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Scientists

Water Year 2024

DRAFT - Annual Report for the Groundwater Sustainability Plan for the Atascadero Basin

February 2025

Prepared for: Atascadero Basin GSA

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Water Year 2024

DRAFT - Annual Report for the Groundwater Sustainability Plan for the Atascadero Basin

Prepared for:

Atascadero Basin GSA
5505 El Camino Real
Atascadero, CA 93423

Prepared by:

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February 2025

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WATER YEAR 2024
ANNUAL REPORT FOR THE
GROUNDWATER SUSTAINABILITY PLAN FOR THE ATASCADERO BASIN

Certifications and Seals

This report and analysis were prepared by the following GEI Consultants Inc. professional geologists:

_____________________ Date: 3-30-2025

Name: Michael Cornelius, P.E.
Professional Geologist

PG No. 6222

_____________ Date: 3-30-2025

Name: Nathan Page, P.G.
Professional Geologist

PG No. 9746

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RESOLUTION 2025-02

APPROVING THE ANNUAL REPORT FOR THE GROUNDWATER SUSTAINABILTIY PLAN FOR THE ATASCADERO BASIN, AND AUTHORIZING AND DIRECTING ITS FILING WITH THE CALIFORNIA DEPARTMENT OF WATER RESOURCES FOR THE WATER YEAR ENDING SEPTEMBER 30, 2024

WHEREAS in August 2014, the California Legislature passed, and in September 2014 the Governor signed, legislation creating the Sustainable Groundwater Management Act ("SGMA") "to provide local groundwater sustainability agencies with the authority and technical and financial assistance necessary to sustainably manage groundwater" (Wat. Code, § 10720, (d)); and

WHEREAS SGMA requires sustainable management through the development of groundwater sustainability plans ("GSPs"), which can be a single plan developed by one or more groundwater sustainability agency ("GSA") or multiple coordinated plans within a basin or subbasin (Wat. Code, § 10727); and

WHEREAS the Atascadero Basin GSA Executive Committee approved submittal of a GSP for the Atascadero Basin (3-004.11 Salinas Valley Atascadero Area) to the Department of Water Resourced (DWR) on January 19, 2022; and

WHEREAS the Atascadero Basin GSA submitted the GSP for the Atascadero Basin to the DWR on January 30, 2022; and

WHEREAS GSAs are required to prepare annual reports before April 1 of each year following submittal of their GSP to the DWR; and

WHEREAS a public draft of the annual report for the water year ending September 30, 2024, was made available for review and comment on the Atascadero Basin communication portal (https://portal.atascaderobasin.com/) for a minimum 15-day public review on or before March 15, 2025; and

WHEREAS an email was sent to all interested parties who have registered on the communications portal notifying them that the annual report was available for review and comment.

NOW, THEREFORE, BE IT RESOLVED that the Executive Committee of the Atascadero Basin GSA hereby approves and authorizes the filing of the Atascadero Basin Groundwater Sustainability Plan Annual Report with the California Department of Water Resources or the water year ending September 30, 2024, including consideration of comments received during the public review period.

PASSED AND ADOPTED at a meeting of the Executive Committee of the Atascadero Basin GSA on March 19, 2025, by the following vote:

AYES:
NOES:
ABSENT: Rossi
ABSTAIN:

____

____________, *Chairperson*

****

Secretary's Certification

I, ___________, Secretary of the Atascadero Basin GSA Executive Committee, do hereby certify that the foregoing Resolution is a true and correct copy entered into the Minutes of the Meeting of March 19, 2025, at which time a quorum was present, and no motion to amend or rescind the above resolution was made.

____

_________, *Secretary*

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Abbreviations and Acronyms

§	Section
AF	acre-feet
AFY	acre-feet per year
Basin	Atascadero Basin
CCR	California Code of Regulations
COC	constituent of concern
CSD	Community Services District
Department	California State Department of Water Resources
DU	domestic units
DWR	California State Department of Water Resources
ET	evapotranspiration
ft/msl	feet above mean sea level
gpm	gallons per minute
gpm/ft	gallons per minute per foot
GAMA	Groundwater Ambient Monitoring and Assessment
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GSP basin model	GSP model
GWE	groundwater elevation
InSAR	interferometric synthetic-aperture radar
MOs	measurable objectives
MTs	minimum thresholds
MWC	Mutual Water Company
NWP	Nacimiento Water Project
Paso Robles Area Groundwater Subbasin of the Salinas Valley Basin	
Plan	Atascadero Basin Groundwater Sustainability Plan
PWS	public water system
RMS	representative monitoring site
S	storage coefficient
SGMA	Sustainable Groundwater Management Act
SLOFCWCD	San Luis Obispo Flood Control and Water Conservation District
SPI	Standardized Precipitation Index
TDS	total dissolved solids
WQCP	Water Quality Control Plan
WQO	water quality objective
WY	Water Year

Annual Report Elements Guide and Checklist

California Code of Regulations – GSP Regulation Sections	Annual Report Elements	Location in Annual Report
Article 7	Annual Reports and Periodic Evaluations by the Agency	
§ 356.2	Annual Reports	
	Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year:	
	(a) General information, including an executive summary and a location map depicting the basin covered by the report.	Executive Summary (§356.2[a])
	(b) A detailed description and graphical representation of the following conditions of the basin managed in the Plan:	Section 2.4 Groundwater Elevation Monitoring (§356.2[b])
	(1) Groundwater elevation data from monitoring wells identified in the monitoring network shall be analyzed and displayed as follows:	Section 3 Groundwater Elevations (§356.2[b][1])
	(A) Groundwater elevation contour maps for each principal aquifer in the basin illustrating, at a minimum, the seasonal high and seasonal low groundwater conditions.	Section 3.2 Seasonal High and Low (Spring and Fall) (§356.2[b][1][A])
	(B) Hydrographs of groundwater elevations and water year type using historical data to the greatest extent available, including from January 1, 2015, to current reporting year.	Section 3.3 Hydrographs (§356.2[b][1][B], and Attachment E)
	(2) Groundwater extraction for the preceding water year. Data shall be collected using the best available measurement methods and shall be presented in a table that summarizes groundwater extractions by water use sector and identifies the method of measurement (direct or estimate) and accuracy of measurements, and a map that illustrates the general location and volume of groundwater extractions.	Section 4 Groundwater Extractions (§356.2[b][2])
	(3) Surface water supply used or available for use, for groundwater recharge or in-lieu use shall be reported based on quantitative data that describes the annual volume and sources for the preceding water year.	Section 5 Surface Water Use (§356.2[b][3])
	(4) Total water use shall be collected using the best available measurement methods and shall be reported in a table that summarizes total water use by water use sector, water source type, and identifies the method of measurement (direct or estimate) and accuracy of measurements. Existing water use data from the most recent Urban Water Management Plans or Agricultural Water Management Plans within the basin may be used, as long as the data are reported by water year.	Section 6 Total Water Use (§356.2[b][4])
	(5) Change in groundwater in storage shall include the following:	Section 7 Change in Groundwater in Storage (§356.2[b][5])

California Code of Regulations – GSP Regulation Sections	Annual Report Elements	Location in Annual Report
Article 7	Annual Reports and Periodic Evaluations by the Agency	
§ 356.2	Annual Reports	
	(A) Change in groundwater in storage maps for each principal aquifer in the basin.	Section 7.1 Annual Changes in Groundwater Elevation (§356.2[b][5][A])
	(B) A graph depicting water year type, groundwater use, the annual change in groundwater in storage, and the cumulative change in groundwater in storage for the basin based on historical data to the greatest extent available, including from January 1, 2015, to the current reporting year.	Section 7.2 Annual and Cumulative Change in Groundwater in Storage Calculations (§356.2[b][5][B])
	(c) A description of progress towards implementing the Plan, including achieving interim milestones, and implementation of projects or management actions since the previous annual report.	Section 8 Progress towards Implementing the GSP (§356.2[c])

Executive Summary

With the submittal of the Atascadero Basin Groundwater Sustainability Plan (GSP; Plan), the Groundwater Sustainability Agency (GSA) is required to submit an annual report for the preceding Water Year (October 1 – September 30) to California Department of Water Resources (DWR) by April 1, 2025. The annual report shall be provided by April 1 of each year following adoption of the Plan and provide monitoring and water use data to the DWR and Atascadero Basin (Basin) stakeholders to gauge performance of the Basin relative to sustainability goals set forth in the GSP.

This document provides annual monitoring data required by the DWR for a GSP and consistent with the GSP dated January 19, 2022, for the Basin. The DWR provided a letter to the Atascadero Basin GSA on January 31, 2024, recognizing the submittal of the Atascadero Basin GSP even though the Basin is very low-priority. The letter noted that DWR prioritized the review of the GSPs in the medium and high priority basins and stated that the low and very low priority basin GSPs would be reviewed the and assessments and determinations would be made as soon as practicable. The letter also encouraged the Atascadero Basin GSA to continue implementing its GSP and providing information to DWR through its annual reports. A copy of the letter provided by DWR is included in **Attachment A**. This report contains monitoring data for WY 2024 (October 1, 2023 – September 30, 2024). The values for WYs 2017 through 2023 are included for reference purposes.

On May 10, 2024, DWR provided a letter (see **Attachment B**), that acknowledging they received the Atascadero Basin GSP Water Year 2023 Annual Report. The DWR letter and noted that it appeared to satisfy the requirements of the GSP Regulations (23 California Code of Regulations [CCR] § 356.2) and no additional information was required at this time regard the WY 2023 Annual Report. The letter also noted the Basin does not have a sustainability goal that is part of an approved Plan, thus the DWR cannot independently evaluate whether the information in the annual report indicates that the Plan is being implemented in a manner to achieve the sustainability goal for the Basin at this this time, but that determination will be included in the Department's forthcoming evaluation of the Plan.

Water levels, groundwater extractions, surface water diversions, and total water usage measurements and change in groundwater storage estimates are presented. The measurements and information presented demonstrate the groundwater in the Basin is sustainable, consistent with the GSP findings.

Sections of the WY 2023 Annual Report include the following:

- **Section 1. Introduction:** a brief background of the Atascadero Basin GSA and a location map.
- **Section 2. Atascadero Basin Setting and Monitoring Networks:** a summary of the Basin setting, Basin monitoring networks, and ways in which data are used for groundwater management.
- **Section 3. Groundwater Elevations (§356.2[b][1]):** a description of recent monitoring data with groundwater elevation contour maps for spring and fall monitoring events and representative hydrographs.

- **Section 4. Groundwater Extraction (§356.2[b][2]):** compilation of metered and estimated groundwater extractions by land use sector and location of extractions.
- **Section 5. Surface Water Use (§356.2[b][3]):** a summary of reported surface water use.
- **Section 6. Total Water Use (§356.2[b][4]):** a presentation of total water use by source and sector.
- **Section 7. Change in Groundwater in Storage (§356.2[b][5]):** a description of the methodology and presentation of changes in groundwater in storage.
- **Section 8. Progress Towards Implementing the GSP (§356.2[c]):** a summary of sustainability of the Basin.
- **Section 9. References:** includes the references used for this Annual Report.

Water Year 2024 Hydrologic Conditions

Water Year (WY) 2024 in California was marked by above average conditions along the Central Coast. Current hydrologic trends suggest that state's annual hydrologic conditions are going to continue to be highly variable oscillating between wet and dry years.

Groundwater Elevations

Groundwater elevations observed in the Basin during WY 2024 are generally similar to WY 2023 across a majority of the Basin, due to above-average rainfall conditions during the winter of 2023/2024. Both positive and negative changes in groundwater elevations (GWEs) are observed from year to year in different parts of the Basin, as has been the pattern in the Basin for many years. Seasonal trends of slightly higher spring GWEs compared with lower fall levels continued in each of the water years.

Groundwater Extractions

Total groundwater extractions in the Basin for WY 2024 is 14,500 acre-feet (AF). **Table ES-1** summarizes the groundwater extractions by water use sector for each water year. The values for WYs 2017-2023 (grayed out) are included for reference purposes. This convention is carried throughout the report.

Table ES – 1. Groundwater Extractions by Water Use Sector

Water Year	Groundwater Extractions by Water Use Sector			Total (AF)
Source	Municipal (AF)	PWS and Rural Domestic (AF)	Agriculture (AF)	
2017	8,760	1,206	4,900	15,000
2018	10,227	1,218	4,300	15,800
2019	9,442	1,230	5,000	15,800
2020	10,611	1,243	4,700	16,600
2021	10,860	1,252	4,500	16,700
2022	10,242	1,262	4,500	16,000
2023	9,739	1,272	3,100	14,100
2024	**9,691**	**1,159**	**3,600**	**14,500**
Method of Measure	Metered	2016 Groundwater Model	Soil- Water Balance Model, OpenET (2021 and 2022 only)	
Level of Accuracy	high	low-medium	medium	

Notes:
AF = acre-feet; PWS = public water systems

Surface Water Use

The Basin currently benefits from surface water entitlements from the Nacimiento Water Project (NWP) to supplement municipal demands in the city of Paso Robles, Templeton Community Services District (TCSD; a census-designated place), and Atascadero Mutual Water Company. The city of Paso Robles uses a portion of their NWP deliveries within the adjacent Paso Robles Subbasin, so those volumes do not show up in this accounting. Locations of communities dependent on groundwater and with access to surface water are shown on Figure 10. There is currently no surface water available for agricultural or recharge project use within the Basin. A summary of total actual surface water use by source is provided in **Table ES-2**.

Table ES – 2. Total Surface Water Use by Source

Water Year	Nacimiento Water Project Water Available			Total (AF)	Nacimiento Water Project Water Used			Total (AF)
	City of Paso Robles[1] (AF)	Templeton CSD[2] (AF)	Atascadero MWC[3] (AF)		City of Paso Robles (AF)	Templeton CSD (AF)	Atascadero MWC (AF)	
2017	6,488	406	3,244	10,138	134	274	0	408
2018	6,488	406	3,244	10,138	862	258	854	1,974
2019	6,488	406	3,244	10,138	356	157	47	560
2020	6,488	406	3,244	10,138	804	0	1,372	2,176
2021	6,488	406	3,244	10,138	746	97	2,218	3,061
2022	6,488	406	3,244	10,138	1,102	131	1,945	3,088
2023	6,488	406	3,244	10,138	632	144	220	996
2024	**6,488**	**406**	**3244**	**10,138**	**487**	**38**	**0**	**526**

Notes:
[1] Contract annual entitlement to the city of Pas Robles. Note that city of Paso Robles uses some water outside Atascadero Basin
[2] Contract annual entitlement to Templeton Community Services District
[3] Contract annual entitlement to Atascadero Mutual Water Company
AF= acre feet
CSD = Community Services District
MWC = Mutual Water Company

Total Water Use

For WY 2024, quantification of total water use was completed through reporting of metered water production data from municipal wells, metered surface water use, and models used to estimate agricultural crop water supply requirements. In addition, rural water use and small commercial public water system (PWS) use was estimated using the ground\water model. **Table ES-3** summarizes the total annual water use in the Basin by source and water use sector.

Table ES – 3. Total Water Use in the Basin by Source and Water Use Sector

Water Year	Municipal (AF)		PWS and Rural Domestic (AF)	Agriculture (AF)	Total (AF)
Source	**Groundwater**	**Surface Water**	**Groundwater**	**Groundwater**	
2017	8,760	408	1,080	4,900	**15,100**
2018	10,227	1,974	1,091	4,300	**17,600**
2019	9,442	560	1,102	5,000	**16,100**
2020	10,611	2,176	1,113	4,700	**18,600**
2021	10,860	3,061	1,123	4,500	**19,500**
2022	10,242	3,088	1,135	4,500	**19,000**
2023	9,741	996	1,146	3,100	**15,000**
2024	**9,961**	**526**	**1,159**	**3,600**	**15,000**
Method of Measure	Metered	Metered	2016 Groundwater Model	OpenET	
Level of Accuracy	high	high	low-medium	medium	

Notes:
AF = acre-feet
PWS = public water systems

Change in Groundwater in Storage

The calculation of change in groundwater in storage in the Basin was derived from comparison of fall GWE contour maps from one year to the next in each principal aquifer. The annual changes of groundwater in storage calculated for WY 2024 totaled a net gain of 3,600 AF as presented in **Table ES-4**.

Table ES – 4. Annual Change of Groundwater in Storage

Water Year	Annual Change (AF)
2017	14,600
2018	-5,400
2019	4,300
2020	100
2021	-5,200
2022	-8,000
2023	15,700
2024	**3,600**

Note: AF = acre-feet

Progress towards Meeting Basin Sustainability

The Basin continues to be managed sustainably, as evidenced by historic groundwater levels in the Basin so no projects or management actions that are required to achieve sustainability at this time. A number of management actions and conceptual projects were included in the GSP to provide a means to ensure the

Basin is operated to maintain its sustainable yield and sustainability. The Basin will continue to be managed in an adaptive management approach as described in the GSP.

1. Introduction

1.1 Purpose

On January 19, 2022, Atascadero Basin Groundwater Sustainability Agency (GSA) voted to approve the Atascadero Basin Groundwater Sustainability Plan (GSP; Plan) and to submit the GSP for approval by the California Department of Water Resources (DWR). The DWR provided a letter to the Atascadero Basin GSA on January 31, 2024 recognizing the submittal of the Atascadero Basin GSP even though the Basin is very low-priority. The letter noted that DWR prioritized the review of the GSPs in the medium and high priority basins and stated that the low and very low priority basin GSPs would be reviewed the and assessments and determinations would be made as soon as practicable. The letter also encouraged the Atascadero Basin GSA to continue implementing its GSP and providing information to DWR through its annual reports. A copy of the letter provided by DWR is included in **Attachment A.**

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This Annual Report has been prepared for the GSA to provide annual monitoring data for water year (WY) 2024 (October 1, 2023 – September 30, 2024) consistent with the GSP and in accordance with GSP Regulations (356.2. Annual Reports) (**Attachment C**). Pursuant to DWR regulations, a GSP Annual Report must be submitted to DWR by April 1 of each year following the Adoption of the GSP. As with the prior annual reports submitted by the GSA, additional information for WY 2017 through 2023 are provided for reference purposes. DWR also released a guidance document for preparation of Annual Reports in October 2023 but did not prescribe specific methods GSAs must use. This report has been modified to incorporate portions for the suggested components compliant with SGMA.

1.2 Atascadero Basin

The Atascadero Basin (Basin) is identified by DWR in Bulletin 118 as Subbasin No. 3-004.11 (DWR 2016). The Basin is part of the greater Salinas Valley Basin in the Central Coast region of California. The Basin encompasses an area of approximately 19,735 acres, or 31 square miles. It includes portions of the incorporated cities of Paso Robles and Atascadero as well as the unincorporated census-designated places of Santa Margarita and Templeton.

The Basin is bounded to the east by the Paso Robles Subbasin, as shown on **Figure 1**. The shared boundary between the subbasins is the Rinconada Fault zone, which contains areas that are impervious and other areas that are considered to be a leaky barrier to groundwater flow.

The Paso Robles Formation makes up most of the water bearing sediments for the Basin. The lateral extents are defined primarily by the contact with the Monterey Shale (bedrock) while the southern end of the Basin is bounded by the Santa Margarita Formation, which impedes groundwater flow. The other major aquifer unit of the Basin is the Quaternary Alluvium, which overlays the Paso Robles Formation.

In 2018, DWR designated the Basin as a very low priority basin with no overdraft. Because of this designation, the Basin was not subject to the development of a GSP under the Sustainable Groundwater Management Act (SGMA) regulations. However, the forming and participating parties, described below, developed the GSP to proactively manage the groundwater of the Basin to sustainable levels.

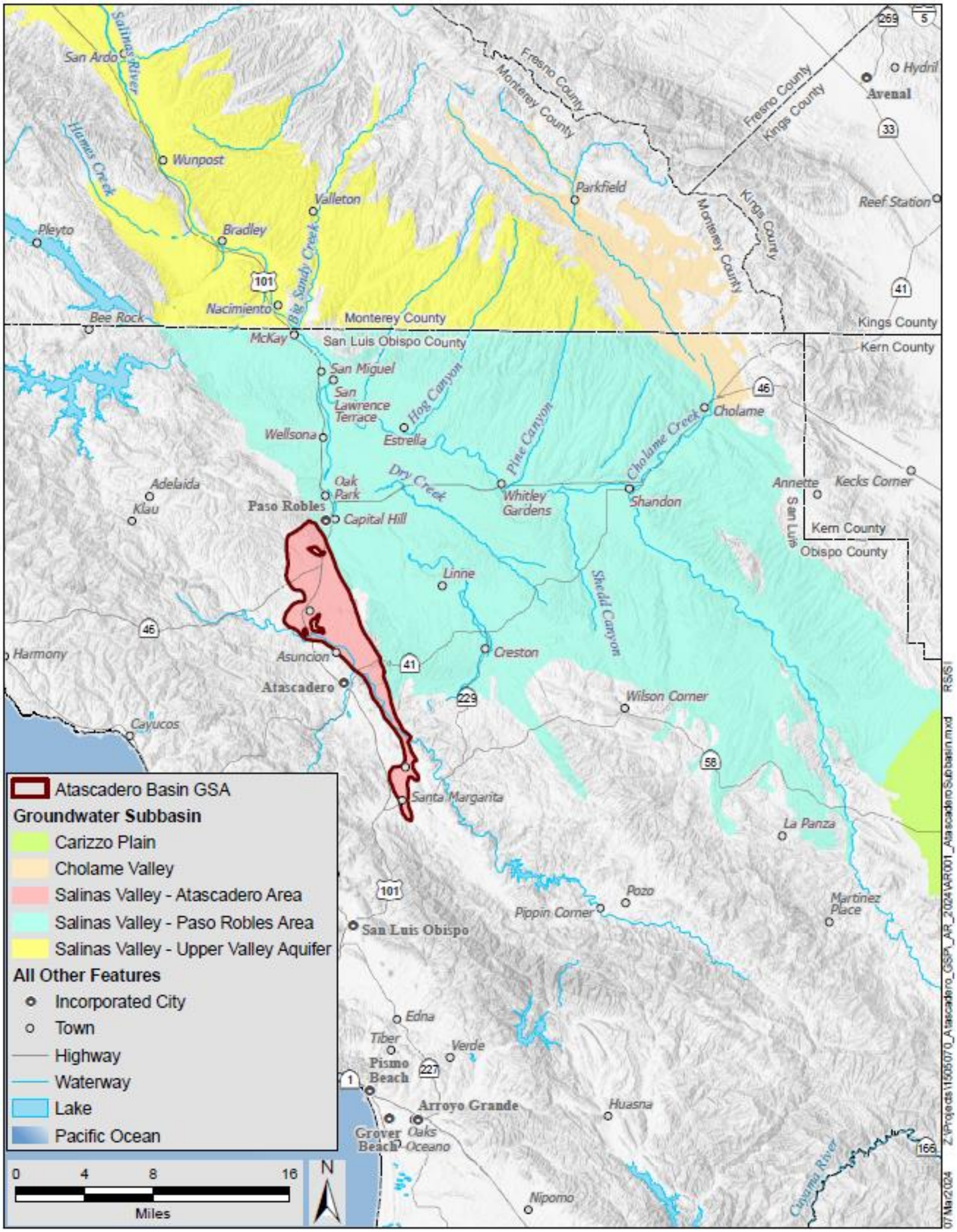

Figure 1: Atascadero Basin and Surrounding Subbasins

1.3 Atascadero Basin GSA

The Basin's GSA is a single GSA covering the entire Basin and is comprised of four forming parties and six participating parties.

Forming Parties

- City of Atascadero
- City of Paso Robles
- County of San Luis Obispo
- Templeton Community Services District

Participating Parties

- Atascadero Mutual Water Company
- Atascadero State Hospital
- SMR Mutual Water Company
- Santa Ysabel Ranch Mutual Water Company
- Walnut Hills Mutual Water Company
- Garden Farms Water District

The GSA is governed by an Executive Committee which is described in the Memorandum of Agreement, dated May 30, 2017, which was included with submittal of the 2022 Atascadero Basin GSP (GEI 2022).

1.4 Organization of This Report

The required contents of an annual report are provided in the GSP Regulations (§ 356.2), included as **Attachment C**. Organization of the report is meant to follow the regulations where possible to assist in the review of the document. Sections of the WY 2024 Annual Report include the following:

- **Section 1. Introduction:** a brief background of the Basin's GSA and a map of the Basin and surrounding basins.
- **Section 2. Atascadero Basin Setting and Monitoring Networks:** a summary of the Basin setting, Basin monitoring networks, and ways in which data are used for groundwater management.
- **Section 3. Groundwater Elevations (§356.2[b][1]):** a description of recent monitoring data with GWE contour maps for spring and fall monitoring events and representative hydrographs.
- **Section 4. Groundwater Extractions (§356.2[b][2]):** compilation of metered and estimated groundwater extractions by land use sector and location of extractions.
- **Section 5. Surface Water Use (§356.2[b][3]):** a summary of reported surface water use.
- **Section 6. Total Water Use (§356.2[b][4]):** a presentation of total water use by source and sector.
- **Section 7. Change in Groundwater in Storage (§356.2[b][5]):** a description of the methodology and presentation of changes in groundwater in storage.
- **Section 8. Progress towards Implementing the GSP (§356.2[c]):** a summary of sustainability of the Basin.
- **Section 9.:** References

2. Atascadero Basin Setting and Monitoring Networks

This section provides a brief description of the Basin setting and the groundwater management monitoring programs described in the GSP, as well as any notable events affecting monitoring activities or the quality of monitoring results in the reported WY 2024. Information provided for WYs 2017-2023 are for reference purposes. Much of the background information reported on in this WY 2024 Annual Report was taken from the Atascadero GSP prepared by GEI Consultants Inc, and GSI Water Solutions, Inc. (GEI/GSI 2022).

2.1 Basin Setting

The Basin is a narrow structural northwest-trending trough that extends from the Santa Margarita area at its southern end to the city of Paso Robles in the north. The Basin is bounded by the Santa Lucia Range on the west. The ground surface elevation of the Basin ranges from approximately 1,300 feet above mean sea level (ft/msl) in the highlands at the northern tip of the Basin to approximately 700 ft/msl where the Salinas River exits the Basin to the north. The southern tip of the Basin is approximately 1,000 ft/msl. The middle part of the Basin forms an elongate narrow valley along the Salinas River, flanked by areas of variable topographic relief. The Basin encompasses an area of approximately 19,735 acres. It is generally bounded by geologic units with low permeability, sediments with poor groundwater quality, rock, and structural faults. Along a portion of the northeast boundary, sediments of the Basin are continuous with the adjacent Paso Robles Area Groundwater Subbasin of the Salinas Valley Basin (Paso Robles Basin).

Specific Basin lateral boundaries include the following:[1]

- The northwestern, western, and southern boundaries of the Atascadero Basin are defined by the contact of Basin sediments with older, relatively impermeable geologic units, including Tertiary-age consolidated sedimentary beds, Cretaceous-age metamorphic rocks, and granitic rock.
- Along the northern portion of the eastern boundary, north of Templeton, the Rinconada Fault defines the eastern boundary of the Basin and is assumed to form a leaky hydraulic barrier between the Paso Robles Subbasin and the Atascadero Basin.
- Along the southern portion of the eastern boundary, south of Templeton, between Atascadero and Creston (a census-designated place in San Luis Obispo County), the Rinconada Fault juxtaposes Monterey Formation rocks and other bedrock units with the Paso Robles Formation basin sediments.

The bottom of the Atascadero Basin and the Paso Robles Subbasin are generally defined as the base of the Paso Robles Formation, which is an irregular surface formed as the result of folding, faulting, and erosion (Fugro and Cleath 2002). The exception to this is the Santa Margarita area at the southern end of the Basin. In this area, the bottom of the Basin is defined as the base of the Alluvium. The Basin boundary

[1] Minor discrepancies between these boundary descriptions and the Bulletin 118 boundary are discussed in Section 4.3.2

and bottom are not considered absolute barriers to flow because some of the geologic units underlying the Paso Robles Formation produce sufficient quantities of water, but the water is generally of poor quality, and it is, therefore, not considered part of the Basin.

There are two principal aquifers in the Basin: the Alluvial Aquifer and the Paso Robles Formation Aquifer. There are no formally defined or laterally continuous aquitards within the Basin. However, the upper portions of the Paso Robles Formation often contain thin, discontinuous clay layers interbedded with sand and “shale gravels” that can act as a leaky confining layer. These upper clay layers are generally pervasive throughout the Basin. In the Templeton area from Graves Creek to approximately Highway 46, the contact between the Alluvial Aquifer and the Paso Robles Formation Aquifer is characterized by a thick (60 feet) clay-rich aquitard that forms a hydraulic barrier to vertical groundwater flow, effectively separating the Alluvial Aquifer from the Paso Robles Formation Aquifer (Torres 1979).

Water wells penetrating and extracting groundwater from the Alluvial Aquifer are located along the Salinas River and its tributaries, including within the Santa Margarita area. The unit, consisting almost entirely of sand and gravel, is everywhere unconfined with high to very high transmissivity values. The thickness of the Alluvium ranges widely, with an estimated maximum thickness of 75 to 90 feet. Specific capacity values for wells in the Alluvium range from 20 to 60 gallons per minute per foot (gpm/ft) at production rates as high as 1,000 gpm (Fugro and Cleath 2002). Overall, within the Basin, the geometric mean hydraulic conductivity of the Alluvial Aquifer is estimated at 481 feet per day (Fugro and Cleath 2002).

In the Atascadero area and the area north of Templeton, the Paso Robles Formation Aquifer underlies and is in direct hydraulic contact with the Alluvial Aquifer along the Salinas River channel. Wells in the Paso Robles Formation Aquifer in hydraulic communication with the overlying Alluvium tend to have higher transmissivity values than wells that penetrate the portions of the Paso Robles Formation not in contact with the Alluvium. Constant discharge aquifer pumping tests for wells in Atascadero on the west side of the Salinas River showed production rates up to 1,300 gpm, with an average specific capacity of 15 gpm/ft (Fugro and Cleath 2002).

Elsewhere in the Basin the upper 300 feet or so of the Paso Robles Formation is characterized by thin (5-15 feet thick) interbedded brown or yellow clays with sand and “shale gravel,” as described above. The beds tend to be thicker below 300 feet, with an increasing proportion of sand and gravel. The results of several controlled aquifer pumping tests were reviewed for wells in the Paso Robles Formation Aquifer, including wells in both the Templeton and Atascadero areas. None of these wells were in direct hydraulic communication with the Alluvial Aquifer. The specific capacity in these wells ranged from 0.9 to 5.7 gpm/ft at pumping rates of 110 to 810 gpm. Overall, within the Basin, the geometric mean hydraulic conductivity of the Paso Robles Formation Aquifer is estimated at 8.6 feet per day and the storativity ranges from 0.04 to 0.0001 (Fugro and Cleath 2002).

2.2 Precipitation and Climatic Period

Annual precipitation recorded at the Atascadero Mutual Water Company (MWC) Station #34 is presented by water year in **Figure 2**. The average annual precipitation for the period 1968 through 2024 is 17.6 inches per water year, as recorded at AMWC Station #34. Climatic periods in the Basin have been determined based on analysis of data from AMWC Station #34 using the Standardized Precipitation Index (SPI), which quantifies deviations from normal precipitation patterns, using a 24-month period for analysis. The 24-month period SPI analysis provides insight into the relationship between water year type and GWE response (WMO 2012). Climatic periods are categorized according to the following designations: wet, dry, and average/alternating wet and dry (**Figure 2**). Historical precipitation records are provided in **Appendix D**.

2.3 Monitoring Network

This section provides a brief description of the monitoring programs currently in place and any notable events affecting monitoring activities or the quality of monitoring results. Monitoring networks are developed for each of the five sustainability indicators relevant to the Basin:

- Chronic lowering of groundwater levels
- Reduction of groundwater in storage
- Degraded water quality
- Land subsidence
- Depletion of interconnected surface water

Monitoring for the chronic lowering of groundwater levels, reduction of groundwater in storage, and depletion of interconnected surface water is implemented using the representative monitoring sites (RMS), is discussed in the next section, Section 2.3.1 – Groundwater Elevation Monitoring Network. Monitoring for degraded water quality and land subsidence is discussed in Section 2.3.2 – Additional Monitoring Networks.

2.3.1 Groundwater Elevation Monitoring Network (§ 356.2[b])

The GWE monitoring network is used to assess Basin health against the chronic lowering of groundwater levels sustainability indicator outlined in the GSP. As groundwater levels are used as a proxy for the reduction in groundwater storage and depletion of interconnected surface water monitoring, this network is used for those sustainability indicators as well. Routine monitoring of groundwater levels is conducted by the San Luis Obispo County Flood Control and Water Conservation District. The GWE monitoring network RMS locations are shown on **Figure 3** and a summary of information for each of the wells is included in **Attachment F**. The monitoring network also includes other wells in the GSP area designated as private that are not shown on this map.

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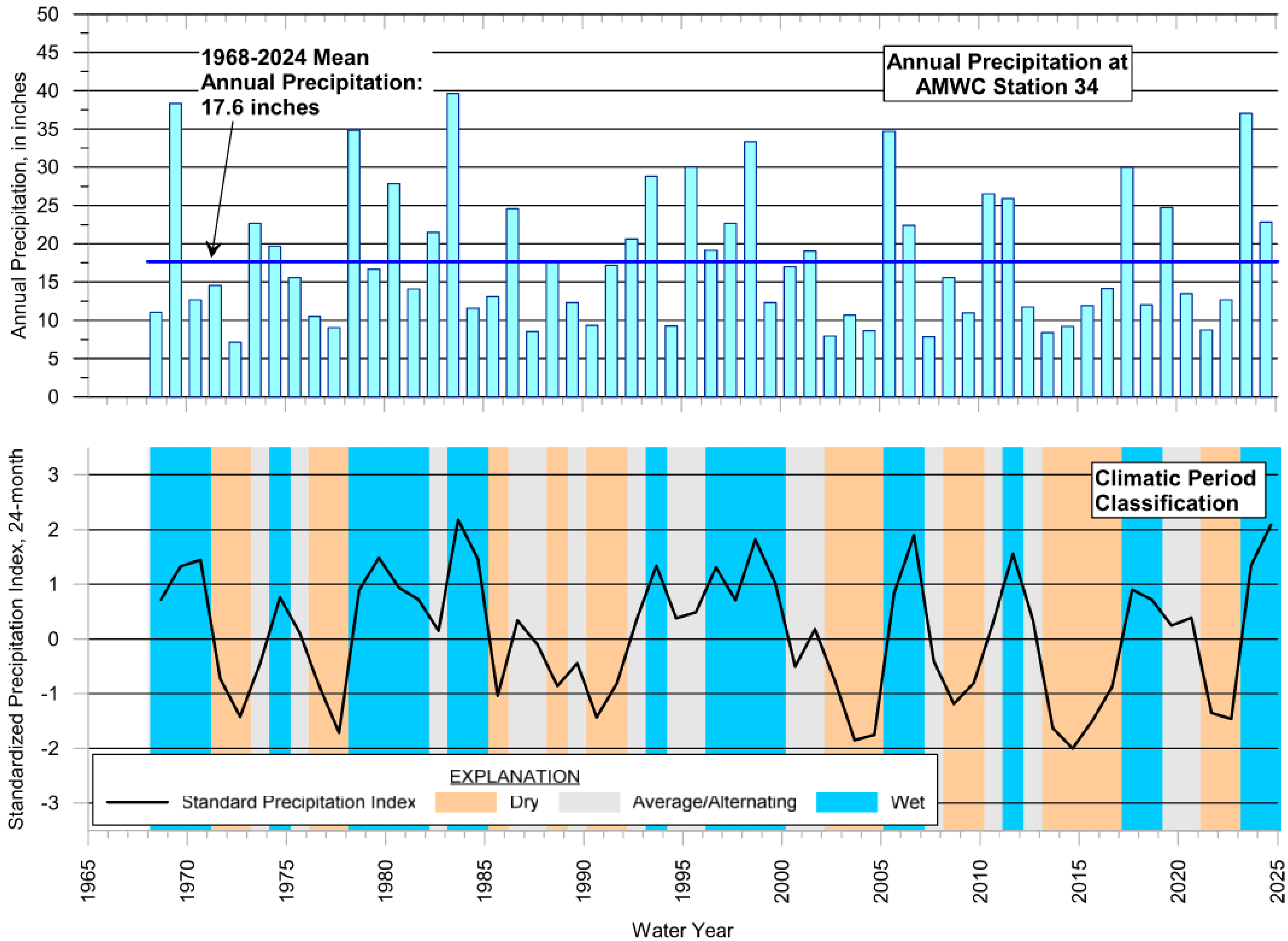

Figure 2: Annual Precipitation and Climatic Periods in the Atascadero Basin

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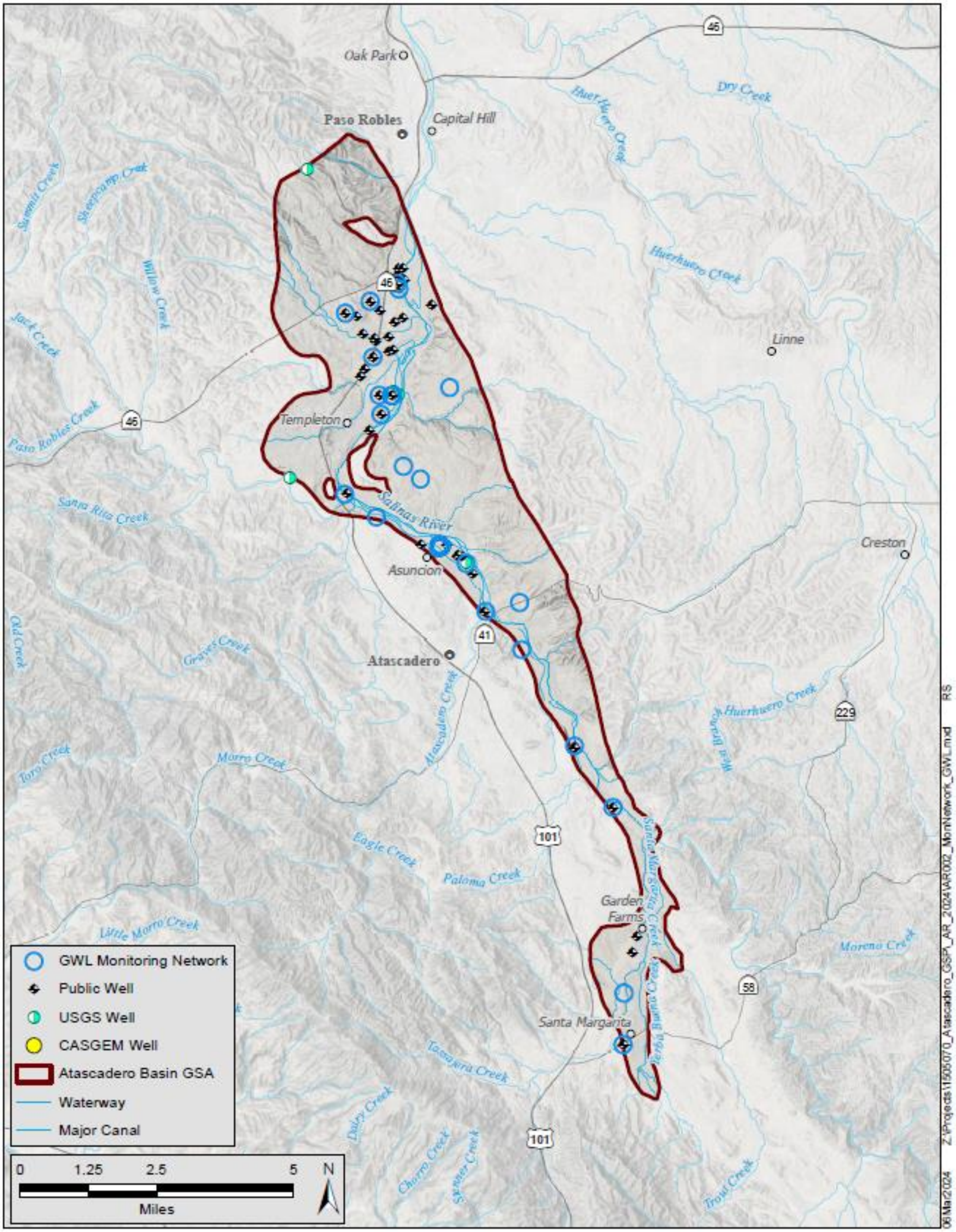

Figure 3: Atascadero Basin Groundwater Elevation Monitoring Network

The GSP provided a summary of existing groundwater monitoring efforts currently promulgated under various existing local, state, and federal programs. SGMA requires that monitoring networks be developed in the Basin to provide sufficient data quality, frequency, and spatial distribution to evaluate changing aquifer conditions in response to GSP implementation. To this purpose, the GSP identifies an existing network of 24 RMS wells for water level monitoring. Of these 24 wells, 13 are wells that screen the Paso Robles Formation, and 11 are Alluvial Aquifer wells[2]. The RMS have been monitored biannually, in April and October, for various periods of record. The RMS groundwater monitoring network developed in the GSP is intended to support efforts to do the following:

- Monitor changes in groundwater conditions and demonstrate progress toward achieving measurable objectives (MOs) and minimum thresholds (MTs) documented in the GSP
- Quantify annual changes in water use
- Monitor impacts to the beneficial uses and users of groundwater

2.3.1.1 Monitoring Data Gaps

The GSP identified data gaps in the current RMS network based on professional judgement. These data gaps are shown by the absence of monitoring wells in the northwest portion of the Basin and eastern portion of the Basin (*refer to* **Figure 3**). Potential wells were identified to fill said data gaps and efforts to bring the wells into the RMS network are continuing during the implementation phase of the GSP. This includes possible construction of new wells. Additionally, a program to increase monitoring frequency may be considered during the implementation phase if deemed necessary to better determine seasonal high and low GWE and measure response to recharge and other activities.

2.3.2 Additional Monitoring Networks

Evaluation of the water quality sustainability indicator is achieved through monitoring of an existing network of supply wells in the Basin. There are no known plumes in the Basin and therefore monitoring is only for non-point source constituents of concern (COCs) and naturally occurring water quality impacts. COCs identified in the GSP that have the potential to impact suitability of water for public supply or agricultural based on Title 22 drinking water regulations and Water Quality Control Plan (WQCP) water quality objectives (WQOs). These include:

[2] Since initial establishment of the water quality monitoring well network, two of the 13 Paso Robles Formation Aquifer RMS wells (27S/13E-30N01 and 26S/12E-2607) have become either inactive or inaccessible.

Title 22 Drinking Water Regulations

- Arsenic
- Gross Alpha
- Nitrate (as N)
- Selenium
- Chloride (SMCL)
- Sulfate (SMCL)
- Iron (SMCL)
- Manganese (SMCL)
- Total Dissolved Solids (TDS)
- (SMCL) Constituent regulated under a secondary MCL

WQCP Water Quality Objectives

- Boron
- Chloride
- Nitrate (as N)
- Sulfate
- Sodium
- TDS

As COCs assigned different MTs for drinking water standards and agricultural standards, outlined in the Title 22 drinking water requirements and WQOs from the Basin's WQCP and Irrigated Lands Program, different RMS wells are assessed for different constituents. At PWS wells, domestic wells, and monitoring wells associate with the State Water Resources Control Board GeoTracker contamination sites, COCs for Title 22 drinking water requirements are assessed. At agricultural supply wells, WQO COCs for crop health are assessed.

The water quality monitoring network consists of 54 PWS wells, 74 agricultural and domestic supply wells, and 55 monitoring wells. There are 41 PWSs in the Subbasin. Agricultural and domestic supply wells are monitored for COCs under the Irrigated Lands Regulatory Program.

Land subsidence in the Subbasin is monitored using Interferometric Synthetic Aperture Radar (InSAR) data collected using microwave satellite imagery provided by DWR. Available data to date indicate no significant subsidence in the that impacts infrastructure. The GSAs will annually assess subsidence using the InSAR data provided by DWR.

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3. Groundwater Elevations (§ 356.2[b][1])

This section provides a report on GWEs in the Basin measured during spring and fall of 2024. Accompanying maps present the most up-to-date seasonal conditions in the Basin.

Data provided characterizes conditions for the two principal aquifers in the Basin – the Alluvial Aquifer and Paso Robles Formation Aquifer. Monitoring data is reviewed for quality and an appropriate time frame is chosen to provide the highest consistency in the wells used for each reporting period. Data quality is often difficult to ascertain when measurements are taken by other agencies or private well owners, and well construction information may be incomplete or unavailable. This means that a careful review of the data is required prior to uploading to DWR's Monitoring Network Module (replacing the current California State Groundwater Elevation Monitoring Program [commonly knowns as, CASGEM] program) to verify whether measurements are trending consistent with trends of previous years and with the current year's hydrology and level of extractions.

3.1 Principal Aquifers

Water-bearing sand and gravel beds are generally grouped together into zones that are referred to as aquifers. The aquifers can be vertically separated by fine-grained zones that can impede movement of groundwater between aquifers. As discussed in Section 2 – Atascadero Basin Setting and Monitoring Networks, there are two principal aquifers in the Basin:

- **Alluvial Aquifer** – A relatively continuous aquifer comprising alluvial sediments that underlie the Salinas River and tributary streams
- **Paso Robles Formation Aquifer** – An interbedded aquifer comprised of sand and gravel lenses in the Paso Robles Formation

Some of the groundwater level information in this report, such as contour maps, is provided by aquifer.

3.2 Seasonal High and Low Groundwater Elevations (Spring and Fall) (§ 356.2[b][1][A])

The assessment of groundwater elevation conditions in the Basin as described in the GSP is largely based on data from the county of San Luis Obispo Flood Control and Water Conservation District (SLOFCWCD) groundwater monitoring program. Groundwater levels are measured by the SLOFCWCD through a network of public and private wells in the Subbasin. Data from many of the wells in the monitoring program are collected subject to confidentiality agreements between the SLOFCWCD and well owners. Consistent with the terms of such agreements, the well owner information and specific locations for these wells are not published in the GSP and that convention is continued in this Annual Report. To maintain consistency with the GSP and represent conditions that can be easily compared from year to year, this Annual Report used the same set of wells as was used in the GSP. Groundwater level data from 29 to 30 Paso Robles Formation wells and 32 to 33 alluvial wells are used to create the groundwater elevation contour maps. The well locations and data points are not shown on the maps to preserve confidentiality. Twenty-four wells in the Subbasin are being used as RMS wells for the purpose of monitoring sustainability indicators. Owners of these wells have agreed to allow public use of the well data. As implementation of the GSP progresses, it is anticipated that additional wells will be added to the data set and that some of the wells with current confidentiality agreements will be modified to allow for public use of the data. No wells were added to the monitoring network during the last year.

It was discovered in spring 2023 that the depth to water data reported in the SLOFCWCD database is presented as a calculated depth to water from the ground surface elevation rather than as measured from the reference point elevation of each well, as was previously understood. This misunderstanding has resulted in prior reporting of groundwater elevations (GWEs) that are slightly off from their true value. This same misunderstanding also affected the setting of measurable objectives and minimum thresholds in the GSP. However, all GWEs presented in this Annual Report have been corrected and represent true groundwater elevations, including both current water year (2023) and historical values. The measurable objectives and minimum thresholds for each well have been corrected using the same approach. The resolution of this issue is essentially clerical. Because both the GWEs and the measurable objectives and minimum thresholds have been moved by the same amount in each well there is no change in status, regarding sustainable management criteria for each well. A more detailed explanation is provided in **Attachment F.**

In accordance with the SGMA regulations, the following information is presented based on available data:

- Groundwater elevation contour maps for the seasonal high and seasonal low groundwater conditions in each principal aquifer. Contour maps were prepared for the seasonal high groundwater levels, which typically occur in the spring, and the seasonal low groundwater levels, which typically occur in the fall. In general, the spring groundwater data are for April and the fall groundwater data are for October. For consistency with the GSP, the same well data sets were used for contouring. The most recent presentation of groundwater conditions representing the spring and fall for WY 2024 are shown in this section.
- Change in groundwater in storage maps for each principal aquifer are prepared comparing the groundwater elevations between spring 2023 to spring 2024 and fall 2023 to fall 2024 are also shown in Section 7 – Change in Groundwater Storage.
- Hydrographs for RMS wells (**Attachment G**).

3.2.1 Alluvial Aquifer Groundwater Elevation Contours

Data from public and private Alluvial Aquifer wells were used for contouring groundwater elevation contour maps for spring and fall for WY 2024 (**Figures 4 and 5**). Contour maps were generated using a computer-based contouring program and checked/modified by a qualified hydrogeologist. Groundwater elevation data deemed unrepresentative of static conditions or obviously erroneous were not used for contouring.

In general, alluvial groundwater elevations range from approximately 980 feet above mean sea level (ft msl) in the Santa Margarita area to approximately 660 to 670 ft msl in the north where the Salinas River exits the Basin. Alluvial groundwater elevations are generally slightly higher in the spring than in the fall.

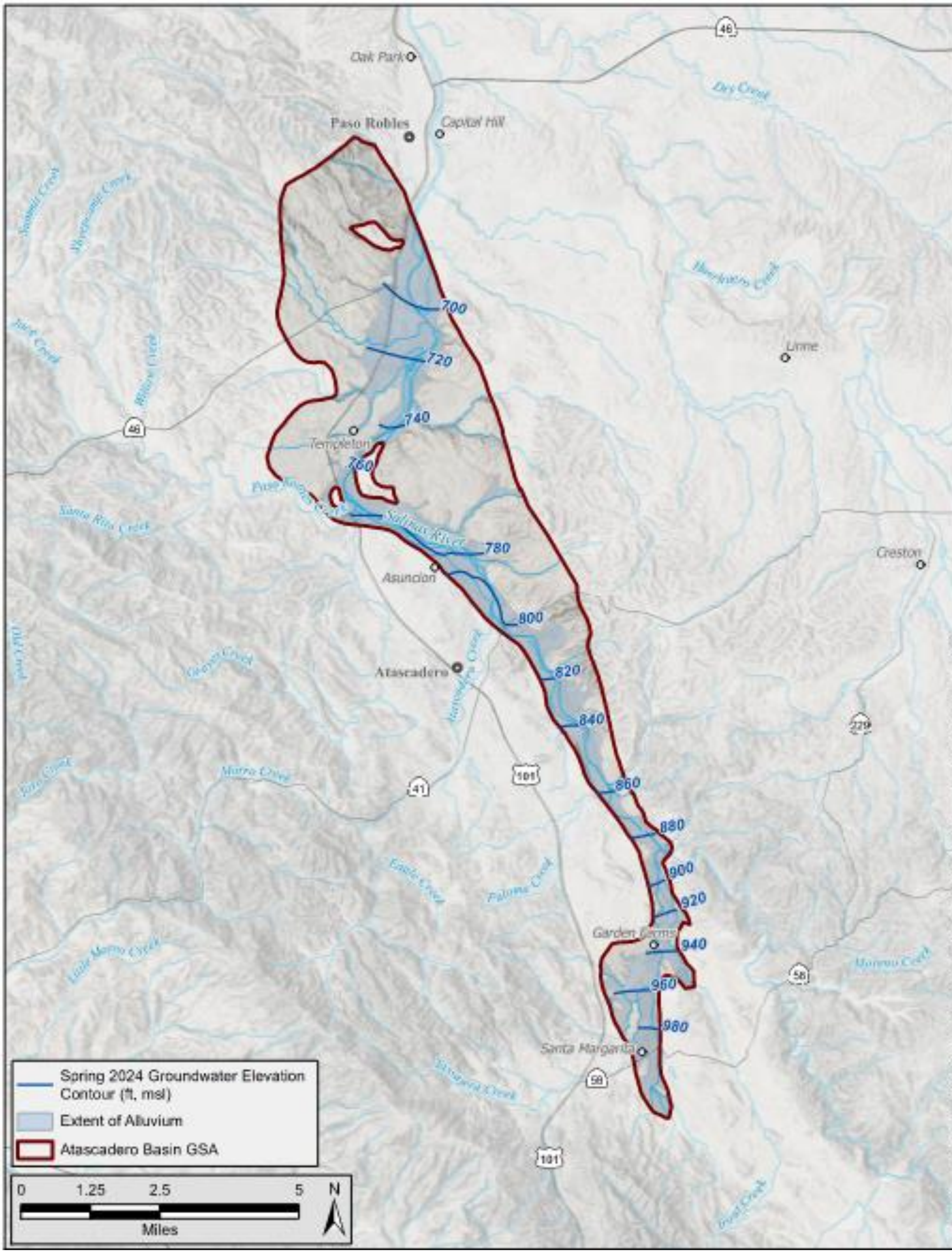

Figure 4: Alluvial Aquifer – Groundwater Elevations Spring 2024

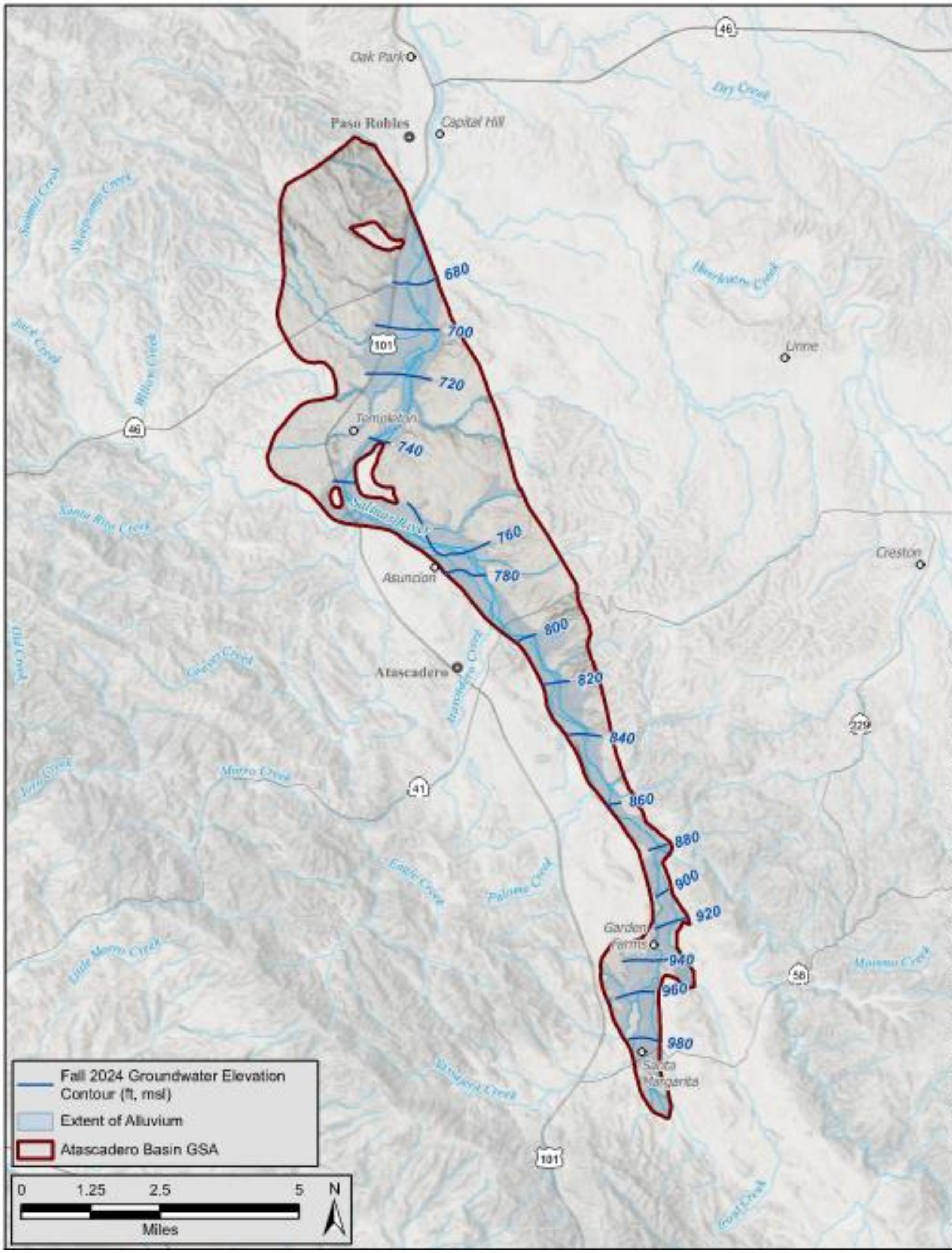

Figure 5: Alluvial Aquifer – Groundwater Elevations Fall 2024

3.2.2 Paso Robles Formation Aquifer Groundwater Elevation Contours

Data from public and private Paso Robles Formation Aquifer wells were used for contouring groundwater elevation contour maps for spring and fall of WY 2024 (**Figures 6 and 7**). Contour maps were generated using a computer-based contouring program and checked/modified by a qualified hydrogeologist. Groundwater elevation data deemed unrepresentative of static conditions or obviously erroneous were not used for contouring.

Groundwater elevations observed in the Paso Robles Formation Aquifer in WY 2024 were generally similar to those observed in WY 2023. Positive and negative changes in GWEs from year to year are observed in different parts of the Basin, as has been observed historically. Seasonal trends of slightly higher spring GWEs compared with fall levels continued in each of the water years.

3.3 Hydrographs (§ 356.2[b][1][B])

Groundwater elevation hydrographs for the 24 RMS wells in the Basin are presented in **Attachment G**. These hydrographs also include information on well screen interval (if available), reference point elevation, as well as the chronic lowering of groundwater levels measurable objectives (MOs) and minimum thresholds (MTs) for each well that were developed during the preparation of the GSP.

As described in the GSP, the average of the spring and fall groundwater elevation measurements in any one water year constitutes the value that shall be measured against MTs and MOs established for each RMS well. If only one measurement was taken for the year, then that value alone is measured against the MT and MO.

The 24 RMS hydrographs presented in **Attachment G** show the measured spring and fall 2024 groundwater elevations. Of the 24 RMS hydrographs presented in Attachment G all the RMS wells exhibit an average of spring and fall 2024 groundwater elevations above the MT.

Hydrographs for the Alluvial Aquifer RMS wells show no discernable long-term trends. Although the Alluvial Aquifer hydrographs typically show declining water levels in response to drought periods, they also demonstrate the ability of the alluvial aquifer to fully recharge during wet periods.

Hydrographs for the Paso Robles Formation RMS wells generally illustrate overall stability of water levels throughout the Basin. Although, hydrographs for Paso Robles Formation Aquifer wells completed in the northern part of the Subbasin exhibit a trend of declining water levels since the 1990's, each of the wells show a notable recovery since the end of the recent drought in 2017. Seventeen of the 24 RMS wells have current groundwater elevations greater than the MO for that RMS well.

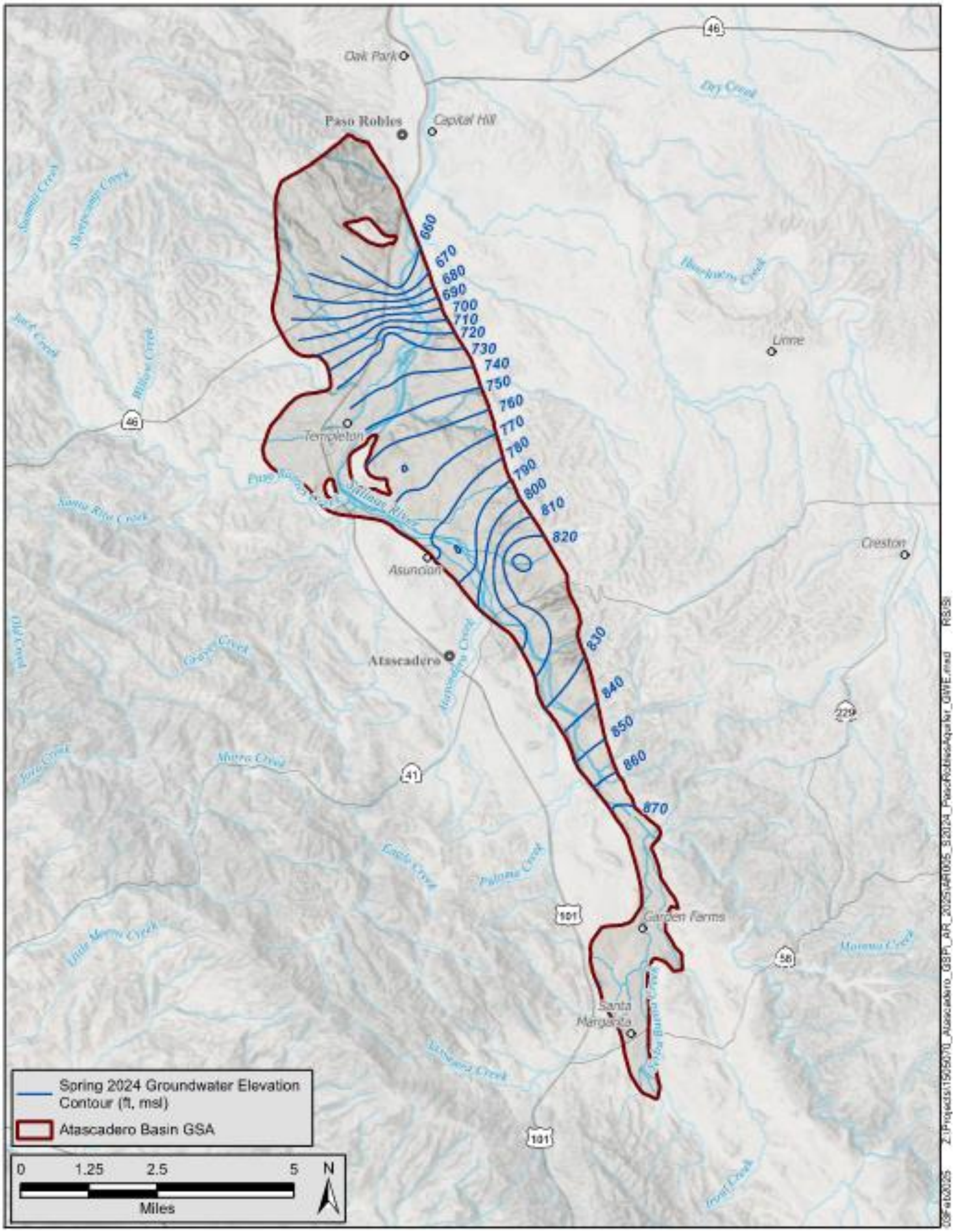

Figure 6: Paso Robles Aquifer – Groundwater Elevations Spring 2024

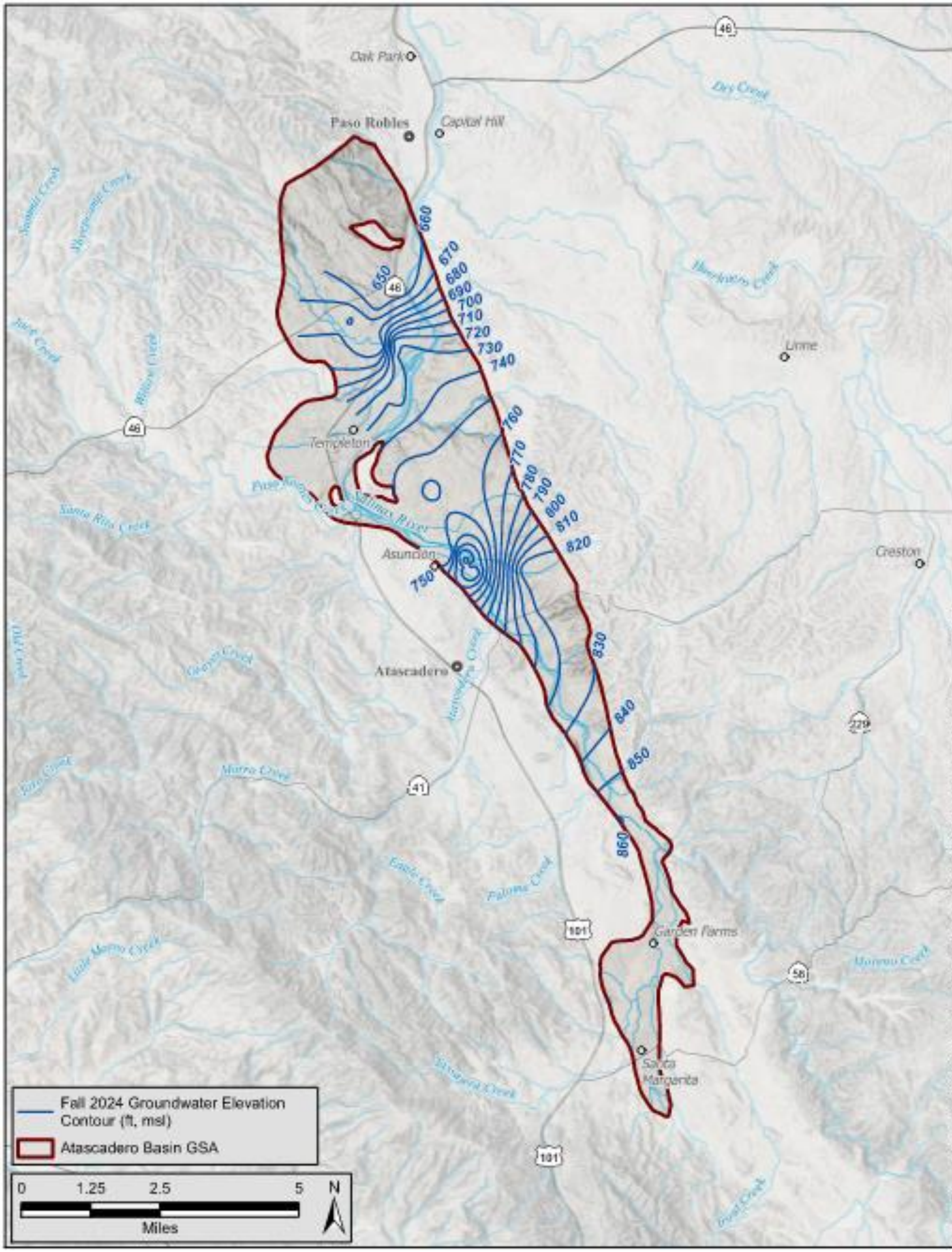

Figure 7: Paso Robles Aquifer – Groundwater Elevations Fall 2024

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4. Groundwater Extraction

This section presents the metered and estimated groundwater extractions from the Basin for WYs 2017 to 2024. The types of groundwater extraction include agricultural, municipal, rural domestic, and small PWSs. **Tables 1 through 5** summarize the groundwater extractions for each water year.

For WY 2024, total groundwater pumping was 14,500 AF. Municipal pumping was the largest component of total groundwater pumping and accounts for about 67 percent of total pumping during the current water budget period. Agricultural pumping accounts for 25 percent of groundwater pumping while PWS and rural domestic pumping account for 8 percent of total average pumping during the current water budget period.

4.1 Municipal Metered Well Production Data

The municipal groundwater extractions documented in this report are metered data. Metered groundwater pumping extraction data are from the city of Paso Robles, Templeton Community Services District (CSD), AMWC, and the county of San Luis Obispo for Community Service Area 23, providing service to the community of Santa Margarita. The data shown in **Table 1** reflect metered data reported by the respective agencies. The accuracy level rating of these metered data is high.

Table 1: Municipal Metered Well Production Data

Water Year	Metered Groundwater Extractions				Total (AF)
	City of Paso Robles[1] (AF)	Templeton CSD (AF)	Atascadero MWC (AF)	CSA 23 (AF)	
2017	2,609	1,207	4,807	137	8,760
2018	3,352	1,396	5,332	147	10,227
2019	3,075	1,308	4,917	142	9,442
2020	3,852	1,395	5,221	143	10,611
2021	3,612	1,531	5,575	143	10,860
2022	3,349	1,424	5,330	138	10,242
2023	3,130	1,295	5,189	127	9,741
2024	**3,151**	**1,370**	**5,042**	**129**	**9,691**

Notes:
[1] – The city of Paso Robles produces groundwater from wells located in both the Atascadero Subbasin and the Paso Robles Subbasin. Only the portion produced from within the Atascadero Basin is included here.
AF = acre-feet
CSA 23 = county of San Luis Obispo Community Service Area
CSD = community services district
MWC = mutual water company

4.2 Estimate of Agricultural Extraction

To estimate agricultural groundwater extraction, WY 2024 specific land use data from Land IQ was used in conjunction with the OpenET ensemble model.[3] OpenET provides satellite-based estimates of the total amount of water that is transferred from the land surface to the atmosphere through the process of evapotranspiration (ET). The OpenET ensemble model uses Landsat satellite data to produce ET data at a spatial resolution of 30 by 30 meters (0.22 acre per pixel). Additional inputs include gridded weather variables such as solar radiation, air temperature, humidity, wind speed, and precipitation (OpenET 2024). OpenET provides estimates of ET for the entire land surface, or in other words, "wall to wall." To produce an estimate of ET specific to the irrigated crop acreage in the Basin the OpenET ensemble model results are screened by the Land IQ land use data set, thereby removing any potential estimated ET volumes associated with bare ground, non-irrigated crops, or native vegetation. A total of eight irrigated crop types were identified in the WY 2043 Land IQ spatial dataset shown on **Figure 8**. Irrigated agricultural crop types were identified by inspection of monthly ET for each mapped crop type versus monthly ET for fallow ground. ET resulting from effective precipitation[4], rather than applied irrigation water, were removed from the analysis. Applied irrigation volumes are estimated by scaling up the estimated irrigated crop ET volumes using assumed crop specific irrigation efficiency factors.[5] The resulting volumes are summed by water year, which then represent estimated annual agricultural groundwater extraction. Deficit irrigation is captured in the satellite-based method through the measurement of actual ET. Groundwater extractions for frost protection are captured to the extent that the produced water results in increased ET. It is assumed that the remainder of the water produced for frost protection remains within the Basin and percolates back to groundwater. The estimated agricultural groundwater extraction volumes are summarized in **Water Year**. The accuracy level rating of these estimated volumes is medium.

[3] OpenET uses reference ET data calculated using the American Society of Civil Engineers (ASCE) Standardized Penman-Monteith equation for a grass reference surface, and usually notated as 'ETo'. For California, OpenET uses Spatial California Irrigation Management Information System (commonly known as CIMIS) meteorological datasets generated by the California DWR to compute ASCE grass reference ET. OpenET provides ET data from multiple satellite-driven models and calculates a single "ensemble value" from those models. The models currently included are ALEXI/DisALEXI, eeMETRIC, geeSEBAL, PT-JPL, SIMS, and SSEBop. More information about these models can be found at: https://openetdata.org/methodologies/. All of the models included in the OpenET ensemble have been used by government agencies with responsibility for water use reporting and management in the western U.S., and some models are widely used internationally (OpenET 2024).

[4] Effective precipitation (the portion of rainfall that remains available to crops after runoff, evaporation, and deep percolation are removed) was calculated monthly for each field based on gridded precipitation values from gridMET using analytical formulas presented in FAO (1986). gridMET is a public domain dataset of daily high-spatial resolution (~4-km, 1/24th degree) surface meteorological data covering the contiguous United States from 1979-yesterday. The dataset is available through OpenET. The methodology behind gridMET is described in Abatzoglou (2013).

[5] Irrigation efficiencies were assigned based on FAO (1989) and Martin (2011). Vineyard, the dominant crop in the Basin was assigned an irrigation efficiency of 90%.

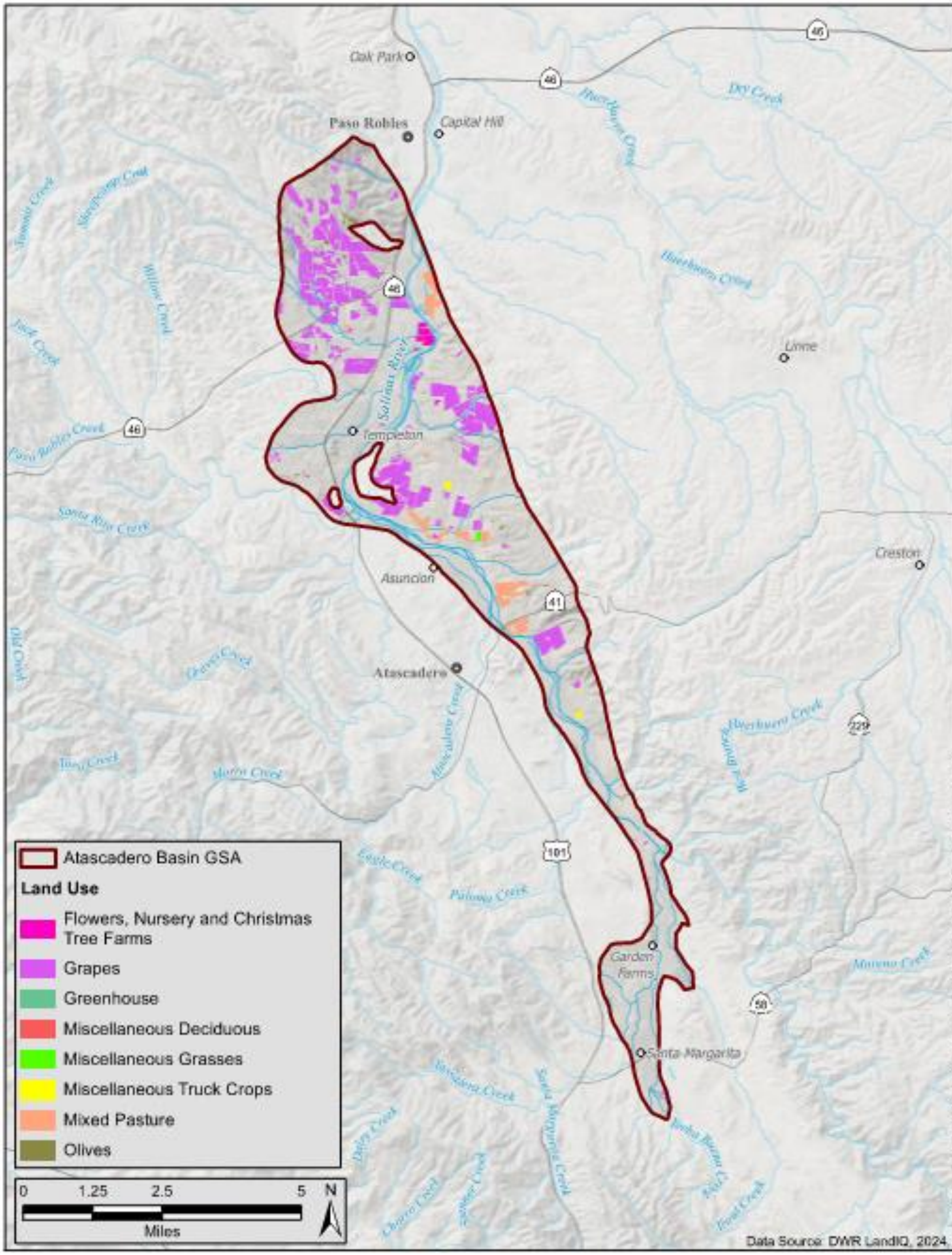

Figure 8: Existing Land Use Designations

Table 2: Estimated Agricultural Irrigation Groundwater Extractions

Water Year	Agricultural Demand (AF)
2017	4,900
2018	4,300
2019	5,000
2020	4,700
2021	4,500
2022	4,500
2023	3,100
2024	**3,600**

Note: AF = acre-feet

4.3 Rural Domestic and Small Public Water System Extraction

Rural domestic and small PWS groundwater extractions in the Subbasin were estimated using the methods described here.

4.3.1 Rural Domestic Demand

As documented in the Paso Robles Groundwater Basin Model Update (GSSI 2014), the rural domestic water demand was originally estimated as the product of County estimates of rural domestic units (DUs) and a water demand factor of 1.7 acre-feet per year (AFY) per DU, which included small PWS water demand (Fugro and Cleath 2002). This factor was subsequently modified to 1.0 AFY/DU in the San Luis Obispo County Master Water Report, not including small PWS demand (Carollo 2012). Based on further investigation completed for the 2014 groundwater model update, the rural domestic water use factor was refined to 0.75 AFY/DU (GSSI 2014). To simulate rural water demand over time in the groundwater model, an annual growth rate of 2.25 percent for the rural population was assumed, based on recommendation from the San Luis Obispo County Planning Department (GSSI 2014). The groundwater model update completed for the GSP (GEI/GSI 2022) used a linear regression projection based on the 2014 model update to estimate rural domestic demand through WY 2016. The projected future water budget presented in the GSP (M&A 2020) assumes a 1 percent annual growth rate in rural domestic water demand from WY 2016 going forward. Therefore, the rural domestic demand volumes presented in this annual report are based on the same assumption. The groundwater extractions for rural domestic demands are summarized in **Table 3**. The accuracy level rating of these estimated volumes is low-medium.

Table 3: Estimated Rural Domestic Groundwater Extractions

Water Year	Rural Domestic (Acre Feet)
2017	493
2018	498
2019	503
2020	508
2021	514
2022	519
2023	524
2024	**529**

4.3.2 Small Public Water System Extractions

The category of small PWSs includes a wide variety of establishments and facilities including small mutual water companies, golf courses, wineries, rural schools, and rural businesses. Various studies over the years used a mix of pumping data and estimates for type-specific water demand rates to estimate small PWS groundwater demand (Fugro and Cleath 2002; Todd Engineers 2009). The 2012 San Luis Obispo County Master Water Report used the county of San Luis Obispo geographic information services mapping to define the distribution and number of commercial systems at the time and applied a single annual factor of 1.5 AFY per system (Carollo et al. 2012).

For the 2014 model update, actual pumping data were used as available to provide a monthly record over the study period (GSSI 2014). Groundwater demand for golf courses was estimated using reference ET data measured in Paso Robles, the crop coefficient for turf grass, monthly rainfall data, and golf course acreage (GSSI 2014). Water use for wineries was estimated by identifying each winery and its permitted capacity and applying a water use rate of 5 gallons of water per gallon of wine produced. Minor landscaping, wine tasting/restaurant functions, and return flows were also accounted for (GSSI 2014). Water use for several small commercial/institutional water systems was estimated using water duty factors specific to the water system type (i.e., camp, school, restaurant, and other uses) (GSSI 2014).

The groundwater model update completed for the GSP (GEI 2022) used a linear regression projection for the 2014 model update to estimate small PWS demand through WY 2016. The projected future water budget presented in the GSP (GEI 2022) assumes a 1 percent annual growth rate in small PWS water demand from WY 2016 going forward. Therefore, the small PWS demand volumes presented in this annual report are based on the same assumption. The groundwater extractions for small PWS demands are summarized in Error! Reference source not found. The accuracy level rating of these estimated volumes is low-medium.

Table 4: Estimated Small Public Water System Groundwater Extractions

Water Year	Small PWS (AF)
2017	587
2018	592
2019	598
2020	604
2021	610
2022	616
2023	623
2024	**630**

Note: AF = acre-feet

4.4 Total Groundwater Extraction Summary

Total groundwater extractions in the Basin for water year 2024 is 14,500 AF. Error! Reference source not found. summarizes the total water use by sector and indicates the method of measure and associated level of accuracy. Approximate points of extraction were spatially distributed and colored according to a grid system to represent the relative pumping across the basin in terms of AFY (*see* **Figure 9**).

Table 5: Total Groundwater Extractions

Water Year	Groundwater Extractions by Water Use Sector			Total (AF)
	Municipal (AF)	PWS and Rural Domestic (AF)	Agriculture (AF)	
2017	8,760	1,080	4,900	14,700
2018	10,227	1,091	4,300	15,600
2019	9,442	1,102	5,000	15,500
2020	10,611	1,113	4,700	16,400
2021	10,860	1,123	4,500	16,500
2022	10,242	1,135	4,500	15,900
2023	9,739	1,146	3,100	14,000
2024	9,691	1,159	3,600	14,500
Method of Measure	Metered	2016 Groundwater Model	Soil- Water Balance Model, OpenET (2021 and 2022 only)	
Level of Accuracy	high	low-medium	medium	

Notes:
AF = acre-feet
PWS = public water systems

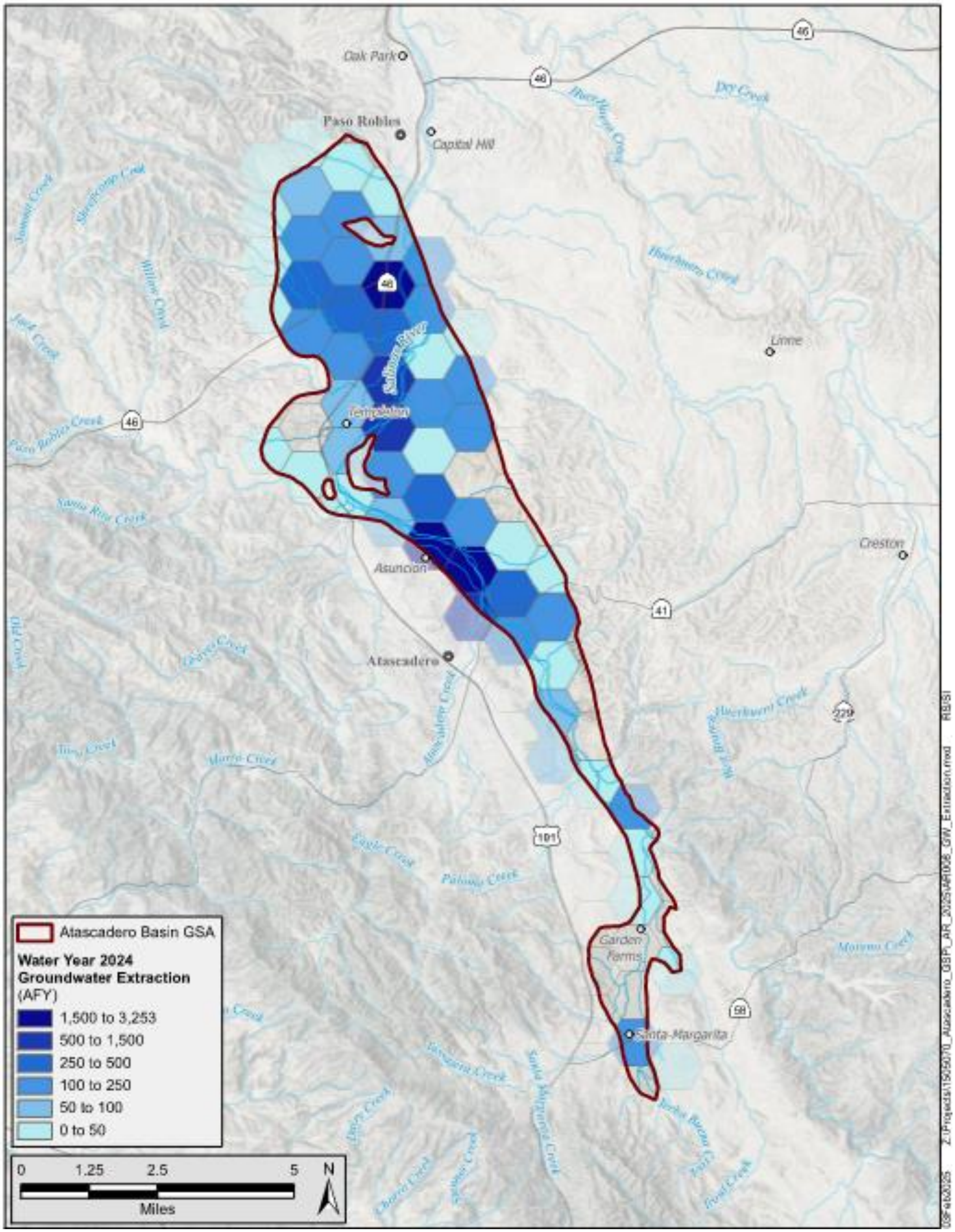

Figure 9: General Locations and Volumes of Groundwater Extraction

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5. Surface Water Use

This section addresses the reporting requirement of providing surface water supplies used, or available for use, and describes the annual volume of sources for the WY 2024. The method of measurement and level of accuracy is rated on a qualitative scale. As described in the GSP (Section 6.3.1), the Basin relies on two surface water source types: local imported supplies and local supplies.

Imported supplies are provided via the NWP regional raw water transmission facility delivers water from Lake Nacimiento to communities in the Basin, including Atascadero MWC, Templeton CSD, and the city of Paso Robles. **Figure 10** identifies the communities within the Atascadero Basin that have access to surface water. Within the Basin, all three municipal purveyors utilize their imported NWP water to recharge the Basin *via* percolation ponds or direct discharge located in the Alluvium adjacent to the Salinas River [6].

- Templeton CSD has an allocation of 406 AFY of NWP water and began taking deliveries in 2011. A total of 74 AF was taken by Templeton CSD in 2011 and constitutes the only NWP deliveries in the historical period (water budget period ending in year 2011) presented in the 2022 GSP.
- Atascadero MWC and the city of Paso Robles began taking deliveries in 2012 and 2013, respectively.

Local surface water supplies include surface water flows that enter the Basin from precipitation runoff within the watershed and Salinas River inflow to the Basin (including releases from the Salinas Reservoir). Annual inflow from these sources is estimated at 90,600 AF with the largest component being releases and flow in the Salinas River.

[6] The city of Paso Robles utilizes their NWP allocation in two ways: treatment in a package water treatment plant and applying directly to the ground surface on the alluvial gravels of the Salinas River floodplain in the north end of the Basin. The treated portion of NWP water is used outside of the Basin and is therefore not considered.

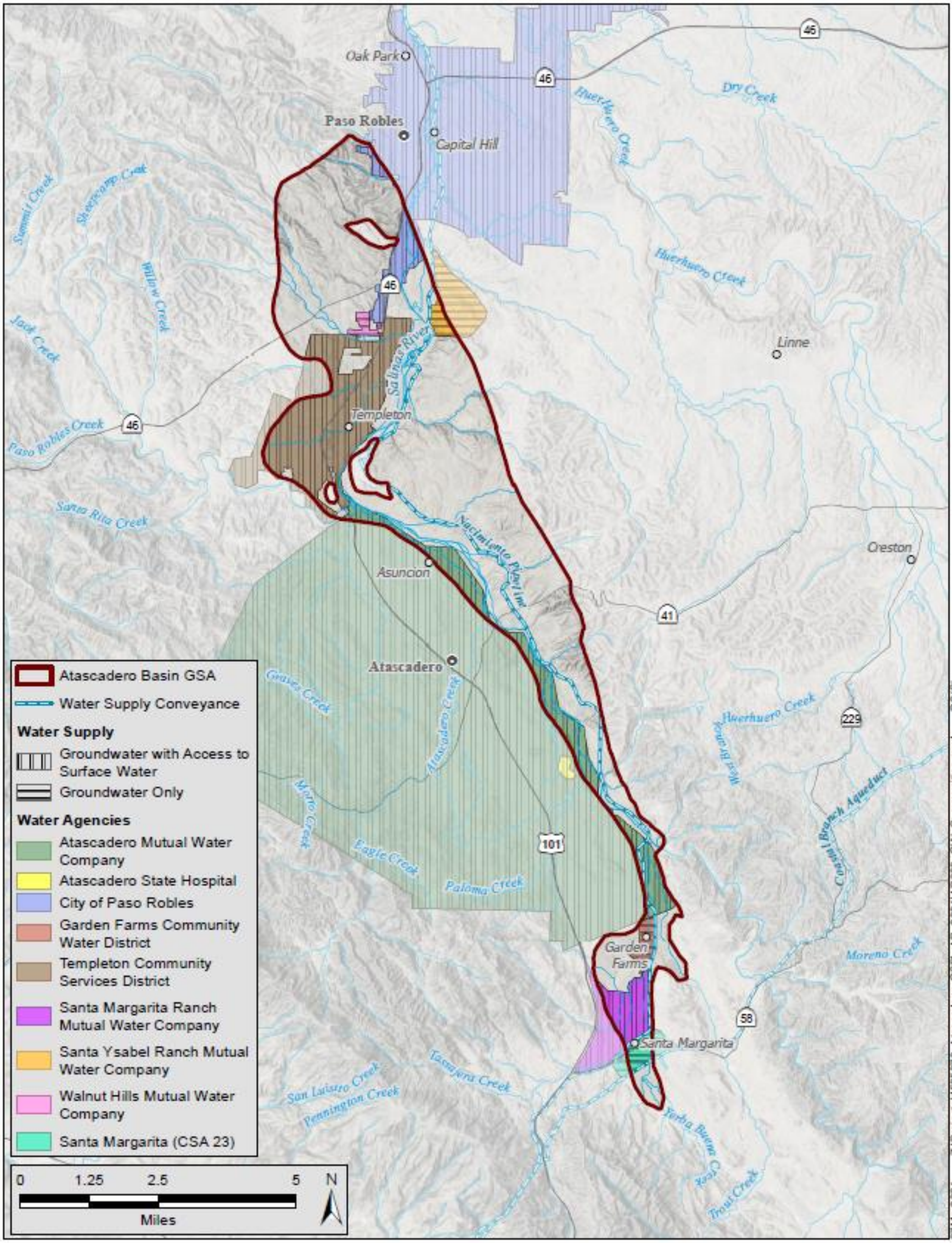

Figure 10: Communities Dependent on Groundwater and with Access to Surface Water

5.1 Surface Water Available for Use

Table 6 provides a breakdown of surface water available for municipal use in the Basin. There is currently no surface water available for agricultural or recharge project use within the Basin.

Table 6: Surface Water Available for Use

Water Year	Nacimiento Water Project			Total (AF)
	City of Paso Robles[1] (AF)	Templeton CSD[2] (AF)	Atascadero MWC[3] (AF)	
2017	6,488	406	3,244	10,138
2018	6,488	406	3,244	10,138
2019	6,488	406	3,244	10,138
2020	6,488	406	3,244	10,138
2021	6,488	406	3,244	10,138
2022	6,488	406	3,244	10,138
2023	6,488	406	3,244	10,138
2024	6,488	406	3,244	10,138

Notes:
[1] Contract annual entitlement to the city of Paso Robles. Note that city of Paso Robles uses Nacimiento Water Project water in both the Atascadero and Paso Robles Subbasins
[2] Contract annual entitlement to Templeton CSD
[3] Contract annual entitlement to Atascadero Mutual Water Company
AF = acre-feet
CSD = community services district
MWC = mutual water company

5.2 Total Surface Water Use

A summary of total actual surface water use by source is provided in **Table 7**. The accuracy level rating of these metered data is high.

Environmental uses of surface water are also recognized but not estimated due to insufficient data to make an estimate of surface water use. It is expected that environmental uses may be quantified in future annual reports as more data become available.

Table 7: Total Surface Water Use

Water Year	Nacimiento Water Project			Total (AF)
	City of Paso Robles[1] (AF)	Templeton CSD (AF)	Atascadero MWC (AF)	
2017	134	274	0	408
2018	862	258	854	1,974
2019	356	157	47	560
2020	804	0	1,372	2,176
2021	746	97	2,218	3,061
2022	1,012	131	1,945	3,088
2023	632	144	220	996
2024	**487**	**38**	**0**	**526**

Notes:
[1] The city of Paso Robles uses Nacimiento Water Project water in both the Atascadero Basin and the Paso Robles Subbasin. Only the portion used in the Atascadero Basin is included here.
AF = acre-feet
CSD = community services district
MWC = mutual water company

6. Total Water Use

This section summarizes the total annual groundwater and surface water used to meet municipal, agricultural, and rural demands within the Basin. For WY 2024, the quantification of total water use was completed from reported metered municipal water production and metered surface water delivery, and from models used to estimate agricultural and rural water demand. **Figure 11** displays the annual water use by source for the 2017 to 2024 period. **Figure 12** displays the annul water use by sector for the 2017 to 2024 period. The method of measurement and level of accuracy for each estimate is rated on a qualitative scale of low, medium, and high.

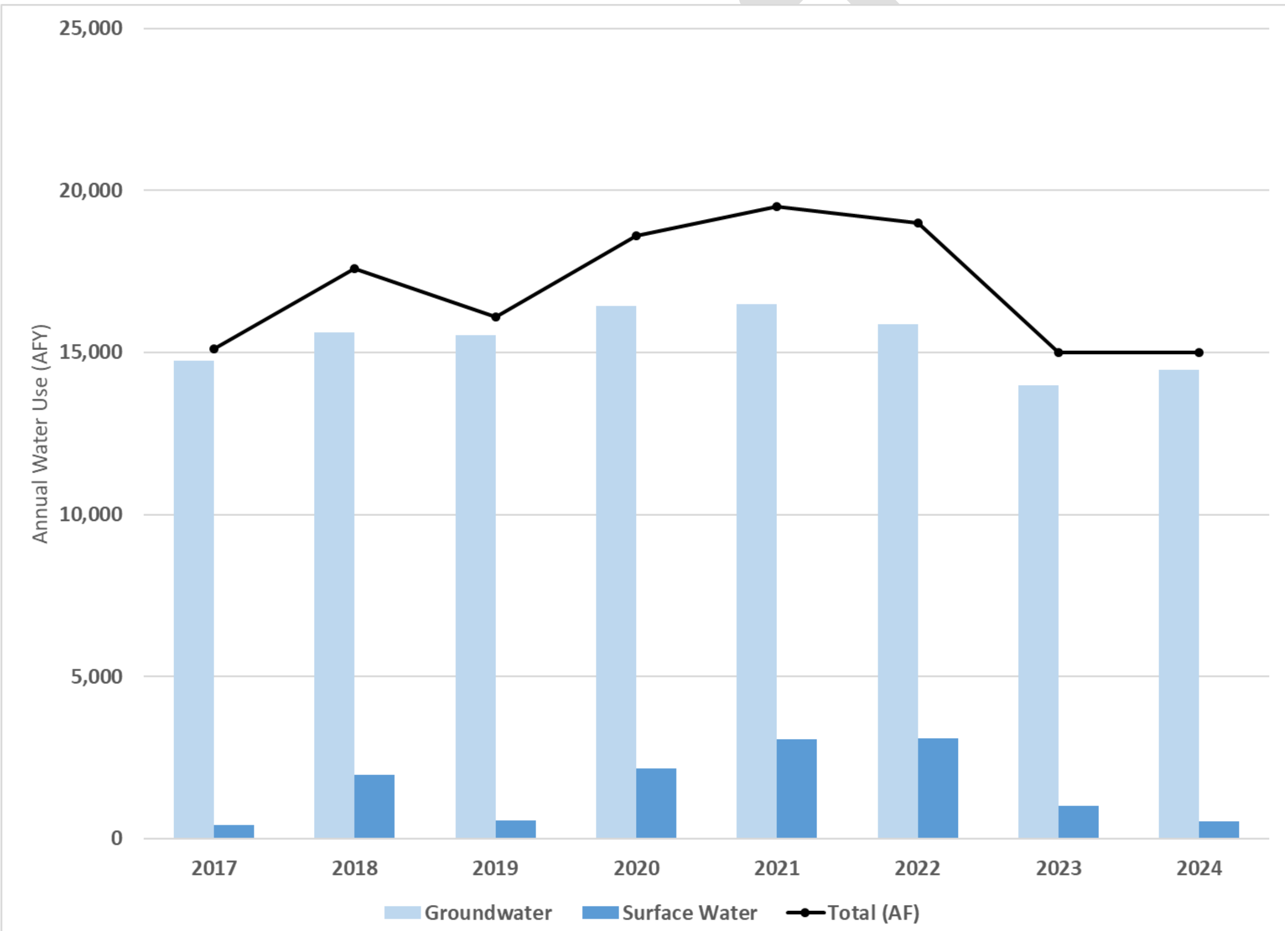

Figure 11: Water Use by Source

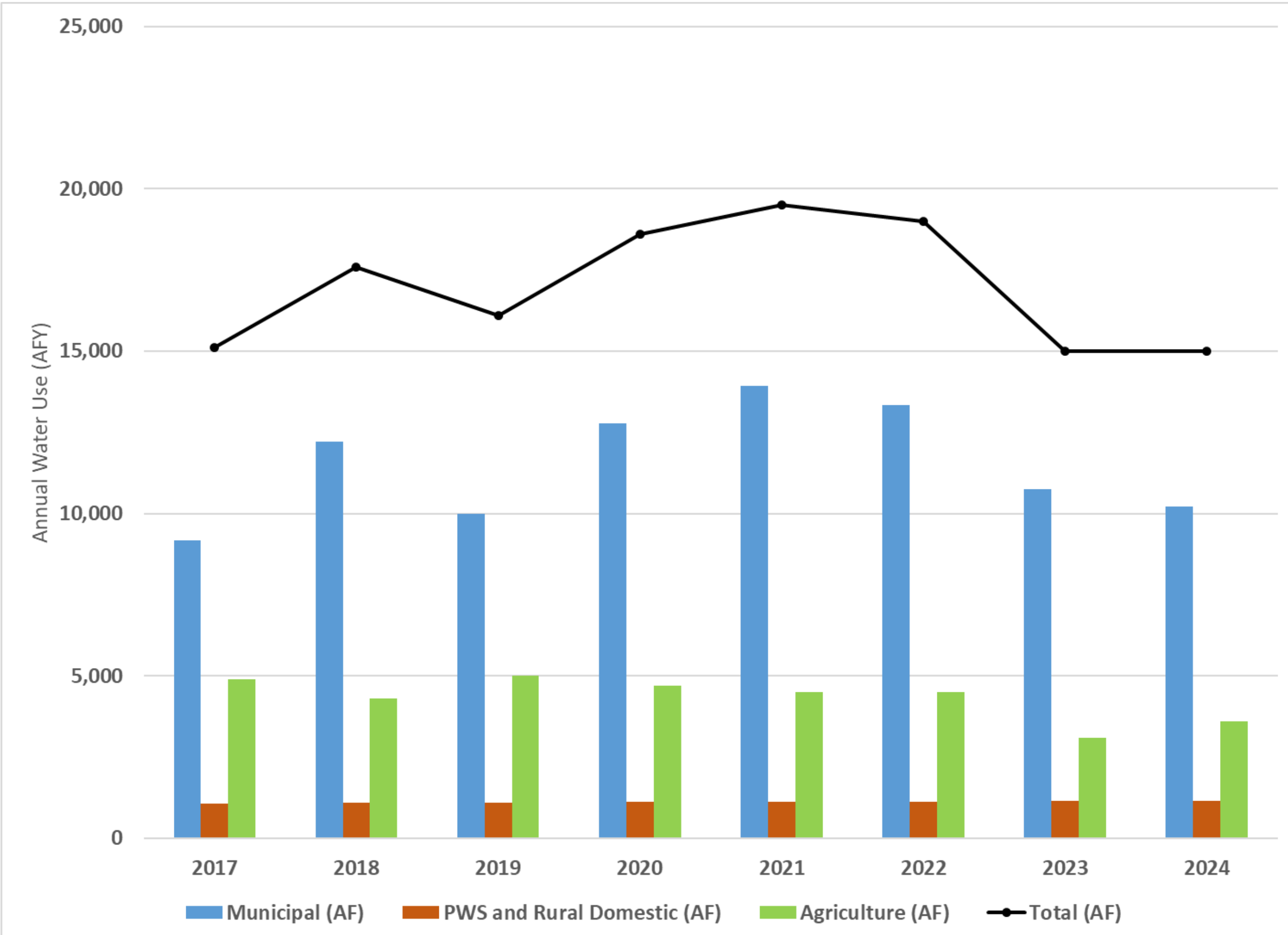

Figure 12: Water Use by Sector

Table 8 summarizes the total annual water use in the Basin by source and water use sector. The method of measurement and level of accuracy for each estimate is rated on a qualitative scale of low, medium, and high.

Table 8: Total Annual Water Use by Source and Water Use Sector

Water Year	Municipal (AF)		PWS and Rural Domestic (AF)	Agriculture (AF)	Estimated Total (AF)
Source:	Groundwater	Surface Water	Groundwater	Groundwater	
2017	8,760	408	1,080	4,900	15,100
2018	10,227	1,974	1,091	4,300	17,600
2019	9,442	560	1,102	5,000	16,100
2020	10,611	2,176	1,113	4,700	18,600
2021	10,860	3,061	1,123	4,500	19,500
2022	10,242	3,088	1,135	4,500	19,000
2023	9,741	996	1,146	3,100	15,000
2024	**9,961**	**526**	**1,159**	**3,600**	**15,000**
Method of Measure:	Metered	Metered	2016 Groundwater Model	Soil- Water Balance Model, OpenET (2021 and 2022 only)	
Level of Accuracy:	high	high	low-medium	medium	

Notes:
AF = acre-feet
PWS = public water systems

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7. Change in Groundwater Storage

7.1 Annual Changes in Groundwater Elevation (§ 356.2[b][5][A])

Annual changes in groundwater elevation are derived from comparison of fall groundwater elevation contour maps from one year to the next. For WY 2024, the fall 2023 groundwater elevations were subtracted from the fall 2024 groundwater elevations in both principal aquifers, resulting in maps depicting the changes in groundwater elevations that occurred during WY 2024. These groundwater elevations change maps are based on a reasonable and thorough analysis of the currently available data.

7.1.1 Alluvial Aquifer

Figure 13 shows the change in groundwater elevation for the Alluvial Aquifer from 2023 to 2024. There is a slight decline in groundwater levels in the Alluvial Aquifer in much the Basin by up to five feet, with up to 10 feet of decline in a very small area in the northern portion of the Basin.

7.1.2 Paso Robles Formation Aquifer

Figure 14 shows changes in groundwater elevation from 2023 to 2024, the most recent period evaluated. Declines in water levels of up to 40 feet were observed in the in the area north and south of Templeton Groundwater elevations in the areas to the north and east of Templeton increases by up to 40 feet. Groundwater elevations in the areas southeast of Templeton and near Asuncion increased by up to 10 feet. South of Atascadero groundwater elevations decreased by up to 10 feet.

7.2 Annual and Cumulative Change in Groundwater in Storage Calculation (§ 356.2[b][5][B])

The groundwater elevation change maps presented above represent a volume change within each principal aquifer for each water year. The volume change depicted on each map represents a total volume, including the volume displaced by the aquifer material and the volume of groundwater stored within the void space of the aquifer. The portion of void space in the aquifer that can be utilized for groundwater storage is represented by the aquifer storage coefficient (S), a unitless factor, which is multiplied by the total volume change to derive the change in groundwater in storage. Based on work completed for the Paso Robles Subbasin GSP (M&A 2020), S is estimated to be 7 percent for the Paso Robles Formation Aquifer.[7] The aquifer storage coefficient value used for the Alluvial Aquifer is 20 percent.[8] The annual change of groundwater in storage calculated for WY 2024 is presented in Error! Reference source not found. and the annual and cumulative change in groundwater in storage since 1981 are presented on **Figure 15**.

[7] Attachment H includes derivation of the storage coefficient from the Paso Robles Subbasin GSP groundwater model files and a sensitivity analysis as documented in the Paso Robles Subbasin First Annual Report (GSI 2020).

[8] In the case of the alluvial aquifer, the aquifer storage coefficient is equivalent to the specific yield, a unitless factor, which is estimated to be 20%.

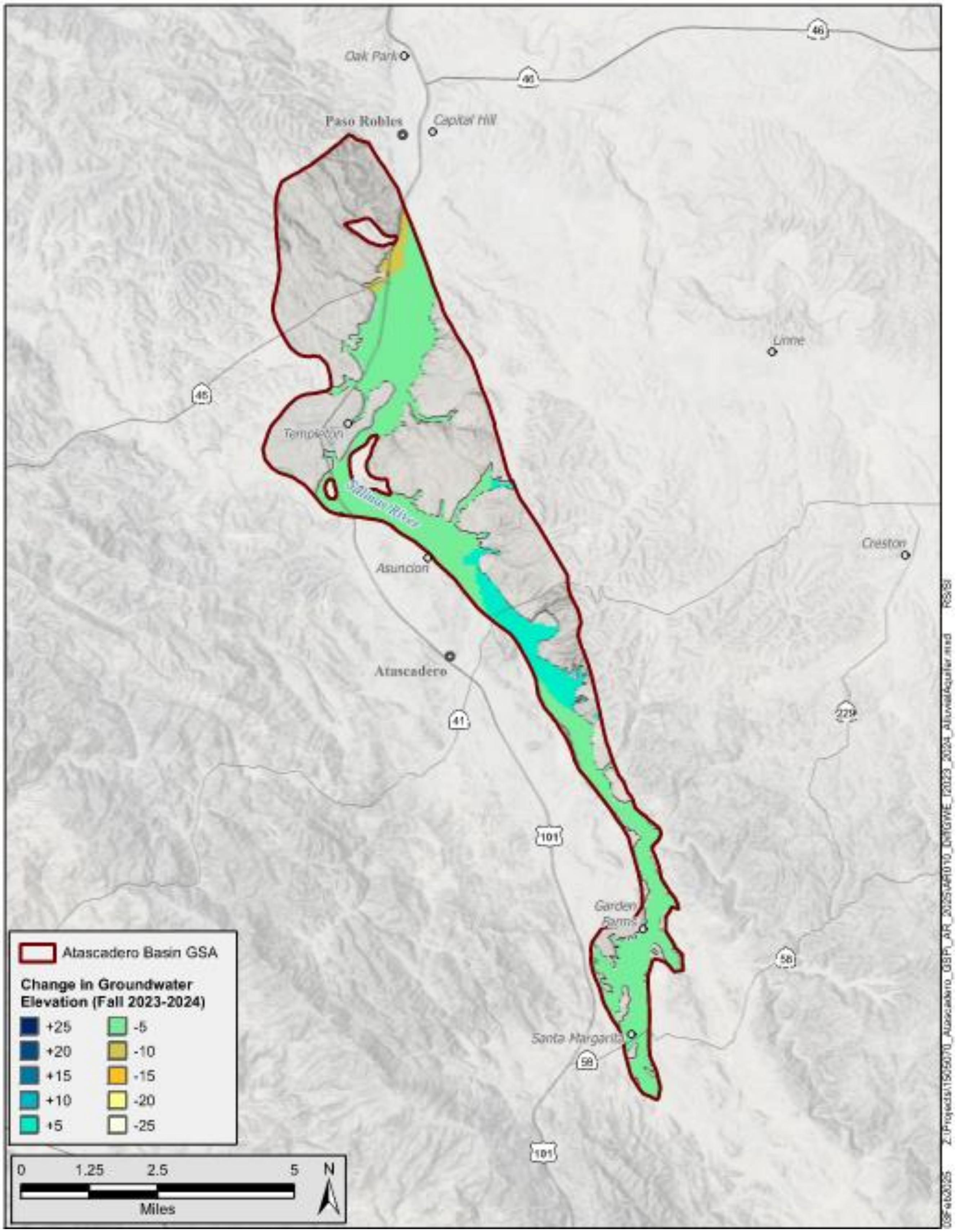

Figure 13: Alluvial Aquifer Change in Groundwater Elevation (Fall 2023 – Fall 2024)

Table 9: Annual Change in Storage

Water Year	Annual Change (AF)
2017	14,600
2018	-5,400
2019	4,300
2020	100
2021	-5,200
2022	-8,000
2023	15,700
2024	**3,600**

Note: AF = acre-feet

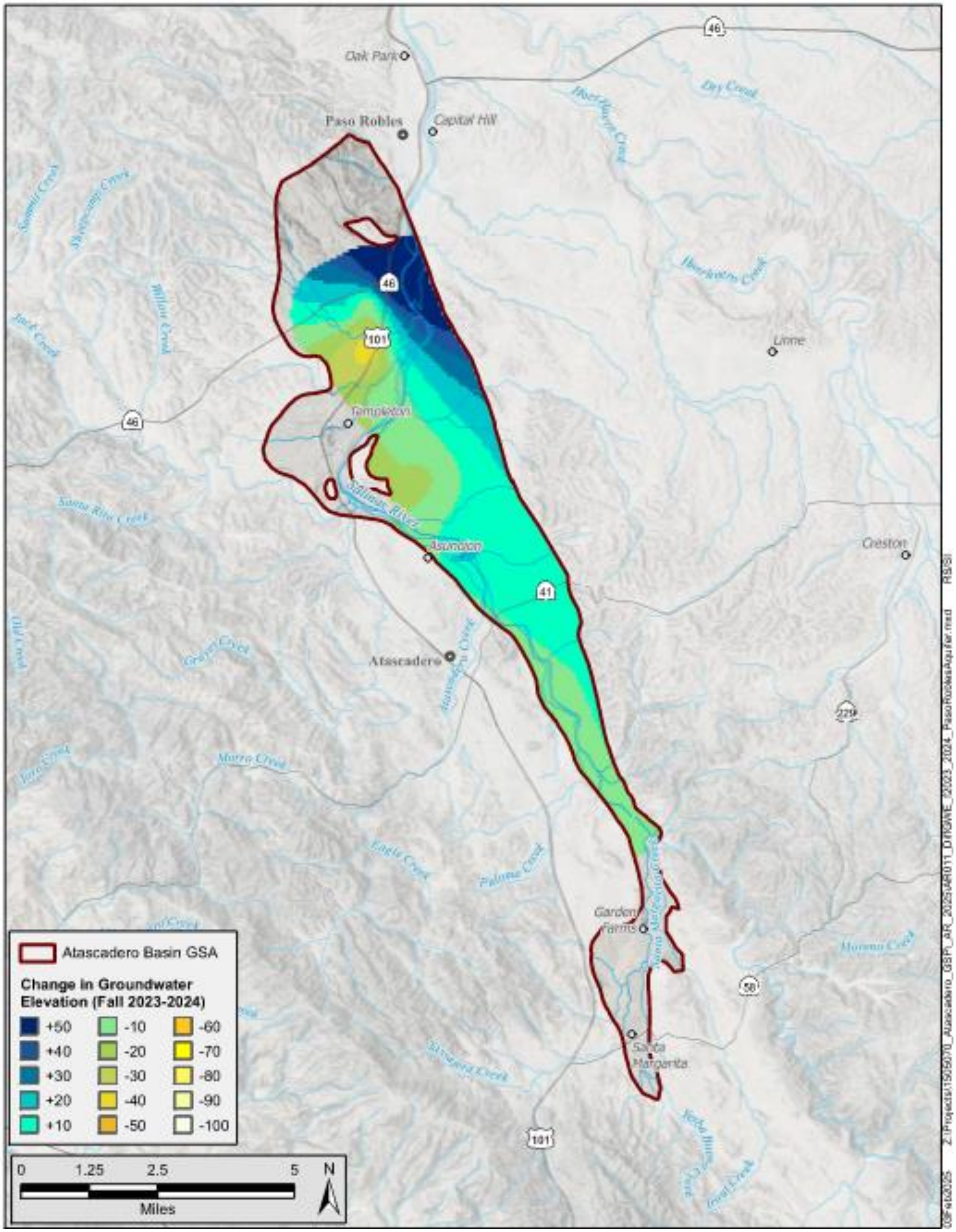

Figure 14: Paso Robles Aquifer Formation Change in Groundwater Elevation (Fall 2023 – Fall 2024)

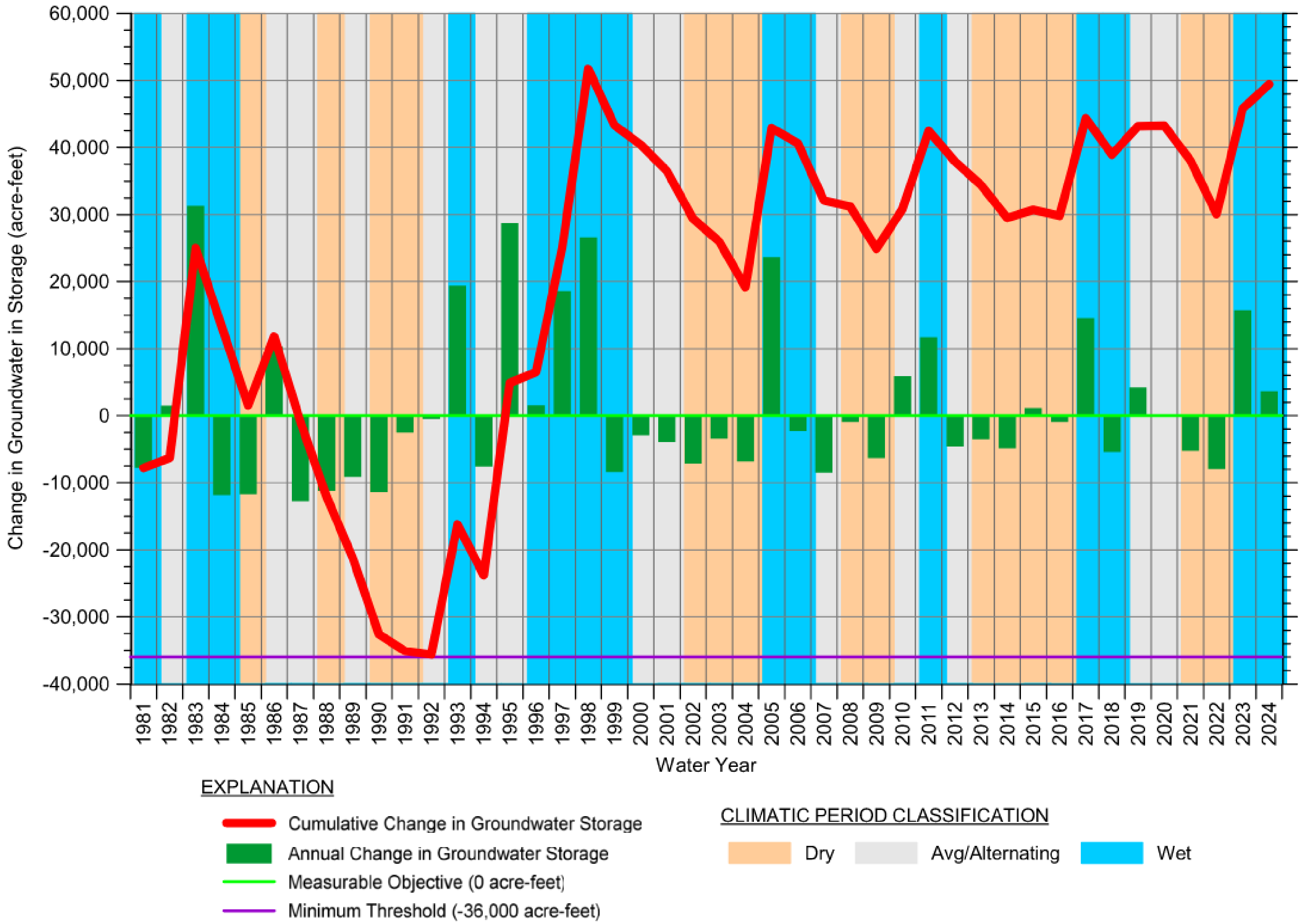

Figure 15: Estimated Annual and Cumulative Change in Storage

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8. Progress Towards Implementing the GSP

8.1 Introduction

The participating agencies of the Basin's GSA agree to work together to protect the groundwater resources of the Basin to meet the current and future beneficial uses in the Basin by developing a GSP that conforms with the requirements of the SGMA.

The hydrologic conditions and hydrogeologic setting of the Basin and ongoing proactive water management have demonstrated the resilient nature of the Basin and avoidance of groundwater overdraft conditions. As a result, the DWR has designated the Basin as very low basin priority that is being sustainably managed.

Because the Basin is currently being managed sustainably, as evidenced by historic groundwater levels in the Basin, there are no projects or management actions that are required to achieve sustainability. Several management actions and conceptual projects were included in the GSP to provide a means to ensure the Basin is operated to maintain its sustainable yield and sustainability.

This section describes the project and management actions that are in progress, recently implemented, or anticipated in the Basin to maintain sustainability and address data gaps.

8.2 Implementation Approach

Because the Basin is currently being managed sustainably, implementation of additional projects and management actions to reach or maintain sustainability are not necessary at this time. However, project and management actions are being taken to address identified data gaps in the GSP and to develop a more complete model of the Basin.

8.3 Basin-Wide Management Actions and Projects

As the Basin is considered very-low priority by DWR and it is currently being operated sustainably, there were no Basin-wide projects implemented during WY 2024.

8.4 Area-Specific Projects

There are no area-specific projects being implemented at this time.

8.5 Summary of Progress toward Maintaining Basin Sustainability

Relative to the Basin conditions at the end of the study period as reported in the GSP, this Fourth Annual Report (WY 2023-2024) indicates the Basin is still being managed in a sustainable fashion. There are fluctuations in groundwater levels, but elevations have been maintained above the MTs at all RMS locations. Continued evaluation of the Basin through Annual Reports, and implementation of projects and management actions, work to ensure the Basin continues to achieve sustainability.

8.5.1 Subsidence

Land subsidence is the lowering of the land surface. As described in the GSP, several human-induced and natural causes of subsidence exist, but the only process applicable to SGMA are those due to permanently lowered ground surface elevations caused by groundwater pumping (GEI 2022). Historical subsidence can be estimated using InSAR data provided by DWR. InSAR measures ground elevation using microwave satellite imagery data. The GSP documents zero historical subsidence in the Subbasin based on data provided by DWR depicting the difference in InSAR measured ground surface elevations between June 2015 and June 2018. The GSP established minimum thresholds for InSAR measured land subsidence as, "…no more than 0.1 foot in any single year and a cumulative 0.5 foot in any 5-year period" as measured using InSAR between June of 1 year and June of the following year (GEI 2022).

Updated InSAR data has been provided by DWR through October 2023. As discussed in the GSP, to minimize the influence of elastic subsidence, changes in ground level should be measured annually from June of one year to June of the following year (GEI 2022). For this WY 2024 Annual Report, the single-year land subsidence was measured using InSAR from June 2023 through June 2024 and the 5-year land subsidence land subsidence was measured from June 2019 through June 2024. According to Towill, Inc. (2024) there is a potential error of +/- 20 millimeters (or 0.066 feet) associated with the InSAR measurement and reporting methods. Therefore, an InSAR measured land surface change of less than 0.066 foot is within the noise of the data and is equivalent to no evidence of subsidence. Considering this range of potential error, examination of the single-year change InSAR data from June 2023 to June 2024 show that zero land subsidence has occurred (**Figure 16**). Considering the same potential error for the 5-year cumulative change InSAR data from June 2019 to June 2024 it is apparent that as much as 0.09 foot of subsidence has occurred in an isolated area in the northern portion of the Subbasin during this period (**Figure 17**). Although minor land subsidence is documented during the 5-year period of June 2019 to June 2024, neither of these results indicate an undesirable result as specified by the land subsidence minimum thresholds. The GSAs will continue to monitor and report annual subsidence as more data become available.

8.5.2 Interconnected Surface Water

Although the Alluvial Aquifer hydrographs presented in **Attachment G** typically show declining water levels in response to drought periods, they also demonstrate the ability of the Alluvial Aquifer to fully recharge during wet periods. Based on this long-term stability of groundwater elevations exhibited in the Alluvial Aquifer RMS wells it appears that no long-term interconnected surface water depletion is occurring in the Basin.

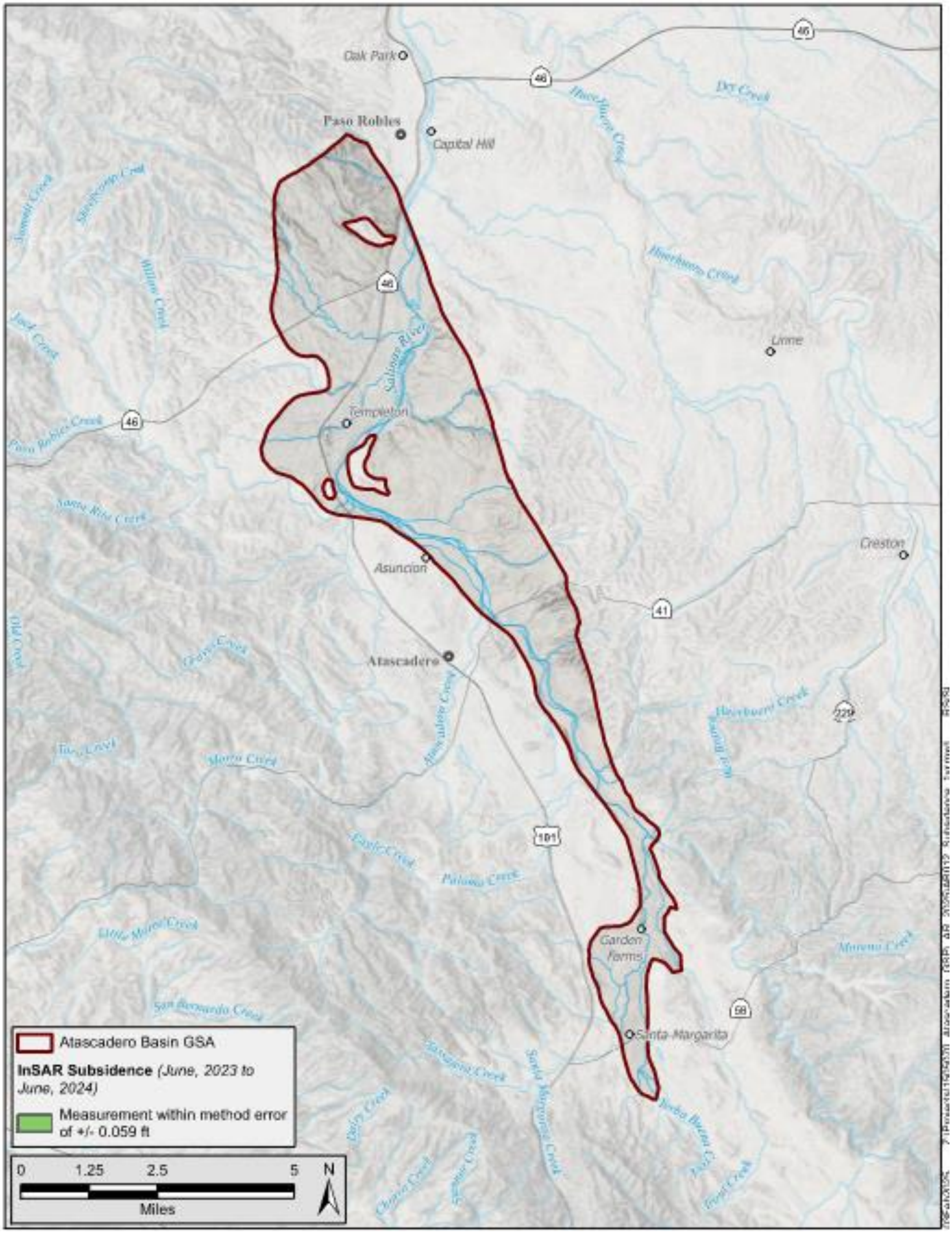

Figure 16: Land Subsidence Measured by InSAR for June 2023 to June 2024

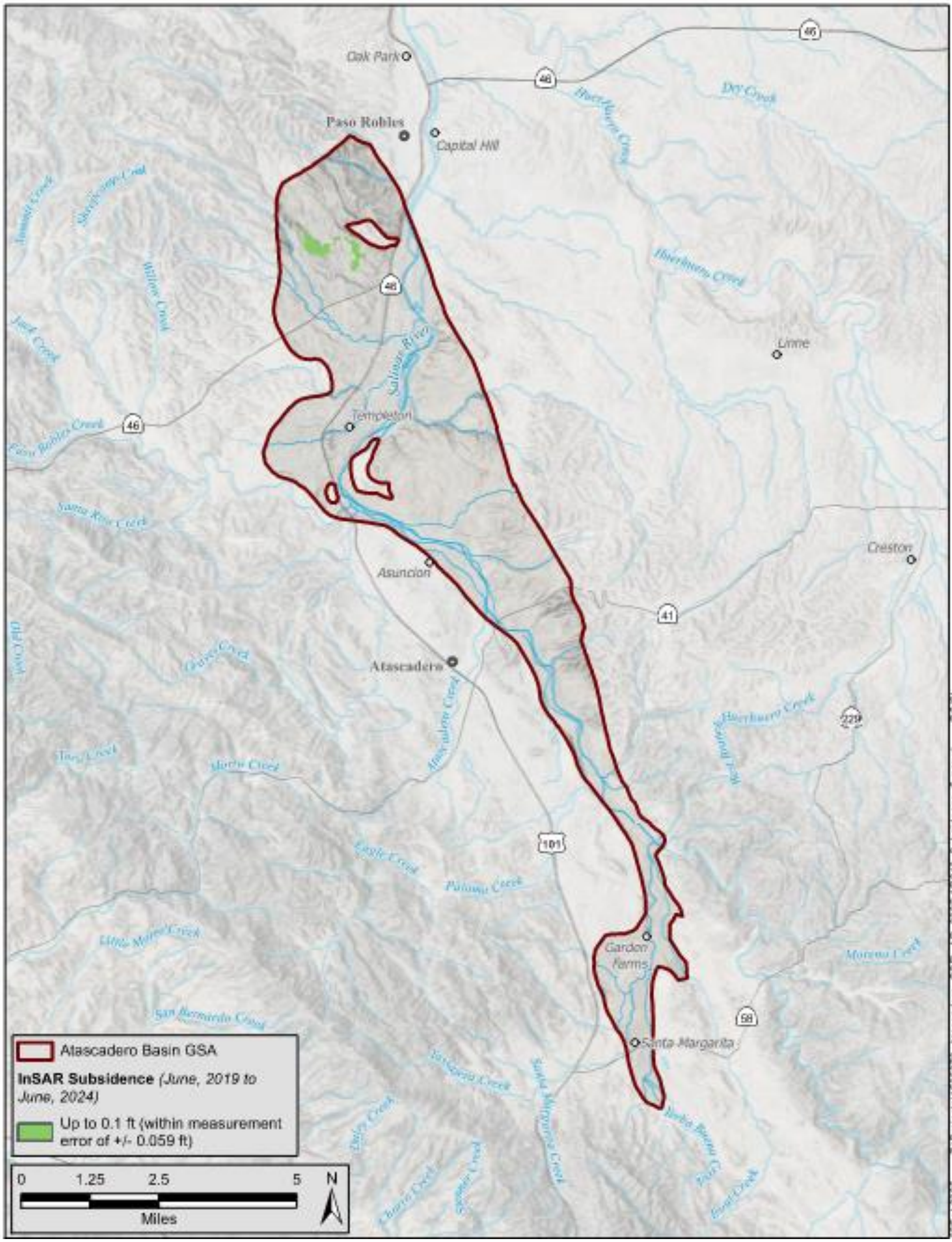

Figure 17: Land Subsidence Measured by InSAR for June 2019 to June 2024

8.5.3 Groundwater Quality

General Groundwater Quality

Although groundwater quality is not a primary focus of SGMA, actions or projects undertaken to achieve sustainability cannot degrade water quality to the extent that they would cause undesirable results. As stated in the GSP, groundwater quality in the Basin is generally suitable for both drinking water and agricultural purposes (GEI 2022). Five constituents of concern (COC's) were identified and discussed in the GSP. These COC's identified in the GSP are total dissolved solids (TDS), sodium, chloride, nitrate, and boron. For this annual report, concentrations of these five COC's were analyzed for WY 2024 using data from the GeoTracker Groundwater Ambient Monitoring and Assessment (GAMA) Program database (GAMA 2025). All of the COC's reviewed show a steady concentration trend since 2016.

Overall, there are no significant changes to general groundwater quality since 2016, as documented in the GSP. Implementation of sustainability projects and/or management actions, as presented in the GSP, in this annual report, or in future reports or GSP updates, are not anticipated to result in degraded groundwater quality in the Basin. Any potential changes in groundwater quality will be documented in future annual reports and GSP updates.

Perflouroalkyl Substances in Drinking Water

In April 2024, EPA finalized an MCL of 4 ppt for perfluorooctanoic acid (PFOA), perfluorooctane sulfonic acid (PFOS). There is no agricultural goal for PFOA and PFOS. Both contaminants are part of a group of Per- and Polyfluoroalkyl Substances (PFAS), a category of manufactured chemicals that have been used in industry and consumer products. Commonly, PFOA is used for nonstick cookware, and PFOS is used in stain and water-repellant fabrics and firefighting foam. PFAS typically break down slowly and are highly hydrophobic.

These contaminants have been detected in five wells within the AMWC system. The origin of these contaminants in our water supply is currently unknown. AMWC is currently performing an investigation to determine the source and is continuing to monitor the PFOS, PFOA, and PFHxS levels in its water sources.

AMWC is required to inform its customers that the drinking water it supplies has concentrations of three perflouroalkyl substances that exceed the notification levels established by the California State Water Resources Control Board (Water Board) pursuant to Health and Safety Code Section 116455. These substances are perfluorooctanesulfonic acid (PFOS), perfluorooctanioic acid (PFOA), and perflourohexane sulfonic acid (PFHxS). AMWC is currently designing a treatment facility that will remove PFAS from the water using granulated activated carbon (GAC). A pilot study using different mediums shows that GAC effectively removes PFAS from the water. The facility design is approximately 30% complete.

8.5.4 Summary of Changes in Basin Conditions

Groundwater elevations have remained relatively consistent. While fluctuations are observed between years based on climatic conditions, groundwater elevations remain consistent with the historical record and no threshold exceedances occurred. Similarly, groundwater in storage in the Basin remained relatively constant, with fluctuations due to climatic conditions observed. Water Year 2024 was an example of this with the wet year resulting in 3,600 acre-foot increase in groundwater storage in the Basin These fluctuations are within the historical record. The volume of groundwater extractions in the Basin has remained relatively consistent with a slight upward trend (averaging between 14,000 and 16,000 AFY; Section 4.4 – Total Groundwater Extraction Summary).

This slight increased has not manifested as a significant change to groundwater levels or groundwater in storage.

8.5.5 Summary of Impacts of Projects and Management Actions

As of this Annual Report, projects and management actions have yet to be implemented in the Basin at a level impacting the management of the Basin. The Basin is very low priority by DWR and continues to be operated sustainably so no projects or management actions are needed at this time. Additional projects and management actions, as outlined in the GSP, shall be implemented if deemed necessary to maintain groundwater sustainability in the Basin.

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9. References

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Attachment A. DWR GSP Determination Letter

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CALIFORNIA DEPARTMENT OF WATER RESOURCES
SUSTAINABLE GROUNDWATER MANAGEMENT OFFICE
715 P Street, 8th Floor | Sacramento, CA 95814 | P.O. Box 942836 | Sacramento, CA 94236-0001

January 31, 2024

John Neil
Atascadero Basin Groundwater Sustainability Agency
5005 El Camino Real
Atascadero, CA 93422
jneil@amwc.us

RE: Salinas Valley – Atascadero Area Subbasin – Groundwater Sustainability Plan

Dear John Neil,

The Atascadero Basin Groundwater Sustainability Agency (GSA) submitted the Salinas Valley – Atascadero Area Subbasin Groundwater Sustainability Plan (GSP or Plan) to the Department of Water Resources (Department) for evaluation. The Salinas Valley – Atascadero Area Subbasin is designated by the Department as very low-priority and therefore, is not required to be managed under a GSP and is not subject to state intervention under Chapter 11 of the Sustainable Groundwater Management Act (SGMA). However, SGMA encourages and authorizes basins designated as low- and very low-priority to be managed under a GSP. The Department appreciates the Atascadero Basin GSA voluntarily submitting a GSP for the very low-priority Salinas Valley – Atascadero Area Subbasin. This letter is to acknowledge receipt of the GSP and provide an update regarding the Department's evaluation and assessment of the GSP.

The Department has prioritized the evaluation of GSPs submitted for medium- and high-priority basins to meet statutory deadlines for those plans in which state intervention applies. The Department will evaluate GSPs submitted for low- and very low-priority basins now that the evaluation of medium- and high-priority-basin GSPs has been completed and will provide assessments and determinations as soon as practicable. In the meantime, the Department encourages the Atascadero Basin GSA to continue implementing its GSP and providing information to the Department through annual report submittals by April 1.

The Department appreciates your patience and should you have any questions, please contact the Sustainable Groundwater Management Office by emailing sgmps@water.ca.gov.

Thank you,

Paul Gosselin

Paul Gosselin
Deputy Director of Sustainable Groundwater Management

Attachment B. DWR GSP WY 2023 Annual Report Letter

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CALIFORNIA DEPARTMENT OF WATER RESOURCES

SUSTAINABLE GROUNDWATER MANAGEMENT OFFICE

715 P Street, 8th Floor | Sacramento, CA 95814 | P.O. Box 942836 | Sacramento, CA 94236-0001

May 10, 2024

John Neil
Atascadero Area Subbasin
5005 El Camio Real
Atascadero, CA 93422
jneil@amwc.us

RE: Review of Annual Report for the Atascadero Area Subbasin, Water Year 2023

Dear John Neil,

As the basin point of contact for the groundwater sustainability plan (GSP) in the Atascadero Area Subbasin (Subbasin), this letter is to inform you that the Department of Water Resources (Department) has reviewed the annual report submitted for the Subbasin for Water Year 2023. The Sustainable Groundwater Management Act (SGMA) requires, on April 1 following the adoption of a GSP and annually thereafter, an annual report to be submitted to the Department. The required contents of annual reports are included in the GSP Regulations (23 CCR § 356.2) as is the Department's role in reviewing annual reports (23 CCR § 355.8).

Once an annual report has been submitted, the Department is required: to notify the submitting agency of receipt within 20 days, review the information to determine whether the basin's GSP is being implemented in a manner likely to achieve its established sustainability goal, and notify the submitting agency in writing if additional information is required (23 CCR § 355.8).

The submitted information appears to satisfy the requirements of the GSP Regulations (23 CCR § 356.2) of and so no additional information is required at this time. However, due to the current status of the GSP for the basin, the basin does not yet have a sustainability goal that is part of an approved Plan. As a result, the Department cannot independently evaluate whether information in the annual report indicates that the Plan is being implemented in a manner that will likely achieve the sustainability goal for the basin at this time, but that determination will be included in the Department's forthcoming evaluation of the Plan.

STATE OF CALIFORNIA | GAVIN NEWSOM, GOVERNOR | CALIFORNIA NATURAL RESOURCES AGENCY

Please contact the assigned DWR basin point-of-contact or sgmps@water.ca.gov if you have questions about this notice or the annual reporting process. The Department looks forward to receiving your Water Year 2024 Annual Report by April 1, 2025.

Thank You,

Paul Gosselin

Paul Gosselin
Deputy Director
Sustainable Water Management

Attachment C. Groundwater Sustainability Plan Regulations - 356.2. Annual Reports

§ 356.2. Annual Reports

Each Agency shall submit an annual report to the Department by April 1 of each year following the adoption of the Plan. The annual report shall include the following components for the preceding water year:

(a) General information, including an executive summary and a location map depicting the basin covered by the report.

(b) A detailed description and graphical representation of the following conditions of the basin managed in the Plan:

(1) Groundwater elevation data from monitoring wells identified in the monitoring network shall be analyzed and displayed as follows:

(A) Groundwater elevation contour maps for each principal aquifer in the basin illustrating, at a minimum, the seasonal high and seasonal low groundwater conditions.

(B) Hydrographs of groundwater elevations and water year type using historical data to the greatest extent available, including from January 1, 2015, to current reporting year.

(2) Groundwater extraction for the preceding water year. Data shall be collected using the best available measurement methods and shall be presented in a table that summarizes groundwater extractions by water use sector, and identifies the method of measurement (direct or estimate) and accuracy of measurements, and a map that illustrates the general location and volume of groundwater extractions.

(3) Surface water supply used or available for use, for groundwater recharge or in-lieu use shall be reported based on quantitative data that describes the annual volume and sources for the preceding water year.

(4) Total water use shall be collected using the best available measurement methods and shall be reported in a table that summarizes total water use by water use sector, water source type, and identifies the method of measurement (direct or estimate) and accuracy of measurements. Existing water use data from the most recent Urban Water Management Plans or Agricultural Water Management Plans within the basin may be used, as long as the data are reported by water year.

(5) Change in groundwater in storage shall include the following:

(A) Change in groundwater in storage maps for each principal aquifer in the basin.

(B) A graph depicting water year type, groundwater use, the annual change in groundwater in storage, and the cumulative change in groundwater in storage for the basin based on historical data to the greatest extent available, including from January 1, 2015, to the current reporting year.

(c) A description of progress towards implementing the Plan, including achieving interim milestones, and implementation of projects or management actions since the previous annual report.

Note: Authority cited: Section 10733.2, Water Code. Reference:

Sections 10727.2, 10728, and 10733.2, Water Code.

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Attachment D. Historical Precipitation Records

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Monthly Precipitation at the Atascadero Mutual Water Company Station 34

(inches)

Source: Atascadero Mutual Water Company

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	WY Total
1915							0.00	0.00	0.00	0.00	0.25	3.81	---
1916	15.51	1.72	1.55	0.15	0.00	0.00	0.00	0.08	0.82	1.52	0.36	10.02	23.89
1917	3.62	8.11	0.95	0.08	0.13	0.00	0.00	0.00	0.00	0.04	0.52	0.11	24.79
1918	0.40	9.37	5.59	0.00	0.00	0.00	0.01	0.02	0.16	0.52	1.33	2.48	16.22
1919	3.15	3.02	2.39	1.05	0.24	0.03	0.00	0.00	0.45	0.75	3.34	1.19	14.66
1920	0.57	4.14	2.97	0.26	0.67	0.00	0.00	0.00	0.16	0.12	0.00	5.23	14.05
1921	0.54	2.30	4.85	2.27	0.00	0.00	0.00	0.00	0.70	0.17	0.03	7.32	16.01
1922	5.65	5.61	3.37	0.31	0.91	0.00	0.00	0.00	0.00	0.33	4.16	6.11	23.37
1923	3.43	0.91	0.09	2.59	0.00	0.19	0.00	0.00	0.17	0.16	0.27	0.28	17.98
1924	1.27	0.56	3.57	0.41	0.23	0.00	0.00	0.00	0.00	1.64	2.34	1.84	6.75
1925	1.33	2.75	3.57	1.86	2.66	0.00	0.00	0.00	0.00	0.40	0.11	1.90	17.99
1926	3.12	5.26	0.28	3.67	0.00	0.00	0.00	0.00	0.00	0.00	7.23	1.39	14.74
1927	1.91	7.53	1.93	1.21	0.00	0.08	0.00	0.00	0.00	1.66	1.88	2.53	21.28
1928	0.00	2.19	5.04	0.54	0.13	0.00	0.00	0.00	0.00	0.00	3.58	5.48	13.97
1929	1.60	2.79	1.82	0.53	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.26	16.05
1930	4.86	2.66	2.52	0.54	0.97	0.14	0.00	0.00	0.00	0.00	1.58	0.50	11.95
1931	4.98	1.54	0.43	0.38	2.02	0.13	0.00	0.00	0.00	0.00	1.90	9.10	11.56
1932	3.58	4.98	0.59	0.16	0.11	0.00	0.00	0.00	0.03	0.00	0.14	1.13	20.45
1933	7.79	0.09	0.72	0.14	0.65	0.93	0.00	0.00	0.00	0.36	0.00	4.38	11.59
1934	2.44	3.17	0.17	0.00	1.00	0.00	0.00	0.00	0.00	0.99	2.85	1.56	11.52
1935	4.92	0.68	2.66	3.84	0.00	0.00	0.00	0.00	0.08	0.20	1.35	1.85	17.58
1936	2.00	9.68	1.13	1.25	0.00	0.15	0.00	0.00	0.00	1.47	0.00	5.98	17.61
1937	4.12	4.87	4.86	0.05	0.00	0.00	0.00	0.00	0.00	0.10	0.80	5.29	21.35
1938	1.88	8.97	6.63	0.77	0.03	0.00	0.00	0.00	0.53	0.20	0.48	0.93	25.00
1939	2.70	1.38	1.39	0.14	0.00	0.00	0.00	0.00	0.23	1.02	0.90	1.22	7.45
1940	6.72	5.73	1.81	0.30	0.02	0.00	0.00	0.00	0.00	0.40	0.23	7.91	17.72
1941	5.06	11.22	7.78	3.51	0.00	0.00	0.00	0.00	0.00	1.26	0.84	7.57	36.11
1942	3.00	0.59	2.63	4.28	0.00	0.15	0.00	0.00	0.00	0.66	2.20	2.25	20.32
1943	11.85	2.01	6.85	1.20	0.00	0.00	0.00	0.00	0.00	0.46	0.36	3.73	27.02
1944	1.47	7.67	1.54	1.08	0.00	0.00	0.00	0.00	0.00	0.05	2.87	1.30	16.31
1945	1.54	3.84	4.25	0.15	0.00	0.00	0.01	0.03	0.16	0.51	1.30	2.43	14.20
1946	3.08	2.96	2.34	1.04	0.24	0.03	0.00	0.00	0.00	0.30	6.78	2.20	13.93
1947	0.60	1.42	1.38	0.47	0.91	0.00	0.00	0.00	0.04	0.51	0.16	0.95	14.10
1948	0.00	2.07	4.72	3.30	0.60	0.00	0.00	0.00	0.00	0.06	0.00	3.48	12.31
1949	1.70	2.28	4.47	0.31	0.40	0.00	0.00	0.00	0.00	0.00	1.65	3.14	12.70
1950	4.01	3.52	2.39	1.70	0.00	0.00	0.00	0.00	0.00	1.71	3.27	2.28	16.41
1951	1.91	1.87	0.59	1.58	0.28	0.00	0.00	0.00	0.02	0.81	2.96	7.06	13.51
1952	7.16	0.81	6.65	1.57	0.00	0.00	0.00	0.00	0.00	0.00	2.65	5.98	27.02
1953	1.73	0.00	1.38	2.05	0.25	0.00	0.00	0.00	0.00	0.00	2.29	0.08	14.04
1954	5.16	2.85	4.50	0.74	0.08	0.00	0.00	0.00	0.00	0.00	2.44	1.83	15.70
1955	4.10	2.37	0.15	1.89	1.44	0.00	0.00	0.09	0.00	0.00	1.22	7.88	14.31
1956	5.35	0.94	0.08	2.00	1.39	0.00	0.00	0.00	0.01	1.21	0.00	0.43	18.87
1957	4.38	2.68	0.80	2.77	1.99	0.18	0.00	0.00	0.00	0.82	0.16	5.29	14.44
1958	4.76	7.48	6.56	7.21	0.27	0.00	0.00	0.13	1.02	0.18	0.02	0.28	33.70
1959	2.39	4.84	0.01	0.26	0.02	0.00	0.00	0.00	0.63	0.00	0.00	0.38	8.63

Monthly Precipitation at the Atascadero Mutual Water Company Station 34

(inches)

Source: Atascadero Mutual Water Company

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	WY Total
1960	2.57	5.51	1.31	1.31	0.05	0.00	0.00	0.00	0.00	0.31	4.17	1.57	11.13
1961	1.66	0.56	1.03	0.30	0.80	0.00	0.00	0.00	0.00	0.00	2.43	2.05	10.40
1962	2.14	11.18	2.10	0.00	0.00	0.00	0.00	0.00	0.00	0.74	0.00	1.71	19.90
1963	2.10	5.28	3.68	4.21	0.29	0.06	0.00	0.03	0.16	0.95	3.04	0.05	18.26
1964	2.64	0.14	1.48	1.18	0.51	0.13	0.00	0.00	0.13	0.94	2.95	3.76	10.25
1965	2.15	0.68	2.17	3.17	0.00	0.00	0.00	0.00	0.00	0.00	6.92	3.74	15.82
1966	1.59	0.58	0.18	0.09	0.00	0.05	0.00	0.00	0.13	0.00	3.06	9.27	13.28
1967	5.90	0.61	5.43	5.71	0.05	0.10	0.00	0.00	0.76	0.10	2.09	2.50	30.89
1968	1.83	0.99	2.35	1.17	0.00	0.00	0.00	0.00	0.00	2.25	1.12	3.34	11.03
1969	16.62	12.16	0.76	1.63	0.18	0.00	0.30	0.00	0.00	0.13	0.46	0.82	38.36
1970	5.97	1.11	4.07	0.11	0.00	0.00	0.00	0.00	0.00	0.00	4.59	5.69	12.67
1971	1.63	0.22	1.10	0.94	0.30	0.00	0.00	0.00	0.07	0.27	0.81	4.46	14.54
1972	0.80	0.30	0.00	0.44	0.00	0.04	0.00	0.00	0.03	1.30	4.21	1.35	7.15
1973	6.20	7.17	2.45	0.00	0.00	0.00	0.00	0.00	0.00	0.80	3.75	2.34	22.68
1974	6.20	0.08	5.28	1.25	0.00	0.00	0.00	0.00	0.00	0.86	0.47	3.19	19.70
1975	0.09	5.00	4.39	1.58	0.00	0.00	0.00	0.00	0.00	1.15	0.00	0.10	15.58
1976	0.00	2.87	1.59	0.85	0.11	0.00	0.00	1.19	2.67	0.39	1.56	1.87	10.53
1977	1.71	0.16	1.37	0.00	1.99	0.00	0.00	0.00	0.00	0.16	0.33	7.57	9.05
1978	7.92	7.79	6.78	3.21	0.02	0.00	0.00	0.00	1.06	0.00	2.08	1.22	34.84
1979	4.48	4.73	3.91	0.11	0.00	0.00	0.00	0.00	0.15	0.68	0.89	3.37	16.68
1980	6.41	11.55	3.05	1.00	0.73	0.00	0.16	0.00	0.00	0.11	0.01	0.74	27.84
1981	4.07	1.57	6.64	0.93	0.02	0.00	0.00	0.00	0.00	1.20	1.21	1.50	14.09
1982	4.15	1.15	5.93	4.91	0.00	0.12	0.00	0.00	1.36	1.61	5.13	3.79	21.53
1983	9.21	5.72	8.70	3.11	0.21	0.00	0.00	0.80	1.35	0.47	3.61	5.26	39.63
1984	0.20	0.36	1.03	0.64	0.00	0.00	0.00	0.00	0.00	1.03	3.58	3.03	11.57
1985	0.85	1.69	2.77	0.15	0.00	0.00	0.00	0.00	0.00	0.57	3.37	1.12	13.10
1986	2.13	10.07	6.59	0.00	0.00	0.00	0.00	0.00	0.73	0.00	0.24	0.95	24.58
1987	1.80	2.44	3.10	0.00	0.00	0.00	0.00	0.00	0.00	1.75	2.71	3.67	8.53
1988	3.01	2.60	1.50	2.20	0.00	0.15	0.00	0.00	0.00	0.00	1.13	5.22	17.59
1989	1.57	0.87	1.26	0.49	0.20	0.00	0.00	0.00	1.55	1.09	0.50	0.00	12.29
1990	2.69	2.85	0.45	0.26	0.80	0.00	0.00	0.00	0.70	0.00	0.25	0.40	9.34
1991	0.97	4.09	11.10	0.20	0.00	0.00	0.00	0.05	0.10	0.85	0.25	4.30	17.16
1992	1.98	10.47	2.75	0.00	0.00	0.05	0.00	0.00	0.00	2.35	0.00	5.38	20.65
1993	9.51	7.65	3.39	0.15	0.00	0.25	0.00	0.00	0.15	0.81	2.07	2.09	28.83
1994	1.99	0.65	0.20	0.31	0.00	0.00	0.00	0.00	1.17	0.90	0.60	0.10	9.29
1995	13.98	0.25	13.10	0.07	0.75	0.23	0.00	0.00	0.00	0.00	0.20	2.67	29.98
1996	3.40	9.32	2.70	0.75	0.10	0.00	0.00	0.00	0.00	2.54	2.78	7.67	19.14
1997	9.60	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	3.99	4.27	22.69
1998	5.50	11.49	2.25	2.82	2.77	0.00	0.00	0.00	0.17	0.25	1.29	0.88	33.31
1999	3.07	2.02	3.25	1.25	0.00	0.00	0.00	0.00	0.28	0.00	0.72	0.10	12.29
2000	3.91	7.99	1.73	2.03	0.30	0.10	0.00	0.00	0.10	2.30	0.10	0.30	16.98
2001	5.03	5.60	4.15	1.55	0.00	0.00	0.00	0.00	0.00	0.33	2.70	2.42	19.03
2002	0.35	0.30	1.27	0.33	0.18	0.00	0.00	0.00	0.07	0.00	1.88	4.38	7.95
2003	0.13	1.30	1.10	1.00	0.83	0.00	0.07	0.00	0.00	0.00	0.58	1.72	10.69
2004	1.00	4.97	0.37	0.00	0.00	0.00	0.00	0.00	0.00	5.89	2.32	9.38	8.64

Monthly Precipitation at the Atascadero Mutual Water Company Station 34
(inches)

Source: Atascadero Mutual Water Company

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	WY Total
2005	6.07	5.71	3.12	1.09	1.04	0.00	0.00	0.07	0.00	0.07	0.35	1.78	34.69
2006	8.21	1.64	5.39	3.76	1.20	0.00	0.00	0.00	0.00	0.36	0.36	1.97	22.40
2007	0.91	3.14	0.26	0.60	0.00	0.00	0.00	0.26	0.00	0.43	0.03	3.21	7.86
2008	9.20	2.68	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.26	1.41	1.72	15.56
2009	0.85	4.15	1.84	0.60	0.12	0.00	0.00	0.00	0.04	5.87	0.08	4.71	10.99
2010	8.34	3.70	0.70	3.00	0.11	0.00	0.00	0.00	0.00	1.45	2.28	8.86	26.51
2011	2.65	3.63	5.75	0.08	0.82	0.38	0.00	0.00	0.01	1.21	2.14	0.16	25.91
2012	3.09	0.27	2.20	2.60	0.07	0.00	0.00	0.00	0.00	0.61	1.25	4.24	11.74
2013	1.12	0.49	0.47	0.00	0.23	0.00	0.00	0.00	0.00	0.35	0.15	0.54	8.41
2014	0.00	3.48	3.14	1.55	0.00	0.00	0.02	0.00	0.00	0.00	1.12	4.93	9.23
2015	0.57	3.04	0.21	0.67	0.02	0.01	1.28	0.00	0.06	0.16	1.41	1.34	11.91
2016	5.40	1.31	4.30	0.24	0.00	0.00	0.00	0.00	0.00	2.36	2.19	2.02	14.16
2017	12.74	7.51	1.32	1.38	0.28	0.00	0.00	0.00	0.14	0.07	0.11	0.11	29.94
2018	2.62	0.29	8.53	0.30	0.00	0.00	0.00	0.00	0.00	0.16	3.58	1.24	12.03
2019	5.82	9.12	3.75	0.07	0.98	0.00	0.00	0.00	0.00	0.00	1.55	4.96	24.72
2020	0.73	0.05	3.92	1.95	0.29	0.00	0.00	0.05	0.00	0.00	0.36	1.10	13.50
2021	6.10	0.04	1.10	0.02	0.00	0.00	0.01	0.00	0.00	2.01	0.15	8.34	8.73
2022	0.12	0.00	0.94	0.50	0.00	0.00	0.00	0.00	0.63	0.00	1.70	7.67	12.69
2023	15.12	4.19	8.13	0.00	0.14	0.00	0.00	0.09	0.00	0	1.15	4.62	37.04
2024	3.47	7.48	3.71	2.23	0.13	0.00	0.00	0.00	0.06				22.85
												1916-2024 WY Average:	17.61
												1968-2024 WY Average:	18.08

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Attachment E. Monitoring Well Reference Point Technical Memorandum

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TECHNICAL MEMORANDUM

Discovery and Resolution of RMS Groundwater Level Monitoring Network Wells Reference Point Elevations Discrepancies

To:	Blaine Reely, San Luis Obispo County Groundwater Sustainability Director
From:	Nate Page, GSI Water Solutions, Inc.
Date:	February 16, 2024

1. Introduction

It was discovered during the San Luis Obispo Flood Control and Water Conservation District (SLOFCWCD) groundwater monitoring program spring 2023 groundwater level monitoring event that groundwater elevation data exported from the SLOFCWCD water level database was being, and had previously been, misinterpreted by interested parties in the Atascadero Groundwater Basin (Basin). Beginning with preparation of the Groundwater Sustainability Plan (GSP), depth to water (DTW) data[1] received from SLOFCWCD database was interpreted to be reported from the reference point elevation (RPE) of each well. This understanding has been carried forward consistently through all subsequent annual reporting. However, in spring 2023 it was discovered that the DTW data is actually presented as a calculated depth to water from the ground surface elevation (GSE). The ramifications of this discovery and the resolution of the issue are discussed below.

2. Discussion

Five of the 24 representative monitoring site (RMS) wells in the Basin have RPEs that are not equivalent to their respective GSEs (see Table 1). The SLOFCWCD includes a field labeled as "Ft Above", indicating the amount of 'stickup', or distance between the GSE and RPE at each well location. Because the DTWs reported in the SLOFCWCD database were misinterpreted as measured from the RPEs of each well, the resulting groundwater elevation (GWE) calculations are off from their true value by an amount equivalent to the distance reported in the "Ft Above" field for these 5 RMS wells. The Measurable Objectives (MOs) and Minimum Thresholds (MTs) established in the GSP for these 5 RMS wells are subject to this same "Ft Above" issue (*Ft Above Issue*).

All GWEs presented in the Atascadero Basin Water Year 2023 Annual Report have been corrected for the *Ft Above Issue* to represent true groundwater elevations, including both current water year (2023) and historical values. This correction involved moving GWEs downward in 5 RMS wells. GWEs did not have to be moved in the other 19 wells that have RPEs equal to their GSEs. The MOs and MTs for the 5 RMS wells have also been corrected using the same approach. The resolution to the *Ft Above Issue* is essentially clerical. Because both the GWEs and the MOs/MTs have been moved by the same amount in each well there is no change in status, regarding sustainable management criteria for each well. The RPE, GSE, FT Above, and amount of change applied to GWEs and MOs/MTs for each well is shown in the table below.

[1] The SLOFCWCD database uses the field description "Depth (Distance to Water)"

RMS Well ID	RPE (feet NAVD 88)	GSE (feet NAVD 88)	"Ft Above" (feet)	Change applied to GWEs and MOs/MTs (feet)
27S/12E-09N02	721	721	0	0
27S/12E-21XX6	754.18	754.18	0	0
27S/12E-29H03	753.01	753.01	0	0
28S/12E-04J02	795.83	795.83	0	0
28S/12E-04J04	802.37	802.37	0	0
28S/12E-05AX2	796.21	796.21	0	0
28S/12E-10R04	820	820	0	0
28S/12E-14K04	835	835	0	0
28S/12E-25B03	867.8	866.25	1.55	-1.55
29S/13E-19H04	1005	1003	2.00	-2.00
E11W-26B	1003	1003	0	0
27S/12E-17B02	828.31	828.31	0	0
27S/12E-17E01	842.4	842.4	0	0
27S/12E-20A02	776	776	0	0
27S/12E-20R01	771	771	0	0
27S/12E-21XX5	752.46	752.46	0	0
27S/12E-22M01	850.5	850	0.50	-0.50
27S/12E-33F01	880	879.5	0.50	-0.50
27S/12E-33G01	892	891	1.00	-1.00
28S/12E-04J05	803.13	803.13	0	0
28S/12E-04J06	800.51	800.51	0	0
28S/12E-10A03	808.29	808.29	0	0
28S/12E-11K02	882	882	0	0
28S/13E-31F02	884.3	884.3	0	0

Notes

NAVD 88 = North American Vertical Datum of 1988.

3. Summary

It was discovered in spring 2023 that the DTW data reported in the SLOFCWCD database is presented as a calculated depth to water from the ground surface elevation (GSE) rather than as measured from the RPE of each well, as was previously understood. This misunderstanding has resulted in reporting of GWEs that are off from their true value by an amount equivalent to the distance reported in the "Ft Above" field for each well. This same misunderstanding also affected the setting of MOs and MTs in the GSP. However, all GWEs presented in the Atascadero Basin Water Year 2023 Annual Report have been corrected for the *Ft Above Issue* to represent true groundwater elevations, including both current water year (2023) and historical values. The MOs and MTs for each well have been corrected using the same approach. The resolution to the *Ft Above Issue* is essentially clerical. Because both the GWEs and the MOs/MTs have been moved by the same amount in each well there is no change in status, regarding sustainable management criteria for each well.

Attachment F. Monitoring Network Inventory

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Aquifer	Local Well Name	State Well Number	Well Depth	Ground Surface Elevation	Reference Point Elevation	Screen Interval Range	Spring 2024 Water Surface Elevation	Fall 2024 Water Surface Elevation	Proposed MT	Proposed MO	Interim Milestones				Comments
			(ft)	(ft)	(ft)	(ft btoc)	ft msl	ft msl	(ft)	(ft)	2027	2032	2037	2042	
Alluvial Aquifer (Qa)	27S/12E-09M02	27S12E09N002M	85	721	721	44-85	NM	NM	658	677	663	668	672	677	
	27S/12E-21XX6		61	754.18	754.18	31-51			725	731	727	728	730	731	
	27S/12E-29H03	27S12E29H003M	65		753	35-55	737.51	731.91	709	724	713	717	720	724	
	28S/12E-04J04	28S12E04J004M	70	802.37	802.4	30-70	790.47	767.557	729	761	737	745	753	761	
	28S/12E-05AX2		60	796.21	796.2	25-55			774	778	775	776	777	778	
	28S/12E-04J02	28S12E04J002M	86	801.99	795.8	21-86	778.53	757.73	742	764	748	753	759	764	
	28S/12E-10R04	28S12E10R004M	75	825.02	820	46-75	801.2	796.9	770	787	774	779	783	787	
	28S/12E-14K04	28S12E14K004M	105	838.78	835	50-100	812.1	810.9	785	801	789	793	797	801	
	28S/12E-25B03	28S12E25B003M	120	866.78	867.8	100-120	853	848.7	832	844	835	838	841	844	
	29S/13E-19H04	29S13E19H004M	57	1002.5	1005	29-49	998.8	990.63	979	989	982	984	987	989	
Paso Robles Formation Aquifer (Qtp)	27S/12E-17B02	27S12E17B002M	400	828.31	828.3	200-360 380-400	680.56	656.11	570	676	597	623	650	676	
	27S/12E-17E01	27S12E17E001M	310	842.4	842.4	190-300	686.65	681	636	716	656	676	696	716	
	27S/12E-20A02	27S12E20A002M	205	779.35	776	105-195	731.5	691.4	698	726	705	712	719	726	
	27S/12E-20R01	27S12E20R001M	230	771	771	110-230	742.1	729.8	673	710	682	692	701	710	
	27S/12E-33G01	27S12E33G001M	460	901.46	892	200-460	767.63	748.45	678	730	691	704	717	730	
	28S/12E-04J06	28S12E04J006M	153	800.51	800.5	93-153	779.61	753.51	709	750	719	730	740	750	
	28S/12E-10A03	28S12E10A003M	500	810.95	808.3	157-500	779.89	708.19	631	712	651	672	692	712	
	28S/12E-11K02	28S12E11K002M	603	820	882	300-600	820.7	815.8	707	736	714	722	729	736	
	28S/13E-31F02	28S13E31F002M	310	878.54	884.3	55-300	871.4	857.7	786	829	797	808	818	829	
	27S/12E-21XX5		360	752.46	752.5	110-140 180-250 300-360			661	699	671	680	690	699	
	27S/12E-33F01	27S12E33F001M	340	882.13	880	140-340	770.6	755.1	689	739	702	714	727	739	Pump installed, new RP
	28S/12E-04J05	28S12E04J005M	360	803.13	803.1	145-190 210-360	790.03	756.13	697	746	709	722	734	746	

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Attachment G. Monitoring Well Hydrographs

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Figure F-1. 27S/12E-09N02

Site Code: 355878N1206914W001 **State Well Number:** 27S12E09N002M **Local Well Name:** 27S/12E-09N02

Site Code: 355878N1206914W001
Local Well Name: 27S/12E-09N02
State Well Number: 27S12E09N002M
Station ID: 50530
WCR Number:
Latitude: 35.58778
Longitude: -120.69138
Station Organization ID:
Station Organization Name:
Well Location Description:
Well Use Type: Other
Well Completion Type: Single Well
Well Depth (feet bgs): 85
Top Perforation (feet bgs): 44
Bottom Perforation (feet bgs): 90
Ground Surface Elevation: 721
Reference Point Elevation: 721
Reference Point Description: Top of casing
Station Comments: Other' Well Use Type selected. Additional Comments are required.

SGMA Water Year Type (HUC: 18060005 - Salinas)
Wet · Above Normal · Below Normal · Dry · Critical

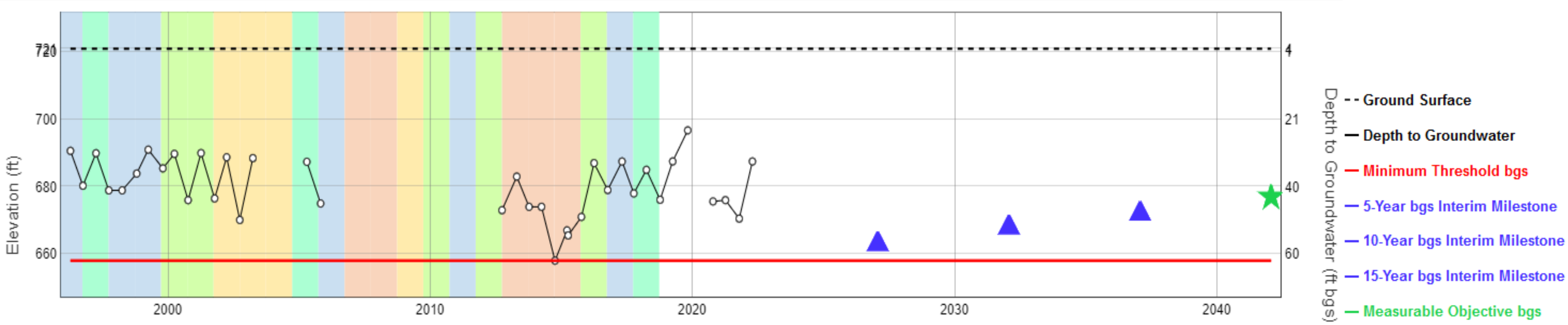


Figure F-2. 27S/12E-21XX6

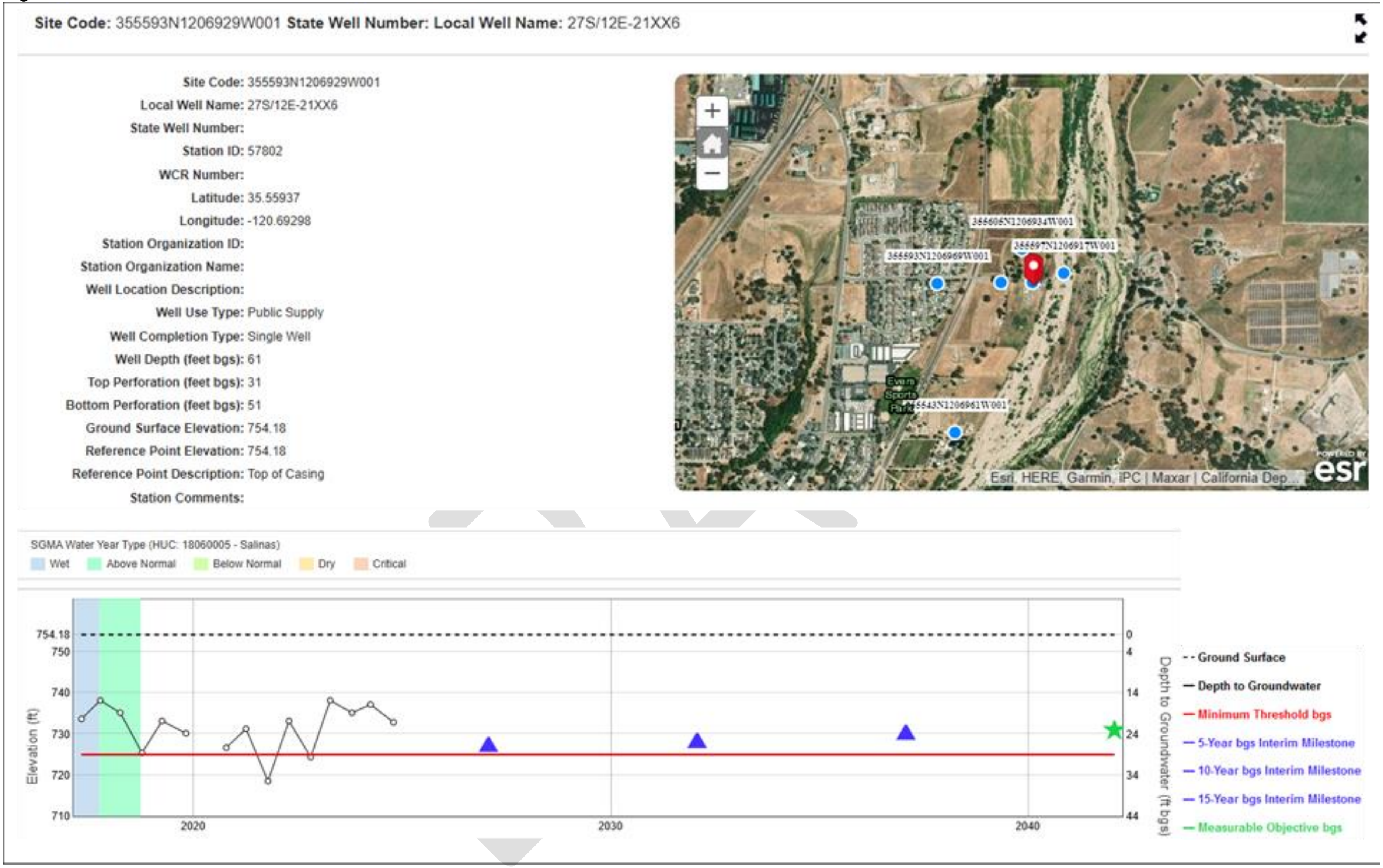


Figure F-3. 27S/12E-29H03

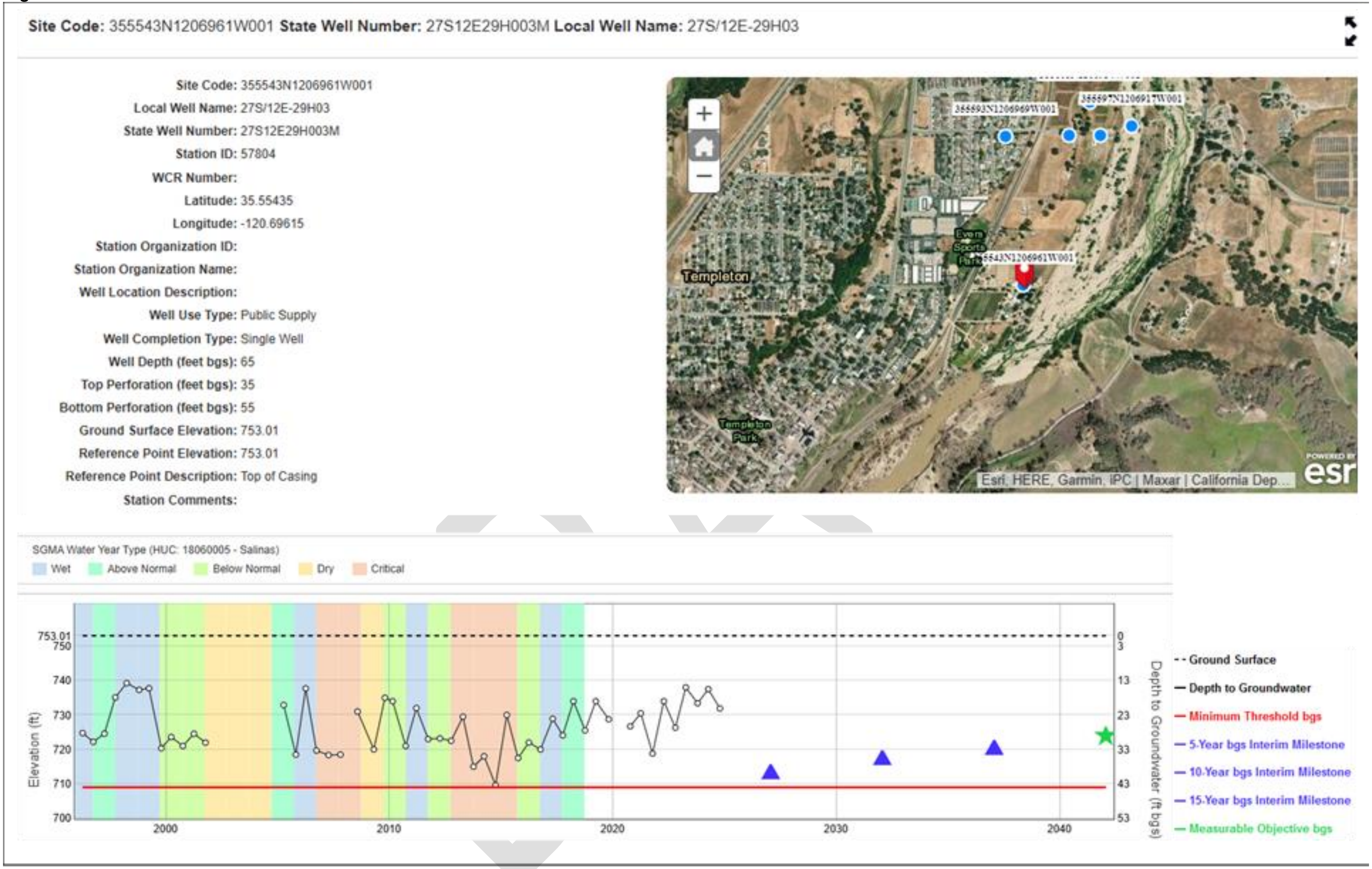


Figure F-4. 28S/12E-04J02

Site Code: 355202N1206761W001 **State Well Number:** 28S12E04J002M **Local Well Name:** 28S/12E-04J02

Site Code:	355202N1206761W001
Local Well Name:	28S/12E-04J02
State Well Number:	28S12E04J002M
Station ID:	57807
WCR Number:	
Latitude:	35.52027
Longitude:	-120.67611
Station Organization ID:	
Station Organization Name:	
Well Location Description:	
Well Use Type:	Public Supply
Well Completion Type:	Single Well
Well Depth (feet bgs):	86
Top Perforation (feet bgs):	21
Bottom Perforation (feet bgs):	86
Ground Surface Elevation:	795.83
Reference Point Elevation:	795.83
Reference Point Description:	Top of Casing
Station Comments:	

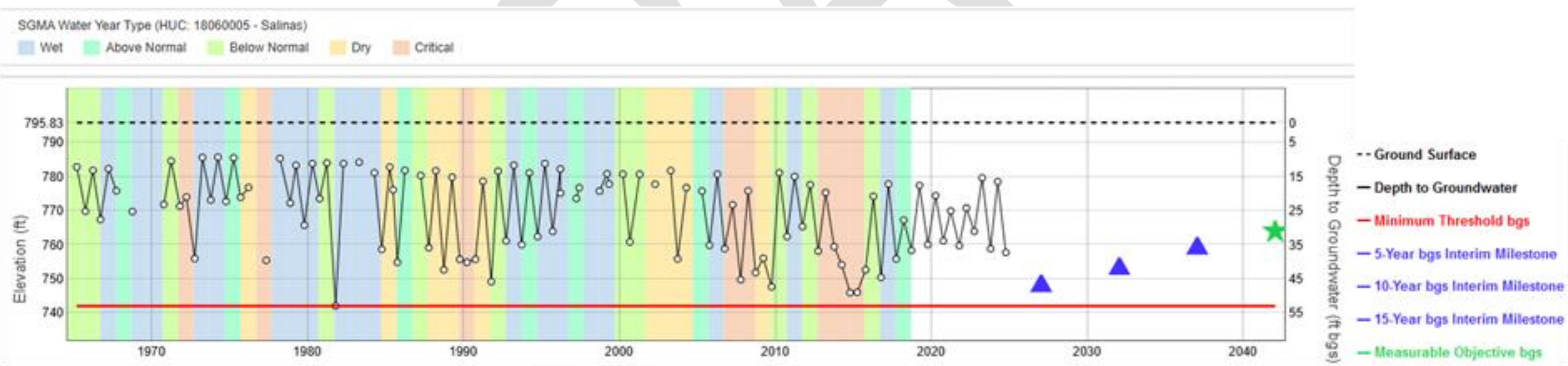


Figure F-5. 28S/12E-04J04

Site Code: 355199N1206749W001 **State Well Number:** 28S12E04J004M **Local Well Name:** 28S/12E-04J04

Site Code: 355199N1206749W001
Local Well Name: 28S/12E-04J04
State Well Number: 28S12E04J004M
Station ID: 57808
WCR Number:
Latitude: 35.52000
Longitude: -120.67499
Station Organization ID:
Station Organization Name:
Well Location Description:
Well Use Type: Observation
Well Completion Type: Single Well
Well Depth (feet bgs): 70
Top Perforation (feet bgs): 30
Bottom Perforation (feet bgs): 70
Ground Surface Elevation: 802.37
Reference Point Elevation: 802.37
Reference Point Description: Top of Casing
Station Comments:

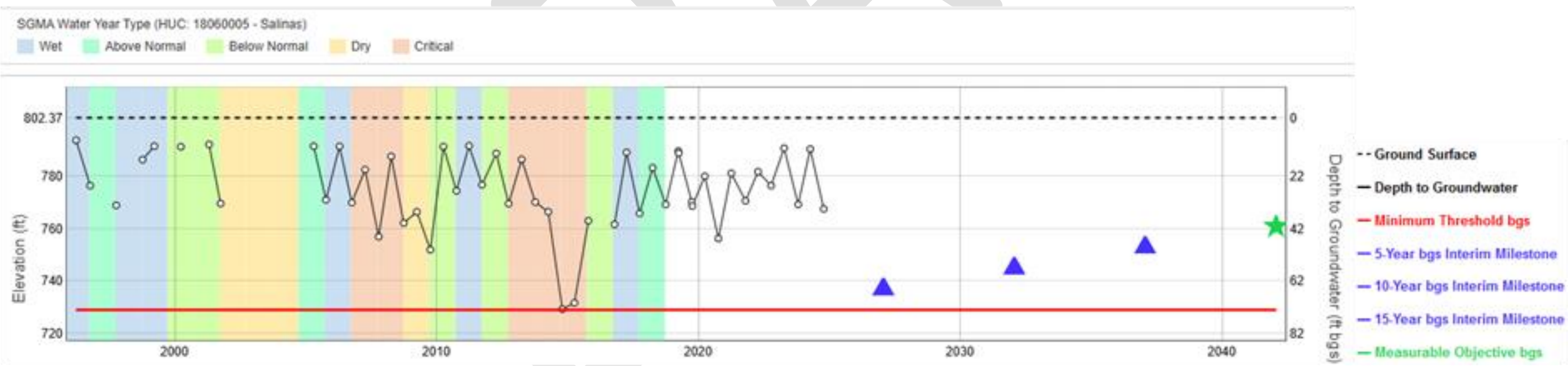


Figure F-6. 28S/12E-05AX2

Site Code: 355269N1206959W001 **State Well Number: Local Well Name:** 28S/12E-05AX2

Site Code: 355269N1206959W001
Local Well Name: 28S/12E-05AX2
State Well Number:
Station ID: 57810
WCR Number:
Latitude: 35.52693
Longitude: -120.69599
Station Organization ID:
Station Organization Name:
Well Location Description:
Well Use Type: Public Supply
Well Completion Type: Single Well
Well Depth (feet bgs): 60
Top Perforation (feet bgs): 25
Bottom Perforation (feet bgs): 55
Ground Surface Elevation: 796.21
Reference Point Elevation: 796.21
Reference Point Description: Top of Casing
Station Comments:

Figure F-7. 28S/12E-10R04

Site Code: 355027N1206605W001 **State Well Number:** 28S12E10R004M **Local Well Name:** 28S/12E-10R04

Site Code: 355027N1206605W001
Local Well Name: 28S/12E-10R04
State Well Number: 28S12E10R004M
Station ID: 57812
WCR Number:
Latitude: 35.50278
Longitude: -120.66051
Station Organization ID:
Station Organization Name:
Well Location Description:
Well Use Type: Public Supply
Well Completion Type: Single Well
Well Depth (feet bgs): 75
Top Perforation (feet bgs): 46
Bottom Perforation (feet bgs): 75
Ground Surface Elevation: 820
Reference Point Elevation: 820
Reference Point Description: Top of Casing
Station Comments:

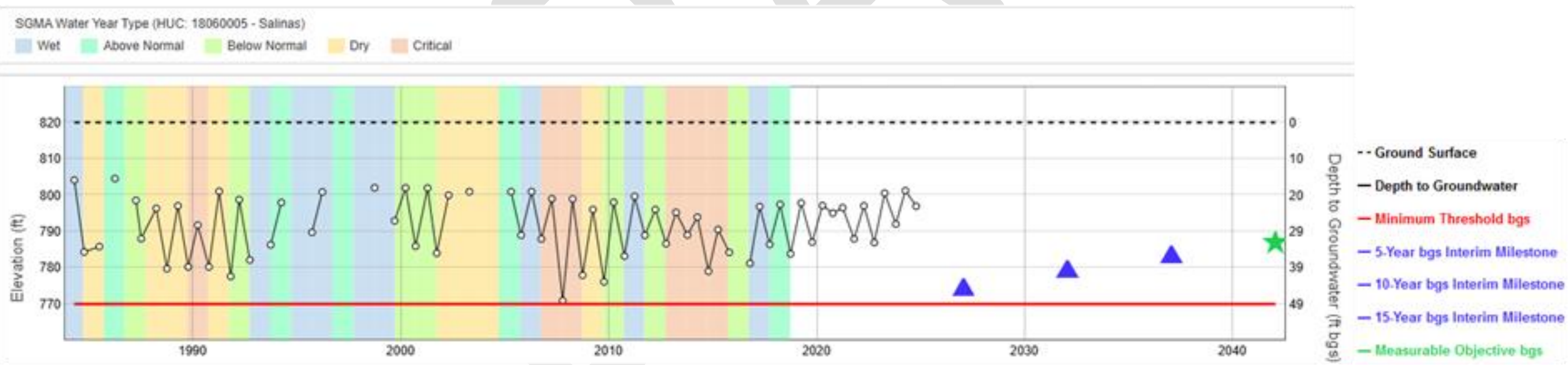


Figure F-8. 28S/12E-14K04

Site Code: 354928N1206484W001 **State Well Number:** 28S12E14K004M **Local Well Name:** 28S/12E-14K04

Site Code: 354928N1206484W001
Local Well Name: 28S/12E-14K04
State Well Number: 28S12E14K004M
Station ID: 57813
WCR Number:
Latitude: 35.49287
Longitude: -120.64843
Station Organization ID:
Station Organization Name:
Well Location Description:
Well Use Type: Public Supply
Well Completion Type: Single Well
Well Depth (feet bgs): 105
Top Perforation (feet bgs): 50
Bottom Perforation (feet bgs): 100
Ground Surface Elevation: 835
Reference Point Elevation: 835
Reference Point Description: Top of Casing
Station Comments:

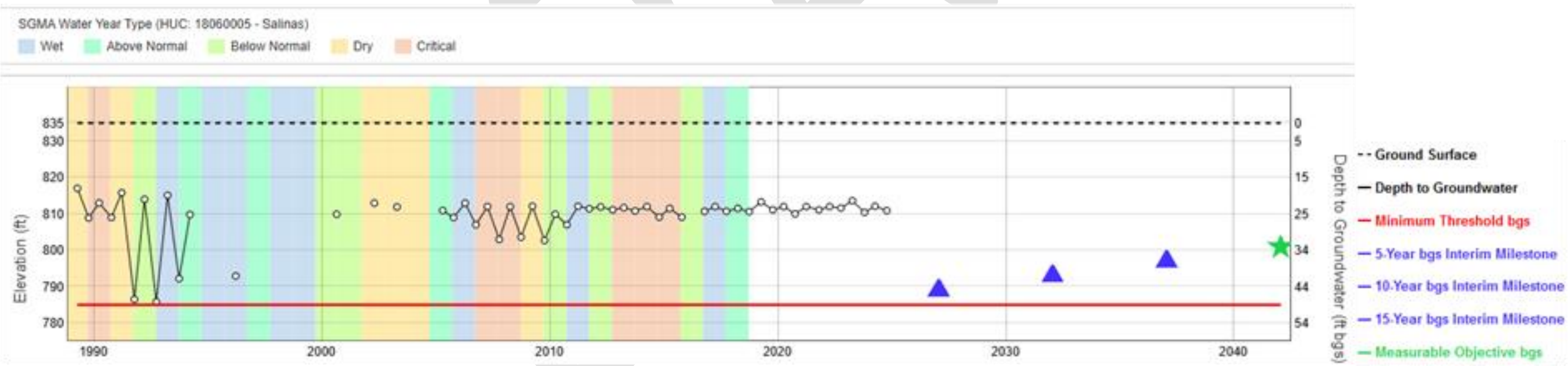


Figure F-9. 28S/12E-25B03

Site Code: 354676N1206305W001 **State Well Number:** 28S12E25B003M **Local Well Name:** 28S/12E-25B03

Site Code: 354676N1206305W001
Local Well Name: 28S/12E-25B03
State Well Number: 28S12E25B003M
Station ID: 57814
WCR Number:
Latitude: 35.46764
Longitude: -120.63056
Station Organization ID:
Station Organization Name:
Well Location Description:
Well Use Type: Public Supply
Well Completion Type: Single Well
Well Depth (feet bgs): 120
Top Perforation (feet bgs): 100
Bottom Perforation (feet bgs): 120
Ground Surface Elevation: 866.25
Reference Point Elevation: 867.8
Reference Point Description: Top of Casing
Station Comments:

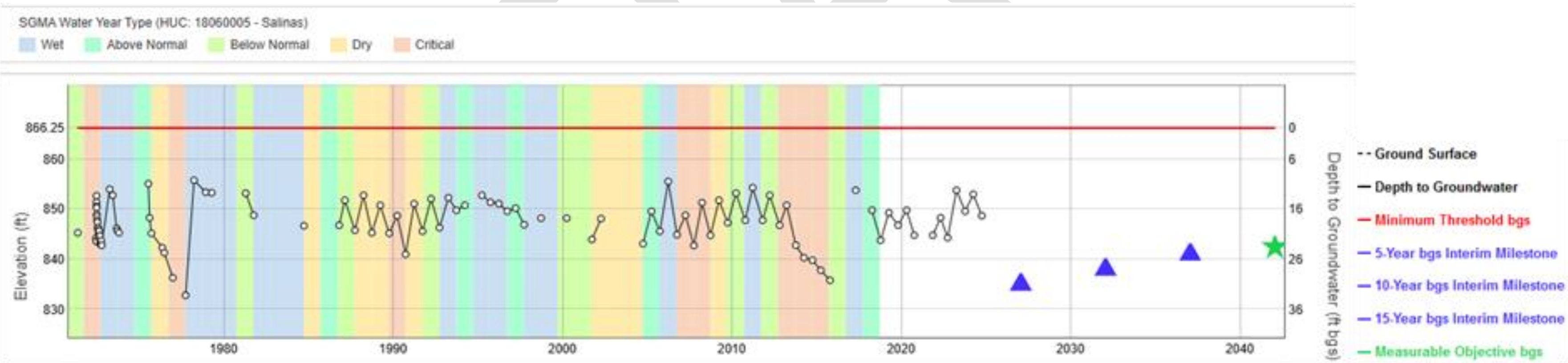


Figure F-10. 29S/13E-19H04

Site Code: 353889N1206123W001 **State Well Number:** 29S13E19H004M **Local Well Name:** 29S/13E-19H04

Site Code: 353889N1206123W001
Local Well Name: 29S/13E-19H04
State Well Number: 29S13E19H004M
Station ID: 50536
WCR Number:
Latitude: 35.38894
Longitude: -120.61232
Station Organization ID:
Station Organization Name:
Well Location Description:
Well Use Type: Other
Well Completion Type: Single Well
Well Depth (feet bgs): 57
Top Perforation (feet bgs): 29
Bottom Perforation (feet bgs): 49
Ground Surface Elevation: 1003
Reference Point Elevation: 1005
Reference Point Description: Top of casing
Station Comments: Other' Well Use Type selected. Additional Comments are required.

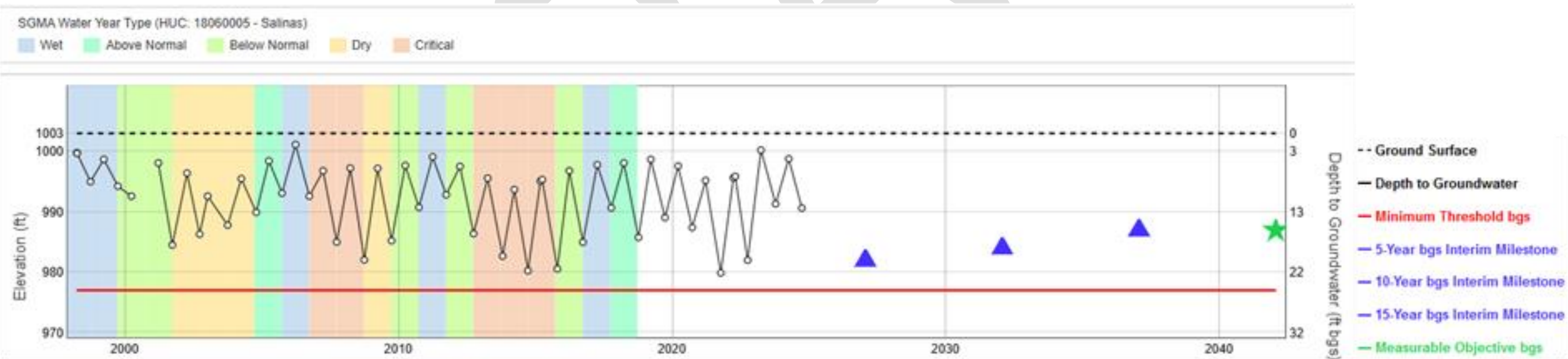


Figure F-11. E11W-26B

Site Code: 354025N1206124W001 **State Well Number:** **Local Well Name:** E11W-26B

Site Code: 354025N1206124W001
Local Well Name: E11W-26B
State Well Number:
Station ID: 57816
WCR Number:
Latitude: 35.40252
Longitude: -120.61242
Station Organization ID:
Station Organization Name:
Well Location Description:
Well Use Type: Observation
Well Completion Type: Single Well
Well Depth (feet bgs): 35
Top Perforation (feet bgs):
Bottom Perforation (feet bgs):
Ground Surface Elevation: 1002.97
Reference Point Elevation: 1003
Reference Point Description: Top of Casing
Station Comments:

SGMA Water Year Type (HUC: 18060005 - Salinas)
Wet | Above Normal | Below Normal | Dry | Critical

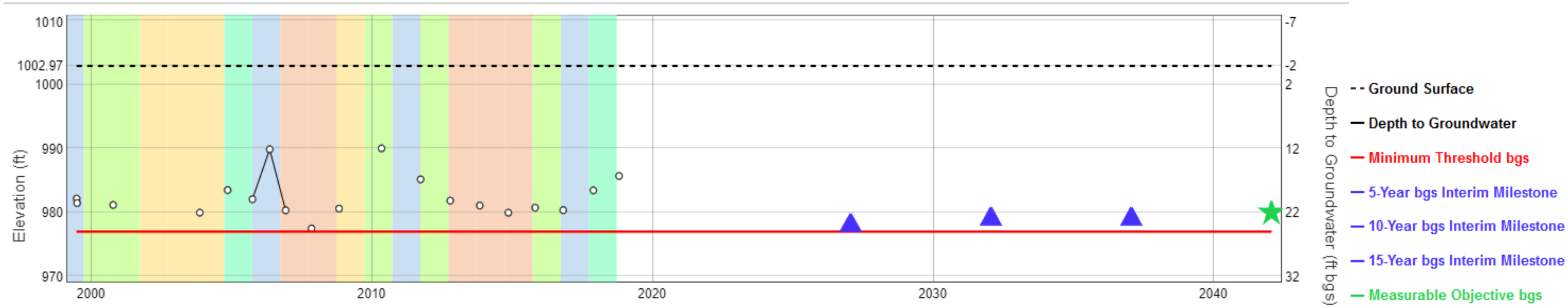


Figure F-12. 27S/12E-17B02

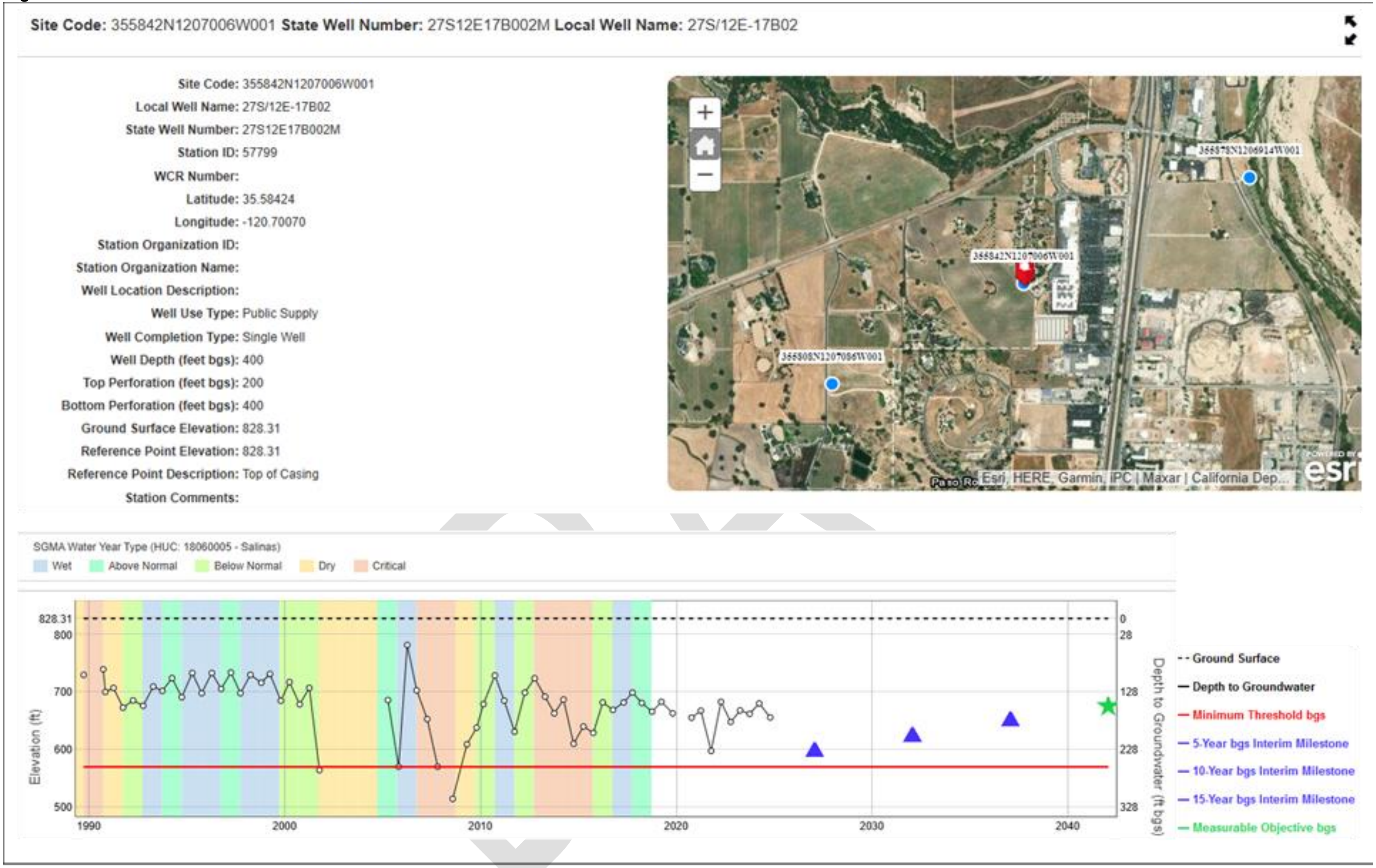


Figure F-13. 27S/12E-17E01

Site Code: 355808N1207086W001 **State Well Number:** 27S12E17E001M **Local Well Name:** 27S/12E-17E01

Site Code: 355808N1207086W001
Local Well Name: 27S/12E-17E01
State Well Number: 27S12E17E001M
Station ID: 50531
WCR Number:
Latitude: 35.58083
Longitude: -120.70861
Station Organization ID:
Station Organization Name:
Well Location Description:
Well Use Type: Other
Well Completion Type: Single Well
Well Depth (feet bgs): 310
Top Perforation (feet bgs): 190
Bottom Perforation (feet bgs): 300
Ground Surface Elevation: 842.4
Reference Point Elevation: 842.4
Reference Point Description: Top of casing
Station Comments: Other' Well Use Type selected. Additional Comments are required.

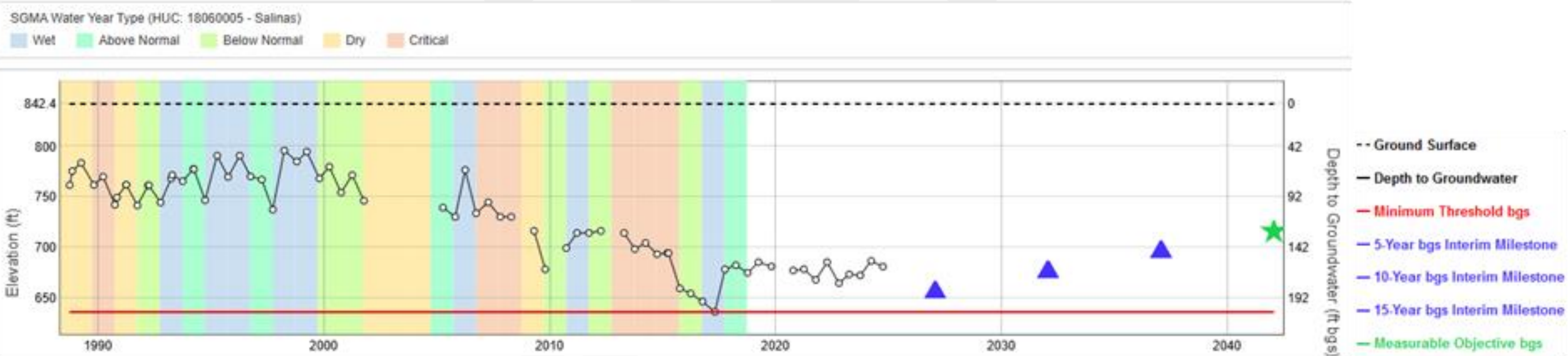


Figure F-14. 27S/12E-20A02

Site Code: 355693N1206994W001 **State Well Number:** 27S12E20A002M **Local Well Name:** 27S/12E-20A02

Site Code: 355693N1206994W001
Local Well Name: 27S/12E-20A02
State Well Number: 27S12E20A002M
Station ID: 57800
WCR Number:
Latitude: 35.56934
Longitude: -120.69940
Station Organization ID:
Station Organization Name:
Well Location Description:
Well Use Type: Public Supply
Well Completion Type: Single Well
Well Depth (feet bgs): 205
Top Perforation (feet bgs): 105
Bottom Perforation (feet bgs): 195
Ground Surface Elevation: 776
Reference Point Elevation: 776
Reference Point Description: Top of Casing
Station Comments:

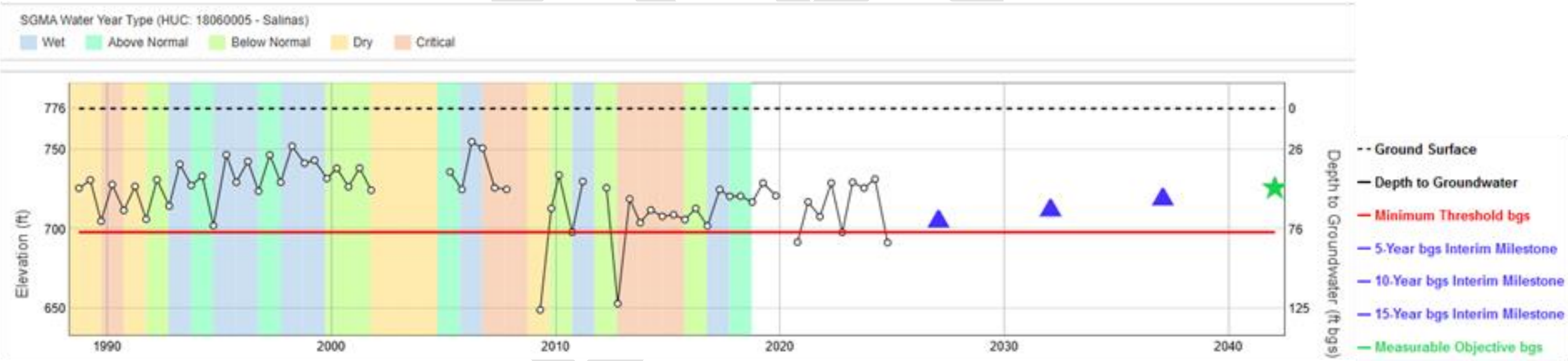


Figure F-15. 27S/12E-20R01

Site Code: 355593N1206969W001 **State Well Number:** 27S12E20R001M **Local Well Name:** 27S/12E-20R01

Site Code: 355593N1206969W001
Local Well Name: 27S/12E-20R01
State Well Number: 27S12E20R001M
Station ID: 50532
WCR Number:
Latitude: 35.55933
Longitude: -120.69690
Station Organization ID:
Station Organization Name:
Well Location Description:
Well Use Type: Other
Well Completion Type: Single Well
Well Depth (feet bgs): 230
Top Perforation (feet bgs): 110
Bottom Perforation (feet bgs): 230
Ground Surface Elevation: 771
Reference Point Elevation: 771
Reference Point Description: Top of casing
Station Comments: Other' Well Use Type selected. Additional Comments are required.

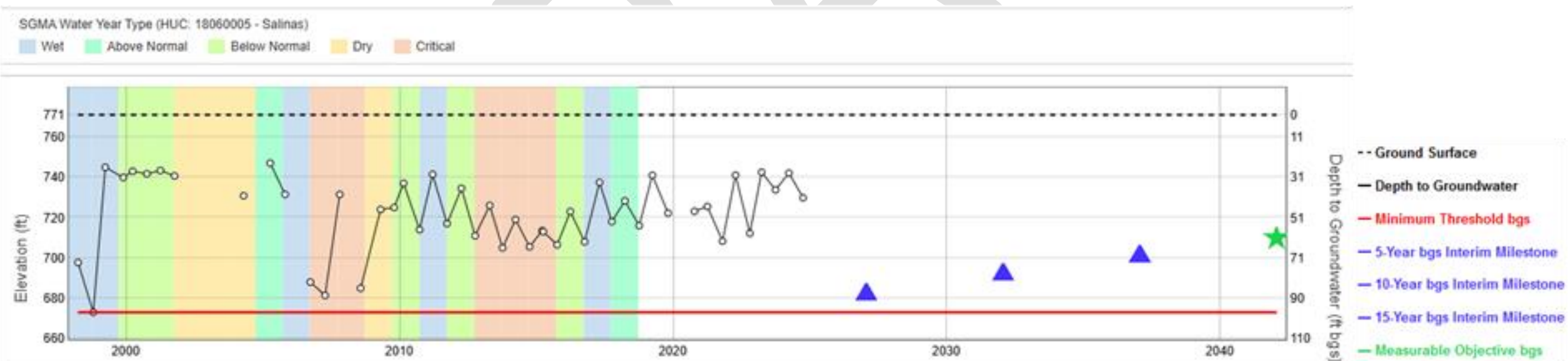


Figure F-16. 27S/12E-21XX5

Site Code: 355593N1206942W001 **State Well Number: Local Well Name:** 27S/12E-21XX5

Site Code: 355593N1206942W001
Local Well Name: 27S/12E-21XX5
State Well Number:
Station ID: 57801
WCR Number:
Latitude: 35.55938
Longitude: -120.69428
Station Organization ID:
Station Organization Name:
Well Location Description:
Well Use Type: Public Supply
Well Completion Type: Single Well
Well Depth (feet bgs): 360
Top Perforation (feet bgs): 110
Bottom Perforation (feet bgs): 360
Ground Surface Elevation: 752.46
Reference Point Elevation: 752.46
Reference Point Description: Top of Casing
Station Comments:

Figure F-17. 27S/12E-22M01

Site Code: 355619N1206741W001 **State Well Number:** 27S12E22M001M **Local Well Name:** 27S/12E-22M01

Site Code: 355619N1206741W001
Local Well Name: 27S/12E-22M01
State Well Number: 27S12E22M001M
Station ID: 57803
WCR Number:
Latitude: 35.56195
Longitude: -120.67414
Station Organization ID:
Station Organization Name:
Well Location Description:
Well Use Type: Irrigation
Well Completion Type: Single Well
Well Depth (feet bgs): 550
Top Perforation (feet bgs):
Bottom Perforation (feet bgs):
Ground Surface Elevation: 850
Reference Point Elevation: 850.5
Reference Point Description: Top of Casing
Station Comments:

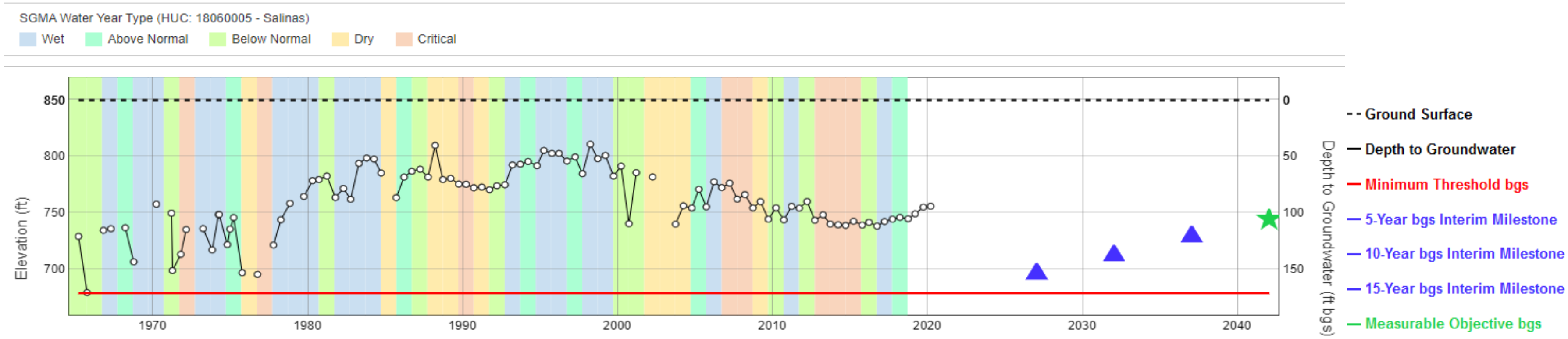


Figure F-18. 27S/12E-33F01

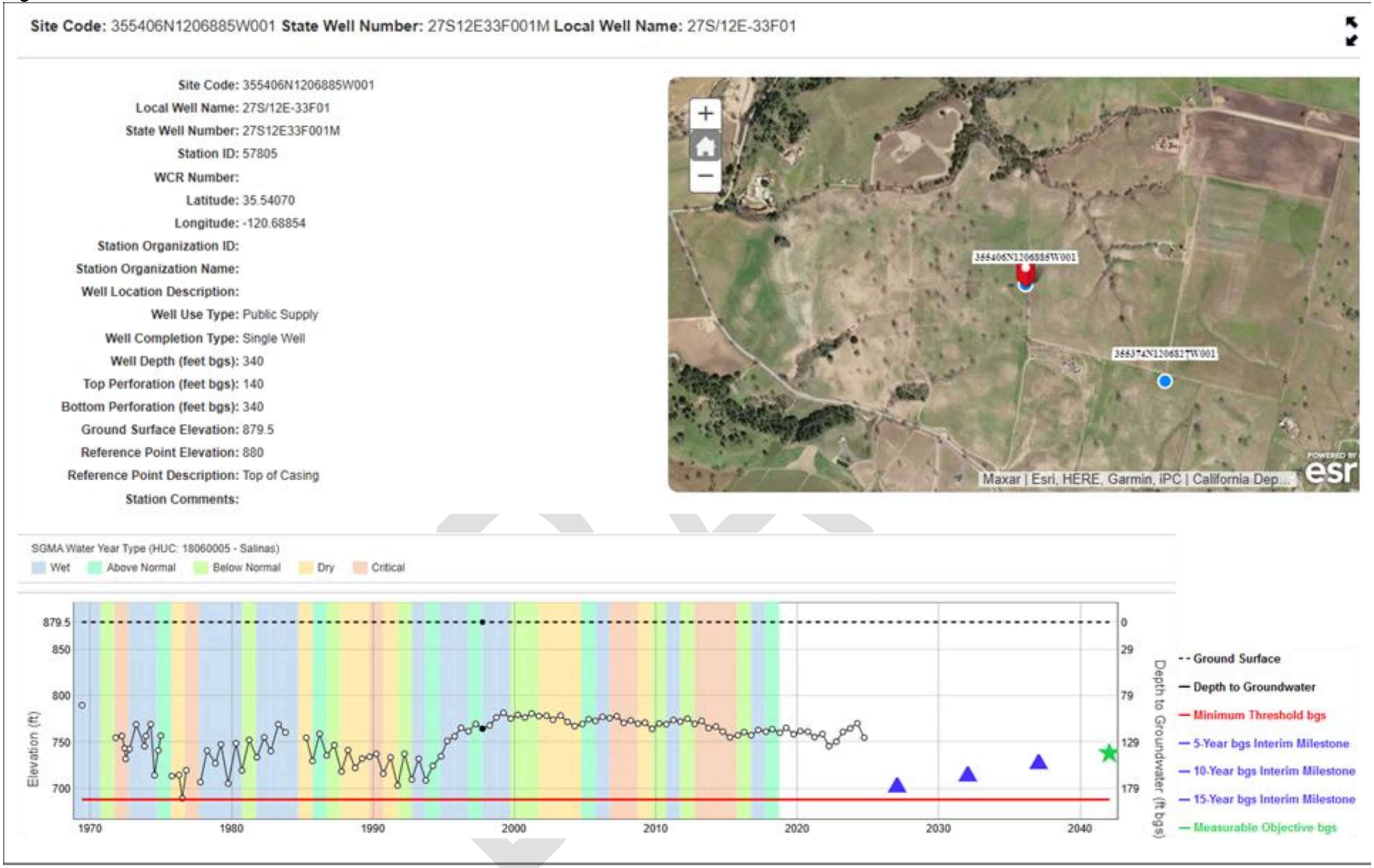


Figure F-19. 27S/12E-33G01

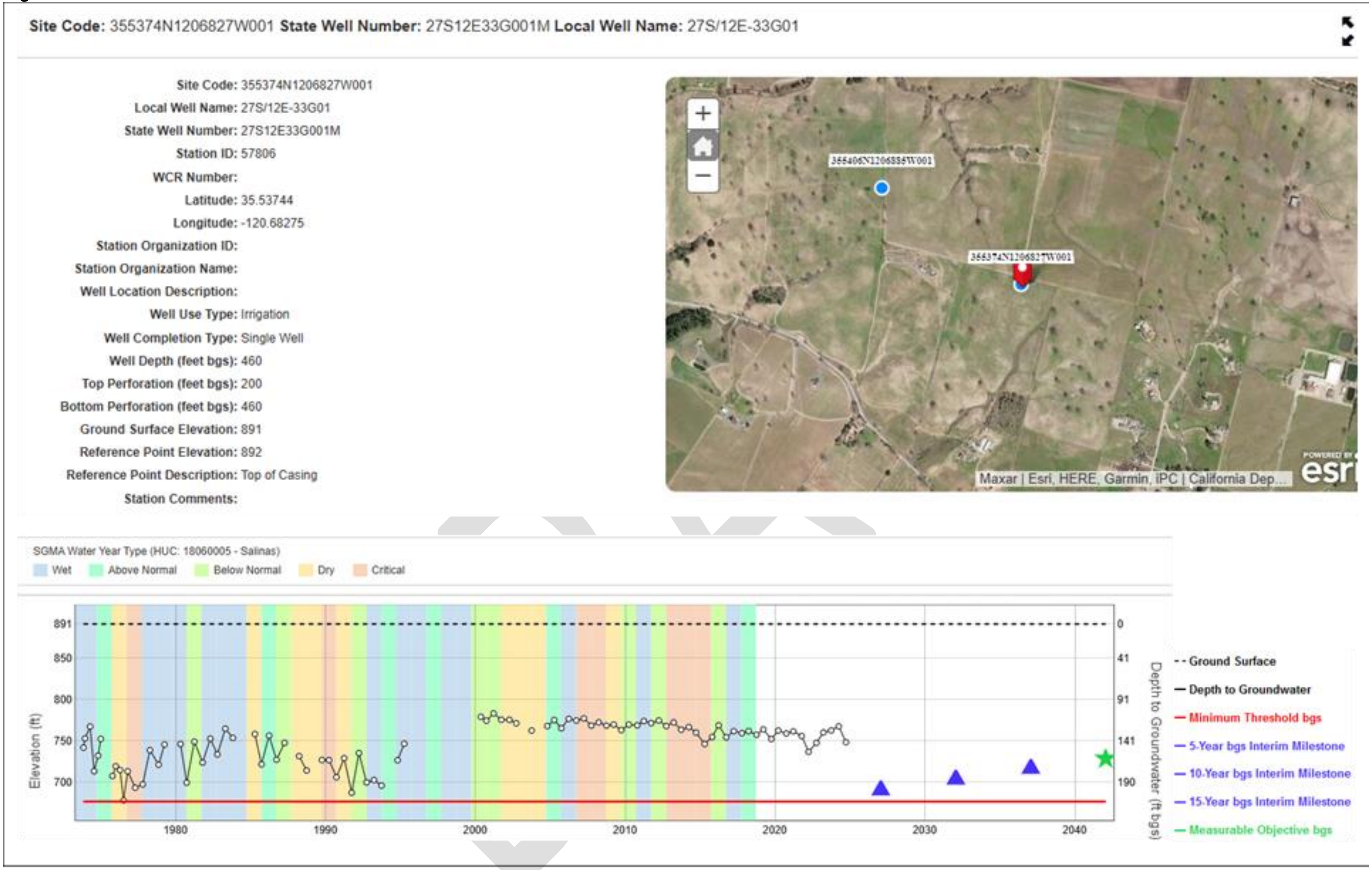


Figure F-20. 28S/12E-04J05

Site Code: 355200N1206760W001 **State Well Number:** 28S12E04J005M **Local Well Name:** 28S/12E-04J05

Site Code: 355200N1206760W001
Local Well Name: 28S/12E-04J05
State Well Number: 28S12E04J005M
Station ID: 57809
WCR Number:
Latitude: 35.52000
Longitude: -120.67610
Station Organization ID:
Station Organization Name:
Well Location Description:
Well Use Type: Public Supply
Well Completion Type: Single Well
Well Depth (feet bgs): 360
Top Perforation (feet bgs): 145
Bottom Perforation (feet bgs): 360
Ground Surface Elevation: 803.13
Reference Point Elevation: 803.13
Reference Point Description: Top of Casing
Station Comments:

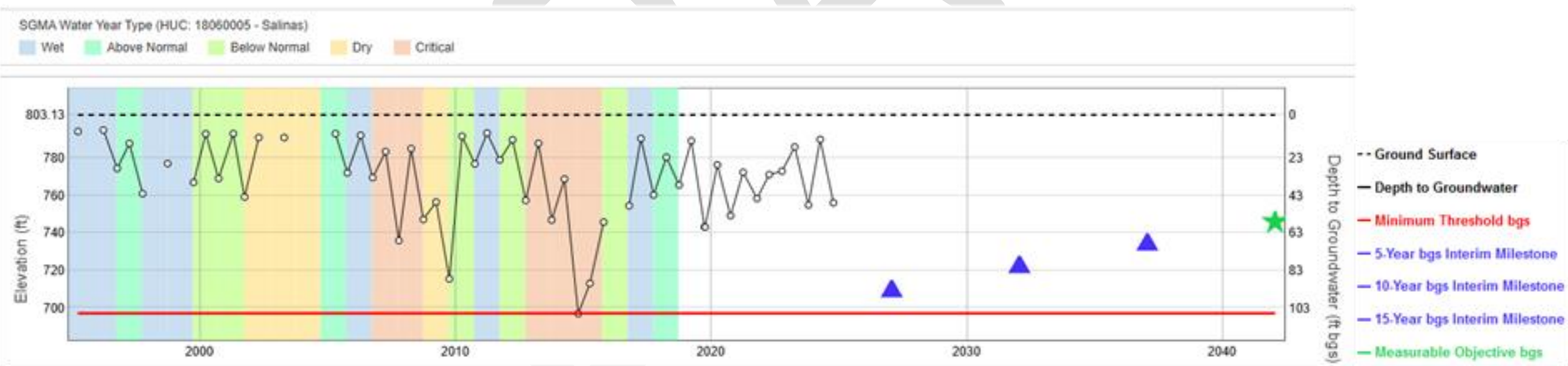


Figure F-21. 28S/12E-04J06

Figure F-22. 28S/12E-10A03

Site Code: 355154N1206672W001 **State Well Number:** 28S12E10A003M **Local Well Name:** 28S/12E-10A03

Site Code: 355154N1206672W001
Local Well Name: 28S/12E-10A03
State Well Number: 28S12E10A003M
Station ID: 57811
WCR Number:
Latitude: 35.51541
Longitude: -120.66728
Station Organization ID:
Station Organization Name:
Well Location Description:
Well Use Type: Unknown
Well Completion Type: Single Well
Well Depth (feet bgs): 500
Top Perforation (feet bgs): 157
Bottom Perforation (feet bgs): 500
Ground Surface Elevation: 808.29
Reference Point Elevation: 808.29
Reference Point Description: Top of Casing
Station Comments:

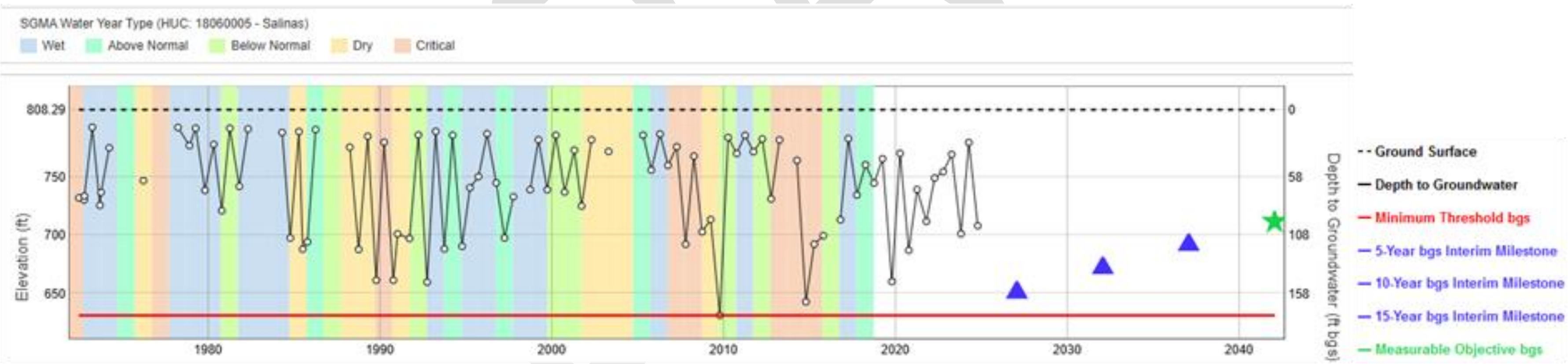


Figure F-23. 28S/12E-11K02

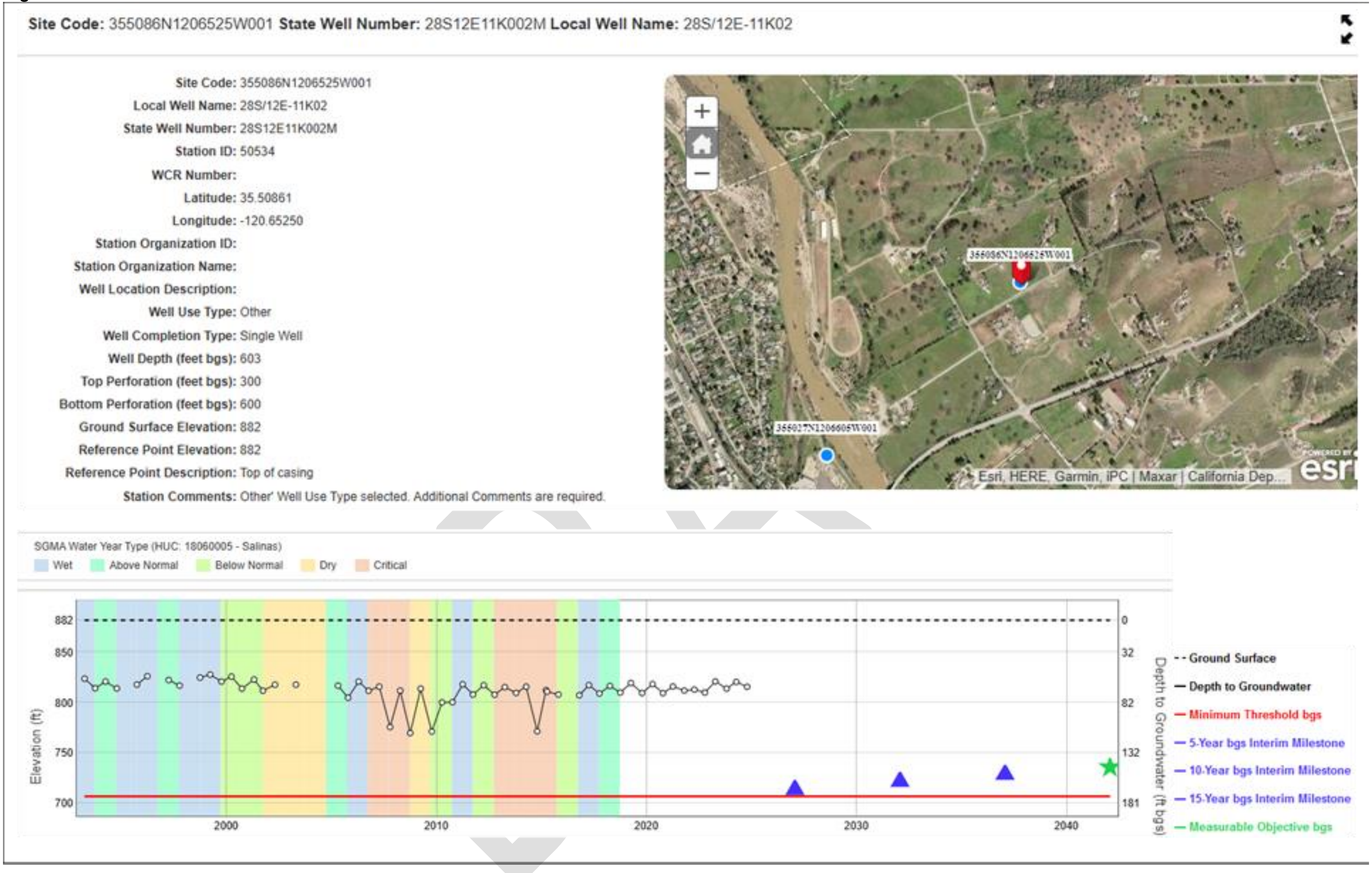
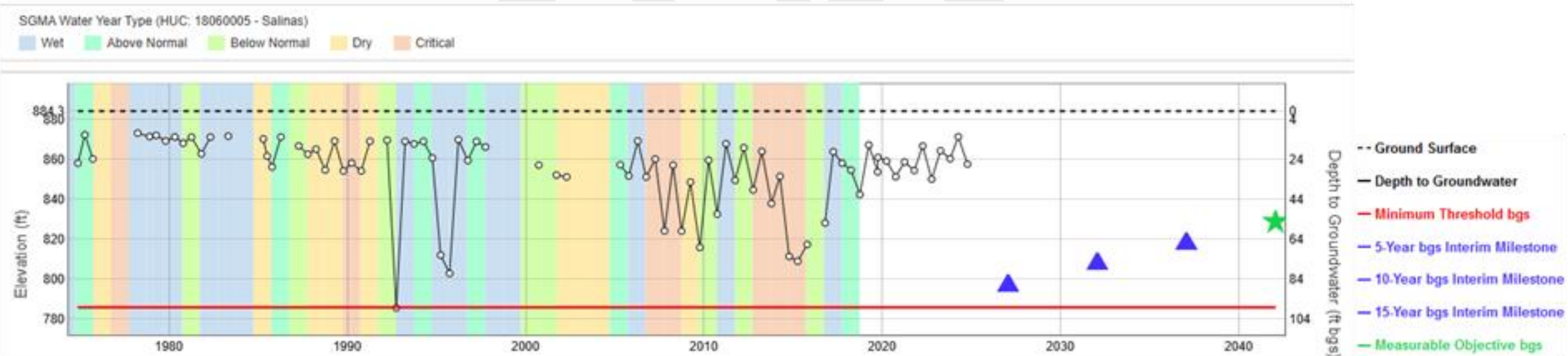


Figure F-24. 28S/13E-31F02

Site Code: 354516N1206176W001 **State Well Number:** 28S13E31F002M **Local Well Name:** 28S/13E-31F02

Site Code: 354516N1206176W001
Local Well Name: 28S/13E-31F02
State Well Number: 28S13E31F002M
Station ID: 57815
WCR Number:
Latitude: 35.45165
Longitude: -120.61765
Station Organization ID:
Station Organization Name:
Well Location Description:
Well Use Type: Public Supply
Well Completion Type: Single Well
Well Depth (feet bgs): 310
Top Perforation (feet bgs): 55
Bottom Perforation (feet bgs): 300
Ground Surface Elevation: 884.3
Reference Point Elevation: 884.3
Reference Point Description: Top of Casing
Station Comments:



Attachment H. Paso Robles Storage Coefficient Derivative

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APPENDIX X

Paso Robles Formation Aquifer Storage Coefficient Derivation and Sensitivity Analysis (GSI, 2020)

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Paso Robles Formation Aquifer Storage Coefficient Derivation and Sensitivity Analysis

The annual changes in groundwater in storage calculated for water years 2017, 2018, and 2019 in the Paso Robles Formation Aquifer presented in this first annual report are based on a fixed storage coefficient (S) value derived from groundwater modeling and groundwater elevation data presented in the Groundwater Sustainability Plan (GSP) for water year 2016. The derivation of S for the Paso Robles Formation Aquifer and a sensitivity analysis are presented below. It should be noted that while the GSP groundwater model utilizes a spatially variable S (both laterally and vertically) the S value derived here and used in this first annual report is a single average value representing the Paso Robles Formation Aquifer within the Subbasin.

1.1 Derivation of the Storage Coefficient Term

Derivation of S was accomplished through a back calculation using the change in groundwater in storage in the Paso Robles Formation Aquifer determined from the GSP groundwater model for water year 2016 and the total volume change represented by a Paso Robles Formation Aquifer groundwater elevation change map prepared for water year 2016. The change in groundwater in storage for water year 2016 in the Paso Robles Formation Aquifer is -59,459 acre-feet (AF) based on the GSP groundwater model.

The Paso Robles Formation Aquifer groundwater elevation change map for water year 2016 was prepared for this annual report by comparing the fall 2015 groundwater elevation contour map to the fall 2016 groundwater elevation contour map. The fall 2015 groundwater elevations were subtracted from the fall 2016 groundwater elevations resulting in a map depicting the changes in groundwater elevations in the Paso Robles Formation Aquifer that occurred during the 2016 water year (not pictured, but similar to Figures 12, 13, and 14 in this first annual report).

The groundwater elevation change map for water year 2016 represents a total volume change within the Paso Robles Formation Aquifer of -807,490 AF. As described in Section 7.2 of this annual report, this total volume change includes the volume displaced by the aquifer material and the volume of groundwater stored within the void space of the aquifer. The portion of void space in the aquifer that can be utilized for groundwater storage is represented by S. The change in groundwater in storage is equivalent to the product of S and the total volume change, as shown here:

$$Change\ of\ Groundwater\ in\ Storage = S \times Total\ Volume\ Change$$

This equation can be re-arranged and solved for S:

$$S = \frac{Change\ of\ Groundwater\ in\ Storage}{Total\ Volume\ Change} = \frac{-59{,}459\ AF}{-807{,}490\ AF} = 0.07$$

Therefore, based on analysis of data for water year 2016, an average S value for the Paso Robles Formation Aquifer in the Paso Robles Subbasin is 0.07.

1.2 Sensitivity Analysis

The annual changes in groundwater in storage in the Paso Robles Formation Aquifer calculated for water years 2017, 2018, and 2019 presented in this first annual report are 60,106, 6,398, and 59,682 AF, respectively. These values, calculated using an S value of 0.07, appear reasonable when compared to historical changes in groundwater in storage (see Figure 15 in this first annual report). While the calculated value of S, presented above, is based on sound science and using the best readily available information, it is necessary to acknowledge that the true value of S in the Paso Robles Formation Aquifer is spatially variable (as indicated in the GSP groundwater model) and ranges in value both above and below the calculated value of 0.07. A sensitivity analysis was performed to demonstrate the range of annual changes in groundwater in storage that result from using a range of S values. Table F1 shows that the annual change in groundwater in storage volumes can range from 27 percent less to 27 percent more than presented in this first annual report based on S values ranging from 0.05 to 0.09. This shows the sensitivity of the S value to determination of annual change in groundwater in storage. However, neither the 27 percent lower nor the 27 percent higher annual change in groundwater in storage volumes seem reasonable when compared to historical changes in groundwater in storage (as shown in Figure 15 in this first annual report). Based on this sensitivity analysis, GSI believes that the calculated value of S (0.07) is reasonable and defensible for the purposes of this first annual report.

Table F 1. Change in Groundwater in Storage Sensitivity Analysis

Water Year	Total Volume of Change (AF)	Change in Groundwater in Storage (AF), based on:								
		S = 0.05		S = 0.06		Calculated S [0.07]	S = 0.08		S = 0.09	
		(AF)	% Diff	(AF)	% Diff	(AF)	(AF)	% Diff	(AF)	% Diff
2017	816,274	43,781	-27%	51,943	-14%	**60,106**	68,269	14%	76,432	27%
2018	86,885	4,660		5,529		**6,398**	7,267		8,135	
2019	810,508	43,471		51,577		**59,682**	67,787		75,892	

notes:

AF = acre-feet, S = storage coefficient, % Diff = percent difference from calculated S