and MT lines are same for each well when the actual distance between MO and MT ranges from 20 to 100 feet. Additionally, wells appear closer or further from their respective MO / MT relative to other wells than they actually are. For example, the Spring 2024 groundwater levels for 26R03 and 01B02 on Figure 2-4 visually appear to be very different heights above their respective MOs but are actually about the same (24 and 23 feet, respectively). At a minimum, the bottom graphics should be noted as being not to scale and that the graphics for the various wells are not comparable. Preferable, the graphics would be adjusted to that all wells are at the same scale and the actual distances between MO and MT for each well are depicted.	Noted. The intent of these figures is to summarize the status relative to the SMCs. The graphics are scaled to the difference between the MT and MO. This information has been added to the figures. Absolute change in groundwater level relative to the MT and MO is displayed in the hydrographs.
LPVB	7	TAC_BB-EC-6	The values in this paragraph are incorrect: • Average WLPMA pumping 2021-2022 was 4,000 AFY more than the upper estimate of sustainable yield, not 3,100 AFY (see value reported on p. 90). • Average ELPMA pumping 2021-2022 was 1,900 AFY more than the upper estimate of sustainable yield, not 2,300 AFY (note: although 2,300 is reported on p. 91, the pumping used for the calculation incorrectly includes Epworth Gravels pumping).	WLPMA reference has been updated to 4,000 AFY more than the upper estimate of the sustainable yield. The ELPMA reference was not updated. The 2021-2022 extraction of 23,800 AFY is 2,300 AFY higher than the upper end estimate of the sustainable yield for the ELPMA (21,500 AFY, inclusive of pumping within the Epworth Gravels). Consistent with the GSP, the sustainable yield includes the Epworth Gravels. Page 91 has been updated to note this.
LPVB	7	TAC_BB-EC-7	Consider also mentioning Simi Valley dewatering wells here, i.e., the City of Simi Valley is no longer planning to divert dewatering well discharges to a desalter for potable use.	Added
LPVB	7	TAC_BB-EC-8	Per Figure 2-4, groundwater elevations were measured in 16 of the 21 key wells, not 15 as indicated in the text.	Revised.
LPVB	7	TAC_BB-EC-9	WLPMA – LAS estimated 2016-2024 change in storage value is incorrect. S/B -32,970	Revised.
LPVB	7	TAC_BB-EC-10	It is unclear what new information has been incorporated into understanding of recharge areas.	Noted. This is correcting an omission in the GSP.
LPVB	7	TAC_BB-EC-11	Text states "Available data characterizing groundwater extractions in water years 2021 and 2022 indicate that groundwater extractions from the LPVB averaged approximately 42,400 AFY (Tables 4-3 and 4-4)." Per the referenced tables, the value cited in the text should be 40,400 AFY	Revised.
LPVB	7	TAC_BB-EC-12	WY 2022 Epworth Gravels Aquifer extraction value appears anomalously low. Consider investigating and/or footnoting.	This is the correct value, although the reported extraction value had to be estimated from the AMI data and may be lower than the actual volume produced.
LPVB	7	TAC_BB-EC-13	Please footnote table to clarify whether values include Calleguas MWD extractions.	This table does not include the CMWD extractions. A footnote has been added to the table.
LPVB	7	TAC_BB-EC-14	Something is wrong with the transition from p. 68 to p. 69.	Noted. Thank you for your comment.
LPVB	7	TAC_BB-EC-15	Second bullet – the wrong model is referenced.	Revised.
LPVB	7	TAC_BB-EC-16	Explanation for footnote "a" is missing.	Footnote designation was added in error. Table has been revised.

Basin	Letter Number	Commentor	Comment	Response
LPVB	7	TAC_BB-EC-17	“CGMA” s/b “FCGMA”	Revised.
LPVB	7	TAC_BA-1	Overall, monitoring in the LPVB could be improved. Many key wells have not been monitored and no reasons for this are provided. For example, key well 02N20W06R01S, which has been below the water-level minimum threshold, was not monitored in 2024. The lack of monitoring seems particularly true in the West Las Posas Management Area (WLPMA), where there are five key wells but only two or three are ever monitored. The lack of explanation could be interpreted to mean that the Fox Canyon Groundwater Management Agency (FCGMA) is trying to downplay this issue.	The Watermaster relies on other agencies for monitoring data and agrees that the monitoring in LPVB can be improved. All available data collected during the March and October have been included in the evaluation. The Watermaster will work with partner agencies to formalize an agreement to monitor critical wells and will continue to pursue funding mechanisms to install additional dedicated monitoring wells, if possible.
LPVB	7	TAC_BA-2	In terms of projects benefitting the LPVB, the evaluation appears to indicate that action is being delayed because of the Judgment and Basin Optimization Plan. For example, it appears that FCGMA has spent most their time on the Oxnard Basin model, work that was done by United Water Conservation District (UWCD). This seems to be the only substantive management action that has moved forward in LPVB.	The introductory text to the projects and management actions section of the GSP Evaluation provides context for the reader on the additional work that has been done since the GSP was adopted as well as the work that is mandated by the Judgment. FCGMA continued to work on the projects identified in the GSP, and solicited additional projects after the GSP was adopted. FCGMA also provides a detailed list of the actions taken by the agency since the GSP adoption in section 7 of the GSP periodic evaluation. The statement that UWCD's updates to the Coastal Plain model are "the only substantive management action that had moved forward in the LPVB" is a mischaracterization of the extensive work that is documented in the periodic evaluation. Furthermore, the improvements to the Coastal Plain model represent a technical improvement, but are not a management action.
LPVB	7	TAC_BA-3	The Grimes Canyon Aquifer (GCA) seems to be mentioned then ignored. In WLPMA, where data are particularly sparse, it just gets lumped into the Lower Aquifer System (LAS).	There are no monitoring wells screened solely in the GCA. This is a data gap that FCGMA has sought to fill by pursuing SGM grant funding for monitoring wells in the LPVB. The Watermaster plans to develop estimated costs and a spending plan, with committee consultation, to include in Watermaster's annual budget for funding through basin assessments. Watermaster staff continues to work to secure funding that can be used to install dedicated monitoring wells and fill data gaps, including in the GCA.
LPVB	7	TAC_BA-4	Figure 4-1 that shows recharge areas for Fox Canyon Aquifer (FCA). Why no equivalent figure for the GCA recharge area?	The recharge area consists of undifferentiated outcrops of FCA and GCA. The text and figure have been revised accordingly.
LPVB	7	TAC_BA-5	There are indications of deteriorating groundwater quality in localized areas. The Evaluations states that this is not related to pumping, but no explanation is given for why for the local concentration increases. Is water from the Upper San Pedro possibly being pulled down by pumping?	Groundwater from the Upper San Pedro is being pulled down by groundwater production in the Fox Canyon aquifer. The Upper San Pedro is a principal source of recharge to the underlying aquifers. There are not enough data to suggest that groundwater quality changes are related to groundwater production, or that the groundwater quality in the Upper San Pedro is worse than the groundwater quality in the underlying FCA (see figures 2-19 through 2-23).
LPVB	7	TAC_BA-6	FCGMA appears to source most or all of the necessary monitoring data from other agencies. Thus, there is no apparent direct culpability if data are not collected.	FCGMA relies on other agencies with jurisdiction to monitor their respective wells and monitoring points. The agencies coordinate with each other, and FCGMA appreciates the professionals that collect the data from each agency and understands that each agency acts in good faith to access a monitoring point and collect data. As discussed above, The Watermaster will work with partner agencies to formalize an agreement to monitor critical wells
LPVB	7	TAC_BA-7	A large amount of new modeling work for the Oxnard Basin is presented. This work is only slightly relevant to the WLPMA of LPVB, but much attention is devoted to describing this work in the Evaluation. The many particle tracking figures presented do not appear to be relevant to the Evaluation.	The particle tracks are presented to show the modeled influence of each scenario on seawater intrusion. These are relevant to the WLPMA, which is included within the model domain because it is hydrogeologically connected to the adjacent Oxnard Subbasin.
LPVB	7	TAC_BA-8	Not sure what this is referring to?	Typo has been corrected
LPVB	7	TAC_BA-9	Need to explain how this apparent mismatch will be managed in the document and in future. Water Year and Court Water Year (when required)?	Clarification added to footnote.
LPVB	7	TAC_BA-10	Not clear what this sentence achieves? Suggest re-wording or deleting.	This sentence is to advise DWR that there may be impacts to the implementation of the LPVB GSP that are not currently understood. Future GSP evaluations may

Basin	Letter Number	Commentor	Comment	Response
				need to explain how implementation has differed from what is presented here, and the reasons why.
LPVB	7	TAC_BA-11	Groundwater elevations in the GCA in WLPMA are not mentioned? This is inconsistent, as it is mentioned for ELPMA Need to mention that there are few wells in the GCA in WLPMA and this is an area of uncertainty? Or is it the intention to call the FCA/GCA the LAS in WLPMA as per Table 2.2 and brush over the lack of aquifer specific wells?	The lack of aquifer specific wells was discussed thoroughly in the GSP and is presented clearly in the GSP evaluation. The Watermaster will develop estimated costs and a spending plan, with committee consultation, to include in Watermaster's annual budget for funding through basin assessments to provide funding to install additional dedicated monitoring wells and transducers. There are no monitoring wells screened solely in the GCA in the WLPMA and only one in the ELPMA. This is a data gap that FCGMA has sought to fill by pursuing SGM grant funding for monitoring wells in the LPVB.
LPVB	7	TAC_BA-12	Suggested addition in red text: Groundwater elevations in central ELPMA near the CMWD ASR well field	Revised
LPVB	7	TAC_BA-13	Can this be re-written? This is expressed more clearly on page 17 as "…groundwater levels, significant and unreasonable loss of groundwater in storage, and, in the WLPMA, will not prevent the Oxnard Subbasin from achieving its sustainability goal"	This is a quote from the GSP and cannot be revised.
LPVB	7	TAC_BA-14	This is a subjective comment and could be deleted. Or the red text could be added. Suggest this document should focus on technical uncertainties rather than administrative."The largest administrative uncertainty is related to how the LPVB Judgment will impact FCGMA's ability to implement the GSP and sustainably manage the LPVB,"	This evaluation is required, under SGMA, to cover both the technical and administrative implementation components as both impact the ability of an agency to successfully implement the GSP. "Administrative" has been added to the sentence as suggested.
LPVB	7	TAC_BA-15	Is it worth noting the reason why the elevation was not measured in this key well? Leaving it as unexplained reduces the robustness of data reporting.	Noted. FCGMA will work to include field notes, as appropriate, in the future.
LPVB	7	TAC_BA-16	The Table would be stronger if there was a column or note explaining why key wells were not measured, otherwise it looks like poor groundwater management – there are lots of '-' cells indicating data not collected, which is obviously disappointing	Same as above.
LPVB	7	TAC_BA-17	To avoid confusion - the 'from' in the sentence could be read as ft msl, when the intention is to show the change in elevations. Previous paras and next sentence are clearer.	Revised
LPVB	7	TAC_BA-18	Explain the reasons and note that it remains an area of uncertainty? Otherwise, it looks like it is being glossed over.	The text has been revised to not that this remains an area of uncertainty.
LPVB	7	TAC_BA-19	typo	Revised
LPVB	7	TAC_BA-20	Is there any proposal to replace these two key wells with new or other wells? It would counterbalance the negative	Yes. FCGMA is investigating whether these wells can still be used or need to be replaced.
LPVB	7	TAC_BA-21	Title of last "Outflow" column is "Subsurface flow to the ELPMAa" Footnote "a" states, "Represents simulated underflows from the East Las Posas Management Area" Do these contradict? Footnote should say "to"? With respect to flow from WLPMA to ELPMA, reference Section 5.1.1 because new finding and still being evaluated.	Table header has changed and clarification has been added to the footnote.
LPVB	7	TAC_BA-22	First column of "Outflow" is "Outflow to PV1" Should that be PVB?	Revised
LPVB	7	TAC_BA-23	Column labeled "Aquifer" has many instances of "Unknown" Can the aquifer be ascertained by well depth, well completion data, local stratigraphy, well chemistry etc? Collecting data from wells without knowing the aquifer diminishes the value of that data. Doing statistics on data of unknown provenance is questionable/not robust	Table has been corrected to reflect the designations in the GSP.
LPVB	7	TAC_BA-24	Increasing trends are noted in a number of wells. While the conclusion is that there is no link between increasing trends and GW production, there is a notable absence of explanations for the increasing trends. If not GW production, then what local conceptual site model is postulated to cause the increases?	There are natural variations in water quality that can occur without being influenced by groundwater production. The key to determining whether groundwater production is causing, or exacerbating, degradation of groundwater quality is to look for both spatial and temporal trends in water quality samples. There are no consistent spatial and temporal trends that suggest water quality degradation is occurring as a result of groundwater production in the LPVB.

Basin	Letter Number	Commentor	Comment	Response
LPVB	7	TAC_BA-25	The previous sentence suggests increases are occurring in wells completed in the USP, but not in the FCA/GCA.Would a hypothetical conceptual model be that groundwater production is pulling higher TDS water down fromthe USP and that there is a link? What is the TDS of USP groundwater?	The previous sentence was deleted from the text. There are not enough wells screened in the USP to generalize the trends. The TDS concentrations are presented in Figure 2-19.
LPVB	7	TAC_BA-26	A formal agreement to ensure future maintenance of these non-native flows will be evaluated as through the Basin Optimization Plan.	Revised
LPVB	7	TAC_BA-27	Is not the biggest benefit of reduced groundwater production the reduced possibility of adverse effects, rather than a specific effect in Oxnard Subbasin?	Agreed. Revised.
LPVB	7	TAC_BA-28	Why none in the WLPMA?	Monitoring wells were also proposed for the WLPMA (See Section 3.2.4 and 3.2.5). Typo in the text has been revised from "ELPMA" to "LPVB."
LPVB	7	TAC_BA-29	Missing word?	Revised
LPVB	7	TAC_BA-30	climate change factors . , with the noted exception that - typo	Revised
LPVB	7	TAC_BA-31	.. Typo	Revised
LPVB	7	TAC_BA-32	Why are the simulated hydrographs shifted by -60 and +70 feet?	The starting elevations of the model simulations differed from the observed elevations. Therefore the simulations were shifted to match the observed data.
LPVB	7	TAC_BA-33	Understood that the subbasins are connected, but shouldn't the focus of sustainability be on the LPVB? The numerous particle tracking figures don't even show the LPVB. What is a LPVB stakeholder supposed to think about this?	This is the same approach that was used in the GSP. The particle tracks are presented to show the modeled influence of each scenario on seawater intrusion. These are relevant to the WLPMA, which is included within the model domain because it is hydrogeologically connected to the adjacent Oxnard Subbasin.
LPVB	7	TAC_BA-34	Should this be 'Arundo Removal Scenario Model results'?	Text has been revised to "Projects Scenario"
LPVB	7	TAC_BA-35	The loss of key well monitoring wells has not really been addressed – either the GSP had too many key wells, or this statement isn't really true?	The GSP identified an appropriate number of key wells. However, as discussed above, additional wells with known screen intervals would improve the monitoring network. This is a data gap that FCGMA has sought to fill by pursuing SGM grant funding for monitoring wells in the LPVB. Additionally, the Watermaster plans to develop estimated costs and a spending plan, with committee consultation, to include in Watermaster's annual budget for funding through basin assessments that could be used to install additional dedicated monitoring wells and transducers.
LPVB	7	TAC_BA-36	Typo. Also, are GW elevations in the eastern part of WLPMA influenced by Oxnard? More likely wells in western part of WLPMA?	Revised. Well is in the western WLPMA, not the eastern WLPMA.
LPVB	7	TAC_BA-37	Insufficient urgency demonstrated? Only one new well installed since 2019.	Text has been revised and a sentence added to discuss seeking funding.
LPVB	7	TAC_BA-38	typo	Revised
LPVB	7	TAC_BA-39	Not clear what this sentence achieves? Suggest rewording or deleting (ame as p ES-2, above)	This sentence is to advise DWR that there may be impacts to the implementation of the LPVB GSP that are not currently understood. Future GSP evaluations may need to explain how implementation has differed from what is presented here, and the reasons why.
LPVB	7	TAC_BA-40	The word "reduction" is a more accurate representation of facts	"Revisions" is the term used in DWR's guidance document.
LPVB	7	TAC_TM-1	subsidence is not discussed in Section 7.2	Revised
LPVB	7	TAC_TM-2	is chronic lowering of water levels currently a WLPMA condition? That message doesn't seem to be a prevalent message throughout the document.	As stated in the evaluation, the primary sustainability goal identified in the GSP for the LPVB is to "maintain a sufficient volume of groundwater in storage in each management area so that there is no significant and unreasonable net decline in groundwater or storage over wet and dry climatic cycles." Additionally, the GSP states that "the criterion used to define undesirable results for chronic lowering of groundwater levels in the eastern part of the WLPMA is groundwater levels that indicate a long-term decline over periods of drought and recovery." This has been added to the discussion of the sustainability goal in section 2.1

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LPVB	7	TAC_TM-3	the undesirable condition is a conversion of the aquifer from confined to unconfined. The following paragraph moves from a discussion of the aquifer transitioning from confined to unconfined, to an individual well?	The second paragraph of section 2.2.1.2 and Table 2-1 identify wells located within areas of the WLPMA subject to aquifer conversion to evaluate potential impacts to well operators.
LPVB	7	TAC_TM-4	declines in water levels to below the top of screen does not necessarily equate to the dewatering of the aquifer. Not clear how this analysis helps assess the potential for CONF-UNCONF conversion. A more powerful analysis would be to determine the tops of the confined aquifer and then compare to a declining water level.	The purpose of this review was to look at impacts to stakeholders within the area that was already designated as prone to conversion in the GSP.
LPVB	7	TAC_TM-5	value doesn't match Table 2-5	Revised
LPVB	7	TAC_TM-6	-34,780+1,810 = -32,970	Corrected.
LPVB	7	TAC_TM-7	Was this accomplished in the document?	This effort is described in Section 2.5.1 and its subsections. The text has been expanded to better characterize the work done to address DWR's recommended corrective action.
LPVB	7	TAC_TM-8	Where is this addressed in the document?	This effort is described in Section 2.5.1 and its subsections. The text has been expanded to better characterize the work done to address DWR's recommended corrective action.
LPVB	7	TAC_TM-9	Where are these data presented?	These data are presented in Section 2.5.1 and its subsections. The text has been expanded to better characterize the work done to address DWR's recommended corrective action.
LPVB	7	TAC_TM-10	What are the critical infrastructure? Their location(s) are not shown on Fig 2-29.	Text has been revised to note that no critical infrastructure has been identified in the LPVB that could be impacted by land subsidence related to groundwater pumping.
LPVB	7	TAC_TM-11	Change to: "Both the Basin Optimization Plan and Basin Optimization Yield Study are planned to be developed by FCGMA, as Watermaster for the LPVB, with consultation, review, and recommendation from the LPVB PAC and TAC."	Revised to "are being"
LPVB	7	TAC_TM-12	these connections are not highlighted/identified in this document. Why mention them here?	Deleted.
LPVB	7	TAC_TM-13	These benefits are logical, but are they actually needed to lessen declines in groundwater elevations, loss of storage, or land subsidence. Other sections in this document do not identify undesirable results associated with them (e.g., subsidence).	Revised to "undesirable results"
LPVB	7	TAC_TM-14	is chronic lowering of groundwater a risk in the WLPMA?	Chronic lowering of groundwater levels is a risk in the WLPMA.
LPVB	7	TAC_TM-15	typo	Revised.
LPVB	7	TAC_TM-16	recommend adding red text	Added.
LPVB	7	TAC_TM-17	section below says groundwater demand would be decreased by 500 AFY	The text and tables have been revised.
LPVB	7	TAC_TM-18	paragraph above says groundwater demand would be decreased by 2,300 AFY	The text and tables have been revised.
LPVB	7	TAC_TM-19	what degraded water quality impacts are attributable to the GSP's management of the basin?	Text has been revised to note the origin of the water quality degradation.
LPVB	7	TAC_TM-20	how does the pumping of groundwater to supply the desalter achieve a reduction in groundwater demands?	Deleted.
LPVB	7	TAC_TM-21	the desalter needs a source of water to treat - groundwater. Not clear how this project reduces groundwater demand and therefore prevents groundwater elevation decline.	Deleted.
LPVB	7	TAC_TM-22	how much of the 2,000 AFY of recharge would have normally been recharged downstream of the percolation ponds or in the PVB? Is this expected to be 2,000 AFY net of the "normal" recharge?	The initial benefit analysis was provided by VCWWD-1, the project proponent. The answers to your question should be explored in more detail when conducting further feasibility analysis of this specific project, which is outside the scope of the GSP evaluation.
LPVB	7	TAC_TM-23	other sections stated that vegetation is not dependent on groundwater. This seems to be backtracking on the conclusions offered elsewhere.	Revised
LPVB	7	TAC_TM-24	Recommend changing to "...an average of approximately 35,100 AFY of groundwater..."	Revised

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LPVB	7	TAC_TM-25	it is a little misleading to show the SWI values as a single number when in reality the modeling results have an error bar associated with them (e.g., 500 AFY +/-200 AFY). The single value presented in the table suggests a more exact rate than we have data to support. Can error estimates be added to the table?	Uncertainty has been added to the footnote of the table.
LPVB	7	TAC_TM-26	Last footnote should be 'd'	Revised
LPVB	7	TAC_TM-27	Seem appropriate to provide the reader with some idea of why so many wells are no longer monitored. Were the wells destroyed, landowner access denied, data determined to be redundant, monitoring entity dropped these wells from their suite of monitored wells, or ??.	Revised wording to reflect correction from CMWD
LPVB	7	TAC_TM-28	Is it anticipated that an annual report will be produced? Will the report address inferred land surface movement near critical infrastructure? If so, what infrastructure?	This will be reported in the regular GSP annual report. Thus far, no critical infrastructure has been identified by stakeholders in the LPVB that may be subject to significant and unreasonable land subsidence that substantially interferes with surface land uses.
LPVB	7	TAC_TM-29	This paragraph seems to fit better in 7.1.2 Extraction Allocations.	Revised
LPVB	7	TAC_TM-30	This GSP puts the sustainable yield at ~27K-34K AFY with projects. The judgment requires a sustainable yield of 40K AFY. What is the GSA (Watermaster?) doing to get to the 40K AFY value? Was this discussed in the GSP?	FCGMA is the groundwater sustainability agency (GSA) and the special act water agency designated by the Legislature to manage and conserve the LPV Basin's groundwater resources. (Judgment, § 3.3.) The judgment appoints FCGMA to be Watermaster for the LPV Basin. (Judgment, § 3.3.) "[T]he Judgment unites the FCGMA's role as the GSA for the Basin with its responsibilities as Watermaster" and tasks FCGMA to "continue in its role as the GSA for the Basin, fulfilling its SGMA statutory obligation, and will simultaneously integrate those regulatory responsibilities and authorities with its role as Watermaster under the Judgment." (Judgment, § 3.3.) The judgment provides "to the extent that it is feasible and cost-effective, Watermaster shall seek to augment the Basin Optimization Yield, and ultimately the Sustainable Yield, to be no less than 40,000 AFY." (Judgment, § 4.9.1.2). The judgment requires the Watermaster to prepare a Basin Optimization Plan on a five-year basis to identify the projects "that are likely to be practical, reasonable, and cost-effective to implement prior to 2040 to maintain the Operating Yield at 40,000 AFY or as close thereto as achievable." (Judgment, § 5.3.2.2). Potential projects are identified and discussed in section 3.2 of the GSP Evaluation.
LPVB	7	TAC_TM-31	Is there a map or ?? showing these locations?	There is no current map showing these locations
LPVB	7	TAC_TM-32	Helpful to reader to identify these surface water discharges. Can the surface water discharges be quantified (e.g., time series)? What values were used for the groundwater model?	Text has been revised.
LPVB	7	TAC_TM-33	This implies limited interconnection between the principal and shallow aquifers. Is this conclusionary statement consistent with the findings from the groundwater flow model? If so, suggest stating the model is supportive of these observations. If not, then why the difference.	The sentence has been modified to be specific to the observation. The intent is not to say that the two are disconnected, just that the increased pumping over the last 15 years hasn't impacted the water levels in the shallow aquifer. There are multiple potential reasons for the pumping not to have impacted the water levels. These could be explored in the future if needed.
LPVB	7	TAC_TM-34	Were the interconnected surface water bodies identified?	Specific reaches of Arroyo Simi-Las Posas may be interconnected, but no recent work has been done to verify this. FCGMA sought funding to install additional monitoring wells to update the understanding of the connection between the aquifers, but did not receive funding. Installation of additional monitoring wells and updating the understanding of gaining and losing reaches of Arroyo Simi-Las Posas are projects that should be pursued over the upcoming years.
LPVB	7	TAC_TM-35	is this sentence saying that depletions of interconnected surface waters due to pumping could occur if upstream surface water discharges decrease? Suggest splitting the sentence into two. Add a period after "...groundwater production." Create a new sentence to say "Interconnected surface water bodies could occur in the future if upstream surface water discharges decrease."	Text has been revised to state "Depletions of interconnected surface water bodies could occur in the future if upstream surface water discharges decrease."
LPVB	7	TAC_CT_1	Is this a typo, or should a value of additional flow be included here?	Typo - "approximately" has been removed

Basin	Letter Number	Commentor	Comment	Response
LPVB	7	TAC_CT_2	This project may need to be modified based on feedback from Bryan Bondy regarding ZMWC's ability to finance improvements. TAC recommendations on the projects for the Basin Optimization Plan include changing this to a Basin-wide feasibility study to increase transfers between management areas.	Noted. Thank you for your comment.
LPVB	7	TAC_CT_3	These are important projects that should be advanced quickly. See later comments on monitoring adequacy.	Agreed.
LPVB	7	TAC_CT_4	Typo	Revised
LPVB	7	TAC_CT_5	Recommend showing the all the data included in and results of this analysis in figures and tables. Table 2-1 shows only perforated interval depths, not production rates that would distinguish domestic wells from those for other uses.	Well use has been added to the table
LPVB	7	TAC_CT_6	18 percent of wells (4 of 22) with reduced capacity seems high	Noted. Thank you for your comment.
LPVB	7	TAC_CT_7	2 wells out of 22 is 9%. That is a fairly large percentage of wells going dry.	Noted. Thank you for your comment.
LPVB	7	TAC_CT_8	The DWR Recommended Corrective Action requested discussion of the effects of the MTs and MOs on beneficial uses and users. This analysis only discusses the MTs. Additionally, contextualizing the reductions in production ability from these wells in the context of the entire production from the management area may not meet DWR expectations regarding effects on beneficial users. Recommend including discussion of effects on individual well owners. Also, will there be a dry well mitigation program in case wells do go dry?	A discussion of the impacts at the MOs has been added to the text. The discussion of potential impacts refers back to the selection of the 20% storage loss threshold evaluated in the GSP, as a level of significance for the FCGMA board. Development of a dry well mitigation program is a good suggestion for future evaluation.
LPVB	7	TAC_CT_9	Can this practice be incorporated into a management action?	This practice is covered under Management Action Number 1 in the GSP - Reduction in Groundwater Production.
LPVB	7	TAC_CT_10	This paragraph seems out of place. Is it supposed to follow the header for 2.2.2?	Moved.
LPVB	7	TAC_CT_11	Should primary be principal?	Revised
LPVB	7	TAC_CT_12	These statements are based solely on one monitoring well at the extreme western end of the WLPMA. That data limitation should be discussed somewhere.	Text was added to further note the limitations of the data. The figures are presented with the text so that all readers can see the data collected and used to develop the discussion in the text.
LPVB	7	TAC_CT_13	The lack of consistent monitoring for comparing water levels may be the cause of the apparent difference between fall and spring comparisons. Inconsistent monitoring makes tracking sustainability very challenging, especially when there are so few Key Wells in the network. This problem may be skewing the assessment of sustainability and should be addressed immediately by adding dedicated monitoring wells that the FCGMA/Watermaster monitors or uses transducers to reliably measure water levels regularly.	Noted. The text is referencing a difference in the geographic water level changes in the fall, only. It is not comparing the difference between the fall and spring changes, because of the lack of data. The text has been revised to clarify this distinction.
LPVB	7	TAC_CT_14	Spring to spring declines with no fall comparison due to inconsistent monitoring should raise concern.	Noted. Thank you for your comment.
LPVB	7	TAC_CT_15	Recommend referencing relevant section discussing Interim Milestones.	Section reference has been added
LPVB	7	TAC_CT_16	This should be prioritized using available funding sources, not waiting for grant funding as alluded to in other sections. Has the FCGMA considered the Technical Support Services available through DWR? Those may not be available now that the Basin is adjudicated, but worth asking about.	The Watermaster will work with partner agencies to formalize an agreement to monitor critical wells and will continue to pursue funding mechanisms to install additional dedicated monitoring wells, if possible. The referenced sentence is out of place here though and has been deleted.
LPVB	7	TAC_CT_17	This seems a weak statement without further explanation of the mechanisms for increased groundwater elevations. Specifically, "anticipates' and "will rise" are very passive.	Agreed that this sentence is out of place in this section and has been deleted.
LPVB	7	TAC_CT_18	Typo	Revised
LPVB	7	TAC_CT_19	40 percent of key wells were not monitored and 2/3 of those that were monitored were below the MT. The importance of more consistent monitoring cannot be stressed highly enough.	The Watermaster will work with partner agencies to formalize an agreement to monitor critical wells and will continue to pursue funding mechanisms to install additional dedicated monitoring wells, if possible.
LPVB	8	TAC_CT_20	Table 2-2?	Revised
LPVB	9	TAC_CT_21	The spring 2024 measurements also included only 60% of Key Wells and the well that was furthest below the MT in fall 2023 was not included.CT-	Noted. Text has been revised where appropriate. As discussed in previous responses, Watermaster will work to formalize agreements with monitoring partners to improve monitoring data.
LPVB	10	TAC_CT_22	missing word	Revised

Basin	Letter Number	Commentor	Comment	Response
LPVB	7	TAC_CT_23	Table 2-2?	Revised
LPVB	7	TAC_CT_24	This makes it sound like there is uncertainty regarding the effectiveness of the thresholds. Can this be strengthened, or is there significant uncertainty?	Sufficient uncertainty exists to warrant the use of the qualifier in this statement.
LPVB	7	TAC_CT_25	SGMA characterizes data gaps as "a lack of information that significantly affects the understanding of basin setting or evaluation of the efficacy of the Plan implementation, and could limit the ability to assess whether a basin is being sustainably managed." Data gaps include not only limited geographic representation, but also monitoring sites that are unreliable. Once identified, as GSA must include a description in the GSP that addresses the data gaps (23CCR §354.38.) As noted above, a plan to address these data gaps should be developed and implemented as soon as possible.	Noted. The Watermaster will work with partner agencies to formalize an agreement to monitor critical wells and will continue to pursue funding mechanisms to install additional dedicated monitoring wells, if possible.
LPVB	7	TAC_CT_26	While this section does acknowledge that undesirable results have occurred, it does not appear to address the DWR RCA request for discussion of potential effects of MTs and MOs on beneficial uses and users. Recommend including a discussion to this effect to address the DWR request.	As referenced in the text, the discussion of undesirable results and impacts to beneficial uses and users of groundwater is presented in section 2.2.4 and 2.2.5.2, because the change in storage undesirable results are tied to the groundwater elevation undesirable results.
LPVB	7	TAC_CT_27	Why does this table show the average and not the total change in storage over the period? The sum of the annual changes in storage is a loss of 34,777 AF, which is 3.3 times the average annual inflow to the WLPMA. By comparison, the total change in storage for the ELPMA over the same period was a loss of 2,824 AF, which is only 10% of the average annual inflow to the management area. Recommend including and discussing the change in storage over the period as it represents significant sustained storage decline.	Sum has been added to the table and a sentence has been added to section 2.3.1.2
LPVB	7	TAC_CT_28	Please explain this calculation. As presented it appears that the change in storage for the entire period of 2004 through 2010 was an increase of 1,810 AF, but the table makes it appear to be an estimate of annual storage change.	This was discussed in section 2.3.2 and in a footnote to section 2.3.1.2, but the text has been expanded in section 2.3.2 and the footnote has been added to the main text in section 2.3.1.2 for clarity.
LPVB	7	TAC_CT_29	should this be -32,970 as in the text above?	Revised
LPVB	7	TAC_CT_30	Recommend explaining how the values in this table relate to those in Table 2-4c	Table 2-4C includes change storage for all model layers, including the Upper San Pedro Formation. Table 2-5 only reports storage change for the principal aquifers in the model. The text has been revised and expanded to explain the difference.
LPVB	7	TAC_CT_31	DWR's RCA for water quality included a request to further describe efforts to evaluate connections between groundwater production and quality, including evaluation of the "casual relationship" referenced in the GSP and document details of a process for determining if groundwater management and extraction are causing adverse impacts to groundwater quality. This discussion and documentation do not appear to have been included and neither is there a statement addressing DWR's request.	This effort is described in Section 2.5.1 and its subsections. The text has been expanded to better characterize the work done to address DWR's recommended corrective action.
LPVB	8	TAC_CT_32	This references the "casual relationship" DWR mentioned, but does not explain the reasons behind the statement or provide any plan for further assessment. Recommend being very careful about statements concerning connections between groundwater elevations and quality without evidence.	This is discussed further in the GSP, which is referenced in the sentence discussed, and specifically refers to the western part of the WLPMA where work was done prior to the GSP to develop the relationship between groundwater quality and groundwater level. The sentence does not apply to the entire LPVB.
LPVB	7	TAC_CT_33	Section 2.5.1.1. says there is a relationship. See comment on that section.	The text has been revised to distinguish the link between groundwater levels and water quality in the western and eastern portions of the WLPMA.
LPVB	8	TAC_CT_34	This project may need to be revised based on recent information presented to the TAC. See TAC Recommendation Report on the Basin Optimization Plan projects.	Noted. The project description was solicited as part of the FCGMA Board project prioritization process that commenced prior to formation of the TAC. The project description provided by the project proponent was used to incorporate the project into the model for the GSP evaluation. Revisions to the project description are planned for the Basin Optimization Plan.

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LPVB	7	TAC_CT_35	Recommend advancing this project as quickly as possible	Noted. Thank you for your comment.
LPVB	7	TAC_CT_36	Recommend advancing this project as quickly as possible	Noted. Thank you for your comment.
LPVB	7	TAC_CT_37	Please include information regarding the understanding of the LPVB and relevant information about the connection to Oxnard in this document.	The changes described are specific to the Oxnard Subbasin and are more appropriately described in the first periodic evaluation for the Oxnard Subbasin. The reference is provided for the interested reader.
LPVB	7	TAC_CT_38	42,400 - 36,100 = 6,300 AFY, and 6,300/42,400 = 15% (14.858).	Revised.
LPVB	7	TAC_CT_39	Please include all new information relevant to the LPVB in this document	The changes described are specific to the Oxnard Subbasin and are more appropriately described in the first periodic evaluation for the Oxnard Subbasin. The reference is provided for the interested reader.
LPVB	7	TAC_CT_40	Why are the modeled flows between WLPMA and ELPMA not integrated into the modeling for the ELPMA? This raises a concern that the two LPVB management areas are not being modeled in a similar or complimentary way. The statement implies that the ELPMA model still uses a no flow boundary at the Somis Fault, which would be expected to produce very different flow and water budget results when compared to the Coastal Plain model that has a partial general head boundary along the fault. The potential for flow between ELPMA and WLPMA in the coastal plain model may also have an impact on seawater intrusion in Oxnard, and that potential is not discussed.Recommend reconsidering the disparity in the way the Somis Fault is modeled in the Coastal Plain and ELPMA models.	The Watermaster agrees that reconciliation of the models used could improve the understanding of the impact of management actions and projects in the LPVB and the interconnectedness of the basins. As stated in the next paragraph, "FCGMA anticipates coordinating with UWCD, in consultation with the LPVB TAC, to better coordinate the representation of this boundary between the ELPMA and WLPMA in both LPVB models."
LPVB	7	TAC_CT_41	Where is this document? This seems like important information for the LPVB 5-Year GSP Evaluation	UWCD is currently working on the supplemental documentation to cover the changes made since the GSP. As of the time this comment response matrix was prepared, UWCD has not yet finalized this supplemental documentation.
LPVB	7	TAC_CT_42	When will this be available? Shouldn't this be available for committee review?	The tech memo was released with the final periodic evaluation.
LPVB	7	TAC_CT_43	Sentence fragment	Not found in document.
LPVB	7	TAC_CT_44	How do flows between WLPMA and ELPMA differ in the two models?	This is discussed in section 5.1.1
LPVB	7	TAC_CT_45	The percent change referenced for PVB is not consistent with the annual pumping values presented in the assumption summaries. I suspect this is a function of how the information is presented, but it should be checked and the text or percentages/volumes corrected. For instance, in NPP1 the summary says "a 20% reduction in both aquifer systems in the PVB and WLPMA" then references production volumes of "13,200 AFY in the PVB, and 10,800 AFY in the WLPMA." Comparing 13,200 AFY for NPP1 in the PVB to 13,900 AFY in Future Baseline shows a change of -5%, not 20%. All other scenarios have similar results when compared to baseline.	The 20% reduction references a 20% reduction in demand in the numerical model. However, in the Oxnard and Pleasant Valley basin, reduced demand may not result in a 20% reduction in groundwater production as surface water is used conjunctively to meet demand.
LPVB	7	TAC_CT_46	This appears to be an arbitrary means of estimating sustainable yield. The values listed are simply the results of one of several production reduction scenarios not an assessment of the maximum "amount of groundwater that can be withdrawn annually without causing undesirable results." (DWR BMP for Sustainable Management Criteria, November 2017).The SMC BMP also indicates that sustainable yield should be a single value, not a range as presented here. Please provide more information regarding the methods for estimating uncertainty in the sustainable yield estimate.	The sustainable yield of the WLPMA is based on the minimized production reduction scenario that resulted in no net seawater intrusion in the Oxnard Subbasin over the sustaining period. This is based on the method used in the GSP. But the method used to estimate sustainable yield in the GSP evaluation improves on the previous method, as requested by stakeholders, by conducting iterative model runs to reach a sustainable pumping rate for the Oxnard Subbasin, Pleasant Valley Basin, and WLPMA, collectively, as these basins are hydrogeologically interconnected. The Watermaster welcomes suggested improvements to the modeling and sustainable yield calculation for discussion and potential incorporation into the BOY and future GSP evaluations.The GSP evaluation includes both a single sustainable yield estimate, by management area, and an uncertainty range. The range of sustainable yield presented in the GSP evaluation represents the uncertainty bounds around the single sustainable yield value. A detailed description of the quantitative uncertainty analysis is provided in section 2.4.5 of the GSP. This evaluation does not change or update that uncertainty analysis.
LPVB	7	TAC_CT_47	See comment on sustainable yield without future projects regarding how to define sustainable yield.	Please see response to comment on sustainable yield without future projects above.

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LPVB	7	TAC_CT_48	Please explain how this range was estimated.	The detailed description of the quantitative uncertainty analysis is provided in the GSP.
LPVB	7	TAC_CT_49	See comment on sustainable yield without future projects regarding how to define sustainable yield.	Please see response to comment on sustainable yield without future projects above.
LPVB	7	TAC_CT_50	Please explain how this range was estimated.	The detailed description of the uncertainty calculation is provided in the GSP.
LPVB	7	TAC_CT_51	See comment on WLPMA sustainable yield without future projects regarding how to define sustainable yield.	Please see response to comment on sustainable yield without future projects above.
LPVB	7	TAC_CT_52	Please explain how this range was estimated.	The detailed description of the uncertainty calculation is provided in the GSP.
LPVB	7	TAC_CT_53	See comment on WLPMA sustainable yield without future projects regarding how to define sustainable yield.	Please see response to comment on sustainable yield without future projects above.
LPVB	7	TAC_CT_54	See previous statements about consistency and the effects of data gaps on sustainable management.	Noted. Text has been revised, where appropriate, to clarify the discussion of data collection and filling of data gaps.
LPVB	7	TAC_CT_55	Importantly, since adoption of the GSP, several groundwater level monitoring wells have been removed from the monitoring network, including two key wells (Figure 6-3): ▪ 02N20W04F02S, which was destroyed; and ▪ 02N21W16J03S, which has not been measured since 2019.	Text has been added to state that the monitoring network is still adequate, but could be improved by replacement monitoring wells.
LPVB	7	TAC_CT_56	Recommend including discussion of the TAC and PAC here as they are outreach, engagement, andcoordination components	The PAC and TAC are discussed in the last full paragraph of section 8.1
LPVB	8	PAC	Recommendation 1: Clearly Distinguish Between Model Predictions and Observed Data Throughout the Draft GSP Evaluation Explicitly label both simulated (modeled) water levels and actual water level measurements in all figures, tables, and discussions. This distinction is crucial for evaluating the model's calibration and its reliability in predicting future groundwater conditions. Accurate calibration, informed by observed data, enhances the model's predictive accuracy.	Labeling has been clarified for the simulated and observed water level measurements in the text, tables, and figures.
LPVB	8	PAC	Recommendation 2: Provide Documentation and Confidence Information for the UWCD Model Used in GSP Evaluation The documentation for the UWCD model used in the Draft GSP Evaluation has not been made available, leading to reservations within the PAC regarding reliance on a model that has not undergone review by the Las Posas Valley Technical Advisory Committee (TAC). While models aim to replicate real-world conditions, they are inherently imperfect, and confidence in their findings is especially challenging given the limited number of wells (especially in the WLPMA) available for calibration. This limited data set raises concerns about the appropriate confidence interval for the model results. The PAC recommends that the Draft GSP Evaluation include comprehensive information from the UWCD model, including documentation and details on confidence intervals, to address these concerns and improve transparency.	UWCD provided extensive model documentation for the version of the model used for the GSP. UWCD is currently working on the supplemental documentation to cover the changes made since the GSP. As of the time this comment response matrix was prepared, UWCD has not yet finalized this supplemental documentation.
LPVB	8	PAC	Recommendation 3: Address Deficiency in Monitoring Data Collection A considerable portion of the monitoring data required by the GSP was not collected during the review period. This data is critical for evaluating the sustainability of the WLPMA and East Las Posas Management Area (ELPMA) and for ensuring compliance with the Judgment. The PAC recommends that the Draft GSP Evaluation clearly outline how the FCGMA plans to address this deficiency, detailing steps to promptly acquire the necessary monitoring data to support future updates and model runs.	The Watermaster agrees that the monitoring in LPVB can be improved. The Watermaster will work with partner agencies to formalize an agreement to monitor critical wells and will continue to pursue funding mechanisms to fill data gaps and install additional dedicated monitoring wells, if possible.
LPVB	8	PAC	Recommendation 4: Clarify the Impact of West Las Posas Management Area (WLPMA) Pumping on Oxnard Subbasin Seawater IntrusionThe Draft GSP Evaluation should address the quantifiable relationship between WLPMA pumping and its incremental effect on seawater intrusion in the Oxnard Subbasin. This can be achieved by either including a detailed discussion of this relationship under various management scenarios or by outlining a process and timeline to conduct a focused assessment. Additionally, the PAC	Watermaster agrees this is a good recommendation for future work.

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			recommends that this topic be robustly addressed in the Basin Optimization Yield Study, utilizing the updated United Water Conservation District (UWCD) Coastal Plain Model.	
LPVB	8	PAC	Recommendation 5(A): Recharacterize Groundwater Underflows Between Oxnard Subbasin and WLPMA The evaluation document should recharacterize groundwater underflows from the Oxnard subbasin to WLPMA, and reductions in underflow from WLPMA to Oxnard, which are currently labeled as “losses” of recharge to the Oxnard subbasin. This framing overlooks that many WLPMA extractors within the boundaries of UWCD have understood that the justification for significant extraction fees was for purported groundwater replenishment from the UWCD spreading grounds. Given this understanding of the interconnection between the basins, if the claimed underflows are occurring as stated, they should not simply be viewed as a loss for the Oxnard subbasin. As noted above, greater transparency of the modeling and better data would clarify this problem. The Draft GSP Evaluation should amend its language to remove the characterization of these underflows as “losses” and instead acknowledge them as part of a balanced, cross-basin groundwater system.	The term "loss" has been replaced in this section by the term "difference" to remove an unintended value judgement in the draft GSP Evaluation.
LPVB	8	PAC	Recommendation 5(B): Recharacterize Groundwater Underflows Between Oxnard Subbasin and WLPMA Additionally, it would be appropriate for the FCGMA to outline a process to periodically review and update minimum thresholds and measurable objectives on both sides of the boundary between the Las Posas Valley and Oxnard Basins. This approach would ensure an accurate, equitable, and proportional understanding of recharge dynamics, benefiting the sustainability of both basins.	The periodic review process for evaluating and updating the minimum thresholds and measurable objectives is set forth in SGMA. FCGMA agrees that the thresholds and objectives on both sides of the boundary between the WLPMA and the Oxnard Subbasin should be reviewed and, if necessary, updated concurrently to ensure that the interbasin flows are adequately accounted for in basin management decisions.
LPVB	8	PAC	Recommendation 6: Provide Justification for Projected Increase in Simi Valley InflowsThe Draft GSP Evaluation’s future baseline scenario projects nearly 2,000 acre-feet per year (AFY) more in Simi Valley inflows than recent flow levels. The PAC recommends that the Draft GSP Evaluation provide a detailed explanation for this anticipated increase, clarify, and provide supporting data and assumptions that justify this projection. Clear documentation of these projections will enhance stakeholder understanding of the expected inflows and their impact on the overall water management strategy.	The future baseline scenario in the GSP Evaluation revised the flows in Arroyo Simi-Las Posas based on a change in the projected water discharge from the Simi Valley Urban Water Management presented in the 2020 Urban Water Management Plan. This change removed an assumption in the GSP that these flows would be reduced over time. To investigate the potential impact of inflows on the sustainable yield of the ELPMA, FCGMA included the NNP2 scenario, which removed approximately 2,000 AFY of SVWQCP discharge (Section 5.2.2.2.2). The sustainable yield of the NNP1 and NNP2 scenarios was similar. Comparison of the two scenarios indicated that under the simulated pumping distribution, SVWQCP discharges in excess of approximately 8,040 AFY do not significantly increase the volume of recharge to the ELPMA. Instead, they contribute to increased outflows to the PVB (Section 5.2.2.2.2).
LPVB	8	PAC	Recommendation 7: Articulate a Clear Master Plan and Leadership for Advancing GSP Management Projects The Draft GSP Evaluation outlines various management projects, however, there appears to be no overarching master plan to manage accountability and progress in advancing these projects, nor a designated leader responsible for their progression. Given that the 15-year timeline is relatively short for implementing some of the projects being considered, the PAC recommends that the Draft GSP Evaluation specify how the FCGMA intends to oversee and drive these initiatives. For instance, FCGMA could assign staff to engage periodically (e.g., quarterly) with each project proponent, tracking progress and providing regular updates to FCGMA and stakeholders on any advances or delays. Stakeholders have expressed a strong desire to be informed promptly if a project faces delays or challenges where stakeholder involvement could help mitigate issues, ensuring that the projects are effectively managed within the available timeframe.	Watermaster agrees that a long-term master plan is appropriate. The evaluation of projects in the Basin Optimization Plan currently under way will help to inform a master plan guided by Board direction. In addition, FCGMA has appointed staff to engage periodically with project proponents to enable timely project updates with stakeholders.
LPVB	8	PAC	Recommendation 8(A): Clarify the Impact of the Proposed Moorpark Desalter on Groundwater Supply, Recharge, and Water BalanceThe PAC recommends that the Draft GSP Evaluation provide a comprehensive discussion of the anticipated effects of the proposed Moorpark desalter on groundwater supply, recharge, and the overall water balance in the ELPMA. Specifically: • Groundwater Supply and Recharge Interaction: The Draft GSP Evaluation should explain how the desalter would influence groundwater extractions and recharge dynamics. If the desalter increases extractions without offsetting	The information provided by the project proponent was used in the GSP Evaluation. This information provided is limited. The Basin Optimization Plan will recommend that a full feasibility study be conducted for this project. Based on current information, FCGMA cannot assess the potential impacts of the proposed desalter until project is clearly defined, hence the need for a feasibility study.

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			them through in-lieu deliveries, it could lead to lower water levels that may undermine sustainability efforts. However, these effects could be mitigated if the desalter's operations encourage dewatering in high groundwater areas near the arroyo, thereby inducing greater recharge, or if the product water is used to reduce extractions in other targeted Basin areas. The Draft GSP Evaluation should address these factors generally and outline specific actions in the Basin Optimization Plan.	
LPVB	8	PAC	Recommendation 8(B): Clarify the Impact of the Proposed Moorpark Desalter on Groundwater Supply, Recharge, and Water Balance ▪ Net Impact on Water Balance: The Draft GSP Evaluation presents conflicting statements about the desalter's effects, suggesting reductions in both groundwater pumping and reliance on imported water. This leaves ambiguity about the net effect on ELPMA's water balance. The Draft GSP Evaluation should clarify the desalter's anticipated impacts on groundwater pumping and imported water usage, with additional analysis in the Basin Optimization Plan to ensure alignment with long-term water balance and sustainability goals.	The draft incorrectly stated that the project would reduce groundwater demands and prevent groundwater elevation declines. That language has been deleted from the draft. As stated in response to Recommendation 8(A), a feasibility study is needed for this project.
LPVB	8	PAC	Recommendation 9: Clarify Responsibility for Sustaining Groundwater Dependent Ecosystems (GDEs) along Arroyo Simi/Las PosasThe PAC recommends that the Draft GSP Evaluation clearly specify that groundwater users will not be held responsible for sustaining vegetation along Arroyo Simi/Las Posas, which is currently supported by inflows from Simi Valley wastewater discharge and dewatering wells. The Draft GSP Evaluation should explicitly state that any impact on vegetation due to reductions in these discharges should not be considered an undesirable result under SGMA in the GSP. Additionally, the PAC recommends that FCGMA establish long-term monitoring to track any potential changes in vegetation health related to GDEs. This ongoing monitoring will allow for a proactive approach to understanding and managing impacts without placing responsibility on groundwater users, thus preventing unintended obligations regarding GDE sustainability.	Section 3.3.6 of the GSP notes that "changes in groundwater elevation in the Shallow Alluvial Aquifer related to decreased surface water flows cannot be mitigated by management actions related to groundwater pumping." Further the GSP notes "the measurable objectives selected to maintain groundwater elevations adjacent to Arroyo Las Posas at levels that promote the health of the vegetation in the Arroyo Simi-Las Posas potential GDE are established 'for the purpose of improving overall conditions" in the ELPMA, 'but failure to achieve those objectives shall not be grounds for finding of inadequacy of the Plan' (23 CCR 354.30[g]). FCGMA proposes this aspirational goal with recognition of the dependence on continuation of these external water sources." Text has been added to call out this GSP finding.Watermaster notes that DWR has requested that additional monitoring facilities be constructed to fill data gaps regarding the potential GDEs. Watermaster has developed a schedule, which may be updated or modified based on committee consultation and funding availability (section 2.7.1 of the draft GDE Evaluation).
LPVB	8	PAC	Recommendation 10(A): Refine and Clarify the Impact Analysis on Northern ELPMA Wells The PAC recommends that the Draft GSP Evaluation provide greater clarity and consideration in the impact analysis for wells in the northern ELPMA, specifically regarding assumptions about well performance and the effects of minimum thresholds on all well owners. ▪ Well Performance Assumptions: The current analysis assumes wells will not experience significant effects until static groundwater levels reach the top of well screens and that partially desaturated screens can still support pumping. While this may be defensible, sustaining pumping at lower rates depends on appropriate pump placement below the adjusted water levels. The Draft GSP Evaluation should discuss the implications of these assumptions, including the key policy question of what constitutes "significant and unreasonable" impacts for this area, as these criteria influence FCGMA and Dudek's approach to the analysis.	The FCGMA board determined in the GSP that a loss of 20% or more of storage beyond the 2015 level in critical areas of the ELPMA constitutes a significant and unreasonable impact to the area. The analysis in the draft GSP Evaluation evaluates well screens and projected water levels, but not significant effects to production. The column label in Table 2-1 has been revised to "Projected Water Level Below 50% of the Well Screen." The previous label incorrectly used the word "production."
LPVB	8	PAC	Recommendation 10(B): Refine and Clarify the Impact Analysis on Northern ELPMA WellsThe PAC recommends that the Draft GSP Evaluation provide greater clarity and consideration in the impact analysis for wells in the northern ELPMA, specifically regarding assumptions about well performance and the effects of minimum thresholds on all well owners. ▪ Consideration of ASR Wells: The analysis should also account for the effects on Aquifer Storage and Recovery (ASR) operations, as 10 out of the 22 wells in the evaluation area are Calleguas ASR wells (not solely agricultural wells, as Table 2-1 indicates). The Draft GSP Evaluation should provide an accurate representation of well types and address the potential impact of minimum thresholds on ASR storage and recovery operations.	The information provided by Calleguas has been reviewed and changes have been made to the text and tables to refine well type and screen interval. The Calleguas ASR Project Operations study should include evaluation of the project operations and the minimum thresholds and measurable objectives.

Basin	Letter Number	Commentor	Comment	Response
LPVB	8	PAC	Recommendation 10(C): Refine and Clarify the Impact Analysis on Northern ELPMA Wells The PAC recommends that the Draft GSP Evaluation provide greater clarity and consideration in the impact analysis for wells in the northern ELPMA, specifically regarding assumptions about well performance and the effects of minimum thresholds on all well owners. ▪ Impact of Minimum Thresholds on All Well Owners: Finally, the PAC recommends that the Draft GSP Evaluation discuss how established minimum thresholds will impact all well owners in the area, ensuring a comprehensive understanding of threshold implications across different types of groundwater users.	Section 2.2.1.2 evaluates the impacts to all wells in the area prone to aquifer conversion identified in the GSP. The draft evaluation text has been revised.
LPVB	8	PAC	Recommendation 11(A): Enhance Transparency and Accessibility in Sections and Tables 7.1 – 7.3 The PAC recommends that the following updates be made to improve transparency and ease of access for stakeholders regarding surcharge rates, fee adoption, compliance, and amendment terminology: ▪ Table 7-1: Update the table to provide details on how the Watermaster establishes extraction surcharge rates. At a minimum, add explanatory footnotes or references to relevant FCGMA Resolutions that outline the basis for these rates.	Table 7-1 specifically identifies the resolution or ordinance implementing each identified regulatory action. All resolutions and ordinances are available for review and download at the Agency's website www.fcgma.org. A footnote has been added to the table.
LPVB	8	PAC	Recommendation 11(B): Enhance Transparency and Accessibility in Sections and Tables 7.1 – 7.3 The PAC recommends that the following updates be made to improve transparency and ease of access for stakeholders regarding surcharge rates, fee adoption, compliance, and amendment terminology: ▪ Section 7.1.3 – Funding: Include footnotes, citations, or references that allow readers to locate documents where the FCGMA adopted specific fees, improving accessibility and clarity.	Footnotes have been added identifying the specific resolutions implementing the funding actions to section 7.1.3.
LPVB	8	PAC	Recommendation 11(C): Enhance Transparency and Accessibility in Sections and Tables 7.1 – 7.3 The PAC recommends that the following updates be made to improve transparency and ease of access for stakeholders regarding surcharge rates, fee adoption, compliance, and amendment terminology: ▪ Section 7.2 – Enforcement and Legal Actions: Provide references or links to each of the listed groundwater extractor responsibilities. This addition would support stakeholder compliance with FCGMA and Watermaster requirements by offering clear guidance on necessary steps.	A footnote has been added to section 7.2 identifying availability of resolutions and ordinances at www.fcgma.org.
LPVB	8	PAC	Recommendation 11(D): Enhance Transparency and Accessibility in Sections and Tables 7.1 – 7.3 The PAC recommends that the following updates be made to improve transparency and ease of access for stakeholders regarding surcharge rates, fee adoption, compliance, and amendment terminology: ▪ Section 7.3 – Plan Amendments: Clarify the distinctions between a “GSP amendment,” “this Update,” and “periodic GSP evaluation,” and specify whether the “amendment” planned for Quarter 1 of 2025 aligns with the GSP “evaluation” for submission to DWR.	The final draft GSP Evaluation no longer envisions a GSP amendment.

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LPVB APPENDIX B: LETTER 1

From:	FCGMA
To:	Christopher Anacker; FCGMA
Subject:	RE: 5-Year GSP Workshop -- input re: potential earthquake activity ...
Date:	Monday, September 9, 2024 11:28:08 AM
Attachments:	~WRD0002.jpg image001.png image003.png

Hello Christopher,

Thank you for submitting written comment regarding the 5-Year GSP Evaluation draft documents. We have filed your response for review and consideration.

We'll be sorry to miss you at the workshops, but we greatly appreciate your engagement via email.

Regards,

Fox Canyon Groundwater Management Agency
800 S. Victoria Ave. #1600
Ventura, CA 93009
(805) 654-2014 | fcgma@ventura.org
www.FCGMA.org

From: Christopher Anacker <christopher.anacker@gmail.com>
Sent: Sunday, September 8, 2024 1:58 PM
To: FCGMA <PWA.FCGMA@ventura.org>
Cc: christopher.anacker@gmail.com
Subject: 5-Year GSP Workshop -- input re: potential earthquake activity ...

Hello,

Thanks for accepting my input.

Although I won't be able to attend the workshops, I do wonder whether the planning includes or can include overall earthquake resilience of the water system by creating a set of operations or procedures to be implemented post-earthquake in the area, should it ever occur.

I guess the concerns can be categorized as:

Infrastructure Vulnerability, since Earthquakes can significantly impact water infrastructure, such as:

- Damage to wells, pipelines, and treatment facilities
- Disruption of power supply needed for pumping and treatment
- Potential contamination of groundwater sources due to damaged infrastructure

Water Supply Resilience and how earthquake activity might affect:

- Groundwater availability and quality post-earthquake
- The ability to extract and distribute water in emergency situations
- Potential changes in aquifer properties or groundwater flow patterns

Subsidence and Liquefaction, looking at Earthquake-induced ground movements that can exacerbate issues related to:

- Land subsidence, which may already be a concern due to groundwater extraction
- Soil liquefaction, particularly in areas with high groundwater tables

Interconnected Surface Water as seismic activity could potentially alter:

- The relationship between groundwater and surface water bodies
- Streamflow patterns and groundwater recharge rates

Long-term Sustainability that incorporates earthquake considerations to ensure:

- The resilience of water supply systems in the face of natural disasters
- The ability to maintain sustainable groundwater management practices even after seismic events

Monitoring and Data Collection that include provisions for:

- Monitoring wells and other data collection systems that can withstand seismic activity
- Rapid assessment of groundwater conditions following an earthquake

Hope this input helps.

Thanks for your efforts,
Chris

LPVB APPENDIX B: LETTER 2

FARM BUREAU OF VENTURA COUNTY
THE INDEPENDENT VOICE FOR AGRICULTURE

5156 McGrath St., Suite 102
P.O. Box 3160, Ventura, CA 93006

(805) 289-0155 / Fax (855) 286-8242
www.farmbureauvc.com

October 8th, 2024
Electronically submitted to fcgma@ventura.org

Subject: Comments on Fox Canyon Groundwater Management Agency's 5-Year GSP Evaluation Draft Documents

Dear Fox Canyon Groundwater Management Agency,

On behalf of the Farm Bureau of Ventura County, we appreciate the opportunity to provide comments on the 5-Year Groundwater Sustainability Plan (GSP) Evaluation Draft Documents for the Oxnard, Pleasant Valley, and Las Posas Valley subbasins. We commend the Agency's efforts to manage groundwater sustainably, and we would like to emphasize key areas of concern and offer suggestions to help support Ventura County's agricultural community, which is the backbone of our local economy.

1. Long-Term Hydrologic Trends and Agricultural Resilience
The evaluation notes that much of the implementation period was marked by below-average rainfall, compounding issues like saltwater intrusion. While the wetter years of 2023 and 2024 brought temporary relief, we cannot rely on sporadic wet periods to offset prolonged droughts. Agriculture in Ventura County is especially vulnerable to groundwater shortages, as it relies heavily on stable water supplies to maintain productivity. We recommend that the Agency adopt a forward-thinking approach by investing in infrastructure that improves water storage and capture during wet years. For example, expanding recharge basins and stormwater capture systems would help retain water locally, benefiting both agriculture and the broader community during future dry cycles.

2. Infrastructure Investment as a Collaborative Solution
While we understand the Agency's focus on demand management, infrastructure projects such as water recycling, desalination, and expanded recharge facilities must be prioritized to ensure a sustainable water future. Delays in these projects put undue pressure on agricultural operations, which could face disproportionate impacts from reduced groundwater availability. Instead of focusing solely on restrictions, a balanced approach that encourages infrastructure investment will help maintain agricultural productivity while advancing groundwater sustainability goals.

Collaboration between the Agency, local governments, and the agricultural community is crucial to move these projects forward. For example, streamlined permitting processes and the development of public-private partnerships can accelerate the construction of water infrastructure, ensuring that vital projects are completed in a timely manner. This type of collaboration also helps avoid the need for more stringent groundwater extraction limits, which would have severe economic consequences for farmers.

3. Avoiding Unintended Financial Burdens on Farmers
As we look toward future management actions, it is essential to minimize the financial burden placed on farmers. Agriculture already operates on narrow margins, and the cost of implementing water conservation measures, purchasing water, or paying for infrastructure upgrades could be prohibitive for many growers. We strongly encourage the Agency to consider funding models that do not pass excessive costs onto farmers. Options such as state or federal grants, low-interest financing, and cost-sharing agreements should be explored to fund water infrastructure projects. This approach will help ensure that farmers are not forced to bear the full financial responsibility for groundwater sustainability, which could otherwise lead to reduced agricultural output, job losses, and pose nation-side food security risks.

4. Addressing Saltwater Intrusion Proactively
The issue of saltwater intrusion, particularly in the lower aquifers, is critical. We support the Agency's long-term projects, such as the Extraction Barrier and Brackish Water Treatment initiative.

5. Economic Impact on Agriculture
Groundwater management decisions must consider the broader economic impacts on agriculture, which is essential to nationwide food security. Farmers face increasing costs for logistics, labor, and inputs, and additional costs associated with groundwater management could push many operations into financial distress. We encourage the Agency to conduct a more detailed analysis of the economic implications of proposed projects and management actions. For instance, measures that raise water costs or limit water availability need to be carefully balanced to avoid unintended consequences such as decreased crop yields or the loss of farmland.

6. Pilot Development of Thoughtful Demand Management for Farmers
Over the next five years, it is critical to explore demand management options that allow farmers to stay in business while balancing water availability as a compliment to large scale infrastructure projects. Recognizing the long timelines and potential challenges of implementing large infrastructure projects, we encourage the Agency to consider temporary, flexible solutions to help farmers adapt to water variability. One such option is an incentive-based program for the temporary fallowing of land, where farmers can voluntarily reduce water use during critical shortages and resume operations when water is more abundant.

A program like this would allow farmers to hedge against the uncertainties of project implementation. If major projects face delays—whether due to permitting challenges, economic viability issues, or legal hurdles—farmers need alternatives to aggressive water-use restrictions. Financially incentivizing the temporary fallowing of land provides a safety net, allowing them to make strategic decisions about water usage without being forced to abandon farming altogether.

Additionally, farmers could be encouraged to transition to less water-intensive crops during periods of drought. By providing financial support and technical assistance for these transitions, the Agency can help farmers mitigate the risks associated with water shortages while continuing to contribute to the region's agricultural economy.

This type of demand management moves away from a "zero-sum" approach that pits different water users against each other in a closed basin. Instead, it offers a flexible, win-win solution that allows farmers to respond to changing conditions without jeopardizing their livelihoods. While implementation of these ideas is not feasible in the next five-years, planning and development could be undertaken including grant-funding cycles such at the Sustainable Agricultural Land Conservation program funded by Department of Conservation. Planning and stakeholder engagement would be essential to ensure that a wide variety of views and edge cases are explored for the purposes of developing a thoughtful and equitable system.

7. The Need for Certainty and Predictability

Given the complexities surrounding water management and the ongoing litigation, it is essential that farmers have a degree of certainty and predictability as they plan for their operations over the coming years. Pending litigation has the potential to drag on for years, and any resulting decisions could reshape the regulatory landscape multiple times throughout that period. This introduces considerable uncertainty for farmers, who rely on stable water availability to sustain their businesses.

To manage this uncertainty, it is crucial that the Agency provides farmers with a framework for continuity in water management, regardless of the legal outcomes. Whether the basin continues to be governed by a Groundwater Sustainability Plan (GSP), whether proposed projects are completed on time, or whether the litigation results in significant changes, there must be a clear, rational path forward to avoid destabilizing agriculture in the region.

Moreover, this continuity is not just about the immediate future but about ensuring that farmers can continue planning long-term investments in their operations. Sudden, unpredictable changes could force them to make costly adjustments or even abandon farming altogether, which would have a lasting negative impact on the local economy and national food supply. Offering a more predictable environment will allow farmers to adapt in a way that maintains agricultural viability while addressing water management needs.

8. Agriculture's Voice

As the various plans outline proposed projects and emphasize stakeholder inclusion in the prioritization process, it is crucial that the agricultural community plays an active, consistent role. Agriculture is a key stakeholder with distinct economic challenges and operational limitations that differ significantly from those of urban areas like cities and municipalities. Without consistent representation and input from farmers, there’s a risk that decisions may not fully reflect the needs and realities of the agricultural sector.

Inclusion must be more than a procedural step; it should be a genuine partnership where growers' perspectives are fully considered and integrated into decision-making. Farmers operate on thin margins, and decisions about water allocation, infrastructure improvements, and project prioritization will directly impact their ability to continue farming. Solutions should not disproportionately burden agriculture but instead support their ability to produce food while contributing to sustainable water management.

For instance, the agricultural sector's reliance on groundwater must be factored into discussions about addressing saline intrusion or allocating resources for improvements.

Unlike urban areas, where adjustments to water usage may be easier, farming operations are less flexible, making it essential that proposed projects accommodate these constraints.

The Farm Bureau of Ventura County is committed to working with the Agency to find solutions that ensure both groundwater sustainability and agricultural viability. The path forward requires a balanced approach, with a strong emphasis on investment in infrastructure, collaboration with all stakeholders, and minimizing the financial burden on farmers. We believe that, with the right investments and cooperative efforts, we can secure a sustainable water future that supports agriculture and the entire community.

Thank you for considering our comments. We look forward to continued collaboration and offer our assistance in developing solutions that protect both water resources and the agricultural industry that depends on them.

Sincerely,

Maureen McGuire
Chief Executive Officer
Farm Bureau of Ventura County

LPVB APPENDIX B: LETTER 3

ZONE MUTUAL
WATER COMPANY

October 7, 2024

Arne Anselm, Interim Executive Officer
Fox Canyon Groundwater Management Agency
800 South Victoria Avenue
Ventura, CA 93009

Via E-mail to FCGMA@ventura.org.

Re: Zone Mutual Water Company Comments on Draft First Periodic Evaluation, Groundwater Sustainability Plan for the Las Posas Valley Basin, dated August 2024

Dear Mr. Anselm,

Zone Mutual Water Company (Zone) thanks you for the opportunity to provide comments on the above-reference document. The first periodic evaluation of the Las Posas Valley Basin (LPVB) Groundwater Sustainability Plan (GSP) is an important milestone on the path to sustainability for the Basin. We offer the following big picture comments from the perspective of a large agricultural water system that straddles western and eastern management areas and in the spirt of fostering increased coordination and collaboration in the planning necessary to achieving the shared goals of the Sustainable Groundwater Management Act and the Judgment in Las Posas Valley Water Rights Coalition, et al., v. Fox Canyon Groundwater Management Agency groundwater rights adjudication case.

Comments

1. Zone Mutual Water Company Infrastructure Improvement Project:
    a. While Zone is moving forward with the infrastructure improvements described in the evaluation report, there are potential legal issues that may prohibit or limit Zone's ability to wheel in-lieu water to non-shareholders. These issues need to be studied along with other opportunities to deliver in-lieu water and move water between West Las Posas Management Areas (WLPMA) and East Las Posas Management Area (ELPMA). The most cost-effective and beneficial method(s) should be identified through this process. We encourage coordination and collaboration on this topic.

    b. Regarding the 500 AFY of water savings associated with this project, this benefit should not be included in the future water supplies for the Projects Scenario at this time. The water savings would be retained as carryover or leased to other water right holders for the benefit of Zone shareholders unless the Watermaster creates a financial mechanism to make Zone whole. We encourage coordination and collaboration on this topic.

2. Nexus Between Sustainable Management of the WLPMA and Oxnard Subbasin: While assessment of impacts on adjacent basins is clearly required under SGMA, the framing and analysis of WLPMA pumping impacts on the Oxnard Basin and the WLPMA sustainable yield estimation approach seem problematic for multiple reasons. First the

analysis has not isolated the impact of WLPMA pumping on seawater intrusion for technical evaluation and consideration in policy making. How can policymakers make sound policy, if the relationship between WLPMA pumping and its incremental effect on seawater intrusion under various management scenarios has not been quantified and vetted? Second, the analysis of the interaction between WLPMA and the Oxnard Subbasin appears to ignore the fact that numerous WLPMA groundwater pumpers pay pump fees to UWCD.

3. Modeling:
    a. Review of the modeling for the WLPMA cannot be completed at this time because documentation of the Coastal Plan model is not yet available. Technical Advisory Committee (TAC) review should be completed before adopting the periodic evaluation report.

    b. Zone is concerned that the two models for the Basin no longer agree on the nature of the WLPMA/ELPMA boundary. We support the recommendation for further review of this issue in consultation with the TAC.

4. Missing Monitoring Data: There are a notable number of unavailable groundwater level and quality measurements during period since GSP adoption. It is critical that data be collected to evaluate status relative to the sustainable management criteria and more generally understand groundwater conditions. It is noted that FCGMA does not collect data itself and, instead, relies on other entities monitoring programs for data. It is recommended that FCGMA coordinate with the monitoring entities to find the most cost-effective solution to ensure that data is collected for future GSP annual reports and periodic evaluations.

5. Groundwater Dependent Ecosystems (GDEs): The vegetation found along Arroyo Simi/Las Posas was recruited and is sustained by discharges from two wastewater plants and City of Simi Valley dewatering wells. Zone is concerned that the framing of GDE issue appears to leave the door open making groundwater users responsible for sustaining the vegetation along Arroyo Simi/Las Posas. The framing of this issue needs to be reworked to emphasize that effects on vegetation attributable to reductions in discharges shall not be considered an SGMA undesirable result in the GSP. Similarly, we are concerned about paying to study vegetation that was recruited and is sustained by wastewater and dewatering well discharges.

Closing

Please feel to contact me for further information our comments.

Sincerely,

John Menne, President, Zone Board of Directors

LPVB APPENDIX B: LETTER 4

Del Norte Water Company

Post Office Box 4065
Ventura, California 93007
Phone (805) 647-1092 Fax (805) 647-2805

October 7, 2024

TO: Fox Canyon Groundwater Management Agency – ***fcgma@ventura.org***

RE: Comment on the First Periodic GSP Evaluation for the LPVB By DUDEK

FROM: John C. Orr, President

I am John C. Orr, a farmer in the West Las Posas Management Area and President of Del Norte Mutual Water Company. I have reviewed the draft First Periodic GSP Evaluation for the Las Posas Valley Basin ("Draft Report") by DUDEK released August 22, 2024 and I attended the September 9, 2024 Public Workshop presented by DUDEK.

If the purpose of DUDEK's work is to review current groundwater conditions, assess GSP implementation and evaluate sustainable yield for an audience of hydrologically trained persons, perhaps it has accomplished what it has set out to do.

If, however, as I believe, its role is to marry the technical components it outlines with the Policy and engagement of the GMA in a report that clarifies what is going on in the Las Posas Basin and inform the landowners of current conditions of the Basin, it falls short for the following reasons:

(1) The Report does not address the continued serious lack of information and data for the period evaluated.

(2) Data from key wells was not accessible and suitable replacements were not found in the five year period update. There are not data gaps – there are data chasms.

(3) There is no explanation as to why private well data was not obtained that could have been used to help fill the significant gaps in the well data.

(4) The Draft Report does not explain why DUDEK's (the GMA's) safe yield for the Basin is 27,600 – 34,000 acre feet, which is not consistent with the GMA and other parties to the Adjudication stipulated safe yield of 36,000 acre feet nor consistent with the Court judgment allocated operational safe yield of 42,851 acre feet.

(5) The Draft Report's states that the Las Posas Valley Basis is not currently experiencing undesirable results however the next sentence states that: "the West Las Posas Management Area experienced undesirable results . . . ."

(6) Most importantly, for any nonscientific reader, it puts the five-year period being evaluated in no historical context. All farmers know intuitively, and because they produced records for, and have reviewed the Master Disclosure Record, that during the period from roughly 2010 to 2022, the area was in drought. Moreover, there was little recharge during that period by the United Water Conservation District ("UWCD") in its spreading grounds that replenish, at least, the shallow wells in the West Las Posas Valley.

(7) Conversely, the winters of 2022 and 2023 were wet – extremely wet – and the recharge by UWCD was extraordinary (reportedly 270,000 acre feet). This recharge impacted the Western end of the Las Posas Basin, significantly. Whether all the data is available for the winter of 2022 or only a portion of the data is available, the Draft Report must review what data is available to date to provide a realistic assessment of the basin. To ignore data that does exist and to fail to mention these significant, if not historic events, leaves a reader to challenge the efficacy of any conclusions the Draft Report may contain.

JCO/mjr

LPVB APPENDIX B: LETTER 5

From:	Kristine McCaffrey
To:	FCGMA
Cc:	Ian Prichard; Bondy, Bryan
Subject:	Calleguas"s Comments on LPVB GSP Update
Date:	Monday, October 7, 2024 12:42:50 PM
Attachments:	LPVB 5-yr evaluation letter 10-7-24.pdf

Please see attached comments.

Thanks.

-Kristine

Kristine McCaffrey, P.E.
General Manager
Calleguas Municipal Water District
2100 E. Olsen Rd.
Thousand Oaks CA 91360
(805) 579-7173
kmccaffrey@calleguas.com

www.calleguas.com

2100 OLSEN ROAD • THOUSAND OAKS, CALIFORNIA 91360-6800   805/526-9323 • FAX: 805/522-5730

October 7, 2024

Arne Anselm, Interim Executive Officer
Fox Canyon Groundwater Management Agency
800 South Victoria Avenue
Ventura, CA 93009

Via E-mail to FCGMA@ventura.org.

Dear Mr. Anselm,

Calleguas Municipal Water District (Calleguas) appreciates the opportunity to provide comments on the above-referenced document. As the imported water supplier for the Las Posas Basin and the operator of the Las Posas Aquifer Storage and Recovery (ASR) Wellfield, long-term sustainability of the Basin is important to Calleguas. The first periodic evaluation of the Las Posas Valley Basin (LPVB) Groundwater Sustainability Plan (GSP) is an important milestone on the path to that sustainability. We offer these comments in the spirt of fostering increased coordination and collaboration in the planning necessary to achieving the shared goals of the Sustainable Groundwater Management Act (SGMA) and the Judgment in the Las Posas Valley Water Rights Coalition, et al., v. Fox Canyon Groundwater Management Agency groundwater rights adjudication case (Judgment).

Comments

1. Analysis of Effects of Minimum Thresholds (MTs) on Beneficial Users in ELPMA (Section 2.2.1.2 (pp. 7-8) and Table 2-1):

   Since the first drafts of the GSP, Calleguas has consistently commented on the inadequacy of the impact analysis of the MTs in the northern portion of the East Las Posas Management Agency (ELPMA) on beneficial uses and users. The Department of Water Resources (DWR) also recognized the insufficiency of the analysis and issued a recommended corrective action in its GSP approval:

   > *"Discuss the potential effects of the minimum thresholds and measurable objectives on beneficial uses and users of groundwater, particularly in the areas where groundwater levels will be maintained below 2015 and historical low levels. Provide an evaluation of the groundwater level and storage conditions when the groundwater storage loss will be 20 percent compared to 2015 conditions in the ELPMA and the Epworth Gravels Management Area, and, based on the result of the evaluation, discuss the effects of such conditions on beneficial users and users."*

The analysis presented in Section 2.2.1.2 (pp. 7-8) and Table 2-1 of the periodic evaluation remains inadequate and does not address the DWR recommended corrective action for the following reasons:

A. Calleguas ASR Wells are Incorrectly Classified as Agricultural Wells: In reference to Table 2-1, the 2nd paragraph of Section 2.2.1.2 (p. 7) states: “The depth and groundwater production rates from the wells in this area indicate that they are agricultural wells…”. In fact, 10 of the 22 wells listed in Table 2-1 are Calleguas ASR wells.

B. The Analysis is Based on Incorrect Data: The top perforation elevation of 13 of the 22 wells in Table 2-1 for which data was readily available was reviewed and it was determined that the values for 12 of the 13 wells evaluated are incorrect, including all 10 ASR wells included in the table. The errors average 48 feet and range from 10 to 364 feet. Using the correct elevations for the 12 wells with erroneous top perforation elevations would add three wells to the list of wells with a projected groundwater elevation below the top of the screen. Based on the above findings, it is possible that some wells may have also been omitted from Table 2-1 due to incorrect well screen elevation data.

C. Analysis of Effects Does not Consider Impacts on ASR Storage and Recovery Operations: Given that analysis incorrectly assumes all wells are agricultural, the analysis does not consider or evaluate potential effects on the Calleguas ASR wellfields. For the analysis to be complete and consistent with SGMA, the impact of the MTs on Calleguas ASR storage and recovery operations needs to be fully evaluated to determine whether the decreased storage and recovery capacity is significant and unreasonable.

   Considerations for ASR wells include the introduction of air into the aquifer, which causes geochemical reactions (precipitation of minerals that clog the well screen); substantial increase in microbiological growth (biological growth that clogs the wells screens); and loss of aquifer storage capacity (air trapped in the aquifer that takes up pore space and/or dissolves into the groundwater, causing operational challenges). Calleguas was already experiencing symptoms of these problems during GSP development (four of nine ASR wells had already experienced aquifer conversion from confined to unconfined conditions) Calleguas is concerned that these problems will be exacerbated and impact additional ASR wells if groundwater levels are allowed to decline to the MTs. In our May 21, 2019 comment letter on the Draft GSP, we estimated groundwater level decline to the MT would cause an estimated 45% decline in ASR pumping capacity relative to its initial operational capability (a 35% decline relative to the 2015 operational capability). To further exacerbate this problem, the aquifer is predicted to become unconfined in the vicinity of at least six additional ASR wells, for a cumulative impact on 10 out of the 19 ASR wells with aquifer conversion. This would result in undesirable effects on a critical emergency water supply for the vast majority of Ventura County’s urban water users. Again, the impact of the MTs on Calleguas ASR storage and recovery operations must be fully evaluated for MT impacts on beneficial uses and users to be complete and consistent with SGMA.

D. <u>The Analysis Does not Consider All Potential Significant and Unreasonable Effects</u>: The analysis assumes that significant effects will not manifest until the static groundwater level drops below the top of the screen in a well and that pumping can be sustained with pump placements in the screen interval. These assumptions are contrary to the generally accepted well design principle of setting the well pump above the screen and maintaining pumping levels above the top of screen to avoid pump bowl or screen abrasion, sand production, cascading water, and accelerated fouling (Glotfelty, 2019 – Art of Water Wells). Wells with partially desaturated screens commonly experience increased fouling rates (sometimes very rapid), which causes significant loss of production, the need for premature rehabilitation efforts, and the need for premature well replacement. The analysis should consider these effects on all well types and Fox Canyon Groundwater Management Authority (FCGMA) should determine, with stakeholder input, whether they are significant and unreasonable.

E. <u>The Analysis Does Not Consider All Wells that May Potentially Experience Significant and Unreasonable Effects</u>: The Table 2-1 wells are limited to those wells located in the area where the Fox Canyon Aquifer (FCA) is predicted to convert from confined to unconfined ("conversion area"). As explained above, potentially significant and unreasonable effects can manifest in wells before the *static* groundwater level drops below the top of the screen, which may occur in wells located outside of the conversion area, including Calleguas ASR wells. The area of analysis should also be extended outside of the conversion area.

In the spirt of fostering increased coordination and collaboration in the planning necessary to achieving the shared goals of the SGMA and the Judgment, Calleguas recommends that a full analysis of the effects of the MTs on beneficial uses and users be completed with Las Posas Basin Watermaster Technical Advisory Committee (TAC) and Policy Advisory Committee (PAC) consultation. This approach would ensure that all potentially affected well owners clearly understand what impacts they should anticipate given the existing MTs so they can provide input as to whether those impacts are significant and unreasonable and whether MT modifications are warranted. This process would provide relevant information to inform GSP Project No. 9 (Feasibility Study to Identify Possible Supplemental Water Supply Sources for the Northern East Las Posas Management Area).

2. <u>Model Differences:</u>
Calleguas is concerned that the United Water Conservation District model and Calleguas model no longer agree on the nature of the West Las Posas Management Area/ELPMA boundary. We support the recommendation for further review of this issue in consultation with the TAC. We also recommend including Calleguas in the process so that potential modifications to the ELPMA model can be considered by Calleguas.

3. <u>Monitoring Network Coordination Needed</u>:
There are a notable number of unavailable groundwater level and quality measurements since GSP adoption. It is critical that data be collected to evaluate status relative to the sustainable management criteria and more generally understand groundwater conditions. It is noted that FCGMA does not collect data itself and, instead, relies on other entities' monitoring programs for data, including Calleguas's. Unfortunately, other than data requests, FCGMA has never reached out to Calleguas to discuss its monitoring activities and whether those activities will meet the needs of the GSP

monitoring network. This has unfortunately led to a number of incorrect assumptions in the GSP monitoring network and periodic evaluation that are inconsistent with actual monitoring activities. Specific inconsistencies are provided in comments below. It is recommended that FCGMA coordinate with the monitoring entities, including Calleguas, to address these issues and find the most cost-effective solutions to ensure data is collected for future GSP annual reports and periodic evaluations. Calleguas is ready and willing to participate in coordination efforts.

4. Revisions to Calleguas Monitoring Network (Section 6.1 and Table 6-2):
   A. The text states, "Four of the wells have been removed from the monitoring network because they were either destroyed or CMWD had recurring access issues." Calleguas has not had access issues. The following are clarifications concerning the wells listed in Table 6-2:
      i. Well 03N20W32H02S has been dry for numerous years. Calleguas continues to check the well for water and will reinstall a transducer if water returns. Consider retaining this well in monitoring network pending increasing groundwater levels.
      ii. Well 02N20W02D02S was destroyed by the owner.
      iii. Well 03N20W36P01S has a transducer stuck in the sounding tube. The transducer will be reinstalled the next time the well pump is removed.
      iv. Well 03N20W35J01S is continuing to be monitored with a transducer. However, the groundwater levels are considered anomalous. It is recommended that this well be removed from the monitoring network due to anomalous data.
      v. Well 02N20W01B02 (ASR #3) is noted as being added to the monitoring network in Table 6-2. This is not correct. This well was already included in the monitoring network in the GSP. Table 6-2 also says there is no water quality sampling for this well, which is not correct. Water quality samples are collected to satisfy State Water Resources Control Board (SWRCB) Division of Drinking Water (DDW) requirements and are available from Calleguas or from the SWRCB website.
   B. Consideration should be given to incorporating the three multi-level monitoring wells constructed by Calleguas in the ELPMA into the monitoring network. These monitoring well nests/clusters provide valuable aquifer specific data, including much needed data for the Grimes Canyon Aquifer (GCA) at one location. Data from these wells are already provided to FCGMA by Calleguas on a regular basis.

5. Changes to Calleguas Monitoring Network (Table 6-3):

   A. Table 6-3 indicates that several wells are "no longer monitored" for water quality. It is noted that Calleguas has never sampled these wells (except once for monitoring wells immediately following construction). FCGMA incorrectly assumed that Calleguas was sampling these wells.

   B. Well 02N19W06F01S is an agricultural well, not a monitoring well.

   C. Well 02N20W09Q08S is a monitoring well, not a municipal well.

6. Groundwater Level Temporal Data Gaps (Section 6.2.2.2):

    A. The text states, “Currently, groundwater elevation measurements are not scheduled according to these criteria because FCGMA relies on monitoring by several other agencies. To minimize the effects of this type of temporal data gap in the future, it would be necessary to coordinate the collection of groundwater elevation data, so it occurs within a two-week window during the key reporting periods of mid-March and mid-October. The recommended collection windows are October 9–22 in the fall and March 9–22 in the spring.”

       Calleguas and Ventura County Waterworks District (VCWWD) have transducers installed in all the wells in their monitoring network. The only reason data may be missing for these wells during the fall and spring two-week windows is if a transducer has failed or is pending reinstallation. FCGMA is encouraged to coordinate with Calleguas and VCWWD to facilitate an approach for collecting manual groundwater level measurements in these cases to address its fall and spring window data needs.

    B. The text states, “Additionally, as funding becomes available, pressure transducers should be added to wells in the groundwater monitoring network.” Calleguas and VCWWD already have transducers installed in all the wells in their monitoring network.

    C. The text states, “Since adoption of the GSP, 13 wells that were to be monitored for groundwater quality are no longer monitored for groundwater quality. The majority these wells, 11 of the 13 wells, are representative monitoring wells located in the ELPMA.” It is noted that Calleguas never committed to sample the wells in its monitoring network, other than ASR wells, which are sampled to comply with SWRCB DDW requirements. Calleguas is willing to help facilitate FCGMA efforts to sample these wells.

7. New Data For ELPMA (Section 4.1.1.1) and Hydrogeologic Conceptual Model (HCM) Data Gaps (Section 4.2 and Table 4-1):
   The text on page 51 states, “No new information is available that would improve or update the understanding of the hydrogeologic conceptual model of the ELPMA and Epworth Gravels Management Area.” Similarly, the text on pp. 52-53 and Table 4-1 states that no additional information has been collected to address HCM data gaps.

   It is noted that Calleguas has constructed three multi-level groundwater monitoring wells, which provides new stratigraphic data for the hydrostratigraphic model. In particular, 03N19W30E07 is a nested monitoring well that provides data to better characterize the Epworth, FCA, and GCA in northern ELPMA and 02N20W11B01-3 is a clustered monitoring well that provides data to better characterize the Upper San Pedro Formation and FCA south of the Moorpark Anticline in the ELPMA. In addition, groundwater level data collected from these wells can be used to characterize vertical gradients. These data should be incorporated into the HCM.

Closing

Thank you for the opportunity to provide these comments. Please feel to contact me for further information or questions about our comments.

Sincerely,

Kristine McCaffrey, P.E.
General Manager

LPVB APPENDIX B: LETTER 6

From:	David Scholle
To:	FCGMA
Subject:	5 year GSP Comment Letter
Date:	Monday, October 7, 2024 12:24:18 PM

Dear FCGMA

Upon a quick look at Table 2-2 on page 11 of the Agency's LPV 5-Year GSP Evaluation Draft Document, I noticed in the West Los Posas Basin (WLPB) the Minimum Threshold (MT) for wells 02N21W11J03S and 02N21W1201S is -70' Below Sea Level (BSL) and the Measurable Objective (MO) is -50' BSL and -45' BSL respectively.

Our well is located in the middle of the WLPB. Data on our wells since 2001, shows the static water level readings (SWL) has never been as high as -50' BSL and rarely gets as high as -70 BSL.

My comment is: The MO's & MT's for those two monitoring wells is incorrect.

The Agency's LPV 5-Year GSP Evaluation Document should clearly state that insufficient data was available at the time the original GSP was drafted and the MO's and MT's for the WLPB will be revised as new data sets are collected.
Therefore, blaming the WLPB has undesirable results due to SWL being below the MO and MT is in error.

If you have any questions, I can be contacted at Email: somisfarm@yahoo.com

Thank you
Steve Scholle

LPVB APPENDIX B: LETTER 7

LAS POSAS VALLEY
TECHNICAL ADVISORY COMMITTEE

October 10, 2024

RECOMMENDATION REPORT

To: Las Posas Valley Watermaster

From: Chad Taylor, LPV TAC Administrator and Chair

Re: TAC Consultation Recommendation Report, Draft First Periodic Evaluation, Groundwater Sustainability Plan for the Las Posas Valley Basin

The Las Posas Valley Basin Watermaster (Watermaster) requested a consultation from the Las Posas Valley Basin Technical Advisory Committee (TAC) for the Draft First Periodic Evaluation, Groundwater Sustainability Plan for the Las Posas Valley Basin (Draft GSP Evaluation). The TAC appreciates the effort the Watermaster, and their consultant (Dudek), committed to the Draft GSP Evaluation. Overall, the Draft GSP Evaluation is a well written document that appears to conform to the guidance provided by DWR. It is clear that the authors dedicated significant effort to provide a well-organized report evaluating and documenting groundwater conditions, planning, and management since the end of the period in the GSP. The TAC has reviewed the Draft GSP Evaluation and is providing this Recommendation Report to convey comments and recommendations to the Watermaster for consideration in revising the Draft GSP Evaluation prior to submittal to the California Department of Water Resources (DWR). The TAC also hopes these comments and recommendations will inform future groundwater sustainability planning for the Las Posas Valley Basin (LPVB).

This Recommendation Report presents major comments and recommendations on the Draft GSP Evaluation in a narrative format. These major comments are illustrated in the attached table providing detailed technical and editorial comments from each TAC member referencing specific sections of the Draft GSP Evaluation. These detailed comments were also provided to the Watermaster on October 4, 2024 to facilitate rapid review and integration into the final GSP Evaluation.

TAC COMMENTS AND RECOMMENDATIONS

Comment / Recommendation 1: Inconsistent Groundwater Monitoring

TAC members all noted and commented on the inconsistency of groundwater elevation and water quality monitoring in the LPVB. Specifically, expected and necessary groundwater elevation and water quality measurement events have been routinely missed since adoption of the GSP. It is critical that these basic data be collected frequently and consistently as without them it is not possible to evaluate conditions in the Basin relative to sustainable management criteria with certainty. The TAC recognizes that the Watermaster relies on partner agencies for groundwater monitoring in many cases and cannot control the data collection programs of those agencies. However, the inconsistent data collection that has occurred as a result of this approach thus far presents a problem that is too large for the Watermaster not to address as quickly and effectively as possible. The TAC is concerned that important interpretations and statements regarding groundwater sustainability presented in the Draft GSP Evaluation are based on limited data (in some cases as little as one or two data points). These interpretations include evaluations of basin-wide, aquifer specific, and management area groundwater conditions, comparisons to minimum thresholds for groundwater sustainability, and conclusions regarding the effectiveness of groundwater management in the LPVB. The TAC questions whether the interpretations can be relied upon given that they are based on such limited and inconsistent data.

To address this inconsistent groundwater monitoring problem the TAC recommends the following:

1. Appropriately caveat interpretations, comparisons, and conclusions that rely on limited and inconsistently collected data (see detailed comments in the attached table for references to specific text passages).
2. Either establish agreements with partner agencies to consistently, correctly, and routinely collect the groundwater elevation and water quality data required to adequately assess groundwater conditions and progress towards sustainability or begin perform these monitoring responsibilities using Watermaster staff.
3. Fast track the projects in the GSP and Draft GSP Evaluation that include construction of monitoring wells and instrumentation of those and other monitoring wells with transducers (Projects 7 and 8, respectively). The Draft GSP Evaluation alluded to delays in implementation of these projects occurred because the Watermaster did not receive requested grant funds. The TAC recommends identifying alternative funding sources for this critical component of successful sustainable groundwater management. If alternative funding sources cannot be secured, consider requesting Technical Support Services (TSS) from DWR. The DWR TSS program was designed to provide field activity support, including monitoring well installation, groundwater level monitoring training, and other relevant assistance.
4. Expand the existing monitoring network by including private wells when and where necessary. While private, active, pumping wells are not perfect for groundwater elevation and water quality monitoring, they are a reasonable means of expanding monitoring networks into areas where dedicated monitoring wells don’t exist and providing redundancy for existing monitored wells.

Comment / Recommendation 2: Boundary Condition Differences in West and East Management Area Models

The Draft GSP Evaluation indicates that the model used to simulate conditions in the West Las Posas Management Area (WLPMA), the Coastal Plain Model, developed, maintained, and employed by United Water Conservation District (UWCD) was recently modified. The extent and nature of these modifications was not described in detail in the Draft GSP Evaluation, but TAC review did note that a potentially significant change was made to the boundary condition used to represent the Somis Fault, which separates the WLPMA from the East Las Posas Management Area (ELPMA). This component of the Coastal Plain Model that is important to the representation of groundwater flow in the LPVB was changed from a no-flow boundary condition to a partial general head boundary condition. This change means the Coastal Plain Model used for the Draft GSP Evaluation allowed flow from the WLPMA to the ELPMA.

The Draft GSP Evaluation indicates that the limited groundwater elevation information in this area of the LPVB implies limited groundwater flow across the Somis Fault and that gradients suggest that if flow occurs it is from ELPMA to WLPMA. Unfortunately, further exploration of the effects of the change to the Coastal Plain Model are not included in the document.

The ELPMA model used to simulate conditions in the ELPMA maintains a no-flow boundary along the Somis Fault, which the TAC assumes results in potentially significant differences in simulated groundwater flow across the WLPMA/ELPMA boundary in the two models. However, the differences between the flow conditions and water budgets in the two models is not described in the Draft GSP Evaluation. The TAC is concerned that the difference in the representation of this boundary between the two LPVB management areas signifies a problematic discrepancy in simulated groundwater flow and budgets within the LPVB.

The Draft GSP Evaluation does indicate that the Watermaster plans to coordinate with UWCD and the TAC to better align the representation of this boundary condition in advance of the Basin Optimization Yield Study. However, the Draft GSP Evaluation relies on simulations using these two models to assess the adequacy of the GSP to meet the sustainability goal of the LPVB, including the effect of projects and management actions and estimating historical changes in groundwater storage, effects of reductions in groundwater production, and sustainable yield for each management area.

The TAC also notes that the Draft GSP Evaluation includes references to multiple documents that include additional information regarding the changes to the Coastal Plain Model. However, these references are either not yet available for review or the information included in them is not included in the Draft GSP Evaluation.

The TAC recommends the following regarding this model discrepancy:

1. Add detailed information relating to the changes to the Coastal Plain Model. This should include maps showing the area of changed Somis Fault boundary conditions, volumes of flow between the two management areas, comparison to the version of the model used in the original GSP, etc. This additional detail should be aimed at providing information to alleviate concerns regarding the apparent inconsistency between the two models.
2. Include relevant information on the changes to the Coastal Plain Model in the Draft GSP Evaluation, not simply as references to other documents. Stakeholders and

interested parties should not have to read reports for other basins to access information related to important components of the LPVB GSP Evaluation.

3. Assess and document the differences in simulated flow and water budgets across the Somis Fault between the two models and include this information in the GSP Evaluation.
4. Advance the coordination with UWCD and the TAC to develop agreement on the representation of this boundary in the two models. The coordination of this boundary between the two models should not wait until after the GSP is amended. The analyses in the amended GSP should be consistent with the Basin Optimization Yield Study.

Comment / Recommendation 3: Relationship Between Oxnard Subbasin and Sustainability in the WLPMA

The TAC is concerned that the methods used to date to assess the effects of pumping in the WLPMA on seawater intrusion conditions in the Oxnard Subbasin lack scientific rigor. The Draft GSP Evaluation presented model scenarios that included simultaneous changes in pumping volumes in the WLPMA, both Oxnard aquifers, and the Pleasant Valley Basin. The results of these simulations were then compared to a baseline scenario and the changes to simulated seawater intrusion in the Oxnard Subbasin were used to evaluate effects on sustainable yield in the WLPMA. However, the changes to pumping volumes in the scenarios appeared to be relatively arbitrary and the TAC is concerned that the resulting sustainable yield estimates for the WLPMA are similarly arbitrary.

The TAC recommends developing model scenarios that limit changes to single variables to assess the impacts of those variables on sustainability. This could include scenarios wherein pumping in the Oxnard Subbasin and Pleasant Valley Subbasin are held constant while pumping in WLPMA is varied. Comparison of the results of such simulations could then be compared to the baseline to evaluate changes in seawater intrusion in the Oxnard Subbasin, thereby developing a relationship between pumping volume in WLPMA and seawater intrusion. Similar scenarios with reductions in pumping in only the Oxnard Subbasin and only the Pleasant Valley Basin could also be conducted to isolate the effects of changes in pumping in those basins on seawater intrusion. Estimates of the effects of pumping reductions in each individual basin could then be used to more precisely identify the sustainable yield in each basin.

Comment / Recommendation 4: Respond Completely to all Elements of the DWR Recommended Corrective Actions

The DWR recommended corrective actions (RCAs) all include multiple requests for additional information, and the responses did not always provide all the requested information. For instance, the RCA 2 requests discussion of the potential effects of the minimum thresholds and measurable objectives on beneficial uses and users of groundwater. However, the sections of the Draft GSP Evaluation intended to respond to this RCA may not adequately respond to this request. The discussion that is included is somewhat vague about the beneficial uses and users and includes errors, as detailed in the specific comments in the attached table. This is true for other RCA responses as well, as documented in the attached table.

The TAC recommends carefully reviewing the entirety of each RCA and identifying each component of DWR's request and including responses. The TAC believes that it is better to acknowledge each element of the RCA, even if there is insufficient information to completely address the request. In such cases it would be appropriate to indicate how the Watermaster plans to address the RCA in the future.

Comment / Recommendation 5: Check Entire Document for Consistency of Language and Content

The TAC noted variability in the Draft GSP Evaluation relating to use of language when presenting important conclusions and between tables and text. The TAC review specifically noted sections of text that presented the same information but used different language that was sometimes less certain and/or impactful. Instances of passive and uncertain terminology in important conclusions were also observed.

The TAC recommends the authors review the detailed comments in the attached table and perform a thorough review of the document to maintain consistent content and impact throughout.

Attachment 1

Specific Comments from the Las Posas Valley Basin Technical Advisory Committee, Draft First Periodic Evaluation, Groundwater Sustainability Plan (GSP) for the Las Posas Valley Basin

Specific Comments from the Las Posas Valley Basin Technical Advisory Committee
Draft First Periodic Evaluation, Groundwater Sustainability Plan (GSP) for the Las Posas Valley Basin

Comment ID	Commentor	Technical or Editorial Comment	Topic	Page Number	Section ID	Quoted Text	Comment
BB-TC-1	Bryan Bondy	General Technical	Interpretations Made Based on Limited Data	--	--	--	Interpretations presented in the document that are based on limited data (in some cases as little as one or two data points), should be appropriately caveated and, as discussed in other comments, steps should be taken to better coordinate with monitoring partners to reduce the frequency of missing data.
BB-TC-2	Bryan Bondy	General Technical	Missing Monitoring Data	--	--	--	There are a notable number of unavailable groundwater level and quality measurements during period since GSP adoption. It is critical that data be collected to evaluate status relative to the sustainable management criteria and more generally understand groundwater conditions. It is noted that FCGMA does not collect data itself and, instead, relies on other entities monitoring programs for data. To date, it does not appear that FCGMA has formalized arrangements with the monitoring entities. It is recommended that FCGMA coordinate with the monitoring entities communicate FCGMA's data needs and formalize agreements. In cases where the monitoring entities cannot commit to providing certain data or if monitoring locations are no longer available or accessible, FCGMA should take steps to address those gaps.
BB-TC-3a	Bryan Bondy	Technical	--	ES-2	3rd paragraph	*In the western part of the WLPMA groundwater elevations in the FCA were higher in water year 2024 than they were in water year 2015.*	Based on Figure 2-4, there does not appear to be any 2024 groundwater level measurements in the western half of the WLPMA. Therefore, it is unclear what data the quoted sentence is based upon.
BB-TC-3b	Bryan Bondy	Technical	--	ES-2	3rd paragraph	*In contrast, groundwater elevations in the eastern part of the WLPMA were lower in water year 2024 than they were in water year 2015.*	Based on Figure 2-4, there is one well indicating a higher groundwater level in 2024 and one indicating a lower groundwater level in the eastern half of the WLPMA. Therefore, it is unclear what data this statement is based upon.
BB-TC-3c	Bryan Bondy	Technical	--	ES-2	3rd paragraph		Consider instead distinguishing between changes in the pumping depression in the southeastern corner of the WLPMA versus the remainder of the management area, with groundwater levels appearing to be lower in former and higher in the latter.
BB-TC-4	Bryan Bondy	Technical	Representative Monitoring Points		Figure 2-2 Table 2-2	--	Consideration should be given to enhancing the RMP network (per review of Figure 2-2): • Western WLPMA – there is no RMP for the Fox Canyon Aquifer • WLPMA and ELPMA – both areas lack GCA RMPs (potential candidate RPM well is 03N19W30E07-D) • Epworth Gravels – only one RPM (potential candidate for additional RMPs include 03N19W30M02 and 03N19W30E07-S)
BB-TC-5	Bryan Bondy	Technical	Zone Mutual Water Company Infrastructure Improvement Project		Table 1-1, 4th row; Section 3.2.1; Section 5.2.2.1.5	--	While Zone Mutual Water Company (Zone) is moving forward with the infrastructure improvements described in the evaluation report, Zone has indicated there are potential legal issues that may prohibit or limit Zone's ability to wheel water to non-shareholders. These issues need to be studied along with other opportunities for moving water between WLPMA and ELPMA. Regarding the 500 AFY of water savings associated with converting from scheduled deliveries to on-demand deliveries, this benefit should not be included in the future water supplies for the Projects Scenario because that water savings will be retained as carryover or leased to other water right holders for the benefit of Zone shareholders unless Watermaster creates a financial mechanism to make Zone whole.
BB-TC-6	Bryan Bondy	Technical	Analysis of Effects of MTs on Beneficial Users in ELPMA	7-8	Section 2.2.1.2; Table 2-1	*The depth and groundwater production rates from the wells in this area indicate that they are agricultural wells...*	This statement is incorrect. 10 of the 22 wells are Calleguas ASR wells.
BB-TC-7	Bryan Bondy	Technical	Analysis of Effects of MTs on Beneficial Users in ELPMA	7-8	Section 2.2.1.2; Table 2-1	--	The reviewer checked the top perforation elevation of 13 of the 22 wells in Table 2-1 for which data was readily available and found 12/13 to be incorrect, with errors averaging 48 feet ranging from 10 to 364 feet. Using the correct elevations for the twelve wells reviewed would add three wells to the number of wells with a projected groundwater elevation below the top of the screen. Based on these findings, a full QC of this table is warranted.

Specific Comments from the Las Posas Valley Basin Technical Advisory Committee
Draft First Periodic Evaluation, Groundwater Sustainability Plan (GSP) for the Las Posas Valley Basin

Comment ID	Commentor	Technical or Editorial Comment	Topic	Page Number	Section ID	Quoted Text	Comment
BB-TC-8	Bryan Bondy	Technical	Analysis of Effects of MTs on Beneficial Users in ELPMA	7-8	Section 2.2.1.2; Table 2-1	--	The analysis implies that significant effects will not manifest until the static groundwater level drops below the top of the screen in a well. The analysis also implicitly assumes that pumping can be sustained with pump placements in the screen interval. These assumptions are inconsistent with the generally accepted well design principle of pump placement above the top of screen to avoid pump bowl or screen abrasion, sand production, cascading water, and accelerated fouling (Glotfelty, 2019 - Art of Water Wells). Wells with partially desaturated screens commonly experience increased fouling rates (sometimes very rapid), which causes significant loss of production, premature well rehabilitation, and premature well replacement. Text should be added to explain why these effects are not considered in the analysis.
BB-TC-9	Bryan Bondy	Technical	Analysis of Effects of MTs on Beneficial Users in ELPMA	7-8	Section 2.2.1.2; Table 2-1	--	Given that 10 of the 22 wells identified in Table 2-1 are Calleguas ASR wells, the analysis should address potential effects on storage and recovery operations of the Calleguas ASR well fields.
BB-TC-10	Bryan Bondy	Technical	GDEs	34	Section 2.7.2	*The areas where satellite imagery indicates declining plant cover may be related to shifting flow patterns within the arroyo, with decreasing greenness on the banks of the arroyo and decreasing greenness in the downstream portion of the arroyo, adjacent to the PVB.*	Another potential explanation for decrease greenness could be vegetation removal during high flow events during the 2023 and 2023 wet seasons. Air photos could be reviewed to assess this.
BB-TC-11	Bryan Bondy	Technical	Arroyo Simi-Las Posas Water Acquisition Project	40	Section 3.1.2.3.2 and Table 3-1	*Text states the project "will make additional water available to recharge" and table states the project benefit will be "increase in sustainable yield."*	These statements are incorrect. The project would ensure that existing inflows continue, which maintains status quo, as opposed to adding water to the ELPMA water balance.
BB-TC-12	Bryan Bondy	Technical	--	43	Section 3.2.2	*Text states the project would "reduce the dependence on imported water in the LPVB by providing new local potable supplies" and later states the project will "reduce groundwater demands in the LPVB."*	These statements appear to be in conflict. Please provide information about anticipated reductions in groundwater demand vs. reduction in imported water purchases. In other words, what is the anticipated net benefit to the ELPMA water balance?
BB-TC-13	Bryan Bondy	Technical	New Data for ELPMA	51	Section 4.1.1.1	*No new information is available that would improve or update the understanding of the hydrogeologic conceptual model of the ELPMA and Epworth Gravels Management Area.*	Calleguas has constructed three multi-level groundwater monitoring wells, which provides new stratigraphic data for the hydrostratigraphic model. In particular, 03N19W30E07 is a nested monitoring well that provides data to better characterize the Epworth, FCA, and GCA in northern ELPMA and 02N20W11B01-3 is a clustered monitoring well that provides data better characterize the Upper San Pedro Formation and FCA south of the Moorpark Anticline in the ELPMA. In addition, groundwater level data collected from these wells can be used to characterize vertical gradients. These data should be incorporated into the Hydrogeologic Conceptual Model.
BB-TC-14	Bryan Bondy	Technical	Data Gaps in the HCM	52	Section 4.2; Table 4-1	--	Text states that no additional information has been collected to address data gaps. Please see prior comment. New data from Calleguas' multi-level groundwater monitoring wells helps address the data gaps listed in Table 4-1.
BB-TC-15	Bryan Bondy	Technical	WLPMA Model Update		Section 5.1.1, Table 2-4b	--	Review of the modeling for the WLPMA cannot not be completed at this time because documentation of the Coastal Plan model is not yet available. Based on review of the GSP evaluation, there are several issues with the Coastal Plain model that appear worthy of further review in consultation with the TAC. Additional items worthy of further review may be identified after documentation review. The issues identified based on the GSP evaluation review include (1) conversion of the WLPMA-ELPMA model boundary from no-flow to general head, (2) inconsistency between the model LAS water balance (Table 2-4b), which indicates little to no underflow from the Oxnard Subbasin into WLPMA in contrast with spring groundwater elevation contours in the annual reports that suggest there is underflow from the Oxnard Subbasin into WLPMA; (3) groundwater exchange between Pleasant Valley Basin and WLPMA; and (4) groundwater exchange between ELPMA and WLPMA.

Specific Comments from the Las Posas Valley Basin Technical Advisory Committee
Draft First Periodic Evaluation, Groundwater Sustainability Plan (GSP) for the Las Posas Valley Basin

Comment ID	Commentor	Technical or Editorial Comment	Topic	Page Number	Section ID	Quoted Text	Comment
BB-TC-16	Bryan Bondy	Technical	WLPMA Modeling and Sustainable Yield Estimate for WLPMA		Section 5.2.2.1 and Section 5.2.3.1	--	While assessment of impacts on adjacent basins is clearly required under SGMA, the framing and analysis of WLPMA impact on Oxnard Basin and the approach to estimating WLPMA sustainable yield seem problematic for multiple reasons. First the analysis has not isolated the impact of WLPMA pumping on seawater intrusion for technical evaluation and consideration in policy making. Second, the analysis of the interaction between WLPMA and the Oxnard Subbasin appears to ignore the fact that numerous WLPMA groundwater pumpers pay pump fees to UWCD. This is evident in the discussion of the underflows from Oxnard Subbasin into WLPMA, which are characterized as a “losses of underflow recharge” to the Oxnard Subbasin. The implication is that WLPMA is taking water away from the Oxnard Subbasin, when, in fact, many pumpers have paid for the benefit of underflow from UCWD’s recharge operations. Consideration should be given to reframing analysis of WLPMA impacts on seawater intrusion and WLPMA sustainable yield to account for underflow that is paid for by WLPMA extraction fees paid to UWCD and additional analysis that isolates the actual influence of WLPMA pumping on seawater intrusion.
BB-TC-17	Bryan Bondy	Technical	Future Baseline with EBB Results	85	Section 5.2.2.1.6	--	Regarding the Future Baseline with EBB scenario, the text states “These results indicate that groundwater production at the average 2016 to 2022 rates in the Oxnard Subbasin, PVB, and WLPMA may be sustainable if UWCD’s EBB project is implemented at a 10,000 AFY production scale.” It is unclear how this scenario can be considered sustainable for the WLPMA because Figures 5-23a and b show minimum threshold exceedances for this scenario.
BB-TC-18	Bryan Bondy	Technical	ELPMA Future Baseline Scenario		Section 5.2.2.2.1	--	Please incorporate the table produced for TAC titled “Summary of Annual Discharges Simulated in the East Las Posas Model (2040-2069 Average” into the evaluation report in this section as it provides important context for technical evaluation of the scenarios.
BB-TC-19	Bryan Bondy	Technical	--	91	Section 5.2.3.2	--	Average ELPMA pumping 2021-2022 value of 23,800 incorrectly includes Epworth Gravels pumping and should be reduced to 23,400 (see Table 4-4). After making that correction, the amount of extraction in excess of the upper estimate of sustainable yield becomes 1,900 AFY and should be updated.
BB-TC-20	Bryan Bondy	Technical	--	92	Section 5.2.3.3	--	The 2021-2022 average annual extractions from the Epworth Gravels is incorrectly reported as approximately 900 AFY and being approximately 450 AFY lower than the estimated upper end of the sustainable yield. Per Table 4-4, the 2021-2022 average annual extractions should be approximately 460 AFY, which is approximately 890 AFY lower than the estimated upper end of the sustainable yield.
BB-TC-21	Bryan Bondy	Technical	Monitoring Network		Section 6	--	Consideration should be given to incorporating the three multi-level monitoring wells constructed by Calleguas in the ELPMA into the monitoring network. These monitoring well nests/clusters provide valuable aquifer specific data, including much needed data for the Grimes Canyon Aquifer at one location. Data from these wells are already provided to FCGMA by Calleguas MWD on a regular basis.

Specific Comments from the Las Posas Valley Basin Technical Advisory Committee
Draft First Periodic Evaluation, Groundwater Sustainability Plan (GSP) for the Las Posas Valley Basin

Comment ID	Commentor	Technical or Editorial Comment	Topic	Page Number	Section ID	Quoted Text	Comment
BB-TC-22	Bryan Bondy	Technical	Revisions to CMWD Monitoring Network	95	Section 6.1; Table 6-2	*Four of the wells have been removed from the monitoring network because they were either destroyed or CMWD had recurring access issues.*	Calleguas has not had access issues. The following are clarifications concerning the wells listed in Table 6-2: • Well 03N20W32H02S has been dry for numerous years. Calleguas continues to check the well for water and will reinstall a transducer if water returns. Consider retaining in monitoring network pending increasing groundwater levels. • Well 02N20W02D02S was destroyed by the owner. • Well 03N20W36P01S has a transducer stuck in the sounding tube. The transducer will be reinstalled the next time the well pump is removed. • Well 03N20W35J01S is continuing to be monitored with a transducer. However, the groundwater levels are considered anomalous. It is recommended that this well be removed from the monitoring network due to anomalous data. • Well 02N20W01B02 is noted as being added to the monitoring network in Table 6-2. This is not correct. This well was already included in the monitoring network in the GSP. Table 6-2 says no water quality sampling. This is not correct. Water quality samples are collected according to satisfy Division of Drinking Water requirements and are available from Calleguas or from the SWRCB website. Calleguas has added its three multilevel groundwater monitoring wells to its monitoring network.
BB-TC-23	Bryan Bondy	Technical	Change in CMWD Monitoring Schedule	96	Table 6-3	--	Table 6-3 indicates that several wells are "no longer monitored" for water quality. It is noted that Calleguas has never sampled these wells (except once for monitoring wells immediately following construction). FCGMA incorrectly assumed that Calleguas was sampling these wells. Well 02N19W06F01S is an agricultural well, not a monitoring well. Well 02N20W09Q08S is a monitoring well, not a municipal well.
BB-TC-24	Bryan Bondy	Technical	Water Level Measurements: Temporal Data Gap, p. 98	98	Section 6.2.2.2	*Currently, groundwater elevation measurements are not scheduled according to these criteria because FCGMA relies on monitoring by several other agencies. To minimize the effects of this type of temporal data gap in the future, it would be necessary to coordinate the collection of groundwater elevation data, so it occurs within a 2-week window during the key reporting periods of mid-March and mid-October. The recommended collection windows are October 9–22 in the fall and March 9–22 in the spring.*	Calleguas and VCWWD have transducers installed in all the wells in their monitoring network. The only reason data may be missing for these wells during the fall and spring two-week windows is if a transducer has failed and is pending reinstallation. FCGMA is encouraged to coordinate with Calleguas and VCWWD to facilitate determine an approach for collection of manual groundwater level measurements to address the fall and spring window data needs.
BB-TC-25	Bryan Bondy	Technical	Water Level Measurements: Temporal Data Gap, p. 98	98	Section 6.2.2.2	*Additionally, as funding becomes available, pressure transducers should be added to wells in the groundwater monitoring network.*	It is noted that Calleguas and VCWWD already have transducers installed in all the wells in their monitoring network.
BB-TC-26	Bryan Bondy	Technical	Water Level Measurements: Temporal Data Gap, p. 98	98	Section 6.2.2.2	*Since adoption of the GSP, 13 wells that were to be monitored for groundwater quality are no longer monitored for groundwater quality. The majority these wells, 11 of the 13 wells, are representative monitoring wells located in the ELPMA.requirements.*	As noted in comment BB-TC-23, Calleguas never committed to sample the wells in its monitoring network, other than ASR wells, which are sampled to comply with Division of Drinking Water requirements.
BB-TC-27	Bryan Bondy	Technical	Data Gaps	97	Section 6.2	--	Consideration should be given to reevaluating data gaps in consultation with TAC after FCGMA staff have met and conferred with the monitoring entities.
BB-TC-28a	Bryan Bondy	General Technical	Potential Additional Report Elements	--	--	--	1.Consideration should be given to including groundwater level contour maps. Perhaps the annual report figures could becompiled into an appendix.

Specific Comments from the Las Posas Valley Basin Technical Advisory Committee
Draft First Periodic Evaluation, Groundwater Sustainability Plan (GSP) for the Las Posas Valley Basin

Comment ID	Commentor	Technical or Editorial Comment	Topic	Page Number	Section ID	Quoted Text	Comment
BB-TC-28b	Bryan Bondy	General Technical	Potential Additional Report Elements	--	--	--	2.Consideration should be given to including discussion concerning whether there were any notable changes in the spatialdistribution of pumping in the management areas.
BB-EC-1	Bryan Bondy	General Editorial	Figure References	--	--	--	The reviewer noticed a number of incorrect figure and table number references in the text. Consider QC'ing.
BB-EC-2	Bryan Bondy	Editorial	--	120	Figure 2-2	--	Wells 18H12 and 17L01 (WLPMA) and 01Q02 (ELPMA) are depicted as RMP/Key Wells but are not identified as such in the GSP and are not listed in Table 2-2.
BB-EC-3	Bryan Bondy	Editorial	--	120	Figure 2-2	--	RMP/Key Well 35R02 is missing on Figure 2-2.
BB-EC-4	Bryan Bondy	Editorial	--	ES-3	2nd full paragraph	*...14 key wells in the ELPMA...*	per Table 2-2 and the GSP, there are 15 (13 FCA and 2 Shallow Aquifer).
BB-EC-5	Bryan Bondy	Editorial	--	122 and 124	Figures 2-3 and 2-4	--	These figures are a clever approach to communicating status relative to the SMCs. However, while the graphics in the lower half of the figures are intuitive, they are misleading because the scale for each well is different. This is most evident in the fact that the distance between the MO and MT lines are same for each well when the actual distance between MO and MT ranges from 20 to 100 feet. Additionally, wells appear closer or further from their respective MO / MT relative to other wells than they actually are. For example, the Spring 2024 groundwater levels for 26R03 and 01B02 on Figure 2-4 visually appear to be very different heights above their respective MOs but are actually about the same (24 and 23 feet, respectively). At a minimum, the bottom graphics should be noted as being not to scale and that the graphics for the various wells are not comparable. Preferable, the graphics would be adjusted to that all wells are at the same scale and the actual distances between MO and MT for each well are depicted.
BB-EC-6	Bryan Bondy	Editorial	--	ES-4	1st paragraph	--	The values in this paragraph are incorrect: • Average WLPMA pumping 2021-2022 was 4,000 AFY more than the upper estimate of sustainable yield, not 3,100 AFY (see value reported on p. 90). • Average ELPMA pumping 2021-2022 was 1,900 AFY more than the upper estimate of sustainable yield, not 2,300 AFY (note: although 2,300 is reported on p. 91, the pumping used for the calculation incorrectly includes Epworth Gravels pumping).
BB-EC-7	Bryan Bondy	Editorial	--	1	Table 1-1, 2nd row	--	Consider also mentioning Simi Valley dewatering wells here, i.e., the City of Simi Valley is no longer planning to divert dewatering well discharges to a desalter for potable use.
BB-EC-8	Bryan Bondy	Editorial	--	6	Section 2.2 second paragraph	--	Per Figure 2-4, groundwater elevations were measured in 16 of the 21 key wells, not 15 as indicated in the text.
BB-EC-9	Bryan Bondy	Editorial	--	24	Table 2-5	--	WLPMA – LAS estimated 2016-2024 change in storage value is incorrect. S/B -32,970
BB-EC-10	Bryan Bondy	Editorial	--	52	Section 4.1.3.1	--	It is unclear what new information has been incorporated into understanding of recharge areas.
BB-EC-11	Bryan Bondy	Editorial	--	55	Section 4.3.2.1	--	Text states "Available data characterizing groundwater extractions in water years 2021 and 2022 indicate that groundwater extractions from the LPVB averaged approximately 42,400 AFY (Tables 4-3 and 4-4)." Per the referenced tables, the value cited in the text should be 40,400 AFY.
BB-EC-12	Bryan Bondy	Editorial	--	Table 4-4		--	WY 2022 Epworth Gravels Aquifer extraction value appears anomalously low. Consider investigating and/or footnoting.
BB-EC-13	Bryan Bondy	Editorial	--	Table 4-4		--	Please footnote table to clarify whether values include Calleguas MWD extractions.
BB-EC-14	Bryan Bondy	Editorial	--	68-69		--	Something is wrong with the transition from p. 68 to p. 69.
BB-EC-15	Bryan Bondy	Editorial	--	86	Section 5.2.2.2.1	--	Second bullet – the wrong model is referenced.
BB-EC-16	Bryan Bondy	Editorial	--	Table 6-1		--	Explanation for footnote "a" is missing.
BB-EC-17	Bryan Bondy	Editorial	--	98		--	"CGMA" s/b "FCGMA"

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BA-1	Bob Abrams	General Technical	Groundwater Monitoring	--	--	--	Overall, monitoring in the LPVB could be improved. Many key wells have not been monitored and no reasons for this are provided. For example, key well 02N20W06R01S, which has been below the water-level minimum threshold, was not monitored in 2024. The lack of monitoring seems particularly true in the West Las Posas Management Area (WLPMA), where there are five key wells but only two or three are ever monitored. The lack of explanation could be interpreted to mean that the Fox Canyon Groundwater Management Agency (FCGMA) is trying to downplay this issue.
BA-2	Bob Abrams	General Technical	Projects and Management Actions	--	--	--	In terms of projects benefitting the LPVB, the evaluation appears to indicate that action is being delayed because of the Judgment and Basin Optimization Plan. For example, it appears that FCGMA has spent most their time on the Oxnard Basin model, work that was done by United Water Conservation District (UWCD). This seems to be the only substantive management action that has moved forward in LPVB.
BA-3	Bob Abrams	General Technical	Grimes Canyon Aquifer	--	--	--	The Grimes Canyon Aquifer (GCA) seems to be mentioned then ignored. In WLPMA, where data are particularly sparse, it just gets lumped into the Lower Aquifer System (LAS).
BA-4	Bob Abrams	General Technical	Recharge Figures	--	--	--	Figure 4-1 that shows recharge areas for Fox Canyon Aquifer (FCA). Why no equivalent figure for the GCA recharge area?
BA-5	Bob Abrams	General Technical	Water Quality	--	--	--	There are indications of deteriorating groundwater quality in localized areas. The Evaluations states that this is not related to pumping, but no explanation is given for why for the local concentration increases. Is water from the Upper San Pedro possibly being pulled down by pumping?
BA-6	Bob Abrams	General Technical	Groundwater Monitoring	--	--	--	FCGMA appears to source most or all of the necessary monitoring data from other agencies. Thus, there is no apparent direct culpability if data are not collected.
BA-7	Bob Abrams	General Technical	Groundwater Modeling	--	--	--	A large amount of new modeling work for the Oxnard Basin is presented. This work is only slightly relevant to the WLPMA of LPVB, but much attention is devoted to describing this work in the Evaluation. The many particle tracking figures presented do not appear to be relevant to the Evaluation.
BA-8	Bob Abrams	Editorial	--	ES-1	Footnote 1	--	Not sure what this is referring to?
BA-9	Bob Abrams	Editorial	--	ES-1	Footnote 2	*Under the Judgment adopted in the LPVB adjudication (Las Posas Valley Water Rights Coalition, et al. v. Fox Canyon Groundwater Management Agency, Santa Barbara Sup. Ct. Case No. VENC100509700) water year 2024 begins on October 1, 2024 and will end on September 30, 2025.*	Need to explain how this apparent mismatch will be managed in the document and in future. Water Year and Court Water Year (when required)?
BA-10	Bob Abrams	Editorial	--	ES-2	--	*Because the Judgment is still being implemented and subject to appellate court review, its effect on FCGMA's implementation of the LPVB GSP and sustainable management of the LPVB is uncertain.*	Not clear what this sentence achieves? Suggest re-wording or deleting.
BA-11	Bob Abrams	Technical	--	ES-2	--	--	Groundwater elevations in the GCA in WLPMA are not mentioned? This is inconsistent, as it is mentioned for ELPMA Need to mention that there are few wells in the GCA in WLPMA and this is an area of uncertainty? Or is it the intention to call the FCA/GCA the LAS in WLPMA as per Table 2.2 and brush over the lack of aquifer specific wells?
BA-12	Bob Abrams	Editorial	--	ES-2	--	*Groundwater elevations central ELPMA near the CMWD ASR well field*	Suggested addition in red text: Groundwater elevations in central ELPMA near the CMWD ASR well field

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BA-13	Bob Abrams	Editorial	--	ES-4	--	*groundwater levels in the WLPMA should be maintained at elevations that are high enough to not inhibit the ability of the Oxnard Subbasin to prevent net landward migration of the saline water impact front*	Can this be re-written? This is expressed more clearly on page 17 as "...groundwater levels, significant and unreasonable loss of groundwater in storage, and, in the WLPMA, will not prevent the Oxnard Subbasin from achieving its sustainability goal"
BA-14	Bob Abrams	Editorial and Technical	--	ES-4	--	*The largest administrative uncertainty is related to how the LPVB Judgment will impact FCGMA's ability to implement the GSP and sustainably manage the LPVB,*	This is a subjective comment and could be deleted. Or the red text could be added. Suggest this document should focus on technical uncertainties rather than administrative. "The largest administrative uncertainty is related to how the LPVB Judgment will impact FCGMA's ability to implement the GSP and sustainably manage the LPVB,"
BA-15	Bob Abrams	Technical	--	10	--	*Groundwater elevation was not measured in well 02N20W12MMW1 in water year 2024*	Is it worth noting the reason why the elevation was not measured in this key well? Leaving it as unexplained reduces the robustness of data reporting.
BA-16	Bob Abrams	Technical	--	11	Table 2.2		The Table would be stronger if there was a column or note explaining why key wells were not measured, otherwise it looks like poor groundwater management – there are lots of '-' cells indicating data not collected, which is obviously disappointing.
BA-17	Bob Abrams	Editorial	--	13	FCA third paragraph	*Fall groundwater elevations decreased ~~from~~ by less than a foot to 48 feet*	To avoid confusion - the 'from' in the sentence could be read as ft msl, when the intention is to show the change in elevations. Previous paras and next sentence are clearer.
BA-18	Bob Abrams	Technical	--	13	GCA	*Sufficient measurements were not collected by the monitoring agency to evaluate the change in groundwater elevation for fall 2015 to fall 2023 and spring 2015 to spring 2024.*	Explain the reasons and note that it remains an area of uncertainty? Otherwise, it looks like it is being glossed over.
BA-19	Bob Abrams	Editorial	--	15	--	*Fall 2023 groundwater elevations were below the 2025 interim milestones in ~~the~~ two of the key wells in the WLPMA*	typo
BA-20	Bob Abrams	Technical	--	19	1st paragraph	*The lack of measurements at these two wells creates data gaps in the characterization of groundwater conditions within the LPVB.*	Is there any proposal to replace these two key wells with new or other wells? It would counterbalance the negative.
BA-21	Bob Abrams	Editorial and Technical	--	22	Table 2-4b	--	Title of last "Outflow" column is "Subsurface flow to the ELPMAa" Footnote "a" states, "Represents simulated underflows from the East Las Posas Management Area" Do these contradict? Footnote should say "to"? With respect to flow from WLPMA to ELPMA, reference Section 5.1.1 because new finding and still being evaluated.
BA-22	Bob Abrams	Editorial	--	23	Table 2-4c	--	First column of "Outflow" is "Outflow to PV1" Should that be PVB?
BA-23	Bob Abrams	Technical	--	26	Table 2-6	--	Column labeled "Aquifer" has many instances of "Unknown" Can the aquifer be ascertained by well depth, well completion data, local stratigraphy, well chemistry etc? Collecting data from wells without knowing the aquifer diminishes the value of that data. Doing statistics on data of unknown provenance is questionable/not robust
BA-24	Bob Abrams	Technical	--	28	4th paragraph ELPMA groundwater quality	*While recent data doesn't suggest a link between groundwater quality degradation and groundwater production during the evaluation period*	Increasing trends are noted in a number of wells. While the conclusion is that there is no link between increasing trends and GW production, there is a notable absence of explanations for the increasing trends. If not GW production, then what local conceptual site model is postulated to cause the increases?
BA-25	Bob Abrams	Technical	--	28	2.5.2.1 WLPMA	*TDS concentration data do not indicate that groundwater production since 2015 has caused degradation of groundwater quality*	The previous sentence suggests increases are occurring in wells completed in the USP, but not in the FCA/GCA. Would a hypothetical conceptual model be that groundwater production is pulling higher TDS water down from the USP and that there is a link? What is the TDS of USP groundwater?
BA-26	Bob Abrams	Editorial	--	40	3.1.2.3.2 last sentence	*A formal agreement to ensure future maintenance of these non-native flows will be evaluated ~~as~~ through the Basin Optimization Plan.*	typo

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BA-27	Bob Abrams	Technical	--	41	Table 3-1	*Estimated Accrued Benefits at Completion: Recovery of groundwater levels that have contributed to seawater intrusion in the Oxnard Subbasin.*	Is not the biggest benefit of reduced groundwater production the reduced possibility of adverse effects, rather than a specific effect in Oxnard Subbasin?
BA-28	Bob Abrams	Technical	--	51	4.1.1.1.	*Projects have been identified to install additional monitoring wells and transducers in existing wells that would address data gaps in the ELPMA*	Why none in the WLPMA?
BA-29	Bob Abrams	Editorial	--	64	4.3.2.3	*Between 2003 and 2022, recycled water in the ELPMA was used exclusively for municipal and industrial uses.*	Missing word?
BA-30	Bob Abrams	Editorial	--	70	5.2.1.3	*climate change factors ~~:~~ , with the noted exception that*	typo
BA-31	Bob Abrams	Editorial	--	73	5.2.2	*...model runs that resulted in: (1) no net flux of seawater into either the UAS or LAS of the Oxnard Subbasin, ~~;~~*	typo
BA-32	Bob Abrams	Technical	--	226 and 228	Figures 5-23a, b	--	Why are the simulated hydrographs shifted by -60 and +70 feet?
BA-33	Bob Abrams	Technical	--	73	5.2.2	*Due to the connection between the WLPMA and Oxnard Subbasin, the sustainable yield was evaluated using the model runs that resulted in: (1) no net flux of seawater into either the UAS or LAS of the Oxnard Subbasin,, (2) no landward migration of the saline water impact front in the Oxnard Subbasin, and (3) no chronic lowering of groundwater levels in WLPMA.*	Understood that the subbasins are connected, but shouldn't the focus of sustainability be on the LPVB? The numerous particle tracking figures don't even show the LPVB. What is a LPVB stakeholder supposed to think about this?
BA-34	Bob Abrams	Editorial	--	89	--	*No New Projects Scenario Model Results*	Should this be 'Arundo Removal Scenario Model results'?
BA-35	Bob Abrams	Technical	--	97	6.2.2.	*the existing monitoring network in the LPVB is sufficient to document groundwater and can be used to document progress toward the sustainability goals for the LPVB.*	The loss of key well monitoring wells has not really been addressed – either the GSP had too many key wells, or this statement isn't really true?
BA-36	Bob Abrams	Editorial and Technical	--	98	6.2.2.1	*The removal of 02N21W16J03S limits characterization of groundwater conditions in the eastern part of WLPMA, where groundwater elevations are influenced by operations in the Oxnard Subbasin*	Typo. Also, are GW elevations in the eastern part of WLPMA influenced by Oxnard? More likely wells in western part of WLPMA?
BA-37	Bob Abrams	Technical	--	98	6.2.2.1	*As noted above, FCGMA anticipates evaluating projects that help to fill these critical data gaps as part of the Basin Optimization Plan*	Insufficient urgency demonstrated? Only one new well installed since 2019.
BA-38	Bob Abrams	Editorial	--	107	8.3	*with FCGMA holding regular meetings ~~with~~ to coordinate on projects*	typo
BA-39	Bob Abrams	Editorial	--	110	9.3	*Because the Judgment is still being implemented and subject to appellate court review, the effect of the Judgment on FCGMA's implementation of the LPV GSP and sustainable management of the LPV Basin is uncertain at this time.*	Not clear what this sentence achieves? Suggest rewording or deleting (ame as p ES-2, above)
BA-40	Bob Abrams	Editorial	--	112	10	*~~Revisions~~ Reductions to the monitoring network, including the key well network*	The word "reduction" is a more accurate representation of facts

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TM-1	Tony Morgan	Editorial	--	ES-1	Table ES-1, 4th row, last column	--	subsidence is not discussed in Section 7.2
TM-2	Tony Morgan	Technical	--	7	2.2.1.1	*prevent chronic lowering of groundwater levels*	is chronic lowering of water levels currently a WLPMA condition? That message doesn't seem to be a prevalent message throughout the document.
TM-3	Tony Morgan	Technical	--	7	2.2.1.2, first paragraph	*to limit the area of the FCA that would convert from confined to unconfined conditions with declining water levels,*	the undesirable condition is a conversion of the aquifer from confined to unconfined. The following paragraph moves from a discussion of the aquifer transitioning from confined to unconfined, to an individual well?
TM-4	Tony Morgan	Technical	--	7	2.2.1.2, second paragraph	*would result in projected groundwater elevations that are below the top of the well screen in nine wells*	declines in water levels to below the top of screen does not necessarily equate to the dewatering of the aquifer. Not clear how this analysis helps assess the potential for CONF-UNCONF conversion. A more powerful analysis would be to determine the tops of the confined aquifer and then compare to a declining water level.
TM-5	Tony Morgan	Editorial	--	24	2.3.2.1, Lower Aquifer System	*approximately 32,970 AF since 2015 (Table 2-5)*	value doesn't match Table 2-5
TM-6	Tony Morgan	Editorial	--	24	Table 2-5., West Las Posas / LAS row	--	-34,780+1,810 = -32,970
TM-7	Tony Morgan	Technical	--	26	2.5.1	*describe efforts to evaluate the connection between groundwater production and groundwater quality*	Was this accomplished in the document?
TM-8	Tony Morgan	Technical	--	26	2.5.1	*progress made toward evaluation of the causal relationship referenced in the GSP.*	Where is this addressed in the document?
TM-9	Tony Morgan	Technical	--	28	2.5.1.2, last paragraph	*While recent data doesn't suggest a link between groundwater quality degradation and groundwater production during the evaluation period,*	Where are these data presented?
TM-10	Tony Morgan	Technical	--	32	2.6.2	*critical infrastructure*	What are the criticial infrastructure? Their location(s) are not shown on Fig 2-29.
TM-11	Tony Morgan	Editorial	--	35	3	*Both the Basin Optimization Plan and Basin Optimization Yield Study are developed by FCGMA, as Watermaster for the LPVB, with consultation, review, and recommendation from the LPVB PAC and TAC.*	Change to: "Both the Basin Optimization Plan and Basin Optimization Yield Study are planned to be developed by FCGMA, as Watermaster for the LPVB, with consultation, review, and recommendation from the LPVB PAC and TAC."
TM-12	Tony Morgan	Technical	--	37	3.1.1.1.3, Impacts to beneficial uses and users	*potential groundwater-surface water connections.*	these connections are not highlighted/identified in this document. Why mention them here?
TM-13	Tony Morgan	Technical	--	39	3.1.2.1.2, Expected Benefits	*prevent declines in groundwater elevation, loss of storage, and land subsidence by*	These benefits are logical, but are they actually needed to lessen declines in groundwater elevations, loss of storage, or land subsidence. Other sections in this document do not identify undesirable results associated with them (e.g., subsidence).
TM-14	Tony Morgan	Technical	--	39	3.1.2.1.2, Impacts to beneficial uses and users	*chronic lowering of groundwater levels,*	is chronic lowering of groundwater a risk in the WLPMA?
TM-15	Tony Morgan	Editorial	--	40	3.1.2.3.2, Realized Benefits, second paragraph	*A formal agreement to ensure future maintenance of these non-native flows will be evaluated ~~as~~ through the Basin Optimization Plan.*	typo
TM-16	Tony Morgan	Editorial	--	41	Table 3-1, first row, second column	*Reduce Groundwater production by monitoring and imposing quantitative limits on pumpers; with governing authority from the FCGMA Board as the Watermaster.*	recommend adding red text
TM-17	Tony Morgan	Editorial	--	42	3.2.1.1	*decrease groundwater demand in the LPVB by 2,300 AFY.*	section below says groundwater demand would be decreased by 500 AFY
TM-18	Tony Morgan	Editorial	--	42	3.2.1.2, Expected Benefits	*It is estimated that implementation of this project would decrease groundwater demand in the LPVB by approximately 500 AFY.*	paragraph above says groundwater demand would be decreased by 2,300 AFY

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TM-19	Tony Morgan	Technical	--	43	3.2.1.2, Expected Benefits	*which directly addresses undesirable results associated with degraded water quality,*	what degraded water quality impacts are attributable to the GSP's management of the basin?
TM-20	Tony Morgan	Technical	--	43	3.2.1.2, Expected Benefits	*reducing groundwater demands in the LPVB.*	how does the pumping of groundwater to supply the desalter achieve a reduction in groundwater demands?
TM-21	Tony Morgan	Technical	--	43	3.2.1.2, Impacts to beneficial uses and users	*helping to prevent groundwater elevation declines*	the desalter needs a source of water to treat - groundwater. Not clear how this project reduces groundwater demand and therefore prevents groundwater elevation decline.
TM-22	Tony Morgan	Technical	--	44	3.2.3.1	*would provide up to 2,000 AFY of recharge.*	how much of the 2,000 AFY of recharge would have normally been recharged downstream of the percolation ponds or in the PVB? Is this expected to be 2,000 AFY net of the "normal" recharge?
TM-23	Tony Morgan	Technical	--	45	3.2.4.1	*would provide data on whether the vegetation in the riparian corridor relies on groundwater or soil moisture from infiltrating surface water.*	other sections stated that vegetation is not dependent on groundwater. This seems to be backtracking on the conclusions offered elsewhere.
TM-24	Tony Morgan	Editorial	--	54	4.3.2.1	*approximately 35,100 AFY of groundwater*	Recommend changing to "...an average of approximately 35,100 AFY of groundwater..."
TM-25	Tony Morgan	Technical	--	77	Table 5-2, first column, second row	*Seawater Flux into the Oxnard Subbasin* [b]	it is a little misleading to show the SWI values as a single number when in reality the modeling results have an error bar associated with them (e.g., 500 AFY +/-200 AFY). The single value presented in the table suggests a more exact rate than we have data to support. Can error estimates be added to the table?
TM-26	Tony Morgan	Editorial	--	77	Table 5-2, footnotes	--	Last footnote should be 'd'
TM-27	Tony Morgan	Technical	--	98	6.2.2.3	*13 wells that were to be monitored for groundwater quality are no longer monitored for groundwater quality.*	Seem appropriate to provide the reader with some idea of why so many wells are no longer monitored. Were the wells destroyed, landowner access denied, data determined to be redundant, monitoring entity dropped these wells from their suite of monitored wells, or ??.
TM-28	Tony Morgan	Technical	--	99	6.4	*monitor subsidence*	Is it anticipated that an annual report will be produced? Will the report address inferred land surface movement near critical infrastructure? If so, what infrastructure?
TM-29	Tony Morgan	Editorial	--	103	7.1.3	*As described in Section 3.1, Evaluation of Projects and Management Actions, the Judgment adjudicated water rights in the basin and established an allocation system based on those water rights. The Judgment allocations supersede the allocations developed and adopted by FCGMA in 2019.*	This paragraph seems to fit better in 7.1.2 Extraction Allocations.
TM-30	Tony Morgan	Technical	--	110	9.3, Las Posas Valley Water rights Coalition, et al. v. Fox Canyon Groundwater Management Agency, Santa Barbara Sup. Ct. Case No. VENC100509700	*adopts a physical solution that requires FCGMA to prepare new studies and reports designed to maintain an annual operating yield for the LPVB at 40,000 AFY*	This GSP puts the sustainable yield at ~27K-34K AFY with projects. The judgment requires a sustainable yield of 40K AFY. What is the GSA (Watermaster?) doing to get to the 40K AFY value? Was this discussed in the GSP?
TM-31	Tony Morgan	Technical	--	Appendix A, A-1	A.1	*identify specific locations where Arroyo Simi-Las Posas is connected to the underlying aquifer and*	Is there a map or ?? showing these locations?
TM-32	Tony Morgan	Technical	--	Appendix A, A-2	A.2, first paragraph on page	*recharge of the surface water discharges*	Helpful to reader to identify these surface water discharges. Can the surface water discharges be quantified (e.g., time series)? What values were used for the groundwater model?
TM-33	Tony Morgan	Technical	--	Appendix A, A-2	A.3, last sentence in first paragraph	*This indicates that groundwater production in the principal aquifers of the ELPMA has not impacted the groundwater level in the shallow alluvial aquifer adjacent to the Arroyo near well MMW-1.*	This implies limited interconnection between the principal and shallow aquifers. Is this conclusionary statement consistent with the findings from the groundwater flow model? If so, suggest stating the model is supportive of these observations. If not, then why the difference.

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TM-34	Tony Morgan	Technical	--	Appendix A, A-2	A.4, first paragraph	*interconnected surface water bodies*	Were the interconnected surface water bodies identified?
TM-35	Tony Morgan	Editorial	--	Appendix A, A-2	A.4, first paragraph	*has not occurred in relation to current groundwater production, although this could occur in the future if upstream surface water discharges decrease.*	is this sentence saying that depletions of interconnected surface waters due to pumping could occur if upstream surface water discharges decrease? Suggest splitting the sentence into two. Add a period after "...groundwater production." Create a new sentence to say "Interconnected surface water bodies could occur in the future if upstream surface water discharges decrease."

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CT-1	Chad Taylor	Editorial	--	1	Table 1-1, fourth row, second column	*As a result, FCGMA anticipates approximately more flow in Arroyo Simi-Las Posas than previously assumed for the GSP*	Is this a typo, or should a value of additional flow be included here?
CT-1	Chad Taylor	Technical	--	1	Table 1-1	*Infrastructure Improvements to Zone Mutual Water Company's water delivery system*	This project may need to be modified based on feedback from Bryan Bondy regarding ZMWC's ability to finance improvements. TAC recommendations on the projects for the Basin Optimization Plan include changing this to a Basin-wide feasibility study to increase transfers between management areas.
CT-1	Chad Taylor	Technical	--	2	Table 1-1	*Projects to Address Data Gaps, Installation of Additional Groundwater Monitoring Wells and Installation of Additional Groundwater Monitoring Wells*	These are important projects that should be advanced quickly. See later comments on monitoring adequacy.
CT-1	Chad Taylor	Editorial	--	4	2.1, second paragraph on page	*At the time the GSP was prepared, the groundwater elevations were below the minimum threshold groundwater elevations in ~~the at~~ four of the five key wells in WLPMA, the only key well in the Epworth Gravels Management Area, and one well in the ELPMA.*	Typo
CT-1	Chad Taylor	Technical	--	7	2.2.1.2, second paragraph	*The depth and groundwater production rates from the wells in this area indicate that they are agricultural wells and are not domestic or de minimis wells that produce less than 2 acre-feet per year (AFY).*	Recommend showing the all the data included in and results of this analysis in figures and tables. Table 2-1 shows only perforated interval depths, not production rates that would distinguish domestic wells from those for other uses.
CT-1	Chad Taylor	Technical	--	8	Table 2-1, 6th column	--	18 percent of wells (4 of 22) with reduced capacity seems high
CT-1	Chad Taylor	Technical	--	8	Table 2-1, 7th column	--	2 wells out of 22 is 9%. That is a fairly large percentage of wells going dry.
CT-1	Chad Taylor	Technical	--	8	2.2.1.2, second paragraph on page	*Loss of production at the minimum threshold groundwater elevations represents a loss of between 1% and 3% of the total production from the management area.*	The DWR Recommended Corrective Action requested discussion of the effects of the MTs and MOs on beneficial uses and users. This analysis only discusses the MTs. Additionally, contextualizing the reductions in production ability from these wells in the context of the entire production from the management area may not meet DWR expectations regarding effects on beneficial users. Recommend including discussion of effects on individual well owners. Also, will there be a dry well mitigation program in case wells do go dry?
CT-1	Chad Taylor	Technical	--	9	2.2.1.3, first paragraph	*As groundwater elevations decline in the Epworth Gravels aquifer, groundwater users in this management area rest their Epworth Gravels aquifer wells and rely on water from the FCA instead.*	Can this practice be incorporated into a management action?
CT-1	Chad Taylor	Editorial	--	9	2.2.1.3, second paragraph	*The GSP reported on groundwater conditions through fall 2015. The change in water levels since 2015 varies geographically within the LPVB, reflecting both the influence of groundwater extraction and the availability and extent of groundwater recharge in the WLPMA, ELPMA, and Epworth Gravels Management Area.*	This paragraph seems out of place. Is it supposed to follow the header for 2.2.2?
CT-1	Chad Taylor	Editorial	--	9	2.2.2.1 Upper San Pedro Formation	*There are no key wells screened in the USP because it is not a* ***primary*** *aquifer...*	Should primary be principal?

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Comment ID	Commentor	Technical or Editorial Comment	Topic	Page Number	Section ID	Quoted Text	Comment
CT-1	Chad Taylor	Technical	--	9	2.2.2.1 Fox Canyon Aquifer	*In the western part of the WLPMA, adjacent to the Oxnard Subbasin, fall 2023 and spring 2024 groundwater elevations in the FCA were approximately 55 to 35 feet higher than they were in fall 2015 and spring 2015, respectively (Figure 2-7, Fox Canyon Aquifer – Groundwater Elevation Changes from Fall 2015 to 2023, and Figure 2-8, Fox Canyon Aquifer – Groundwater Elevation Changes from Spring 2015 to 2024). Groundwater elevations in this part of the WLPMA were also higher than they were in fall 2019, the start of the current evaluation period (FCGMA 2021). Groundwater elevation recoveries in the western WLPMA since 2015 reflect the influence of UWCD's recharge operations in the Forebay Management Area of the Oxnard Subbasin, which promoted groundwater elevation recoveries in the Oxnard Subbasin of approximately 120 feet between 2015 and 2024 (FCGMA 2024a).*	These statements are based solely on one monitoring well at the extreme western end of the WLPMA. That data limitation should be discussed somewhere.
CT-1	Chad Taylor	Technical	--	10	2.2.2.1, first paragraph on page	*In contrast, groundwater elevations in the eastern part of the WLPMA were lower in the fall of 2023 than they were in fall 2015 (Figures 2-7)8. The largest groundwater elevation decline measured over this period was at well 02N20W06R01S, where the fall 2023 groundwater elevation was approximately 80 feet lower than fall 2015 (Table 2-2, Water Year 2024 Groundwater Elevations at Key Wells in the Las Posas Valley Basin; Figures 2-7 and 2-8). Groundwater elevation declines in the eastern WLPMA reflect ongoing groundwater production in an area with limited groundwater recharge.*	The lack of consistent monitoring for comparing water levels may be the cause of the apparent difference between fall and spring comparisons. Inconsistent monitoring makes tracking sustainability very challenging, especially when there are so few Key Wells in the network. This problem may be skewing the assessment of sustainability and should be addressed immediately by adding dedicated monitoring wells that the FCGMA/Watermaster monitors or uses transducers to reliably measure water levels regularly.
CT-1	Chad Taylor	Technical	--	10	2.2.2.1 Grimes Canyon Aquifer	*Two wells, 02N21W28A02S and 02N21W22G01S, had groundwater elevations measured in both spring 2015 and spring 2024.*	Spring to spring declines with no fall comparison due to inconsistent monitoring should raise concern.
CT-1	Chad Taylor	Editorial	--	14	2.2.3.1, first paragraph	*The GSP defined interim milestones for the key wells with groundwater elevations below the measurable objectives, so that groundwater elevations would reach the measurable objectives by 2040 (FCGMA 2019).*	Recommend referencing relevant section discussing Interim Milestones.
CT-1	Chad Taylor	Technical	--	14	2.2.3.1, second paragraph	*FCGMA has relied on other agencies for monitoring data but recognizes the need for more consistent monitoring of groundwater elevations in the WLPMA*	This should be prioritized using available funding sources, not waiting for grant funding as alluded to in other sections. Has the FCGMA considered the Technical Support Services available through DWR? Those may not be available now that the Basin is adjudicated, but worth asking about.
CT-1	Chad Taylor	Editorial	--	14	2.2.3.1, second paragraph	*anticipates that groundwater elevations will rise between 2025 and 2040 with the implementation of projects and management actions in the WLPMA that are consistent with the GSP and Judgment.*	This seems a weak statement without further explanation of the mechanisms for increased groundwater elevations. Specifically, "anticipates' and "will rise" are very passive.
CT-1	Chad Taylor	Editorial	--	14	2.2.3.2	*In 2015, the end of the GSP reporting period, groundwater elevations in the WLPMA were above ~~than~~ the minimum threshold water levels at four of the five key wells in the management area (FCGMA 2019).*	Typo

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CT-1	Chad Taylor	Technical	--	15	2.2.3.2, first paragraph on page	*measured in three of the five key wells were measured in three of the five key wells*	40 percent of key wells were not monitored and 2/3 of those that were monitored were below the MT. The importance of more consistent monitoring cannot be stressed highly enough.
CT-1	Chad Taylor	Editorial	--	15	2.2.3.2, first paragraph on page	*...minimum thresholds (Table 2-1).*	Table 2-2?
CT-1	Chad Taylor	Technical	--	15	2.2.3.2, first paragraph on page	*Spring 2024 groundwater elevations were above the minimum threshold groundwater elevations at all of the key wells measured in the WLPMA*	The spring 2024 measurements also included only 60% of Key Wells and the well that was furthest below the MT in fall 2023 was not included.
CT-1	Chad Taylor	Editorial	--	15	2.2.3.3, first paragraph	*Fall 2023 groundwater elevations were below the 2025 interim milestones in the two the key wells*	missing word
CT-1	Chad Taylor	Editorial	--	15	2.2.3.3, first paragraph	*established interim milestones (Table 2-1).*	Table 2-2?
CT-1	Chad Taylor	Technical	--	17	2.2.5.3	*gained and updated numerical modeling conducted for this periodic evaluation (see Section 5, Updated Numerical Modeling)* ***suggest*** *that these thresholds are appropriate to prevent undesirable results in the LPVB*	This makes it sound like there is uncertainty regarding the effectiveness of the thresholds. Can this be strengthened, or is there significant uncertainty?
CT-1	Chad Taylor	Technical	--	19	2.2.5.3, last sentence of first paragraph on page	*The lack of measurements at these two wells creates data gaps in the characterization of groundwater conditions within the LPVB.*	SGMA characterizes data gaps as "a lack of information that significantly affects the understanding of basin setting or evaluation of the efficacy of the Plan implementation, and could limit the ability to assess whether a basin is being sustainably managed." Data gaps include not only limited geographic representation, but also monitoring sites that are unreliable. Once identified, as GSA must include a description in the GSP that addresses the data gaps (23CCR §354.38.) As noted above, a plan to address these data gaps should be developed and implemented as soon as possible.
CT-1	Chad Taylor	Technical	--	19	2.3	--	While this section does acknowledge that undesirable results have occurred, it does not appear to address the DWR RCA request for discussion of potential effects of MTs and MOs on beneficial uses and users. Recommend including a discussion to this effect to address the DWR request.
CT-1	Chad Taylor	Technical	--	22	Table 2-4b	--	Why does this table show the average and not the total change in storage over the period? The sum of the annual changes in storage is a loss of 34,777 AF, which is 3.3 times the average annual inflow to the WLPMA. By comparison, the total change in storage for the ELPMA over the same period was a loss of 2,824 AF, which is only 10% of the average annual inflow to the management area. Recommend including and discussing the change in storage over the period as it represents significant sustained storage decline.
CT-1	Chad Taylor	Technical	--	24	2.3.2.1, Lower Aquifer System	*During the 2004 through 2010 period, the VRGWFM estimates that groundwater in storage in the LAS increased by approximately 1,810 AF (Table 2-5).*	Please explain this calculation. As presented it appears that the change in storage for the entire period of 2004 through 2010 was an increase of 1,810 AF, but the table makes it appear to be an estimate of annual storage change.
CT-1	Chad Taylor	Editorial	--	24	Table 2-5, second row, 6th column	*-35,970*	should this be -32,970 as in the text above?
CT-1	Chad Taylor	Editorial	--	24	Table 2-5, East Las Posas information	--	Recommend explaining how the values in this table relate to those in Table 2-4c

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Comment ID	Commentor	Technical or Editorial Comment	Topic	Page Number	Section ID	Quoted Text	Comment
CT-1	Chad Taylor	Technical	--	26	Groundwater Quality	--	DWR's RCA for water quality included a request to further describe efforts to evaluate connections between groundwater production and quality, including evaluation of the "casual relationship" referenced in the GSP and document details of a process for determining if groundwater management and extraction are causing adverse impacts to groundwater quality. This discussion and documentation do not appear to have been included and neither is there a statement addressing DWR's request.
CT-1	Chad Taylor	Technical	--	27	2.5.1.1	*Water quality in this area has been impacted by historical land uses and is generally tied to groundwater elevation (FCGMA 2019).*	This references the "casual relationship" DWR mentioned, but does not explain the reasons behind the statement or provide any plan for further assessment. Recommend being very careful about statements concerning connections between groundwater elevations and quality without evidence.
CT-1	Chad Taylor	Technical	--	31	2.5.4	*changes in the groundwater quality do not appear to be correlated with decreases in groundwater elevation.*	Section 2.5.1.1. says there is a relationship. See comment on that section.
CT-1	Chad Taylor	Technical	--	42	3.2.1	--	This project may need to be revised based on recent information presented to the TAC. See TAC Recommendation Report on the Basin Optimization Plan projects.
CT-1	Chad Taylor	Technical	--	44	3.2.4	--	Recommend advancing this project as quickly as possible
CT-1	Chad Taylor	Technical	--	45	3.2.5	--	Recommend advancing this project as quickly as possible
CT-1	Chad Taylor	Technical	--	51	4.1.1.1, second paragraph	*These revisions are described in FCGMA (2024a).*	Please include information regarding the understanding of the LPVB and relevant information about the connection to Oxnard in this document.
CT-1	Chad Taylor	Technical	--	55	4.3.2.1, Comparison to Projected Groundwater Supplies	*approximately 10% lower than the average annual groundwater extractions over the 2021 and 2022 water years.*	42,400 - 36,100 = 6,300 AFY, and 6,300/42,400 = 15% (14.858).
CT-1	Chad Taylor	Technical and Editorial	--	67	5.1.1, third paragraph	*These updates are summarized in FCGMA (2024a).*	Please include all new information relevant to the LPVB in this document
CT-1	Chad Taylor	Technical	--	68	5.1.1, first paragraph on page	*of the fault. As a result, the Coastal Plain Model simulates subsurface flows from the WLPMA to the ELPMA (Table 2-4c). These modeled flows are not integrated into the modeling conducted for the ELPMA.*	Why are the modeled flows between WLPMA and ELPMA not integrated into the modeling for the ELPMA? This raises a concern that the two LPVB management areas are not being modeled in a similar or complimentary way. The statement implies that the ELPMA model still uses a no flow boundary at the Somis Fault, which would be expected to produce very different flow and water budget results when compared to the Coastal Plain model that has a partial general head boundary along the fault. The potential for flow between ELPMA and WLPMA in the coastal plain model may also have an impact on seawater intrusion in Oxnard, and that potential is not discussed. Recommend reconsidering the disparity in the way the Somis Fault is modeled in the Coastal Plain and ELPMA models.
CT-1	Chad Taylor	Technical and Editorial	--	68	5.1.1, third paragraph on page	*A broader discussion of updates to the Coastal Plain Model will be detailed in a technical memorandum prepared by UWCD.*	Where is this document? This seems like important information for the LPVB 5-Year GSP Evaluation
CT-1	Chad Taylor	Technical and Editorial	--	68	5.1.2.1	*The ELPMA model extension, and validation, will be detailed in a technical memorandum prepared by FCGMA.*	When will this be available? Shouldn't this be available for committee review?
CT-1	Chad Taylor	Editorial	--	69	5.1.2.1, first sentence on page	*simulation of future groundwater conditions.*	Sentence fragment
CT-1	Chad Taylor	Technical	--	73	5.2.2	--	How do flows between WLPMA and ELPMA differ in the two models?

Specific Comments from the Las Posas Valley Basin Technical Advisory Committee
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Comment ID	Commentor	Technical or Editorial Comment	Topic	Page Number	Section ID	Quoted Text	Comment
CT-1	Chad Taylor	Technical	--	78	5.2.2.1.3, No New Projects Scenario Assumptions	--	The percent change referenced for PVB is not consistent with the annual pumping values presented in the assumption summaries. I suspect this is a function of how the information is presented, but it should be checked and the text or percentages/volumes corrected. For instance, in NPP1 the summary says "a 20% reduction in both aquifer systems in the PVB and WLPMA" then references production volumes of "13,200 AFY in the PVB, and 10,800 AFY in the WLPMA." Comparing 13,200 AFY for NPP1 in the PVB to 13,900 AFY in Future Baseline shows a change of -5%, not 20%. All other scenarios have similar results when compared to baseline.
CT-1	Chad Taylor	Technical	--	90	5.2.3.1, Sustainable Yield without Future Projects	*All three simulations performed under the NNP Scenario avoided chronic lowering of groundwater levels in the WLPMA and reduced seawater intrusion in the LAS of the Oxnard Subbasin during the 30-year sustaining period and resulted in net freshwater loss from the UAS of the Oxnard Subbasin to the Pacific Ocean. Therefore, the simulation with the highest overall production rate, that also minimized impacts from adjacent basins, was identified as the best estimate of the sustainable yield of the Oxnard Subbasin, PVB, and WLPMA, in the event that no new future projects are implemented in each basin. The simulation with the highest total groundwater production rate from this scenario was NNP3 – under this simulation, an average of approximately 11,400 AFY of groundwater was pumped from the WLPMA (Section 5.2.2.1.3 No New Projects Model Scenario). This estimate of the sustainable yield is approximately 1,100 AFY lower than the estimate presented in the GSP (FCGMA 2019). Applying the estimate of sustainable yield uncertainty calculated during the development of the GSP for the sustaining period suggests that the sustainable yield of the WLPMA may be as high as 12,600 AFY or as low as 10,200 AFY (FCGMA 2019).*	This appears to be an arbitrary means of estimating sustainable yield. The values listed are simply the results of one of several production reduction scenarios not an assessment of the maximum "amount of groundwater that can be withdrawn annually without causing undesirable results." (DWR BMP for Sustainable Management Criteria, November 2017). The SMC BMP also indicates that sustainable yield should be a single value, not a range as presented here. Please provide more information regarding the methods for estimating uncertainty in the sustainable yield estimate.
CT-1	Chad Taylor	Technical	--	90	5.2.3.1, Sustainable Yield with Future Projects	--	See comment on sustainable yield without future projects regarding how to define sustainable yield.
CT-1	Chad Taylor	Technical	--	90	5.2.3.1, Sustainable Yield with Future Projects, third paragraph	*the sustainable yield of the WLPMA may be as high as approximately 13,040 AFY or as low as 10,640 AFY.*	Please explain how this range was estimated.
CT-1	Chad Taylor	Technical	--	90	5.2.3.1, Sustainable Yield with UWCD's EBB Water Treatment Project	--	See comment on sustainable yield without future projects regarding how to define sustainable yield.
CT-1	Chad Taylor	Technical	--	91	5.2.3.1, Sustainable Yield with UWCD's EBB Water Treatment Project, second paragraph on page	*approximately 14,700 AFY or as low as 12,300 AFY.*	Please explain how this range was estimated.

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CT-1	Chad Taylor	Technical	--	91	5.2.3.2, Sustainable Yield without Future Projects	--	See comment on WLPMA sustainable yield without future projects regarding how to define sustainable yield.
CT-1	Chad Taylor	Technical	--	91	5.2.3.2, Sustainable Yield without Future Projects, second paragraph	--	Please explain how this range was estimated.
CT-1	Chad Taylor	Technical	--	91	5.2.3.2, Sustainable Yield with Future Projects	--	See comment on WLPMA sustainable yield without future projects regarding how to define sustainable yield.
CT-1	Chad Taylor	Technical	--	97	6.2.2	--	See previous statements about consistency and the effects of data gaps on sustainable management.
CT-1	Chad Taylor	Technical	--	97	6.2.2.1, last paragraph on page	*Importantly, since adoption of the GSP, several groundwater level monitoring wells have been removed from the monitoring network, including two key wells (Figure 6-3):* ▪*02N20W04F02S, which was destroyed; and* ▪*02N21W16J03S, which has not been measured since 2019.*	Is the monitoring network still adequate with the removal of these wells?
CT-1	Chad Taylor	Editorial	--	106	8		Recommend including discussion of the TAC and PAC here as they are outreach, engagement, and coordination components

LPVB APPENDIX B: LETTER 8

TO: Las Posas Valley Watermaster

FROM: Las Posas Valley Watermaster Policy Advisory Committee

RE: Recommendation Report – Draft Las Posas Valley Basin 5-Year Groundwater Sustainability Plan (GSP) Evaluation

DATE: November 8, 2024

Recommendation:

See memo below for recommended changes/additions to the draft GSP Five-Year Update.

Policy Rationale for Recommendation:

See memo below for rationale.

Summary of Facts in Support of Recommendation:

See memo below for complete memo.

Tally of Committee Member Votes:

	YES	NO	ABSTAIN	ABSENT
Ian Prichard, Callegaus MWD	X			
David Fleisch, VC WWD No. 1 & 19	X			
John Menne, Zone MWC	X			
VACANT, Commercial				X
Rob Grether, West LPV Large Ag	X			
David Schwabauer, East LPV Large Ag	X			
Josh Waters, East LPV Small Ag				X
Richard Cavaletto, West LPV Small Ag	X			
Laurel Servin, East LPV MWC				X
Steven Murata, West LPV MWC	X			

Report of Bases for Majority and Minority Committee Member Positions:

The report conformed with previous discussions among the PAC regarding the GSP update.

PAC Recommendation Report Regarding the Draft Las Posas Valley Basin Five-Year Groundwater Sustainability Plan (GSP) Evaluation

On August 26, 2024, the Fox Canyon Groundwater Management Agency (FCGMA), serving in its capacity as the Las Posas Valley Basin Watermaster (Watermaster), sent a Committee Consultation request to the Las Posas Valley Policy Advisory Committee (PAC) regarding the Draft Las Posas Valley Basin – 5-Year Groundwater Sustainability Plan (GSP) Evaluation (Draft GSP Evaluation), entitled the First Periodic GSP Evaluation for the LPVB, as prepared by Dudek, the FCGMA's consultant.

Overall, the document is well-done, and the PAC recognizes the significant effort put forth to prepare the Draft GSP Evaluation by the FCGMA and their consultant, Dudek. Together, they have evidently devoted substantial effort to organizing a comprehensive report assessing and documenting groundwater conditions and management strategies.

Following a thorough review, the PAC is submitting this Recommendation Report to provide recommendations for the Watermaster to consider before finalizing the Draft GSP Evaluation for submission to the California Department of Water Resources (DWR). While the PAC submits these recommendations to help improve the Draft GSP Evaluation for submission to DWR, we also recognize the critical role the Draft GSP Evaluation will have as a foundation for amendments to the GSP Update, the 2025 Basin Optimization Yield Study and the Basin Optimization Plan, all of which are key steps toward achieving long-term groundwater sustainability in the Las Posas Valley.

Following are the policy recommendations approved by the PAC on November 7, 2024.

I. MODELING AND DATA ACCURACY

Recommendation 1: Clearly Distinguish Between Model Predictions and Observed Data Throughout the Draft GSP Evaluation

Explicitly label both simulated (modeled) water levels and actual water level measurements in all figures, tables, and discussions. This distinction is crucial for evaluating the model's calibration and its reliability in predicting future groundwater conditions. Accurate calibration, informed by observed data, enhances the model's predictive accuracy.

Recommendation 2: Provide Documentation and Confidence Information for the UWCD Model Used in GSP Evaluation

The documentation for the UWCD model used in the Draft GSP Evaluation has not been made available, leading to reservations within the PAC regarding reliance on a model that has not undergone review by the Las Posas Valley Technical Advisory Committee (TAC). While models aim to replicate real-world conditions, they are inherently imperfect, and confidence in their findings is especially challenging given the limited number of wells (especially in the WLPMA) available for calibration. This limited data set raises concerns about the appropriate confidence interval for the model results. The PAC recommends that the Draft GSP Evaluation include comprehensive information from the UWCD model, including documentation and details on confidence intervals, to address these concerns and improve transparency.

Recommendation 3: Address Deficiency in Monitoring Data Collection

A considerable portion of the monitoring data required by the GSP was not collected during the review period. This data is critical for evaluating the sustainability of the WLPMA and East Las Posas Management Area (ELPMA) and for ensuring compliance with the Judgment. The PAC recommends that the Draft GSP Evaluation clearly outline how the FCGMA plans to address this deficiency, detailing steps to promptly acquire the necessary monitoring data to support future updates and model runs.

II. CROSS-BASIN AND AREA INTERACTIONS

Recommendation 4: Clarify the Impact of West Las Posas Management Area (WLPMA) Pumping on Oxnard Subbasin Seawater Intrusion

The Draft GSP Evaluation should address the quantifiable relationship between WLPMA pumping and its incremental effect on seawater intrusion in the Oxnard Subbasin. This can be achieved by either including a detailed discussion of this relationship under various management scenarios or by outlining a process and timeline to conduct a focused assessment. Additionally, the PAC recommends that this topic be robustly addressed in the Basin Optimization Yield Study, utilizing the updated United Water Conservation District (UWCD) Coastal Plain Model.

Recommendation 5: Recharacterize Groundwater Underflows Between Oxnard Subbasin and WLPMA

The evaluation document should recharacterize groundwater underflows from the Oxnard subbasin to WLPMA, and reductions in underflow from WLPMA to Oxnard, which are currently labeled as "losses" of recharge to the Oxnard subbasin. This framing overlooks that many WLPMA extractors within the boundaries of UWCD have understood that the justification for significant extraction fees was for purported groundwater replenishment from the UWCD spreading grounds. Given this understanding of the interconnection between the basins, if the claimed underflows are occurring as stated, they should not simply be viewed as a loss for the Oxnard subbasin. As noted above, greater transparency of the modeling and better data would clarify this problem.

The Draft GSP Evaluation should amend its language to remove the characterization of these underflows as "losses" and instead acknowledge them as part of a balanced, cross-basin groundwater system. Additionally, it would be appropriate for the FCGMA to outline a process to periodically review and update minimum thresholds and measurable objectives on both sides of the boundary between the Las Posas Valley and Oxnard Basins. This approach would ensure an accurate, equitable, and proportional understanding of recharge dynamics, benefiting the sustainability of both basins.

Recommendation 6: Provide Justification for Projected Increase in Simi Valley Inflows

The Draft GSP Evaluation's future baseline scenario projects nearly 2,000 acre-feet per year (AFY) more in Simi Valley inflows than recent flow levels. The PAC recommends that the Draft GSP Evaluation provide a detailed explanation for this anticipated increase, clarify, and provide supporting data and assumptions that justify this projection. Clear documentation of these projections will enhance stakeholder understanding of the expected inflows and their impact on the overall water management strategy.

III. MANAGEMENT AND PROJECT OVERSIGHT

Recommendation 7: Articulate a Clear Master Plan and Leadership for Advancing GSP Management Projects

The Draft GSP Evaluation outlines various management projects, however, there appears to be no overarching master plan to manage accountability and progress in advancing these projects, nor a designated leader responsible for their progression. Given that the 15-year timeline is relatively short for implementing some of the projects being considered, the PAC recommends that the Draft GSP Evaluation specify how the FCGMA intends to oversee and drive these initiatives. For instance, FCGMA could assign staff to engage periodically (e.g., quarterly) with each project proponent, tracking progress and providing regular updates to FCGMA and stakeholders on any advances or delays. Stakeholders have expressed a strong desire to be informed promptly if a project faces delays or challenges where stakeholder involvement could help mitigate issues, ensuring that the projects are effectively managed within the available timeframe.

Recommendation 8: Clarify the Impact of the Proposed Moorpark Desalter on Groundwater Supply, Recharge, and Water Balance

The PAC recommends that the Draft GSP Evaluation provide a comprehensive discussion of the anticipated effects of the proposed Moorpark desalter on groundwater supply, recharge, and the overall water balance in the ELPMA. Specifically:

- **Groundwater Supply and Recharge Interaction:** The Draft GSP Evaluation should explain how the desalter would influence groundwater extractions and recharge dynamics. If the desalter increases extractions without offsetting them through in-lieu deliveries, it could lead to lower water levels that may undermine sustainability efforts. However, these effects could be mitigated if the desalter's operations encourage dewatering in high groundwater areas near the arroyo, thereby inducing greater recharge, or if the product water is used to reduce extractions in other targeted Basin areas. The Draft GSP Evaluation should address these factors generally and outline specific actions in the Basin Optimization Plan.

- **Net Impact on Water Balance:** The Draft GSP Evaluation presents conflicting statements about the desalter's effects, suggesting reductions in both groundwater pumping and reliance on imported water. This leaves ambiguity about the net effect on ELPMA's water balance. The Draft GSP Evaluation should clarify the desalter's anticipated impacts on groundwater pumping and imported water usage, with additional analysis in the Basin Optimization Plan to ensure alignment with long-term water balance and sustainability goals.

IV. STAKEHOLDER RESPONSIBILITIES AND TRANSPARENCY

Recommendation 9: Clarify Responsibility for Sustaining Groundwater Dependent Ecosystems (GDEs) along Arroyo Simi/Las Posas

The PAC recommends that the Draft GSP Evaluation clearly specify that groundwater users will not be held responsible for sustaining vegetation along Arroyo Simi/Las Posas, which is currently supported by inflows from Simi Valley wastewater discharge and dewatering wells. The Draft GSP Evaluation should explicitly state that any impact on vegetation due to reductions in these discharges should not be considered an undesirable result under SGMA in the GSP. Additionally, the PAC recommends that FCGMA establish long-term monitoring to track any potential changes in vegetation health related to GDEs. This ongoing monitoring will allow for a proactive approach to understanding and managing impacts without placing responsibility on groundwater users, thus preventing unintended obligations regarding GDE sustainability.

Recommendation 10: Refine and Clarify the Impact Analysis on Northern ELPMA Wells

The PAC recommends that the Draft GSP Evaluation provide greater clarity and consideration in the impact analysis for wells in the northern ELPMA, specifically regarding assumptions about well performance and the effects of minimum thresholds on all well owners.

- **Well Performance Assumptions:** The current analysis assumes wells will not experience significant effects until static groundwater levels reach the top of well screens and that partially desaturated screens can still support pumping. While this may be defensible, sustaining pumping at lower rates depends on appropriate pump placement below the adjusted water levels. The Draft GSP Evaluation should discuss the implications of these assumptions, including the key policy question of what constitutes "significant and unreasonable" impacts for this area, as these criteria influence FCGMA and Dudek's approach to the analysis.

- **Consideration of ASR Wells:** The analysis should also account for the effects on Aquifer Storage and Recovery (ASR) operations, as 10 out of the 22 wells in the evaluation area are Calleguas ASR wells (not solely agricultural wells, as Table 2-1 indicates). The Draft GSP Evaluation should provide an accurate representation of well types and address the potential impact of minimum thresholds on ASR storage and recovery operations.

- **Impact of Minimum Thresholds on All Well Owners:** Finally, the PAC recommends that the Draft GSP Evaluation discuss how established minimum thresholds will impact all well owners in the area, ensuring a comprehensive understanding of threshold implications across different types of groundwater users.

Recommendation 11: Enhance Transparency and Accessibility in Sections and Tables 7.1 – 7.3

The PAC recommends that the following updates be made to improve transparency and ease of access for stakeholders regarding surcharge rates, fee adoption, compliance, and amendment terminology:

- **Table 7-1:** Update the table to provide details on how the Watermaster establishes extraction surcharge rates. At a minimum, add explanatory footnotes or references to relevant FCGMA Resolutions that outline the basis for these rates.

- **Section 7.1.3 – Funding:** Include footnotes, citations, or references that allow readers to locate documents where the FCGMA adopted specific fees, improving accessibility and clarity.

- **Section 7.2 – Enforcement and Legal Actions:** Provide references or links to each of the listed groundwater extractor responsibilities. This addition would support stakeholder compliance with FCGMA and Watermaster requirements by offering clear guidance on necessary steps.

- **Section 7.3 – Plan Amendments:** Clarify the distinctions between a “GSP amendment,” “this Update,” and “periodic GSP evaluation,” and specify whether the “amendment” planned for Quarter 1 of 2025 aligns with the GSP “evaluation” for submission to DWR.

These additions will improve stakeholder understanding of key processes, requirements, and terminology used within the document.

CONCLUSION

We respectfully submit the above policy-related recommendations for consideration by the FCGMA and Dudek. These recommendations reflect the PAC’s commitment to ensuring that the Draft GSP Evaluation is clear, precise, and thoroughly aligned with the objectives set forth in SGMA and the Judgment. We believe these actions will contribute meaningfully to the sustainable management of groundwater in the Las Posas Valley Basin. As stakeholders with a vested interest in the Basin’s long-term health, we look forward to continued collaboration with the FCGMA and Dudek to address these critical areas and to support a balanced, forward-thinking approach in the GSP Evaluation.