Third Annual Report Water Year 2023
for the
Santa Ynez River Valley Groundwater Basin
Bulletin 118 Basin No. 3-15
Western Management Area
Groundwater Sustainability Agency

WMA

Western Management Area

FINAL
March 13, 2024

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SANTA YNEZ RIVER VALLEY GROUNDWATER BASIN

WESTERN MANAGEMENT AREA

Third Annual Report, Water Year 2023

March 13, 2024

FINAL

APPROVED

FEBRUARY 28, 2024

BY THE COMMITTEE OF THE

SANTA YNEZ RIVER VALLEY GROUNDWATER BASIN

WESTERN MANAGEMENT AREA GROUNDWATER SUSTAINABLITY AGENCY

Santa Ynez River Valley Groundwater Basin

Western Management Area

Groundwater Sustainability Agency Committee

Water Year 2023 (October 2022-September 2023)

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ACKNOWLEDGMENTS

The Western Management Area Groundwater Sustainability Agency Committee and Stetson Engineers Inc. would like to thank and acknowledge the many stakeholders, entities, and private citizens who have contributed their time and expertise to develop this Third Annual Report.

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LIST OF ACRONYMS AND ABBREVIATIONS

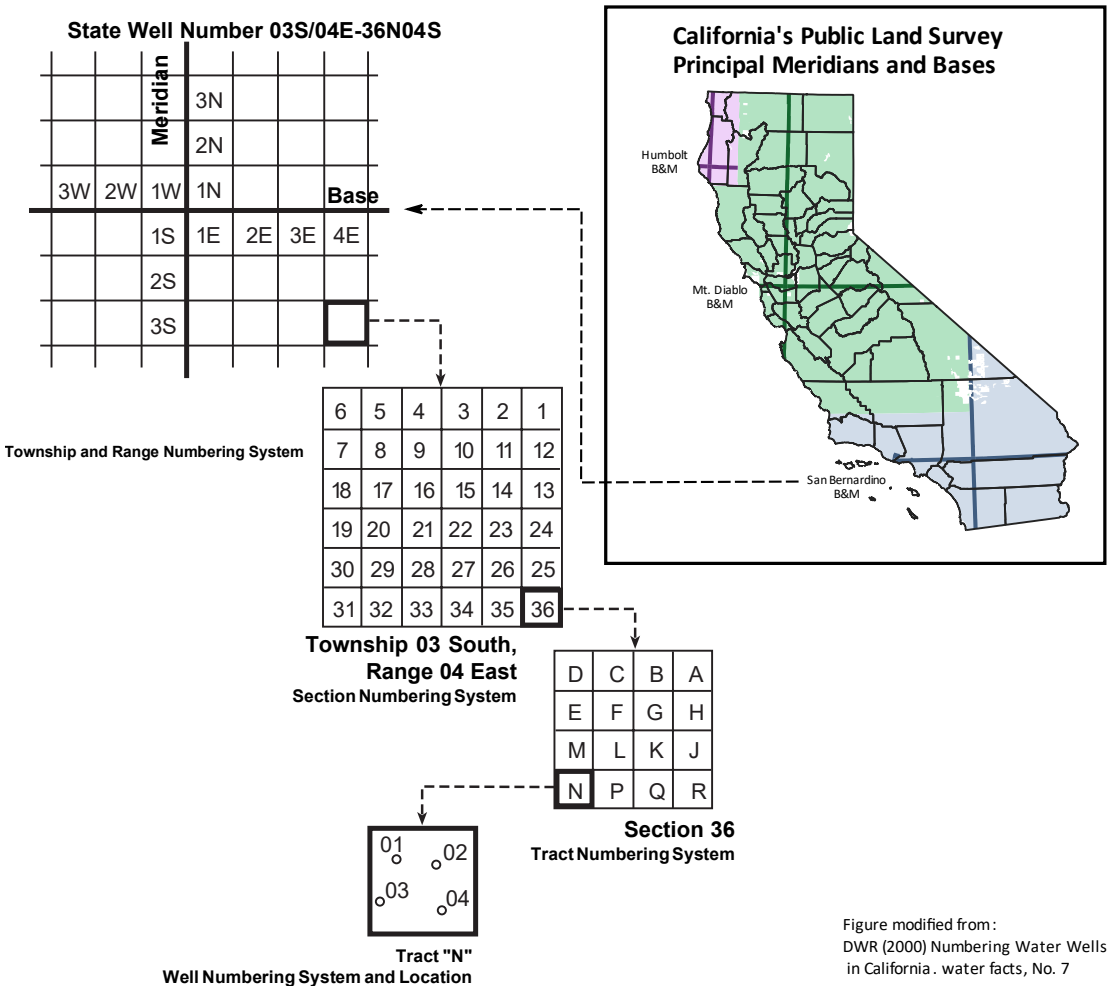
AF	acre-feet
AFY	acre-feet per year
CCR	California Code of Regulations
CCWA	Central Coast Water Authority
CEQA	California Environmental Quality Act
CGPS	Continuous Global Positioning System
CIMIS	California Irrigation Management Information System
CMA	Central Management Area
COMB	Cachuma Operation and Maintenance Board
CSD	Community Services District
CWC	California Water Code
DBID	Database Identification Number
DWR	Department of Water Resources
EMA	Eastern Management Area
ET	Evapotranspiration
FY	Fiscal Year (July 1 through June 30)
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
InSAR	Interferometric Synthetic Aperture Radar
LRWRP	Lompoc Regional Wastewater Reclamation Plant
mg/L	milligrams per liter
MHCSD	Mission Hills Community Services District
NAIP	National Agriculture Imagery Program
PRISM	Parameter-elevation Regressions on Independent Slopes Model
RMW	Representative Monitoring Well
RWQCB	Regional Water Quality Control Board
SFB	Space Force Base
SGMA	Sustainable Groundwater Management Act

SWP	State Water Project
SWRCB	State Water Resources Control Board
SYRA	Santa Ynez River Alluvium
SYRVGB	Santa Ynez River Valley Groundwater Basin
SYRWCD	Santa Ynez River Water Conservation District
USBR	United States Bureau of Reclamation
USGS	United States Geological Survey
VSFB	Vandenberg Space Force Base
VVCSD	Vandenberg Village Community Services District
WMA	Western Management Area
WR	Water Rights Order
WY	Water Year (October 1 through September 30)

WELL NUMBERING DESCRIPTION

The California Department of Water Resources (DWR) assigns a unique State Well Number based on the public land grid published by the Bureau of Land Management (BLM) Cadastral survey grid. The State Well Number includes the township, range, and section numbers in which a well is located. Each section in the public land grid is further subdivided into sixteen 40-acre tracts, which are assigned a letter designation as shown on the following page. Because all wells in the Santa Ynez River Valley Groundwater Basin use the San Bernardino ("S") baseline and meridian, the reference to the baseline and meridian is generally omitted from the well numbers identified in this report. Much of the land is former Mexican Land grant land and not covered by the BLM Cadastral survey, so the naming is based on other interpolated grids.

There are other well reference identifiers found in this text. The USGS 15-digit well number based on degrees, minutes, and seconds of latitude (6 digits) and longitude (7 digits) and sequential number (2 digits) are also shown on wells that are part of the USGS databases. The database management system for this project (sywater.info) additionally assigns a 4-digit unique database identification number (DBID) for each well. DWR also assigns a California Groundwater Elevation Monitoring (CASGEM) number.

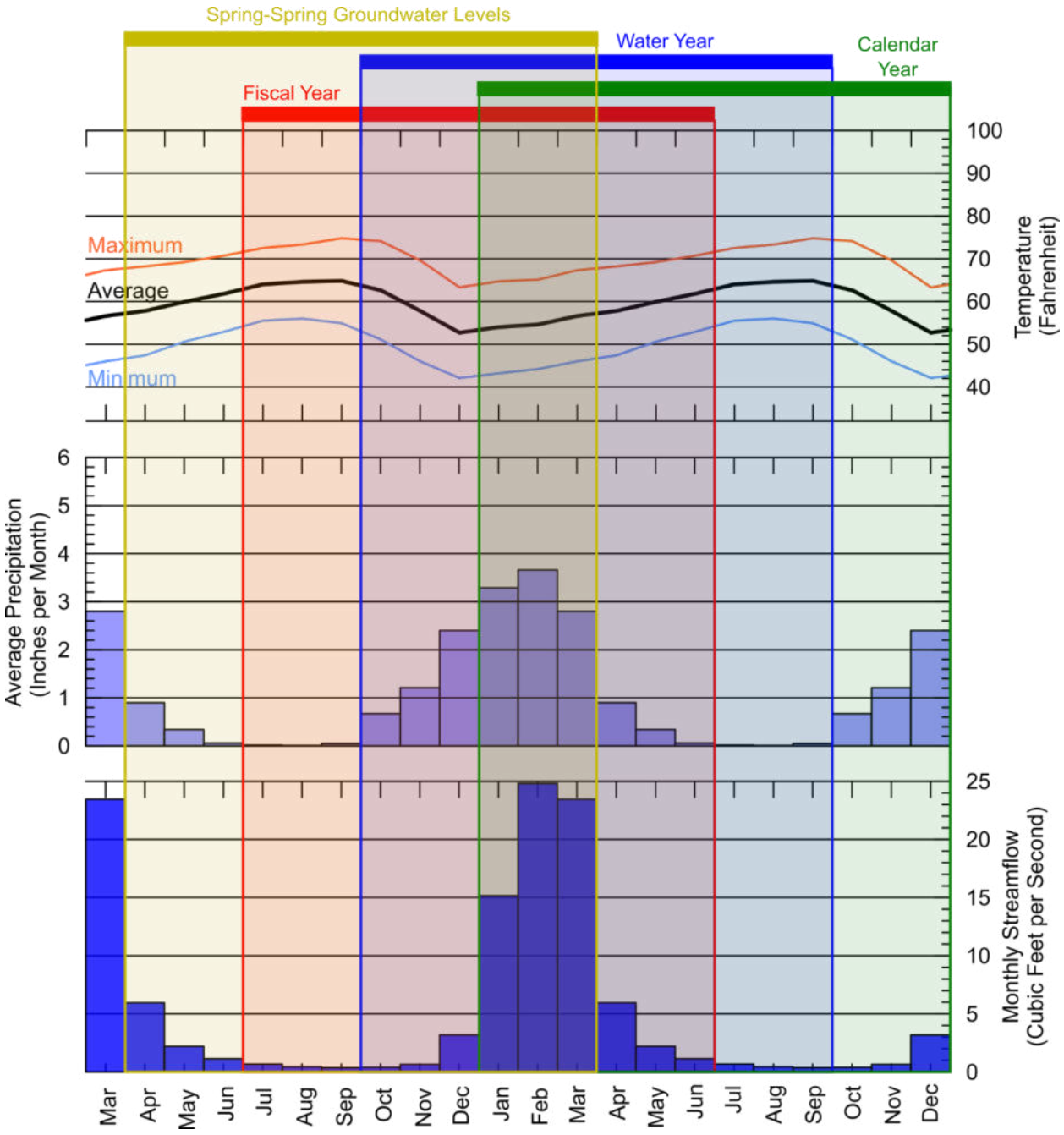


California Department of Water Resources' Numbering System for Water Wells

WATER YEAR DESCRIPTION

Several different annual periods are used in managing Santa Ynez River Valley Groundwater Basin water resources: Water Year, Calendar Year, Fiscal Year and Water Year (July – June), and Spring-Spring Groundwater measurements. For the Sustainable Groundwater Management Act, Water Years are based on the period from October 1st to September 30th, (CWC Section 10721(aa)) which combines the early winter months at the end of a Calendar Year with the remainder of the winter months in the early part of the subsequent Calendar Year, better representing the year on a seasonal basis. Calendar Years are the traditional and commonly used annual period from January 1st to December 31st which starts and ends near the winter solstice. The Santa Ynez River Water Conservation District (SYRWCD) utilizes a Fiscal Year and Water Year (CWC Section 75507(a)) based on the annual period from July 1st to June 30th. Annual spring high groundwater levels are typically evaluated from March of one year to –March of a subsequent year. Finally, the Santa Barbara County Flood Control District annual hydrology reports use a September 1st to August 31st reporting year. The Figure below shows how most of these annual periods compare with the average monthly precipitation at Lompoc and the average monthly stream flow in Salsipuedes Creek at the stream gage.

- Water Year: October 1st to September 30th
- Calendar Year: January 1st to December 31st
- Fiscal Year/ Water Year (SYRWCD): July 1st to June 30th
- Water Year (Flood Control District): September 1st to August 31st
- Spring-Spring Groundwater Levels: March to March



Temperature and Precipitation are National Oceanic & Atmospheric Administration
Climate Normals 1991- 2020 at LOMPOC, CA US, station code USC00045064.

Streamflow is the United States Geological Survey
Average Monthly Flow for 1991 - 2020 at Salsipuedes Creek Near Lompoc, station code 11132500.

EXECUTIVE SUMMARY

This is the third annual report for the Western Management Area (WMA). This report describes changes within the WMA and progress for Water Year (WY) 2023. WY 2023 started on October 1, 2022, and ended on September 30, 2023.

The WMA is the most western agency in the Santa Ynez River Valley Groundwater Basin (SYRVGB). The SYRVGB is in Santa Barbara County, within the Central Coast Region of California. DWR identifies the SWRVGB as basin number 3-15. The SYRVGB has three management agencies: Western (WMA), Central (CMA), and Eastern (EMA). The Department of Water Resources (DWR) designated the SYRVGB as a medium-priority groundwater basin. The WMA Groundwater Sustainability Agency (GSA) is implementing the Sustainable Groundwater Management Act (SGMA) law, which is overseen by the DWR.

WY 2023 was the first complete water year following the submittal of the Groundwater Sustainability Plan (GSP) to DWR in January 2022. The WMA GSP indicated that the current WMA conditions are sustainable. The WMA GSP established sustainable management criteria for measuring progress toward groundwater sustainability. The WMA GSP recommended projects and management actions. These projects help maintain sustainability, avoid undesirable results, and avoid unsustainable groundwater conditions. DWR approved the GSP for the WMA on January 18, 2024.

WY 2023 was the first wet year in the WMA following eleven years of drought. The largest reservoir on the Santa Ynez River, Lake Cachuma, spilled for the first time since WY 2011.

The estimated sustainable yield of the WMA is 26,000 to 27,000 acre-feet per year (AFY). Sustainable yield is the long-term average over the period of record. The total estimated groundwater storage change in the WMA during WY 2023 is a gain of 14,100 acre-feet (AF). The estimated total groundwater production in the WMA during WY 2023 was about 21,600 AF. Total use includes all water types including groundwater, surface water (surface and underflow), and imported water. The total estimated water use is about 26,765 AF.

The WMA has organized this Third Annual Report into the following chapters:

- General information (including Basin location) – Chapter 1
- Hydrologic conditions – Chapter 2
- Groundwater elevation data (including contours, with hydrographs as an appendix) – Chapter 3
- Water supply data (including groundwater extraction data) – Chapter 4
- Groundwater storage data – Chapter 5
- Progress towards GSP implementation and sustainability – Chapter 6.

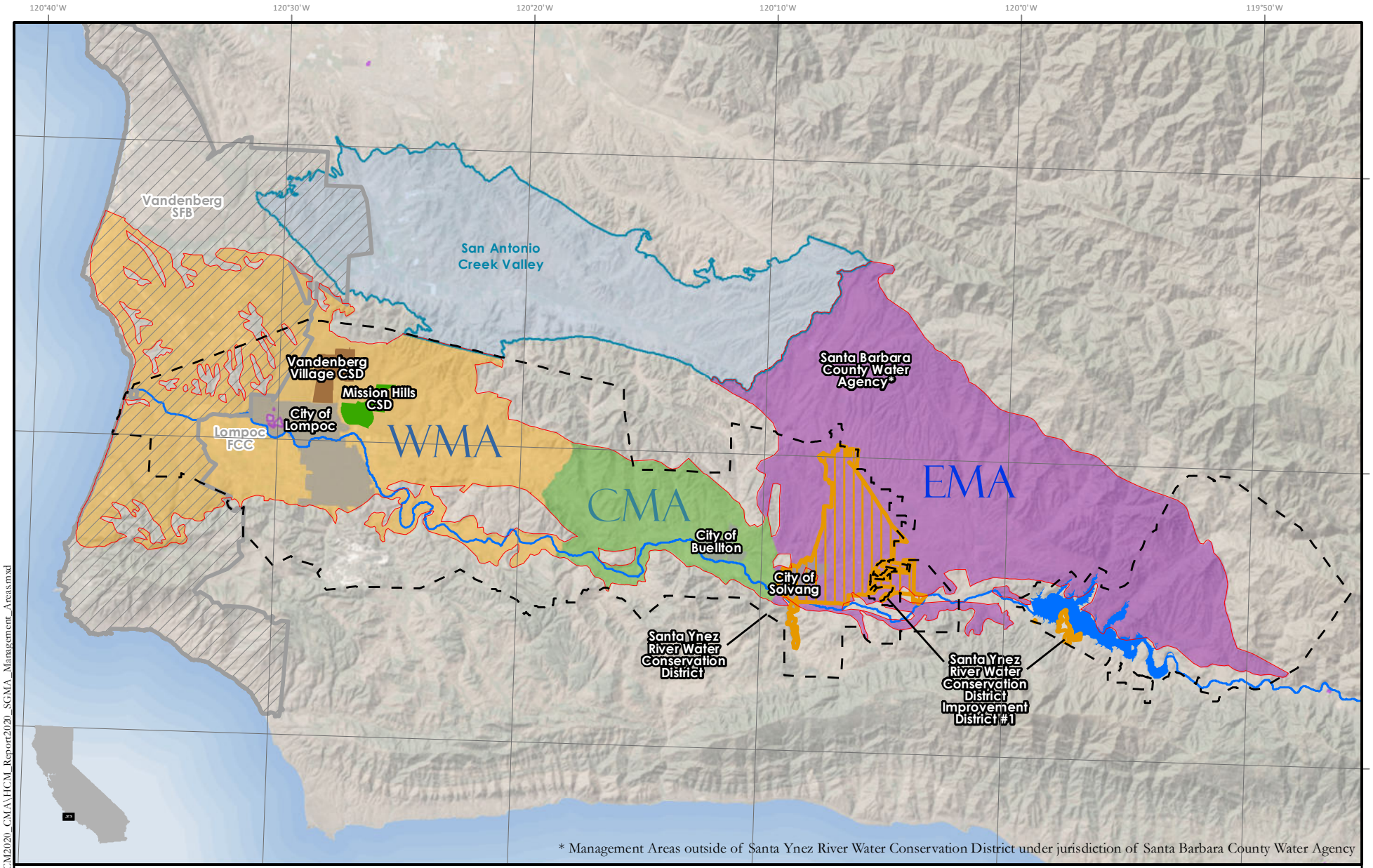
CHAPTER 1: GENERAL INFORMATION

The Western Management Area (WMA) Groundwater Sustainability Agency (GSA) is the responsible local agency for complying with Sustainable Groundwater Management Act (SGMA)[1] requirements in the western portion of the Santa Ynez River Valley Groundwater Basin (SYRVGB). Following the adoption of the Sustainable Groundwater Management Plan (GSP) for the WMA on January 5, 2022, the WMA GSP is required to submit an annual report every April 1st.[2] This third annual report for the WMA is prepared in coordination with the two other management areas within the SYRVGB and covers the water year 2023 (October 1, 2022– September 30, 2023). **Figure 1-1** shows the location of all three management areas of the SYRVGB[3] and **Figure 1-2** shows the areas managed by the constituent public member agencies of the WMA: Santa Ynez River Water Conservation District (SYRWCD), City of Lompoc, County of Santa Barbara, Mission Hills Community Services District (MHCSD), and Vandenberg Village Community Services District (VVCSD). Although partially within the WMA, as a Federal Facility, Vandenberg Space Force Base (VSFB) is not subject to SGMA.

The SYRVGB is a groundwater basin located in central Santa Barbara County in the central coast region of California (Figure 1-1) which encompasses an area of approximately 133.7 square miles (85,595.5 acres), located within the larger Santa Ynez watershed. This area is geographically diverse, with east-west trending ranges of low mountains and hills interspersed with small to medium-sized valleys and perpendicular north and south-trending canyons that drain out of the mountains and hills.

In the SYRVGB there are eight public water agencies participating in SGMA, four of them in the WMA. **Table 1-1** summarizes the extent and member agencies of all three Management Areas of the SYRVGB. To be consistent with the California legislature's findings that "Groundwater resources are most effectively managed at the local or regional level"[4] the SYRVGB public water agencies divided the SYRVGB into three local management areas based on the geography and extent of local aquifers.

1 CWC Section 10720 et seq. and 23 CCR § 350 et seq.
2 CWC Section 10728, 23 CCR § 351(d), § 355.8, 353.4, 354.40, 355.6(b), 355.8, 356, 356.2.
3 23 CCR § 356.2(a) "[…] location map depicting the basin covered by the report."
4 Sustainable Groundwater Management Act, Uncodified Findings (a)(6)



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Western Management Area (WMA)
Central Management Area (CMA)
Eastern Management Area (EMA)

SANTA YNEZ RIVER VALLEY GROUNDWATER BASIN
(DWR BULLETIN 118 BASIN NO. 3-105)
AND SGMA MANAGEMENT AREA BOUNDARIES

0 2 4 Miles

N

Sources:
NAIP (2018)
USGS National Elevation Dataset, 2002
Groundwater basin boundary from DWR Bulletin 118, 2018

FIGURE 1-1

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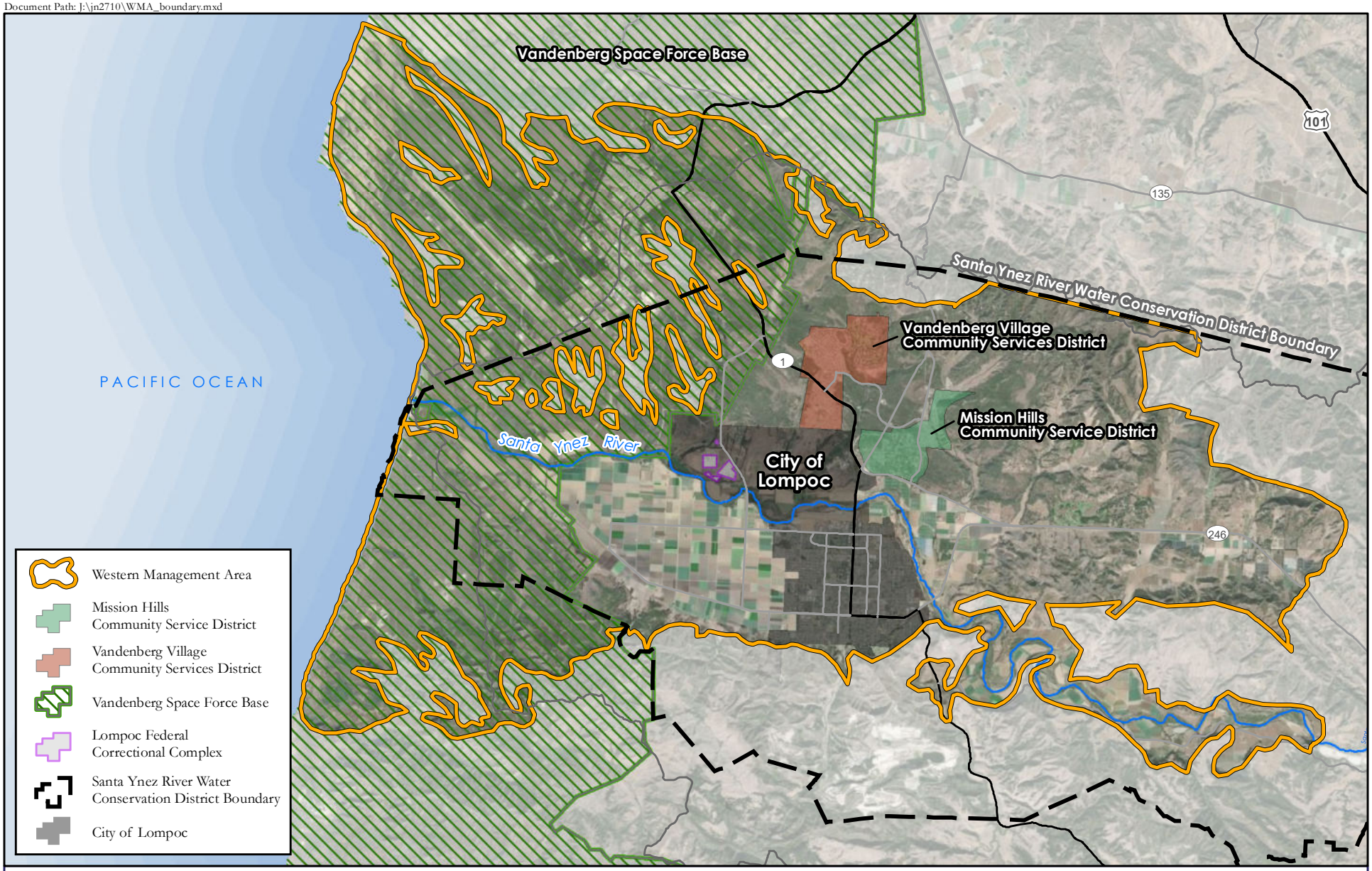

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WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

WESTERN MANAGEMENT AREA BOUNDARY
SANTA YNEZ RIVER VALLEY GROUNDWATER BASIN
GROUNDWATER SUSTAINABILITY AGENCY

0 1 2 Miles

N

FIGURE 1-2

Table 1-1
Management Areas of the Santa Ynez River Valley Groundwater Basin

Management Area	Physical Description	Committee Member Agencies
WMA Santa Ynez River Valley Groundwater Basin Western Management Area Groundwater Sustainability Agency	133.7 square miles • Santa Ynez River alluvium west of Santa Rosa Park to the Lompoc Narrows • Lompoc Plain • Lompoc Terrace • Burton Mesa • Lompoc Upland • Santa Rita Upland.	• City of Lompoc • Vandenberg Village Community Services District • Mission Hills Community Services District • Santa Ynez River Water Conservation District • Santa Barbara County Water Agency (non-voting member)
CMA Santa Ynez River Valley Groundwater Basin Central Management Area Groundwater Sustainability Agency	32.8 square miles • Santa Ynez River alluvium east of Santa Rosa Park to just west of the City of Solvang • Buellton Upland	• City of Buellton • Santa Ynez River Water Conservation District • Santa Barbara County Water Agency (non-voting member)
EMA Santa Ynez River Valley Groundwater Basin Eastern Management Area Groundwater Sustainability Agency	150.9 square miles • Santa Ynez River alluvium from City of Solvang east • Santa Ynez Upland	• City of Solvang • Santa Ynez River Water Conservation District, Improvement District No.1 • Santa Ynez River Water Conservation District • Santa Barbara County Water Agency

The WMA is bordered on the west by the Pacific Ocean, on the north by the Purisima Hills, on the east by the Central Management Area (CMA), and on the south by the White Hills. The WMA has two aquifers, an "Upper Aquifer" and a "Lower Aquifer." The Upper Aquifer consists of the current and historical deposits of the Santa Ynez River downstream of the Lompoc Narrows. The Lower Aquifer consists of older Paso Robles and Careaga Sand Formations. The Lower Aquifer is within a wide geologic syncline fold. **Figure 1-3** shows where these two aquifers are located within the extent of the WMA.

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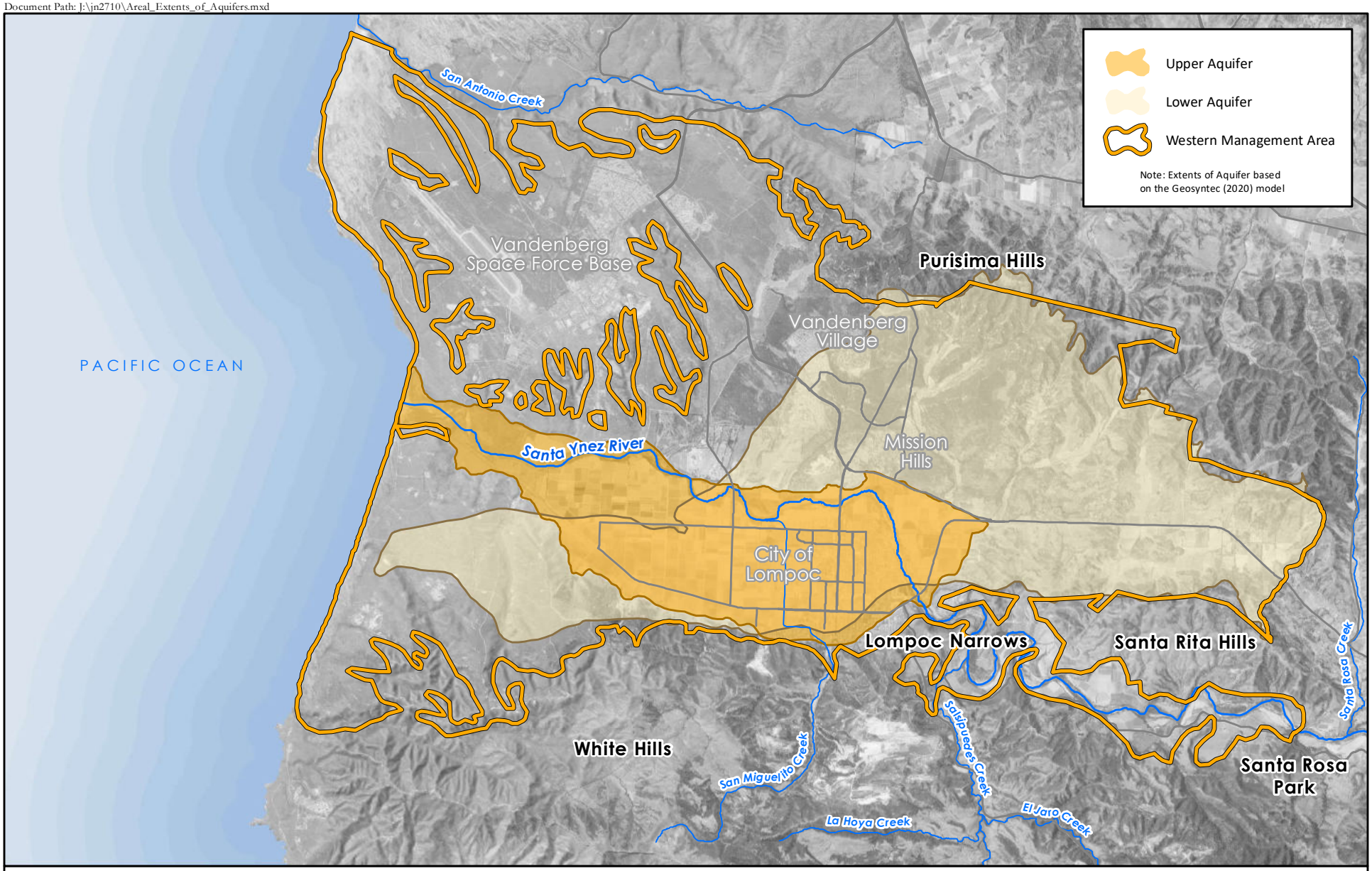

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WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

AREAL EXTENTS OF THE PRINCIPLE AQUIFERS WESTERN MANAGEMENT AREA

0 1 2 Miles

Sources:
NAIP (2012/2022)

N

FIGURE 1-3

Surface water drains to the Pacific Ocean through the Santa Ynez River and its tributaries. The State Water Resources Control Board (SWRCB) administers Santa Ynez River water, including both surface water and underflow of the Santa Ynez River and surface water rights. The upstream Cachuma Reservoirs are operated by the United States Bureau of Reclamation (USBR) which physically controls the flows of the Santa Ynez River. USBR conducts releases to meet downstream surface water rights and for the benefit of fish. The SGMA statute excludes the WMA from altering the surface water rights of the Santa Ynez River.[5] The SWRCB Orders for the Cachuma Project include coordination of releases from the Cachuma Reservoir for underflow alluvial storage and replenishment, which includes portions of the Santa Ynez Alluvium upstream of the Lompoc Narrows.

The water in the WMA Santa Ynez Alluvium upstream of the Lompoc Narrows is in a "known and definite channel"[6] of high permeability river sediments under and adjacent to the Santa Ynez River. These sediments fill a river channel historically cut into the relatively impermeable silts and clays of the Monterey Formation by past flows of the river. In the WMA these underflow deposits are physically disconnected from the groundwater aquifers by over two miles of bedrock in places (Stetson 2022). Conditions are consistent with the SWRCB's tests for a subterranean stream and underflow (Stetson 2023).[7] Releases of surface water for the Lompoc Plain and downstream users under SWRCB Order WR 2019-0148 are conveyed through the surface flow and underflow of the Santa Ynez River.

The WMA is a diverse area divided into six subareas[8] based on more homogeneous hydrogeologic and topographic characteristics. The six subareas are the Lompoc Plain, Lompoc Terrace, Lompoc Upland, Santa Rita Upland, Santa Ynez River Alluvium, and Burton Mesa. **Figure 1-4** shows the locations and extents of the subareas, and **Table 1-2** summarizes the sizes of each subarea.

5 CWC Section 10720.5 (b) "Nothing in this part, or in any groundwater management plan adopted pursuant to this part, determines or alters surface water rights or groundwater rights under common law or any provision of law that determines or grants surface water rights."

6 CWC Section 10721 (g) "Groundwater" means water beneath the surface of the earth within the zone below the water table in which the soil is completely saturated with water, but does not include water that flows in known and definite channels.

7 See the 1999 State Water Board's Decision 1639 (In the Matter of Application 29664 of Garrapata Water Company) and subsequent rulings such as North Gualala Water Company v. State Water Resources Control Board (2006).

8 Subareas are like and based on the Santa Ynez River Water Conservation District Annual Report subareas, also used for managing pumping in much of the WMA. Extents were adjusted to cover the entire Bulletin 118 Interim Update 2016 (DWR 2016a) basin boundary.

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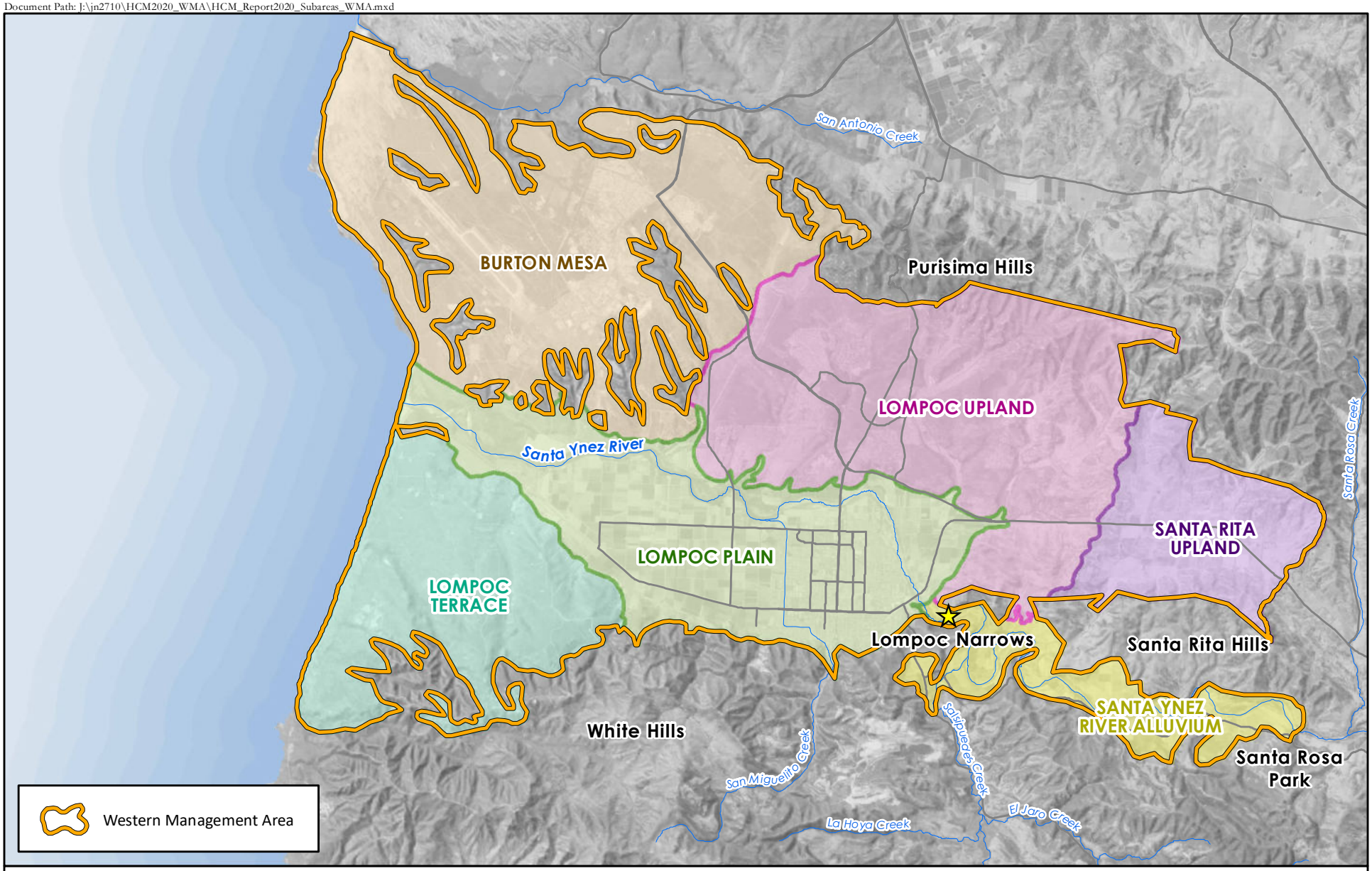

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WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

SUBAREAS
WESTERN MANAGEMENT AREA

0 1 2 Miles

Sources:
USGS National Elevation Dataset, 2002
NAIP (2018)

N

FIGURE 1-4

Table 1-2
Summary of WMA Subareas by Area

WMA Subarea	Acres [A]	Square Miles
Lompoc Plain	18,780	29.3
Lompoc Terrace	10,560	16.5
Lompoc Upland	21,170	33.1
Santa Rita Upland	7,090	11.1
Santa Ynez River Alluvium	4,940	7.7
Burton Mesa	23,060	36.0
Total	**85,600**	**133.7**

[A] Rounded to the nearest ten acres.

1.1 PURPOSE OF ANNUAL REPORT

The California legislature identified the following items to include in the SGMA annual reports (California Water Code [CWC] Section 10728):

> *On the April 1 following the adoption of a groundwater sustainability plan and annually thereafter, a groundwater sustainability agency shall submit a report to the department containing the following information about the basin managed in the groundwater sustainability plan:*
>
> *(a) Groundwater elevation data.*
>
> *(b) Annual aggregated data identifying groundwater extraction for the preceding water year.*
>
> *(c) Surface water supply used for or available for use for groundwater recharge or in-lieu use.*
>
> *(d) Total water use.*
>
> *(e) Change in groundwater storage.*
>
> *(Added by Stats. 2014, Ch. 346, Sec. 3. (SB 1168) Effective January 1, 2015.)*

Appendix 1-A includes the SGMA statute and regulations related to the required elements of this annual report. In general, the annual report is required to describe progress toward implementing the GSP and groundwater conditions over the year.

Earlier published reports by the WMA provide historical information before the start of WY 2023. The WMA GSP (adopted on January 5, 2022, submitted to DWR on January 18, 2022, and approved by DWR on January 18, 2024) covered historical data through May 2021. The First Annual Report in March 2022 covered conditions for WY 2021 (October 1, 2020 - September 30, 2021) and additional water use and change in storage information for WYs 2019 and 2020 (October 1, 2018 – September 30, 2020). The Second Annual Report in March 2023 covered conditions for WY 2022 (October 1, 2021 - September 30, 2022). This Third Annual Report covers conditions for WY 2023 (October 1, 2022 - September 30, 2023).

1.2 SUSTAINABILITY GOAL AND UNDESIRABLE RESULTS

The WMA GSP identified the following sustainability goal for the SYRVGB:

> "The sustainability goal for the Santa Ynez River Valley Groundwater Basin is to manage groundwater resources in the WMA, CMA and EMA for the purpose of facilitating long-term beneficial uses of groundwater within the Basin. Beneficial uses of groundwater in the Basin include municipal, domestic, and agricultural and environmental supply. The sustainability goal is in part defined by the locally defined minimum thresholds and undesirable results. This GSP describes how the WMA GSA will maintain the sustainability of the Basin, and how the measures recommended in the GSP will achieve these objectives and desired conditions" (2022 WMA GSP, Section 3B.1 Sustainability Goal).

Under SGMA,[9] six indicators of sustainability were considered as part of the GSP.[10] The six sustainability indicators are listed as follows.

1. Chronic lowering of groundwater levels

2. Reduction of groundwater storage

3. Seawater intrusion

9 CWC Section 10721 (x), 23 CCR § 354.28(c), 23 CCR § 354.34(c),

10 23 CCR § 354.30(a) Each Agency shall establish measurable objectives, including interim milestones in increments of five years, to achieve the sustainability goal for the basin within 20 years of Plan implementation and to continue to sustainably manage the groundwater basin over the planning and implementation horizon.

4. Degraded water quality

5. Land subsidence

6. Depletion of interconnected surface water

1.3 NEW AND UPDATED PLANS, REPORTS, AND DATA OF NOTE DURING WATER YEAR 2023

Every year plans, reports, and data pertinent to the WMA are developed, updated, and released. **Table 1-3** summarizes notable relevant reports and plans that were released during WY 2023 (October 1, 2022 – September 30, 2023) which provide information for use in updating future GSPs.

This WMA SGMA annual report uses the SGMA water year (October 1 to September 30) and includes data through September 30, 2023. One of the WMA member agencies, SYRWCD, produces an annual report (based on the July 1 to June 30 water year[11]) entitled "Engineering Investigation and Report upon Ground Water Conditions"[12] which covers related topics to this SGMA report. The SYRWCD report summarizes Santa Ynez River system conditions, basin surface water use, water purchased by contract, production within SYRWCD boundaries, expected future demand, and revenue from groundwater production. The SYRWCD's reports cover a different period than the SGMA annual reports and have a statute that defines groundwater differently. The SRWCD's 46th report (in April 2024) will include projections of surface water and groundwater use through June 30, 2025.

Table 1-3
New Reports and Data during the Water Year 2023

Calendar Year	Month	Report Title
2022	September	Santa Barbara County 2022 Groundwater Basins Summary Report.
2022	November	Indicators of Climate Change in California. Fourth Edition.

11 CWC Section 75507 (a) "Water year" means July 1st of one calendar year to June 30th of the following calendar year.
12 CWC Section 75560 The district shall annually cause to be made an engineering investigation and report upon ground water conditions of the district.

Calendar Year	Month	Report Title
2022	December	InSAR Land Surveying and Mapping Services to DWR supporting SGMA - October 2022 update
2022	December	MPA Decadal Management Review. California's Marine Protected Area Network
2023	March	InSAR Land Surveying and Mapping Services to DWR supporting SGMA. January 2023 Update
2023	March	Second Annual Report Water Year 2022 for the Santa Ynez River Valley Groundwater Basin. Santa Ynez River Valley Groundwater Basin Western Management Area.
2023	March	Atlas of the Biodiversity of California. Second Edition.
2023	March	Water Shortage Planning for Rural Communities and Sustainable Groundwater Management. Guidance for Sustainable Groundwater Management Act Implementation.
2023	April	Considerations for Identifying and Addressing Drinking Water Well Impacts. Guidance for Sustainable Groundwater Management Act Implementation.
2023	April	Forty-Fifth Annual Engineering and Survey Report on Water Supply Conditions of The Santa Ynez River Water Conservation District. A Summary of Findings for the Previous Water Year (2021-2022), Current Water Year (2022-2023), and Ensuing Water Year (2023-2024). FINAL April 28, 2023. Accepted by the Board of Directors of the Santa Ynez River Water Conservation District
2023	May	LAFCO 23-12. Resolution Of The Santa Barbara Local Agency Formation Commission Making Determinations And Approving The 2022 Countywide Municipal Service Review And Spheres Of Influence For Water, Wastewater, Recycled Water And Stormwater Services Agencies.
2023	June	WY 2022 Annual Monitoring Summary for The Biological Opinion for The Operation and Maintenance of The Cachuma Project on The Santa Ynez River in Santa Barbara County, California
2023	June	InSAR Land Surveying and Mapping Services to DWR supporting SGMA. April 2023 Update Technical Report
2023	August	Santa Ynez GSAs' Response to April 14, 2023, SWRCB Staff Comment Letter. RE: SANTA YNEZ VALLEY GROUNDWATER SUSTAINABILITY PLANS, GROUNDWATER BASIN NO. 3-015.
2023	October	Santa Barbara County 2023 Groundwater Basins Summary Report.
2023	October	A Guide to Annual Reports, Periodic Evaluations, & Plan Amendments. Groundwater Sustainability Plan Implementation.
2023	October	Santa Barbara County Hydrology Report. Precipitation, Rivers/Streams, & Reservoirs Water-Year 2023

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CHAPTER 2: BASIN CONDITIONS

The water year type is a classification of how wet or dry basin conditions are due to weather during the year. This is a potential cause of changes to groundwater conditions, as measured through groundwater levels, storage, and water quality. This chapter updates the "Hydrologic Characteristics" subsection of the Hydrogeologic Conceptual Model section of the GSP through the end of WY 2023.

Table 2-1 summarizes the precipitation and the water year type for the recent years of WY 2015 through WY 2023.

Table 2-1
Annual Precipitation and Water Year Classification for WMA for Recent Years

Water Year	Lompoc City Hall		Hydrologic Year Type Classification USGS Gage 11132500 (Salsipuedes Creek)	
	Precipitation (in/year)	% Of Average [A]	Percentile Rank	Water Year Type Classification
2015	8.03	55%	0%	Critically Dry
2016	11.68	79%	2%	Critically Dry
2017	22.49	153%	72%	Above Normal
2018	8.29	56%	5%	Critically Dry
2019	20.44	139%	78%	Above Normal
2020	12.97	88%	33%	Dry
2021	10.79	73%	49%	Below Normal
2022	12.46	85%	22%	Dry
2023	32.01	217%	93%	Wet

Years are color-coded as follows: yellow indicates dry and critically dry years (below 40 percentile); blue indicates wet years (above 80 percentile); unshaded indicates years that were either in the below normal or above normal years (40 to 80 percentile). Percentages and percentiles are calculated from the respective periods of record.
[A] The average is calculated as the mean of the period of record (WY1955-WY 2023).
Notes: WMA = Western Management Area; USGS = U.S. Geological Survey; SWRCB = State Water Resources Control Board; in/year = inches per year.
Source: Precipitation from Santa Barbara County - Flood Control District station #439 - Lompoc City Hall

2.1 PRECIPITATION

Within the WMA, direct annual average precipitation ranges from 12.7 inches per year at the Santa Ynez River estuary to 20.5 inches per year at a corner of the Lompoc Terrace. **Figure 2-1** shows the average precipitation within the WMA and adjacent watershed.[1] Orthographic lift effects are the primary driver of precipitation within the WMA, and portions of the WMA at lower elevations generally receive less direct precipitation. **Table 2-2** summarizes the annual average direct precipitation for the subareas of the WMA.

Table 2-2
Average Annual (1991-2020) Precipitation by WMA Subarea

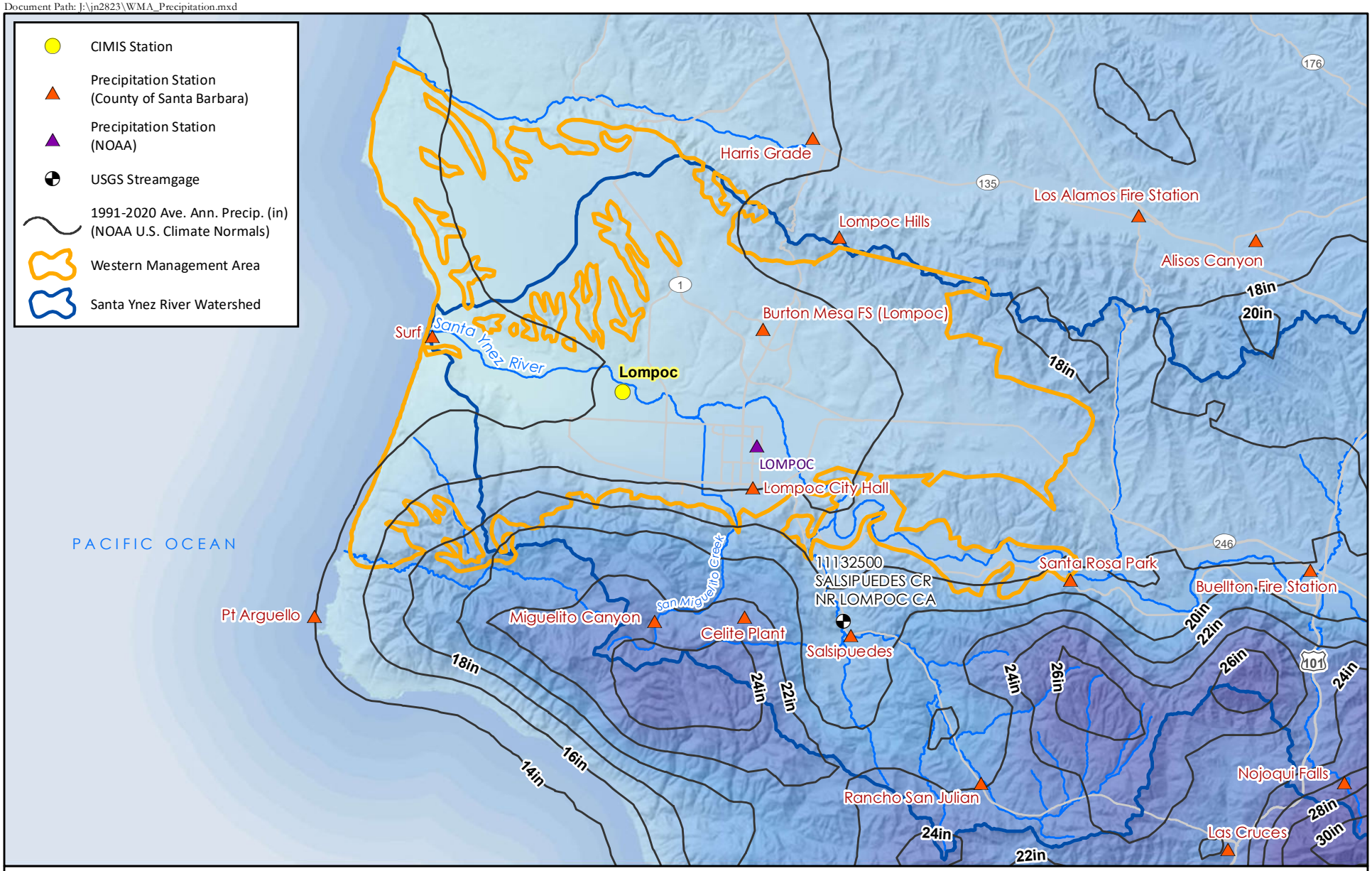
WMA Subarea	Size (Acres) [A]	Average Annual Precipitation Per Subarea (Average 1991-2020) inches per year		
		Average	Average Annual Minimum	Average Annual Maximum
Lompoc Plain	18,780	14.8	12.7	17.6
Santa Rita Upland	7,090	17.0	16.3	17.7
SYR Alluvium	4,940	17.0	15.6	18.4
Lompoc Upland	21,170	15.8	14.6	17.8
Burton Mesa	23,060	14.4	13.3	16.5
Lompoc Terrace	10,560	15.7	12.9	20.5

[A] Rounded to the nearest 10 acres.
Source: Derived from PRISM Climate Group (2021), Average Annual Precipitation 1991-2020.

The precipitation station at Lompoc City Hall is the primary gauge for precipitation within the WMA. Total precipitation during WY 2023 was 32.01 inches. **Figure 2-2** presents annual precipitation data from this station for WY 1955 to the present (WY 2023) and the cumulative departure from the mean (CDM). The CDM trends provide a representation of wet and dry periods within the overall period of record. On a CDM graph, a wet period is indicated with an upward trend over the years. Conversely, a downward trend on the graph indicates a dry period.

[1] Average conditions here are updated to include newly released data for the period 1991-2020, compared to the GSP (including GSP Figure 2a.3-2) which used available data for the period 1981-2010.

Document Path: J:\jn2823\WMA_Precipitation.mxd



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WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

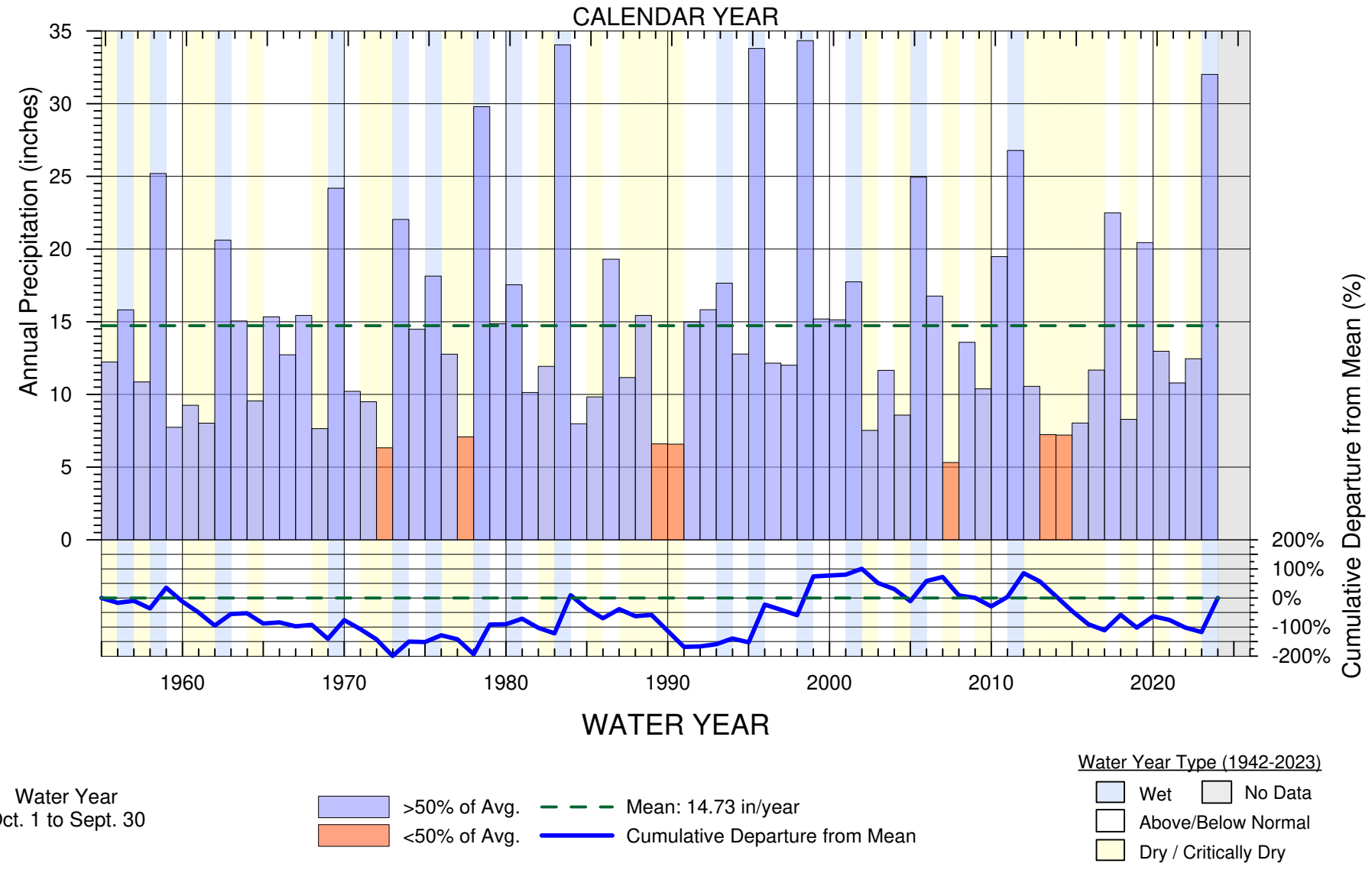
PRECIPITATION STATIONS AND ISOHYETALS
1991-2020 CLIMATE NORMALS
WESTERN MANAGEMENT AREA

0 2 4 Miles

Source:
ESRI World Imagery (2018 Maxar)
NOAA (2020), WRCC (2020)

N

FIGURE 2-1



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WMA
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Western Management Area
Groundwater Sustainability Agency

LOMPOC CITY HALL
PRECIPITATION AND
CUMULATIVE DEPARTURE FROM MEAN
WY 1955 - 2023

Source: Santa Barbara County (2023)
Preciptiation Gage #439

FIGURE 2-2

I:\DATA\2823\Analyses\2023-12 WY23 Precipitation CDM Graphs\Fig 2-02 WMA_Lompoc_City_Precip_CDM WY2023.grf 1/26/2024 M. McCammon

2.2 CLASSIFICATION OF WATER YEAR 2023

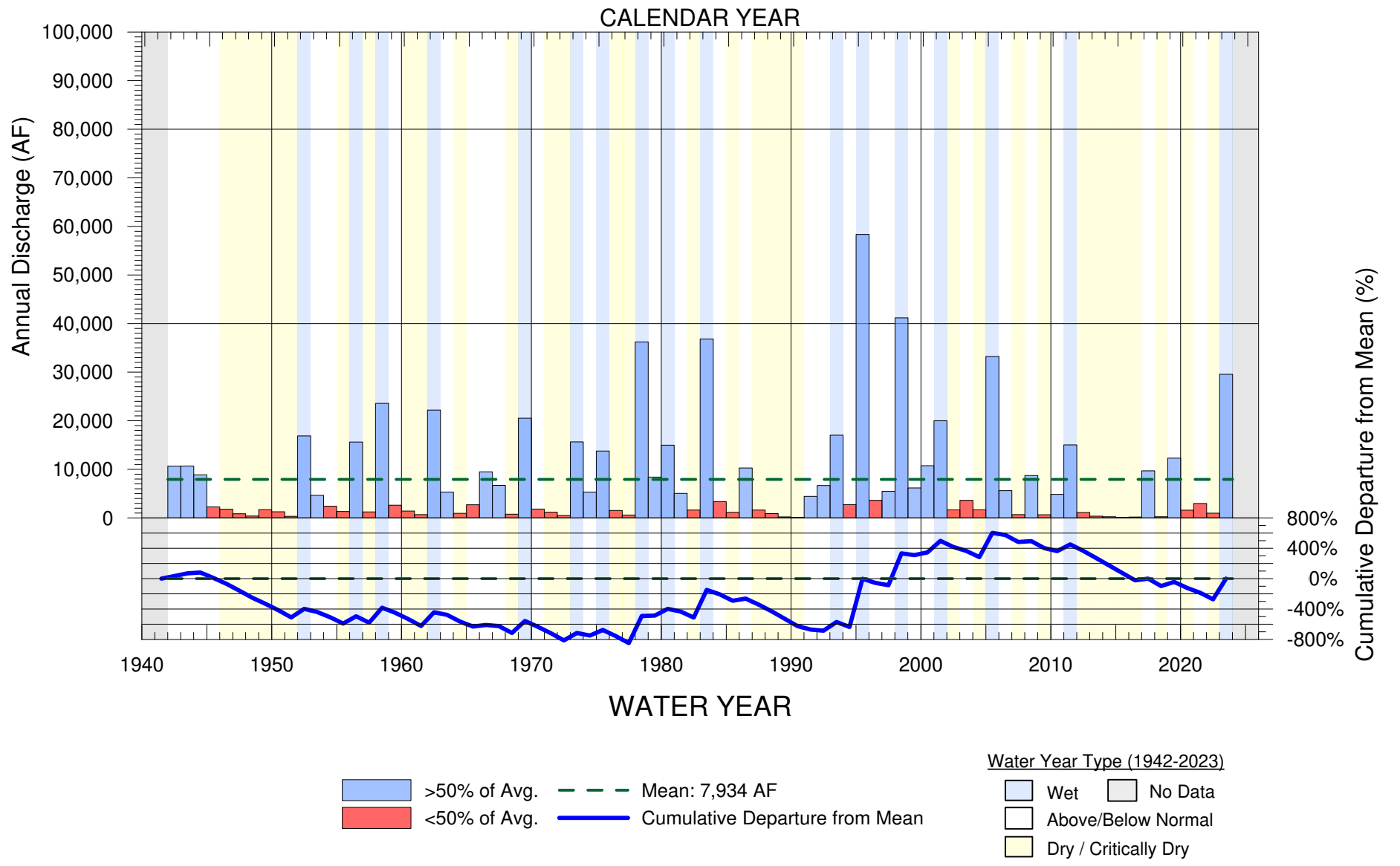
The WMA classified WY 2023 as a wet year based on the Water Year Type. [2] Conditions for recent years, WY 2015 through WY 2023 are summarized in Table 2-1. The basin was experiencing a historic drought before WY 2023. For the recent 10-year period WY 2014-2023, there were only three years, WYs 2017, 2019, and 2023 which were "Above Normal" or "Wet", and, before February 2023, Lake Cachuma had not spilled since WY 2011.

Water Year Type is a generalized characterization of the amount of water that is available in a year. It is a summary of general precipitation and streamflow conditions during the year. Salsipuedes Creek flows measured at the USGS stream gage (U.S. Geological Survey [USGS] gage 11132500) are used as the monitoring location for calculating water year types. The relative ranking in the period of record is used to classify the hydrologic year types into one of five categories: critically dry (bottom 20th percentile), dry (20th to 40th percentile), below normal (40th to 60th percentile), above normal (60th to 80th percentile), and wet (80th to 100th percentile).

The Salsipuedes Creek USGS streamflow gage is located on Salsipuedes Creek just below the confluence with El Jaro Creek and has a drainage area of 47.1 square miles (shown in Figure 2-1). The 82-year dataset for the Salsipuedes Creek stream gage spans 1942 through 2023 (in **Figure 2-3**) and represents unimpeded runoff due to the absence of upstream water diversions and storage reservoirs. The gage type, proximity, long history, and development of the Salsipuedes Creek are all contributing factors for selecting this as the indicator of WMA water year type.

Annual Salispuedes Creek flow data ordered by the amount of flow in each year is shown in **Figure 2-4**. WY 2023 is indicated in Figure 2-4, which shows that WY 2023 was a wet year compared to the period of record. The background colors on most time series figures in this report are derived from Figure 2-4 and likewise indicate the relative year type.

[2] All three Santa Ynez management areas classified WY 2023 as a wet year. WMA and CMA use the same method based on measured streamflow, described here. EMA uses a different method based on precipitation, described by DWR (2021).



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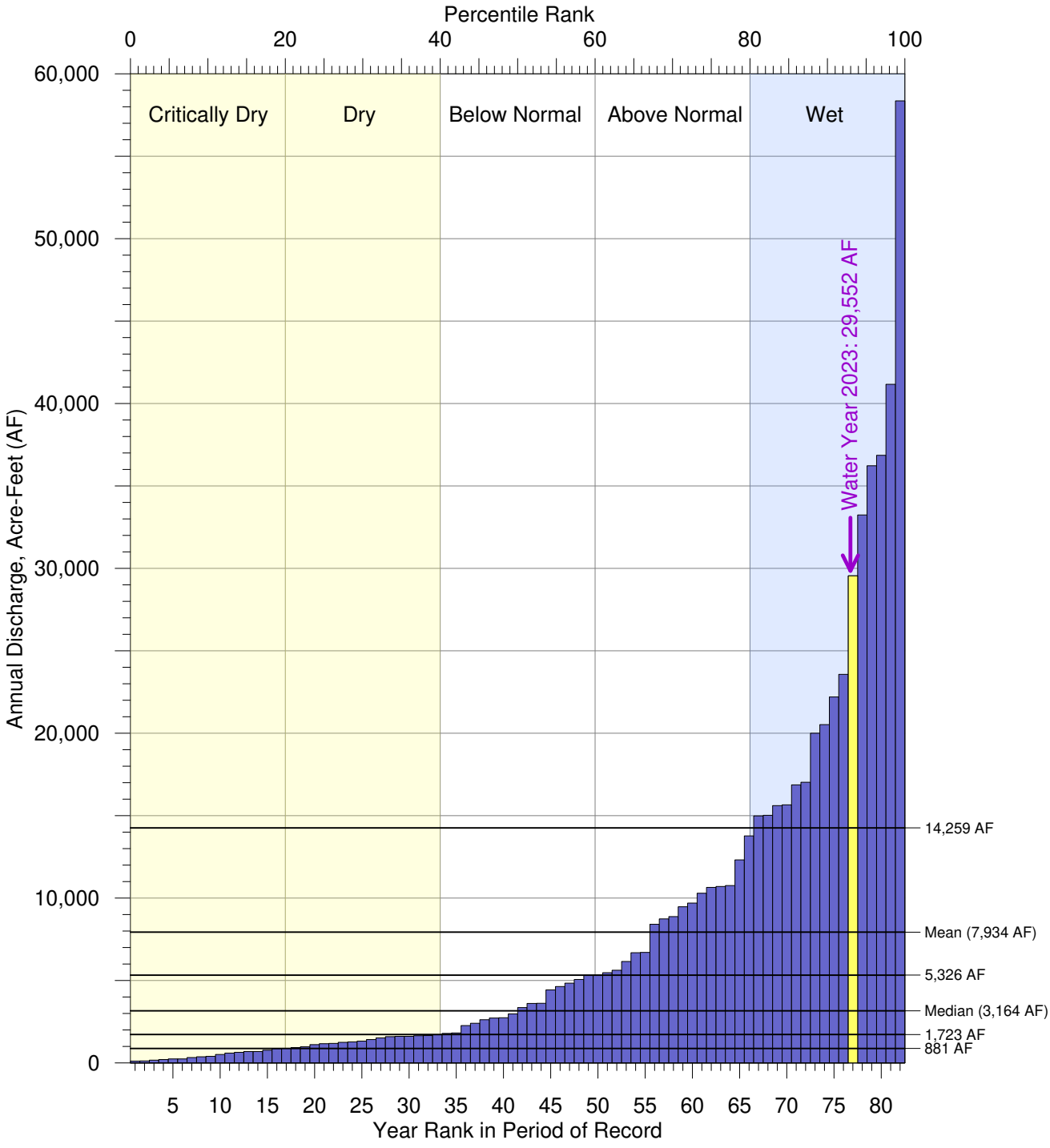
11132500 SALSIPUEDES CREEK NEAR LOMPOC
CUMULATIVE DEPARTURE FROM MEAN AND
PERIOD OF RECORD (WY 1942 - 2023)

Sources: USGS (2023) streamflow data

FIGURE 2-3

I:\DATA\2823\Analyses\2023-12 WY23 SW Flow Statistics\Salispuedes_CDM_WY23.grf 12/4/2023 M. McCammon

SANTA YNEZ RIVER ANNUAL FLOWS
11132500 SALSIPUEDES CREEK NEAR LOMPOC
PERIOD OF RECORD (WY 1942 - 2023)



Data Source: USGS (2023) streamflow data

WATER YEAR TYPE
SANTA YNEZ RIVER VALLEY GROUNDWATER BASIN

STETSON ENGINEERS INC.

I:\DATA\2823\Analyses\2023-12 WY23 SW Flow Statistics\Salispuedes_Year_type_WY23.grf 1/26/2024 M. McCammon

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CHAPTER 3: GROUNDWATER HYDROGRAPHS AND CONTOURS

Groundwater levels are a key indicator of sustainability in the basin. Groundwater levels directly impact the beneficial use of the Basin and correlate with or impact most of the groundwater sustainability indicators. The SGMA regulations require that GSP Annual Reports contain "...*groundwater elevation data from monitoring wells identified in the monitoring network [which] shall be analyzed and displayed*."[1]

The WMA assesses the following three SGMA sustainability indicators using groundwater level data:


Chronic lowering of groundwater levels


Reduction of groundwater storage (see Chapter 5)

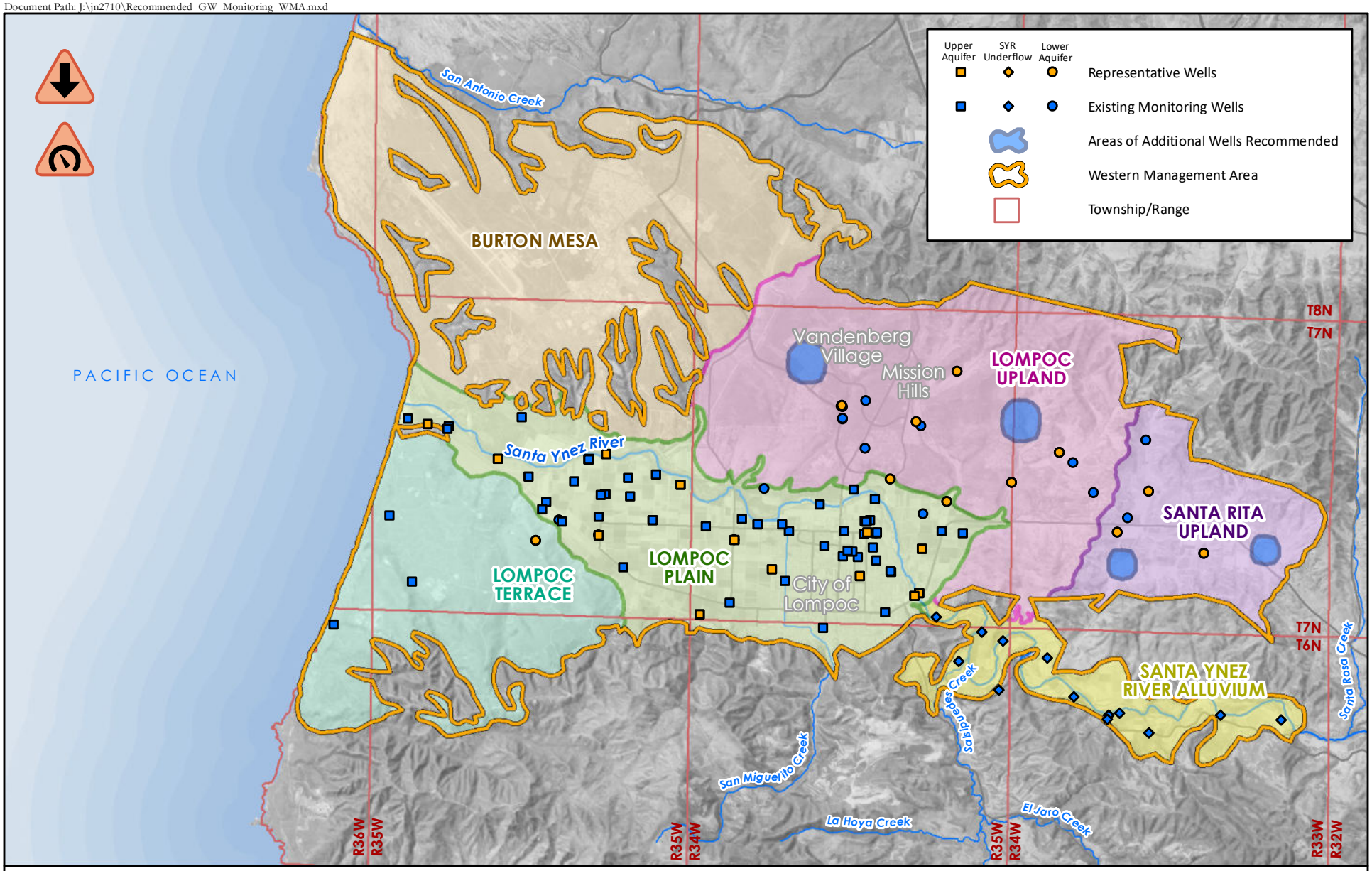

Depletion of interconnected surface water

3.1 GROUNDWATER ELEVATION DATA AND HYDROGRAPHS

Figure 3-1 is a map of the locations of groundwater monitoring network wells. Two appendices contain the groundwater level hydrographs[2]: **Appendix 3-A** which is Groundwater Level Hydrographs for Assessing Chronic Decline in Groundwater Levels, and **Appendix 3-B** which is Groundwater Level Hydrographs for Assessing Surface Water Depletion. Several agencies collect groundwater level data in the WMA. In the WMA these agencies include Santa Barbara County Water Agency, the City of Lompoc, USBR, Vandenberg Village, and Mission Hills.

1 23 CCR § 356.2(b)(1)
2 23 CCR § 356.2(b)(1)(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.

Document Path: J:\jn2710\Recommended_GW_Monitoring_WMA.mxd



STETSON ENGINEERS INC.

WMA

Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

WMA MONITORING NETWORK AND REPRESENTATIVE MONITORING WELLS FOR GROUNDWATER LEVELS AND GROUNDWATER STORAGE

0 1 2 Miles

N

FIGURE 3-1

The SGMA water year runs from October 1st through September 30th. Seasonal high data is the data from March and April 2023. Seasonal low data is the data from October 2023. While this fall collection of data is technically collected in WY 2024, it is less than a month after the end of the water year. The WMA GSA considers this fall data as representative of the seasonal low conditions for WY 2023.

3.2 GROUNDWATER ELEVATION CONTOUR MAPS

This GSP Annual Report must contain *"...elevation contour maps for each principal aquifer in the basin illustrating, at a minimum, the seasonal high and seasonal low groundwater conditions."*[3] according to the SGMA regulations. This Third Annual Report includes Fall 2022 (**Figure 3-2**), Spring 2023 (**Figure 3-3**), and Fall 2023 (**Figure 3-4**) contour maps. These correspond to the seasonal high and seasonal low groundwater conditions.

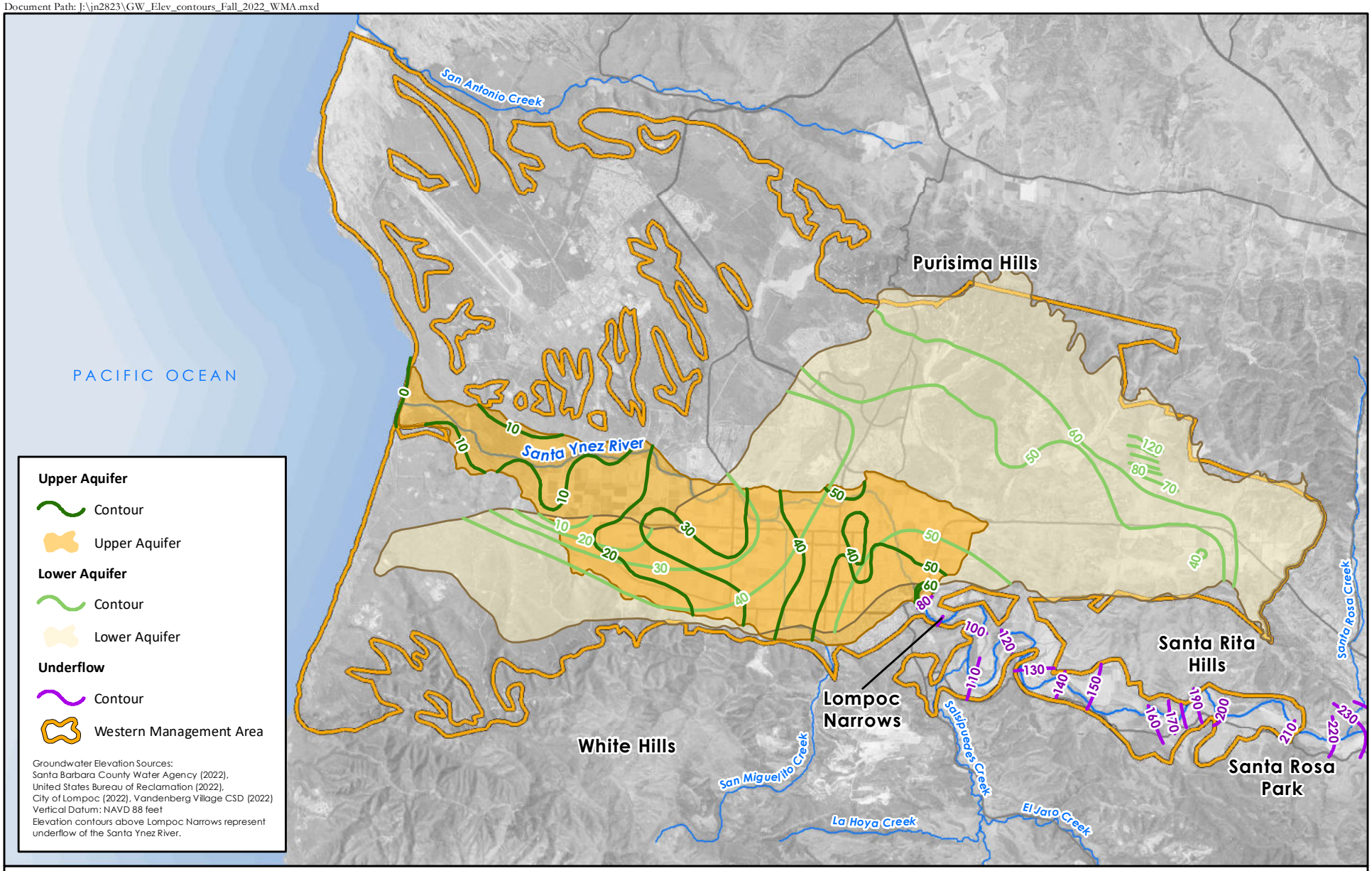
The WMA developed six sets of groundwater elevation contours for WY 2023, including Fall 2022, Spring 2023, and Fall 2023 for the two principal aquifers and the river underflow. The Upper Aquifer consists of the Santa Ynez River deposits within the Lompoc Plain. The Lower Aquifer consists of the water-bearing Careaga Sand and Paso Robles Formations. River underflow occurs upstream of the Lompoc Narrows. SWRCB administers Santa Ynez River underflow as part of the river, so it is not a principal aquifer of the WMA.

3.2.1 Fall 2022 –Start of Year Seasonal Low Contours

Figure 3-2 reproduces the groundwater elevation contour map for Fall 2022 included in the Second Annual Report. The map for Fall 2022 represents conditions at both the end of WY 2022 and at the start of WY 2023. Please see the Second Annual Report for additional discussion of the Fall 2022 map.

[3] 23 CCR § 356.2(b)(1)(A)

Document Path: J:\jn2823\GW_Elev_contours_Fall_2022_WMA.mxd



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WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

GROUNDWATER AND UNDERFLOW ELEVATION CONTOURS
SEASONAL LOW
FALL 2022
WESTERN MANAGEMENT AREA

WY2022 Annual Report

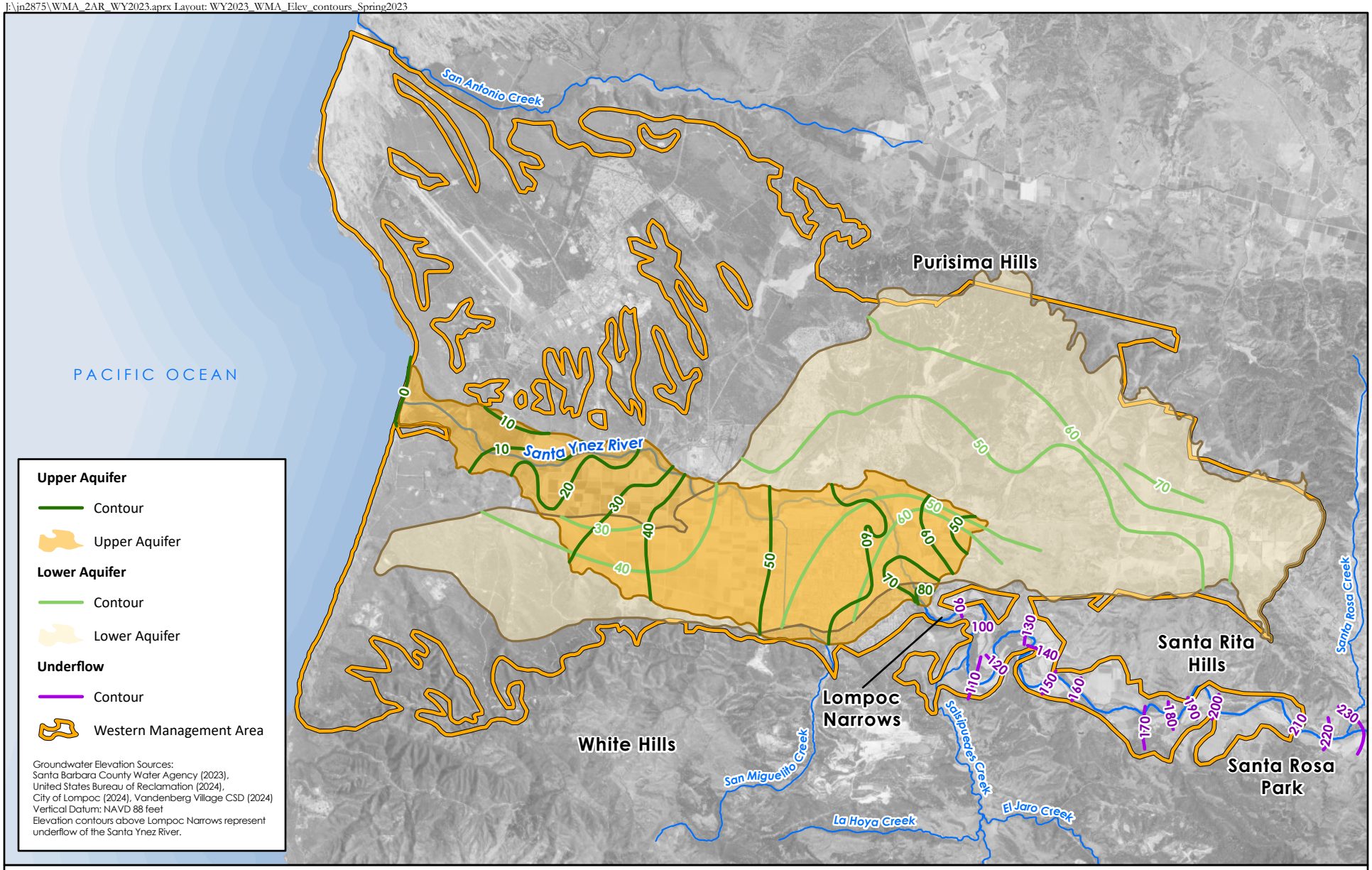
0 1 2 Miles

Sources:
USGS National Elevation Dataset, 2002
Lompoc (2022) and VVCSD (2022)

N

FIGURE 3-2

J:\jn2875\WMA_2AR_WY2023.aprx Layout: WY2023_WMA_Elev_contours_Spring2023



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WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

GROUNDWATER AND UNDERFLOW ELEVATION CONTOURS
SEASONAL HIGH
SPRING 2023
WESTERN MANAGEMENT AREA

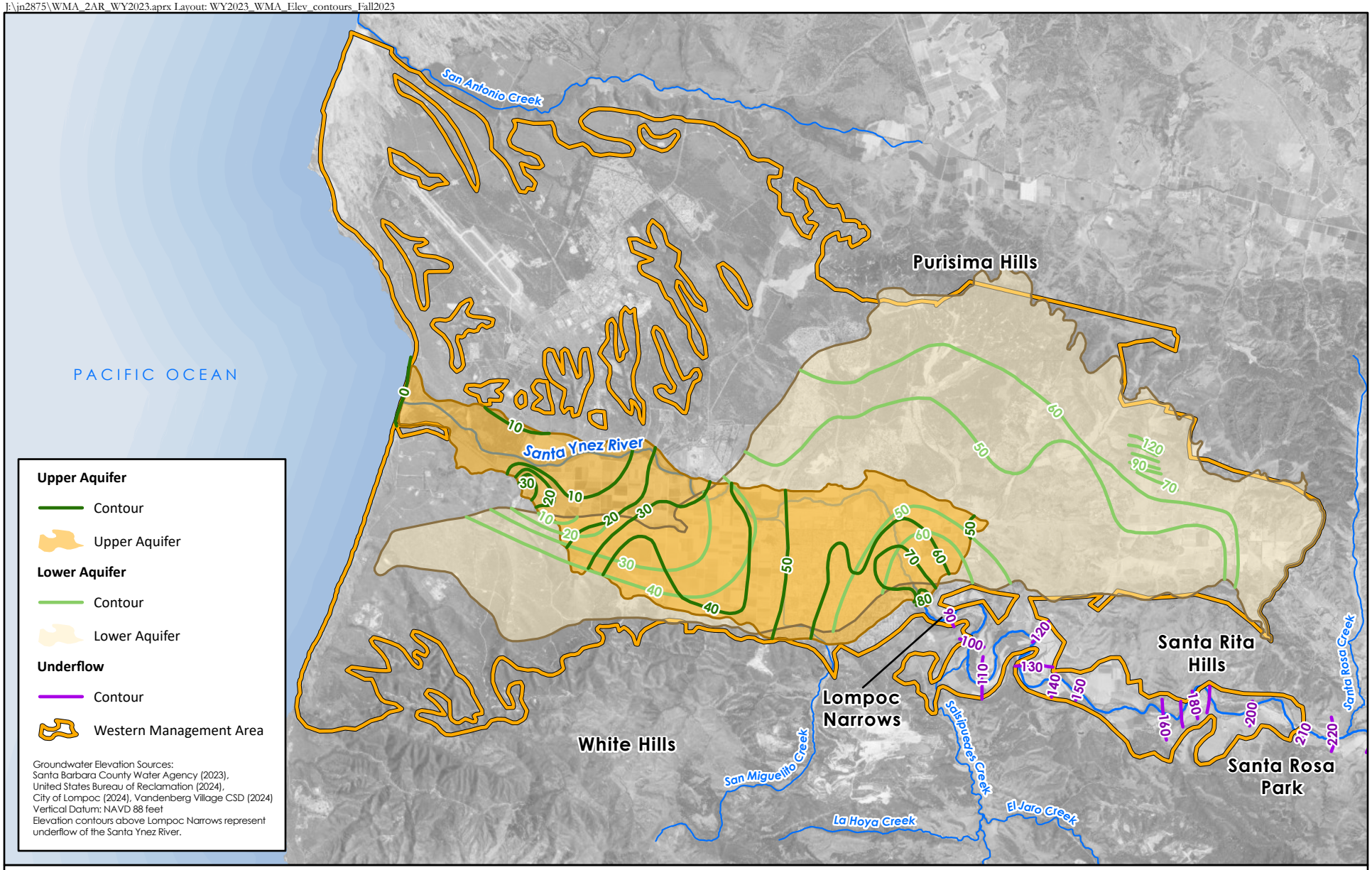
0 1 2 Miles

Sources:
USGS National Elevation Dataset, 2002
Lompoc (2024) and VVCSD (2024)

N

FIGURE 3-3

J:\jn2875\WMA_2AR_WY2023.aprx Layout: WY2023_WMA_Elev_contours_Fall2023



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WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

GROUNDWATER AND UNDERFLOW ELEVATION CONTOURS
SEASONAL LOW
FALL 2023
WESTERN MANAGEMENT AREA

0 1 2 Miles

Sources:
USGS National Elevation Dataset, 2002
Lompoc (2024) and VVCSD (2024)

N

FIGURE 3-4

3.2.2 Spring 2023– Seasonal High Contours

Figure 3-3 is a groundwater level contour map developed for Spring 2023, which is the seasonal high for WY 2023. Relative to Spring 2022, the Upper Aquifer indicated a higher water level in Spring 2023. This is likely due to the amount of recharge from the Santa Ynez River and the wet conditions of WY 2023. The highest increase is in the central Lompoc Plain. The western Lompoc Plain, likely influenced by the estuary, showed less change relative to the spring is more like the previous year.

The Lower Aquifer also showed higher groundwater levels in Spring 2023 compared to Spring 2022. The map shows the greatest increase in water levels in the Lompoc Plain, with less impact in the Lompoc Upland and Santa Rita Upland, which are about the same as the previous year.

3.2.3 Fall 2023 – End of Year Seasonal Low Contours

The Fall 2023 groundwater elevations represent the seasonal low groundwater levels for WY 2023. Figure 3-4 is a groundwater level contour map developed for this seasonal low. Relative to the start of WY 2023, in Fall 2022, the Upper Aquifer showed generally higher groundwater levels.

The Lower Aquifer showed mixed results in groundwater levels in Fall 2023 compared to Fall 2022. The map shows the greatest increase in water levels in the Lompoc Upland and Santa Rita Upland. The Lower Aquifer in the central and western Lompoc Plain showed a slight decline since the Fall of 2022.

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CHAPTER 4: WATER USE AND AVAILABLE SURFACE WATER

Water use is a major component of the water budget. The SGMA regulations require that "*…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.*"[1] This chapter of the Third Annual Report provides an update on water use in the Basin.

4.1 GROUNDWATER USE

Groundwater production within the WMA for both the Upper and Lower Aquifers is used for agricultural, domestic, municipal, and industrial purposes. Outside of the municipal users, most of the WMA is a mixture of rural areas with agriculture and some rural-suburban development. Groundwater production is reported semi-annually to the Santa Ynez River Water Conservation District (SYRWCD).

SYRWCD's semi-annual groundwater production data was converted to monthly values using monthly evapotranspiration (ET) from California Irrigation Management Information System (CIMIS) sites (see Figure 2-1 for CIMIS site locations). Municipal data provided by the City of Lompoc, Vandenberg Village CSD, and Mission Hills CSD was compiled into monthly data. Domestic and agricultural data for the fourth quarter (July-September) of WY 2023 was estimated using the reported data from the fourth quarter of the previous water year (WY 2022). **Figure 4-1** shows the monthly groundwater use in the WMA, and **Figure 4-2** shows the annual groundwater use for each water year.[2] **Figure 4-3** is a map showing the spatial distribution of WMA groundwater pumping during WY 2023. The Upper Aquifer annual groundwater use

1 23 CCR § 356.2(a) 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.

2 Figures in the GSP showed groundwater production based on the SYRWCD's Fiscal Year (July-June), production data presented here is recalculated to the Water Year (October-September) basis.

is shown in **Figure 4-4**, and the Lower Aquifer annual groundwater use is shown in **Figure 4-5**. **Table 4-1** summarizes the groundwater production for WY 2023.

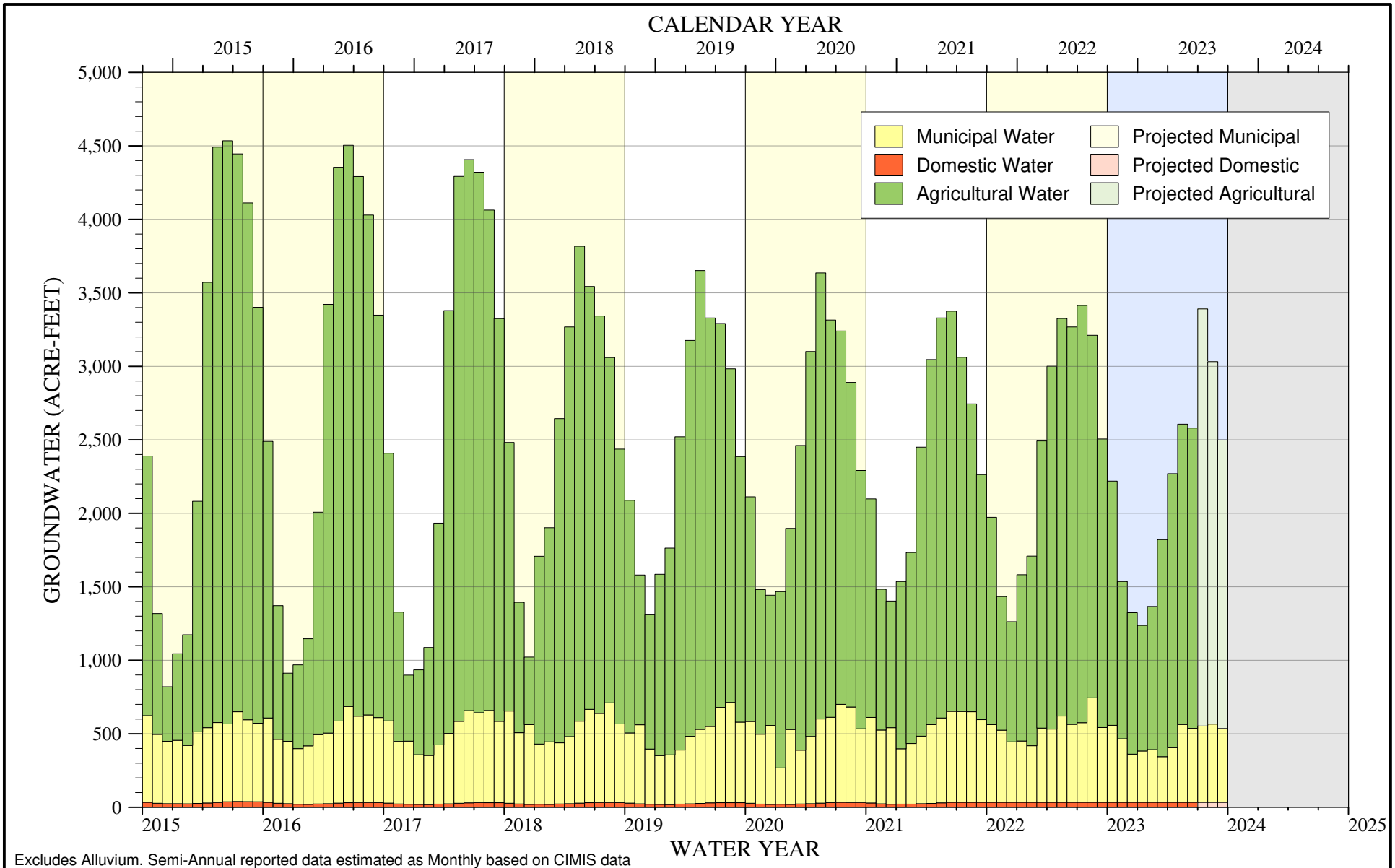
Table 4-1
Summary WMA Groundwater Extraction for Water Year 2023

Water Use Sector	Upper Aquifer	Lower Aquifer	Total	Method of Measurement	Estimated Accuracy
	Acre-Feet	Acre-Feet	Acre-Feet		Acre-Feet
Domestic	60	200	260	Self-reported to SYRWCD	± 30 (~10%)
Agricultural	13,290	2,790	16,080	Self-reported to SYRWCD may include estimates using crop usage, estimated for July-September using WY 2022 data	± 1,600 (~10%)
Municipal	3.660	1,600	5,260	Daily totalizer values	± 50 (~1%)
Total	**17,010**	**4,590**	**21,600**		**± 1,680**

SYRA pumping (SYRWCD Zone A) is managed as surface water and excluded from Table 4-1 (see Table 4-2).
All numbers rounded to the nearest 10 acre-feet.
Source: SYRWCD (2022), City of Lompoc (2022), MHCSD (2022), VVCSD (2022)

4.2 SURFACE WATER USE

The WMA relies on two surface water source types: local water and imported water. Local water includes both local tributary flows and the flows of the Santa Ynez River which are partially retained in Lake Cachuma. Imported water is from the State Water Project (SWP) or the adjacent San Antonio Basin. Vandenberg Space Force Base (VSFB) is the sole water-importing entity in the WMA.



Excludes Alluvium. Semi-Annual reported data estimated as Monthly based on CIMIS data

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WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

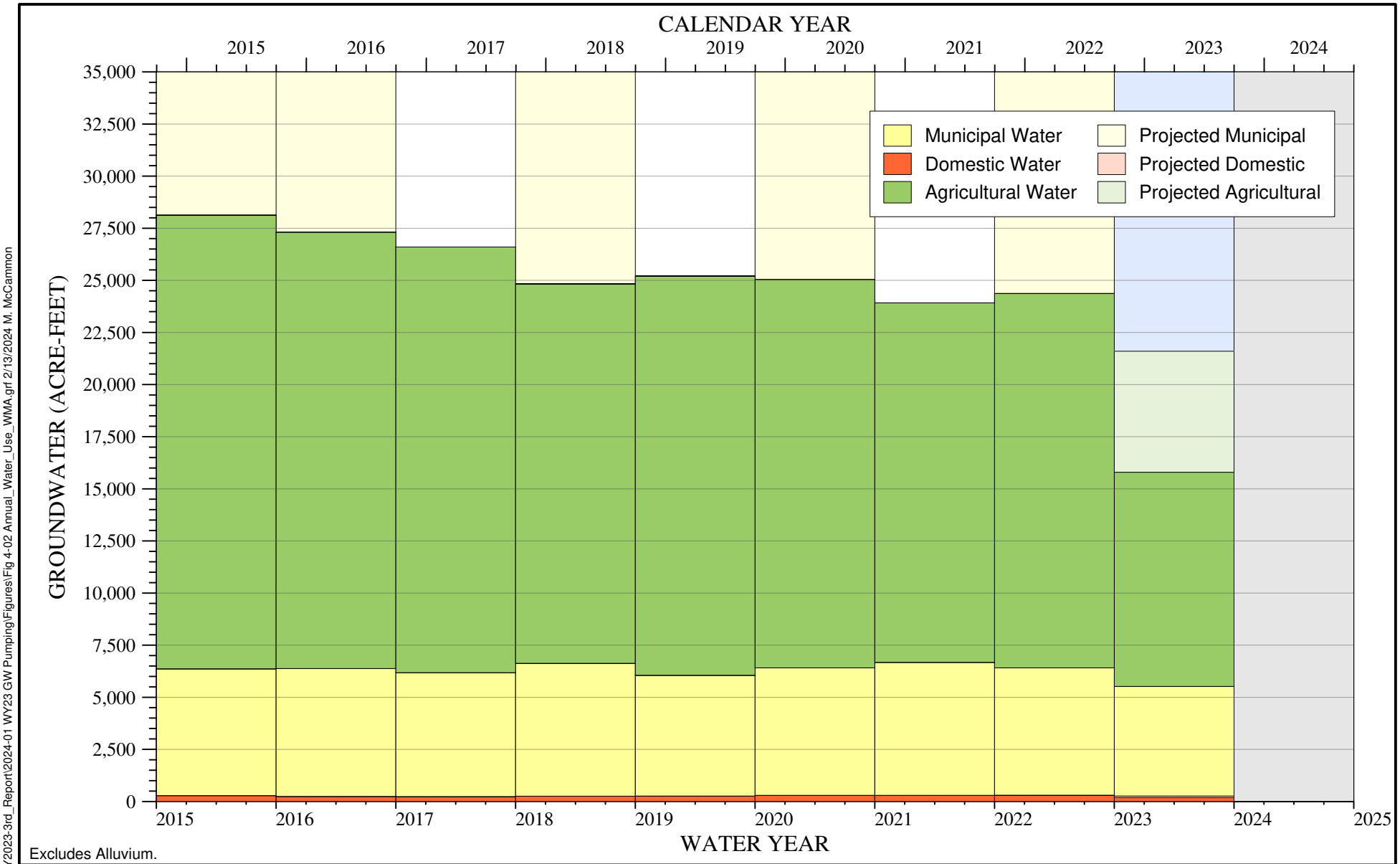
MONTHLY GROUNDWATER USE
TOTAL WESTERN MANAGMENT AREA

Water Year Type (1942-2023)
- Wet
- No Data
- Above/Below Normal
- Dry / Critically Dry

Source: Santa Ynez River Water Conservation District (2024), City of Lompoc (2024), Mission Hills CSD (2024), Vandenberg Village CSD (2024)

FIGURE 4-1

F:\DATA\2823\Analyses\WY2023-3rd_Report\2024-01 WY23 GW Pumping\Figures\Fig 4-01 Monthly_Water_Use_WMA.grf 2/13/2024 M. McCammon



Excludes Alluvium.

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WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

ANNUAL GROUNDWATER USE
TOTAL WESTERN MANAGMENT AREA

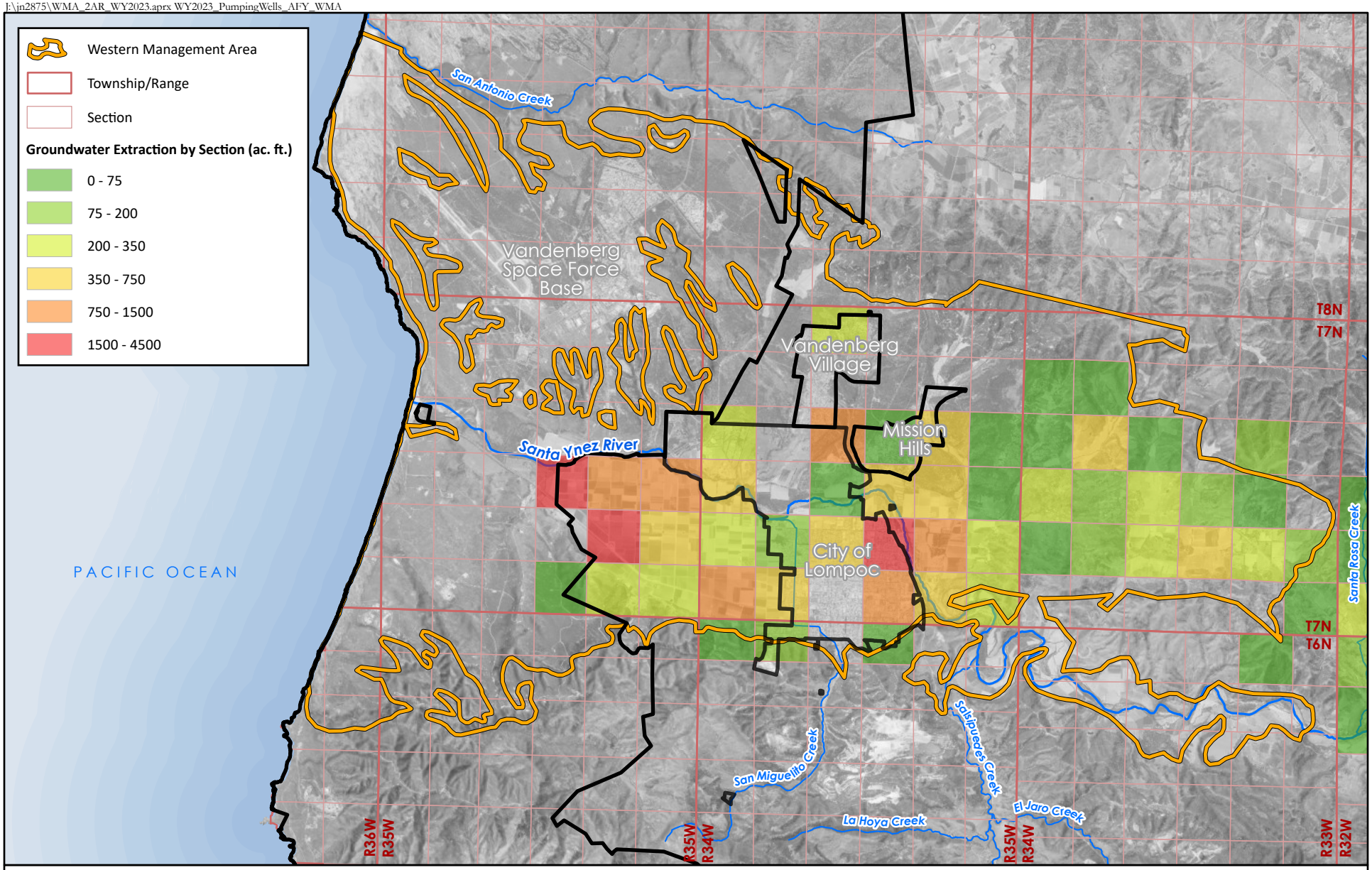
Water Year Type (1942-2023)
- Wet
- No Data
- Above/Below Normal
- Dry / Critically Dry

Source: Santa Ynez River Water Conservation District (2024), City of Lompoc (2024), Mission Hills CSD (2024), Vandenberg Village CSD (2024)

FIGURE 4-2

F:\DATA\2823\Analyses\WY2023-3rd_Report\2024-01 WY23 GW Pumping\Figures\Fig 4-02 Annual_Water_Use_WMA.grf 2/13/2024 M. McCammon

J:\jn2875\WMA_2AR_WY2023.aprx WY2023_PumpingWells_AFY_WMA



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WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

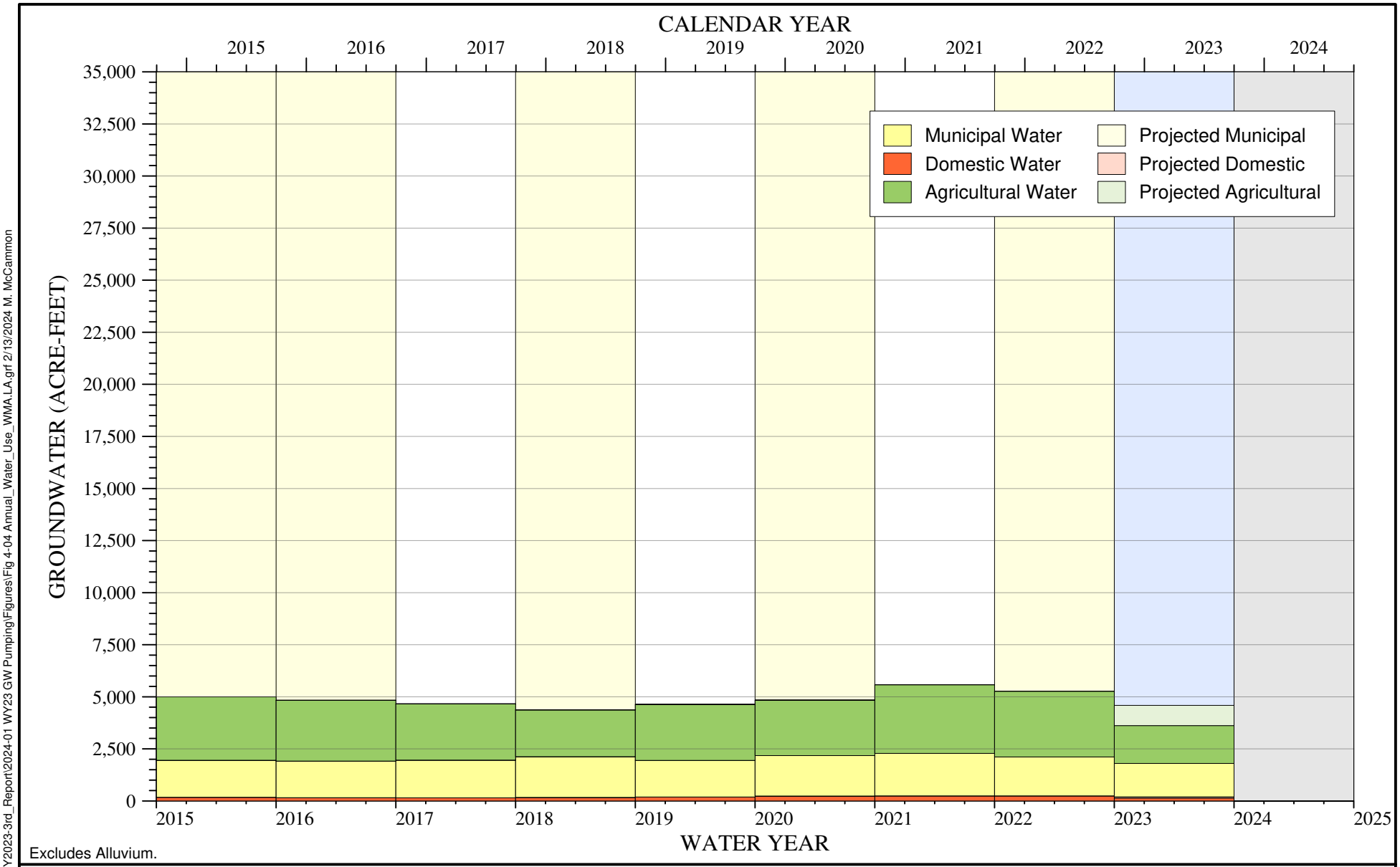
LOCATION AND VOLUME OF GROUNDWATER EXTRACTION 2023

Source: Santa Ynez River Water Conservation District (2023)

0 1 2 Miles

N

FIGURE 4-3



Excludes Alluvium.

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WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

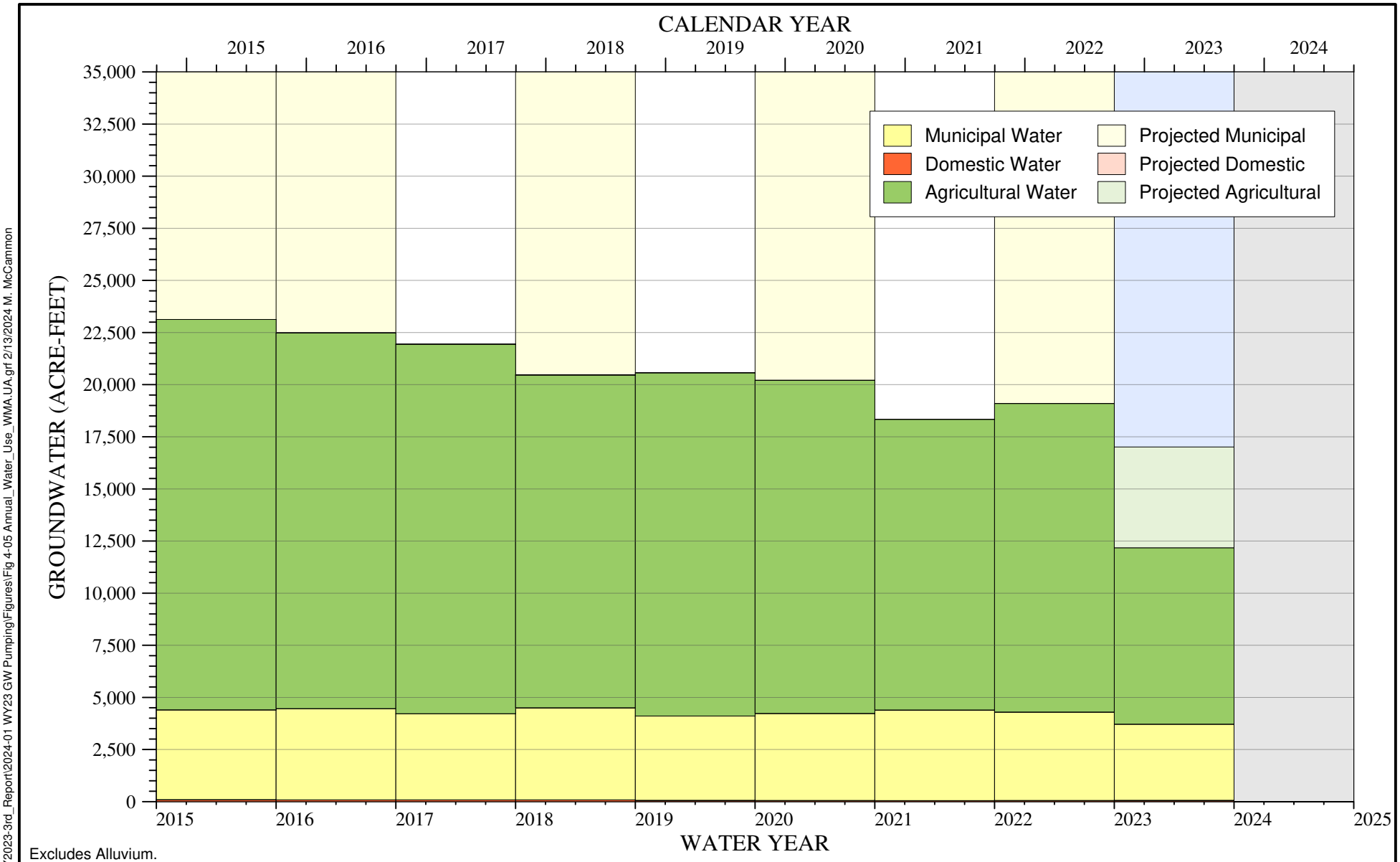
ANNUAL GROUNDWATER USE
LOWER AQUIFER
WESTERN MANAGMENT AREA

Water Year Type (1942-2023)
- Wet
- No Data
- Above/Below Normal
- Dry / Critically Dry

Source: Santa Ynez River Water Conservation District (2024), City of Lompoc (2024), Mission Hills CSD (2024), Vandenberg Village CSD (2024)

FIGURE 4-4

F:\DATA\2823\Analyses\WY2023-3rd_Report\2024-01 WY23 GW Pumping\Figures\Fig 4-04 Annual_Water_Use_WMA.LA.grf 2/13/2024 M. McCammon



Excludes Alluvium.

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WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

ANNUAL GROUNDWATER USE
UPPER AQUIFER
WESTERN MANAGMENT AREA

Water Year Type (1942-2023)
- Wet
- No Data
- Above/Below Normal
- Dry / Critically Dry

Source: Santa Ynez River Water Conservation District (2024), City of Lompoc (2024), Mission Hills CSD (2024), Vandenberg Village CSD (2024)

FIGURE 4-5

F:\DATA\2823\Analyses\WY2023-3rd_Report\2024-01 WY23 GW Pumping\Figures\Fig 4-05 Annual_Water_Use_WMA.UA.grf 2/13/2024 M. McCammon

4.2.1 Surface Water Diversions Upstream of the Lompoc Narrows

Upstream of the Lompoc Narrows, a portion of the Santa Ynez River flows as underflow through a known and definite channel of alluvium. Water flowing in known and definite channels is not groundwater under SGMA,[3] however, this underflow is managed by other agencies. For example, subsurface water above the Lompoc Narrows that is underflow is partially stored in Lake Cachuma per SWRCB Order 2019-148 for later water rights releases. Pumpers from the underflow are legally required to report the amount pumped to both the SYRWCD[4] and the SWRCB. Unlike SGMA, SYRWCD's statute includes all subsurface water as groundwater. The SWRCB water rights Order of 1973 (WR 73-37) was amended in 1989 (WR 89-18) and most recently amended in 2019 (WR 2019-0148). Under appropriated rights in the Santa Ynez River alluvium to-date, SWRCB considers water extracted from wells upstream of the Lompoc Narrows as Santa Ynez River diversions. **Table 4-2** shows the total extraction of river wells upstream of the Lompoc Narrows in the WMA for WY 2023.[5]

Table 4-2
Summary WMA Surface Water Diversions for Water Year 2023

Water Use Sector	Total	Method of Measurement	Estimated Accuracy
	Acre-Feet		Acre-Feet
Domestic	10	Self-reported to SYRWCD	± 1 (~10%)
Agricultural	4,140	Self-reported to SYRWCD may include estimates using crop usage, estimated for July-September using WY 2022 data	± 410 (~10%)
Municipal	0	NA	NA
Total	**4,150**		**± 410**

3 CWC Section 10721 (g) "Groundwater" means water beneath the surface of the earth within the zone below the water table in which the soil is completely saturated with water, but does not include water that flows in known and definite channels.
4 CWC Section 75640 "Any person who fails to register a water-producing facility, as required by Chapter 2 (commencing with Section 75540) of this part, is guilty of a misdemeanor."
5 The SYRWCD records pumping in the Santa Ynez River Alluvium as Zone A.

4.2.2 Water Imports

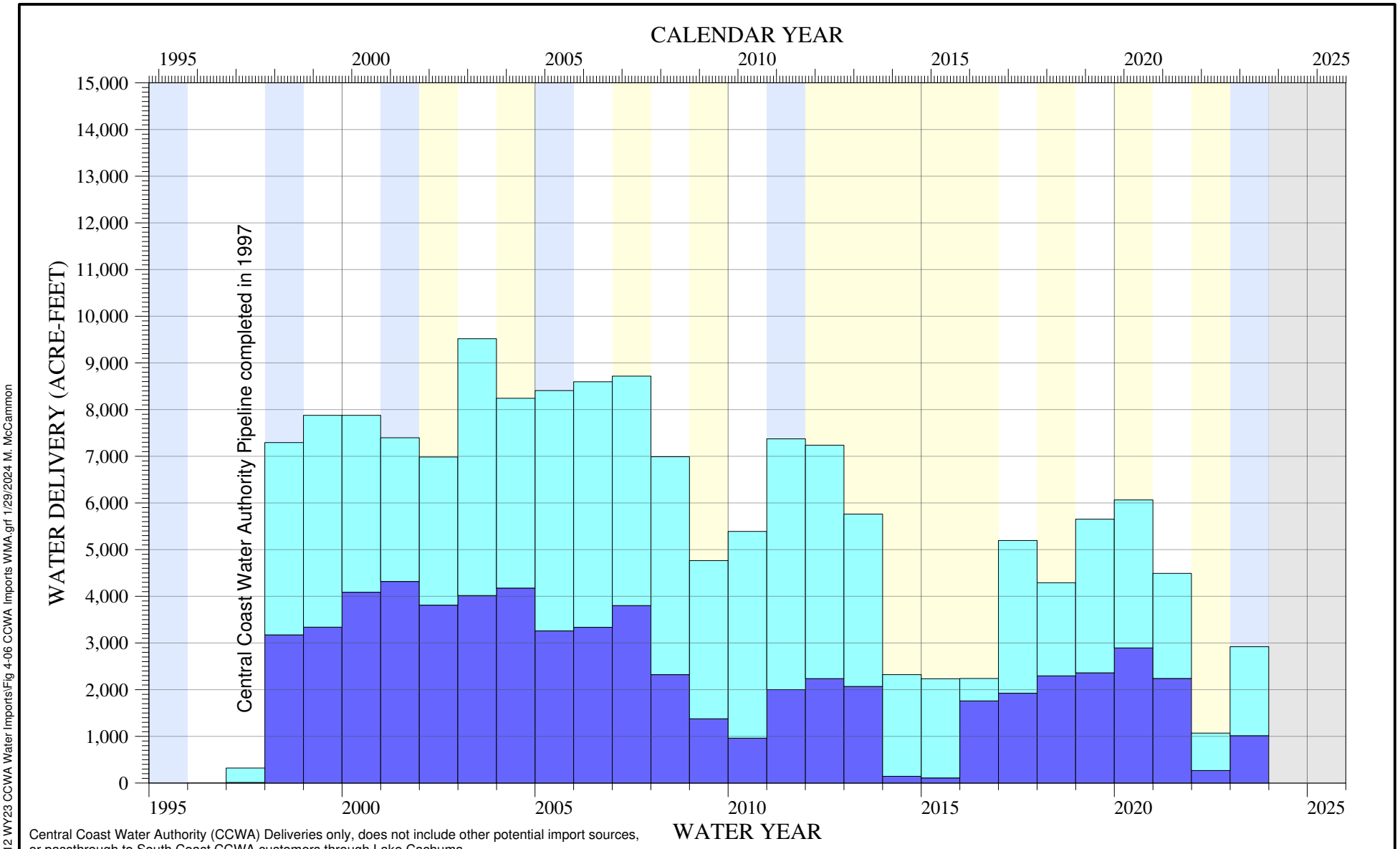
The Central Coastal Water Authority (CCWA) has delivered imported water from the SWP to the SYRVGB since 1997. CCWA makes water deliveries at turnouts to water distribution systems. CCWA delivers to Lake Cachuma for the South Coast customers outside of the SYRVGB. The Cachuma Project Settlement Agreement allows for the comingling of CCWA water with local water for water rights releases. Within the SYRVGB, four agencies contract with CCWA to provide for SWP deliveries: VSFB, the City of Buellton, the City of Solvang, and the Santa Ynez River Water Conservation District Improvement District Number 1. Of these, only the VSFB is located within the WMA.

During WY 2023 VSFB imported 1,015 acre-feet of water, all sourced from the SWP through the CCWA pipeline. This VSFB water makes it into WMA as wastewater through the Lompoc Regional Wastewater Reclamation Plant. **Figure 4-6** and **Table 4-3** show the annual imports through the CCWA pipeline to the WMA and the entire SYRVGB, updated through the end of WY 2023.

Table 4-3
Santa Ynez River Valley Groundwater Basin Water Imports
in Acre-Feet for Recent Years

Water Year	WMA	CMA	EMA	Total Basin
2015	109	0	2,125	2,234
2016	1,758	82	401	2,241
2017	1,924	293	2,979	5,196
2018	2,296	224	1,770	4,290
2019	2,361	268	3,022	5,651
2020	2,893	359	2,813	6,065
2021	2,239	200	2,051	4,490
2022	268	82	719	1,069
2023	1,015	179	1,727	2,921

Source: CCWA (2024)



Central Coast Water Authority (CCWA) Deliveries only, does not include other potential import sources, or passthrough to South Coast CCWA customers through Lake Cachuma.

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ANNUAL WATER IMPORTS
CENTRAL COAST WATER AUTHORITY

Water Year Type (1942-2023)
- Wet
- No Data
- Above/Below Normal
- Dry / Critically Dry

Santa Ynez Imports
- Vandenberg SFB
- Non-WMA

Source: Central Coast Water Authority (2024)

FIGURE 4-6

I:\DATA\2823\Analyses\2023-12 WY23 CCWA Water Imports\Fig 4-06 CCWA Imports WMA.grf 1/29/2024 M. McCammon

4.3 SURFACE WATER AVAILABLE FOR GROUNDWATER RECHARGE OR REUSE

During WY 2023, there were no projects within the WMA for direct groundwater recharge or in-lieu use.[6]

The Santa Ynez River and its underflow are within the jurisdiction of and regulated by the SWRCB. SWRCB regulates river flows for beneficial purposes including supporting the steelhead trout (*Oncorhynchus mykiss, O. mykiss*) population.[7] Following the SWRCB, USBR releases water stored in Lake Cachuma to meet downstream water rights and support fish habitat.

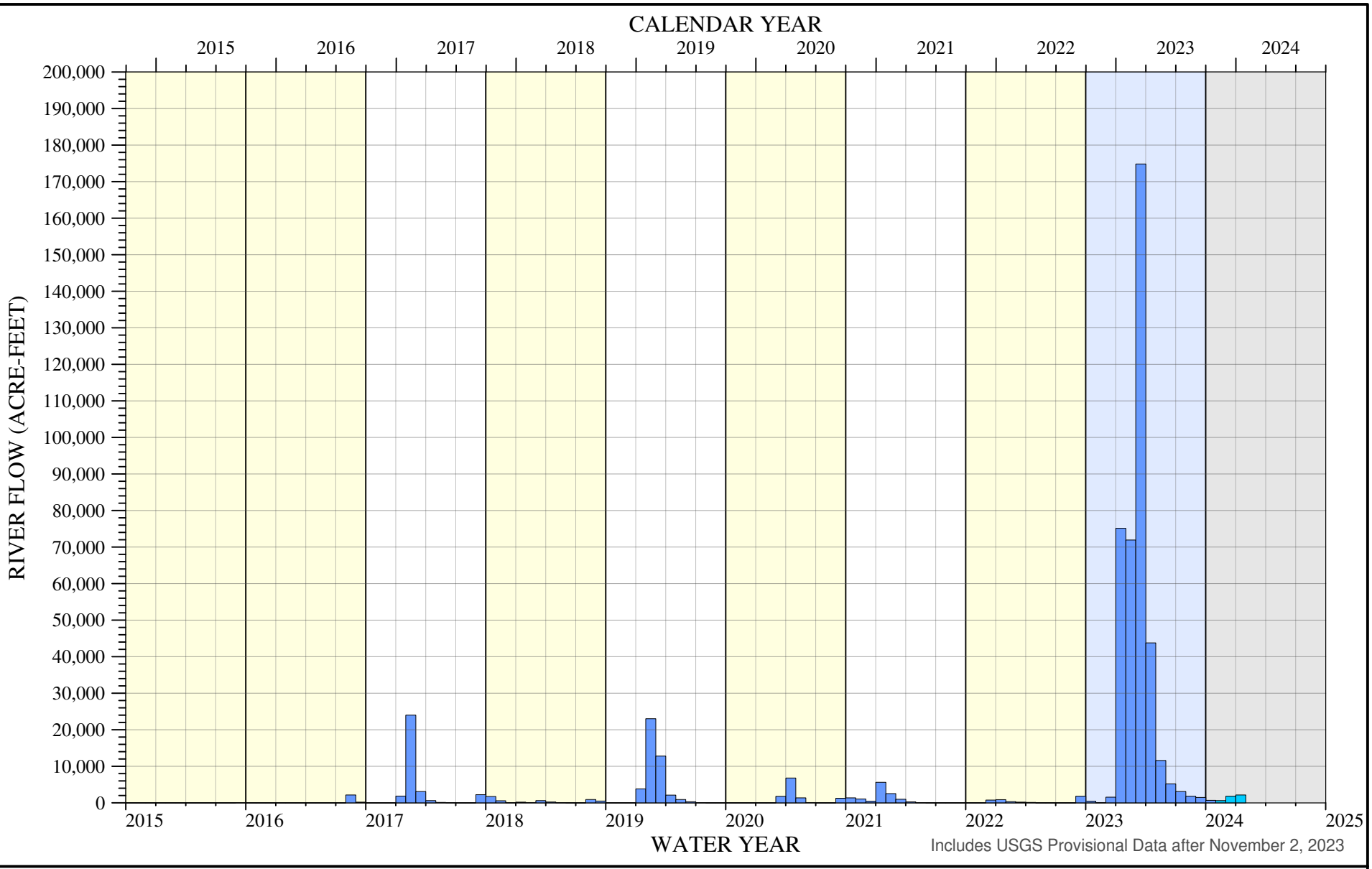
The method for the volume and timing of water rights releases comes from the SWRCB Orders of 1973 (WR 73-37), 1989 (WR 89-18), and 2019 (WR 2019-0148). The SWRCB orders account for the volume of water that would have been available if Lake Cachuma and its dam, Bradbury Dam, were not present. These orders identify two areas that Bradbury Dam prevents water from reaching. The Above Narrows Account (ANA) accounts for the area from Bradbury Dam and the Lompoc Narrows. The ANA is a relatively narrow channel of alluvium along the river (underflow), parts of which are within all three SGMA management areas. The Below Narrows Account (BNA) accounts for a relatively wider area below the Lompoc Narrows, the Lompoc Plain subarea of the WMA.

During the summer and fall of 2023, the volume of dewatered storage in the ANA area was relatively low. That is to say, the elevation of water in the subsurface was high. This was due to a quick response in the underflow to the wet winter of 2022-2023. As a result of there being low dewatered storage, at the direction of the SYRWCD, the USBR did not make water rights releases from Lake Cachuma during 2023.

Measurements at the Lompoc Narrows stream gauge represent more than 85% of all local surface water flows entering the WMA (Stetson, 2022). **Figure 4-7** shows flows of the Santa Ynez River at the USGS Streamflow gage 11133000 at Lompoc Narrows, downstream of the WMA-CMA boundary for WY 2015 through November 2023. The location of the Lompoc Narrows gage is shown in Figure 1-4.

6 23 CCR § 356.2(b)(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.

7 The Cachuma Operation and Maintenance Board (COMB) Fisheries Division conducts the monitoring of steelhead (*Oncorhynchus mykiss*) population in the Santa Ynez River and its tributaries. However, the COMB report comes out in the second quarter of the following water year, which is expected to be published concurrent or after this annual report.



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MONTHLY SURFACE FLOW
SANTA YNEZ RIVER AT LOMPOC NARROWS
USGS STREAMGAGE 11133000

Water Year Type (1942-2023)
- Wet
- No Data
- Above/Below Normal
- Dry / Critically Dry

Source: USGS NWIS (2024)

FIGURE 4-7

F:\DATA\2823\Analyses\2023-12 WY23 SW Flow Statistics\Fig 4-07 WY23 Monthly_11133000_SANTA YNEZ R A NARROWS_WMA.grf 2/5/2024 M. McCammon

4.3.1 Treated Wastewater Sources

Wastewater in the WMA is managed by the City of Lompoc, the Federal Bureau of Prisons, Mission Hills CSD, Vandenberg Village CSD, and VSFB. Annual volumes of water collected by the Lompoc Regional Wastewater Reclamation Plant (LRWRP) and the Mission Hills CSD systems since 2015 are summarized in **Table 4-4**.

Table 4-4
Wastewater Influent Volumes for Recent Years

Water Year	Lompoc Regional Wastewater Reclamation Plant Influent	Mission Hills Community Services District Sewer Flows
	Acre-Feet per Year	Acre-Feet per Year
2015	3,334	212
2016	3,324	247
2017	3,439	265
2018	3,338	240
2019	3,392	300
2020	3,394	223
2021	3,329	196
2022	3,318	180
2023	3,530	204

Source: City of Lompoc (2021, 2022, 2023, 2024), MHCSD (2021, 2022, 2023, 2024)

Most of the water from the LRWRP is tertiary treated and discharged to San Miguelito Creek near the confluence with the Santa Ynez River.

4.3.2 Reuse of Treated Wastewater Sources

The LRWRP has programs to enable the use of recycled water which can offset the use of groundwater. SWRCB Order WW0101, dated May 30, 2018, authorized up to 69 AFY of water used for local construction purposes.[8] In 2019, the Division of Drinking Water approved a Site Use Report approving irrigation use of

[8] "The authorized place of use for up to 62,000 gallons per day of treated wastewater for industrial uses is 7,488 acres within the City of Lompoc city limits and within 30 miles radius of Lompoc Regional Wastewater Reclamation Plant."

LRWRP recycled water (WCI, 2021). Due to high costs, the City of Lompoc suspended the recycled water program during WY 2022.

4.4 TOTAL WATER USE

Total water use in the WMA during WY 2023 is comprised of groundwater supplies, surface water diversions upstream of the Lompoc Narrows, and imported SWP water. See Chapters 4.1 and 4.2 above for additional details on these supplies. **Table 4-5** shows the summary of total water use by sector for the water year 2023. **Table 4-6** shows the summary of total water use by source for WY 2015-WY 2023. Total water use in the WMA was 26,765 AF in WY 2023.

Table 4-5
Summary WMA Total Water Use by Sector for Water Year 2023

Water Use Sector	Total	Method of Measurement	Estimated Accuracy
	Acre-Feet		Acre-Feet
Domestic	270	Self-Reported to SYRWCD	± 30
Agricultural	20,220	Self-reported to SYRWCD and estimates for July-September using WY 2022 data	± 2,020
Municipal	6,275	Daily totalizer values; Includes CCWA imports to VSFB	± 60
Total	**26,765**		**± 2,110**

Table 4-6
Summary WMA Total Water Use by Source for Recent Years

Water Year	Total Groundwater (Upper and Lower Aquifer)	Total Surface Water (River Well Pumping)	Total Imports (CCWA)	TOTAL WATER USE
	Acre-Feet per Year	Acre-Feet per Year	Acre-Feet per Year	Acre-Feet per Year
2015	28,120	5,260	110	33,490
2016	27,320	5,530	1,760	34,610
2017	26,600	5,770	1,920	34,290
2018	24,830	5,790	2,300	32,920
2019	25,210	4,460	2,360	32,030
2020	25,050	4,290	2,890	32,230
2021	23,910	4,590	2,240	30,740
2022	23,430	4,570	268	28,270
2023	21,600	4,150	1,015	26,765

4.4.1 Cannabis Land and Water Use

Multiple commenters on the WMA GSP, including the California Fish and Wildlife Service (CDFW), expressed concern about the use of water for the particular purpose of growing cannabis.[9] This update on cannabis fulfills commitments made by the WMA in the GSP to periodically update about the status of cannabis cultivation within the WMA.

Local and county regulations apply to cannabis cultivation. WMA member agencies of the City of Lompoc and the County of Santa Barbara have individually restricted cannabis cultivation. The City of Lompoc generally prohibits commercial cannabis facilities, including cultivation within the City limits, without specific license.[10] Santa Barbara County has further adopted a series of ordinances that regulate commercial cannabis operations within the County's unincorporated area. As of the end of WY 2023, the

[9] As defined in California Business and Professions Code Section 26001, parts of the plant *Cannabis sativa Linnaeus*, *Cannabis indica*, or *Cannabis ruderalis*.
[10] City of Lompoc Ordinance No. 1640(17), Ordinance No. 1645(18), and Ordinance 1646(18).

WMA has not assessed or limited water use for specific purposes. The WMA has not been a party to or consulted on the cannabis permits issued by the County or City agencies.

Table 4-7 summarizes the status of current applications by parcel within the WMA to the County of Santa Barbara for cannabis Land Use Permits. As of December 2023, the County has received 57 permit applications for parcels within the WMA. Of these, the County has issued 28 permits for cannabis agriculture, closed 15 applications with no permit issued, with the remaining 14 applications pending.

Table 4-7
WMA Cannabis Cultivation Land Use Permits as of December 2023[A]

WMA Subarea	Permits Issued	Application In Review			Total Applications
		Approved	Processing	Closed	
Lompoc Plain	15	0	5	5	25
Lompoc Upland	7	0	3	2	12
Lompoc Terrace	0	0	0	0	0
Burton Mesa	0	0	0	0	0
Santa Rita Upland	4	0	2	4	10
SYR Alluvium [B]	2	0	4	4	10
Total	**28**	**0**	**14**	**15**	**57**

[A] County of Santa Barbara Commercial Cannabis Application status as of 2023-12-11.

[B] The SYR Alluvium area in the WMA is fully channelized in bedrock and has no identified SGMA groundwater, as all shallow wells draw from the underflow of the Santa Ynez River.

CHAPTER 5: GROUNDWATER STORAGE

Groundwater storage is one of the SGMA sustainability indicators. This chapter presents the changes in groundwater in storage components required by the SGMA regulations:

> *"(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."*
>
> (23 CCR § 356.2(b))

Changes in groundwater in storage are calculated and mapped for the seasonal high (spring-to-spring) using a Thiessen polygon[1] method. This method uses water level observations at representative monitoring wells. In the WMA there is a longer period of record for seasonal high spring water levels than there is for seasonal low fall water levels. Agencies collected water levels from fewer wells during the fall. The WMA uses the spring-to-spring storage changes for trends due to this historical data collection.

[1] This method for tessellation goes by several names. Voronoi diagrams or Dirichlet tessellation are both names use in mathematics. The name Thiessen polygons comes from the application to hydrology.

5.1 CHANGE IN GROUNDWATER IN STORAGE MAPS

The SGMA regulations[2] require every Annual Report to contain *"change in groundwater in storage maps for each principal aquifer in the basin."* On the following maps, the polygon color indicates the change in groundwater in storage. Blue indicates increased groundwater in storage. Orange indicates decreased groundwater in storage. Color intensity is relative to the area of the polygon. Darker colors indicate a greater change in storage per acre. Numbers shown in each polygon are the estimated volume change in acre-feet. **Figure 5-1** and **Figure 5-2** show spring change in groundwater in storage.

The node of each polygon comes from existing representative monitoring wells (Figure 3-1). The area of each polygon is the area that is closest to the node point, compared to the other node points. The external boundary is the aquifer extent. The WMA uses the following equation to calculate the change in groundwater in storage for each polygon:

Change of Groundwater in Storage (acre-feet) = [area (acres)] x [Sy (unitless)] x [change in groundwater elevation (ft)]

Total Change of Groundwater in Storage (acre-feet) = Σ (Change in Storage for each Polygon)

Table 5-1 summarizes the total change in groundwater in storage calculated for each aquifer for WY 2023.

Table 5-1
Estimated Change in Groundwater in Storage
By Aquifer in Acre-Feet

Period		Lower Aquifer	Upper Aquifer	Total
Seasonal High	Spring 2022 to Spring 2023	8,200	5,900	14,100

Numbers rounded to the nearest 100 AF.

[2] 23 CCR § 356.2(b)(1)

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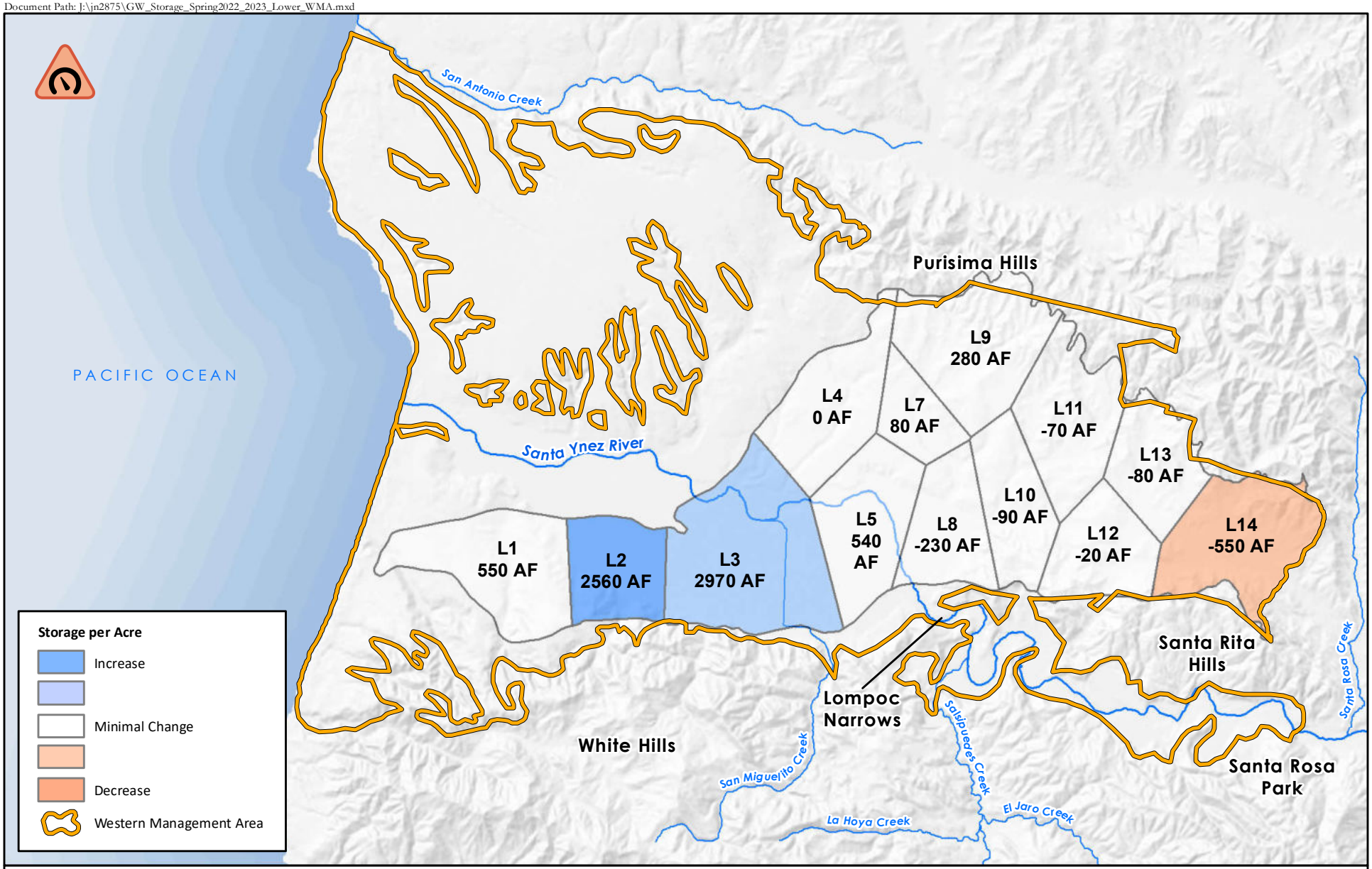

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Groundwater Sustainability Agency

CHANGE IN GROUNDWATER IN STORAGE
SPRING 2022-SPRING 2023
LOWER AQUIFER
WESTERN MANAGEMENT AREA

0 1 2 Miles

Sources:
USGS National Elevation Dataset, 2002

N

FIGURE 5-1

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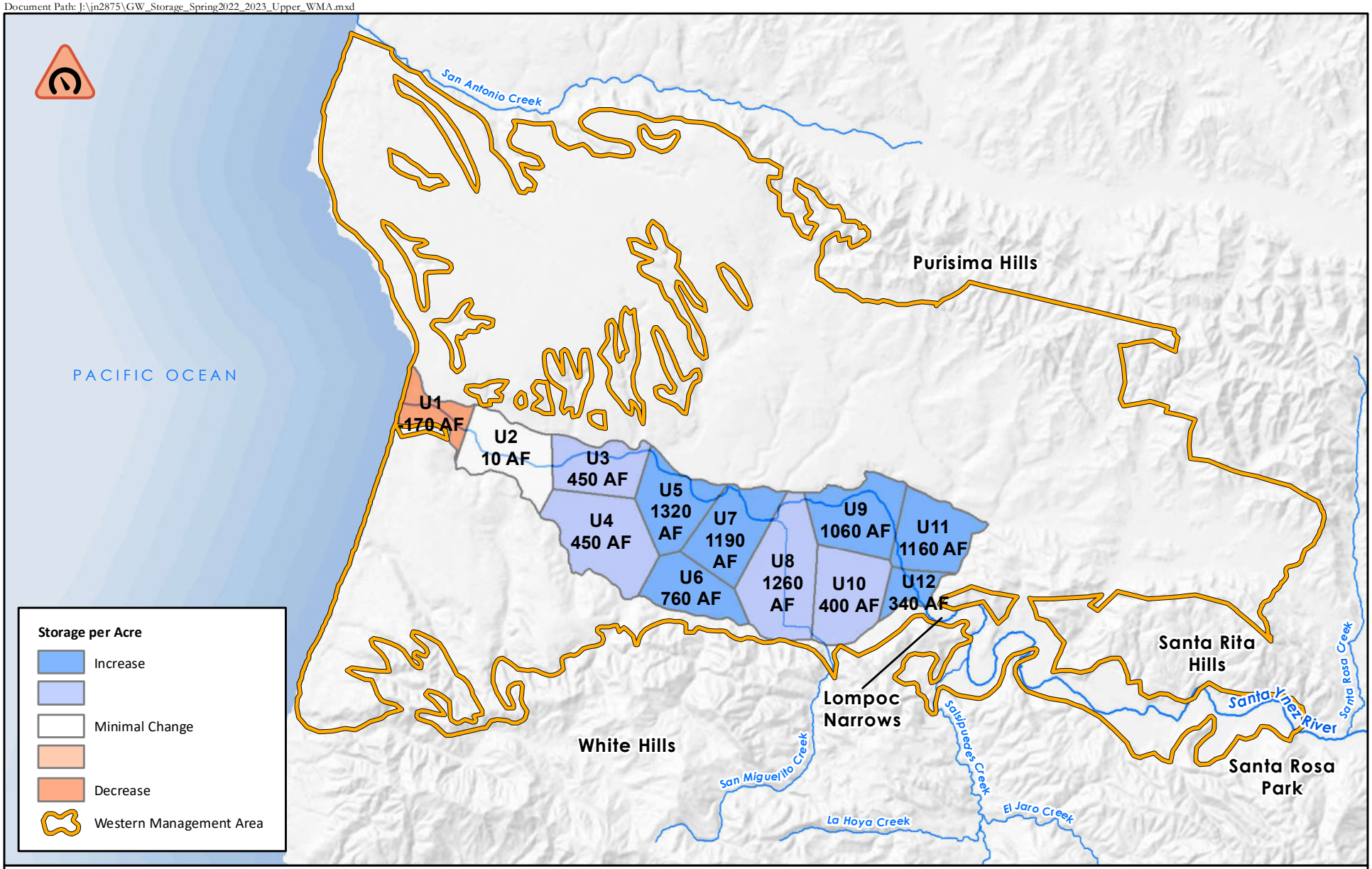

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WMA
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Groundwater Sustainability Agency

CHANGE IN GROUNDWATER IN STORAGE
SPRING 2022-SPRING 2023
UPPER AQUIFER
WESTERN MANAGEMENT AREA

0 1 2 Miles

Sources:
USGS National Elevation Dataset, 2002

N

FIGURE 5-2

The Spring 2022 to Spring 2023 change in groundwater in storage is shown for the Lower Aquifer in Figure 5-1 and the Upper Aquifer in Figure 5-2. The total groundwater in storage change for the WMA was a gain of 14,100 AF. Figure 5-1 and Figure 5-2 show that the volume of groundwater in storage increased in most areas of the Upper Aquifer. The Lower Aquifer showed increases in the Lompoc Plain subarea but had a slight decline in areas of the Santa Rita Upland. These areas of decline include areas where the GSP recommended additional wells to improve the monitoring network (see Figure 3-1), and water levels historically are slower to respond to surface conditions. The Lower Aquifer has a gain in storage of 5,900 AF. The Upper Aquifer has a gain of 8,200 AF.

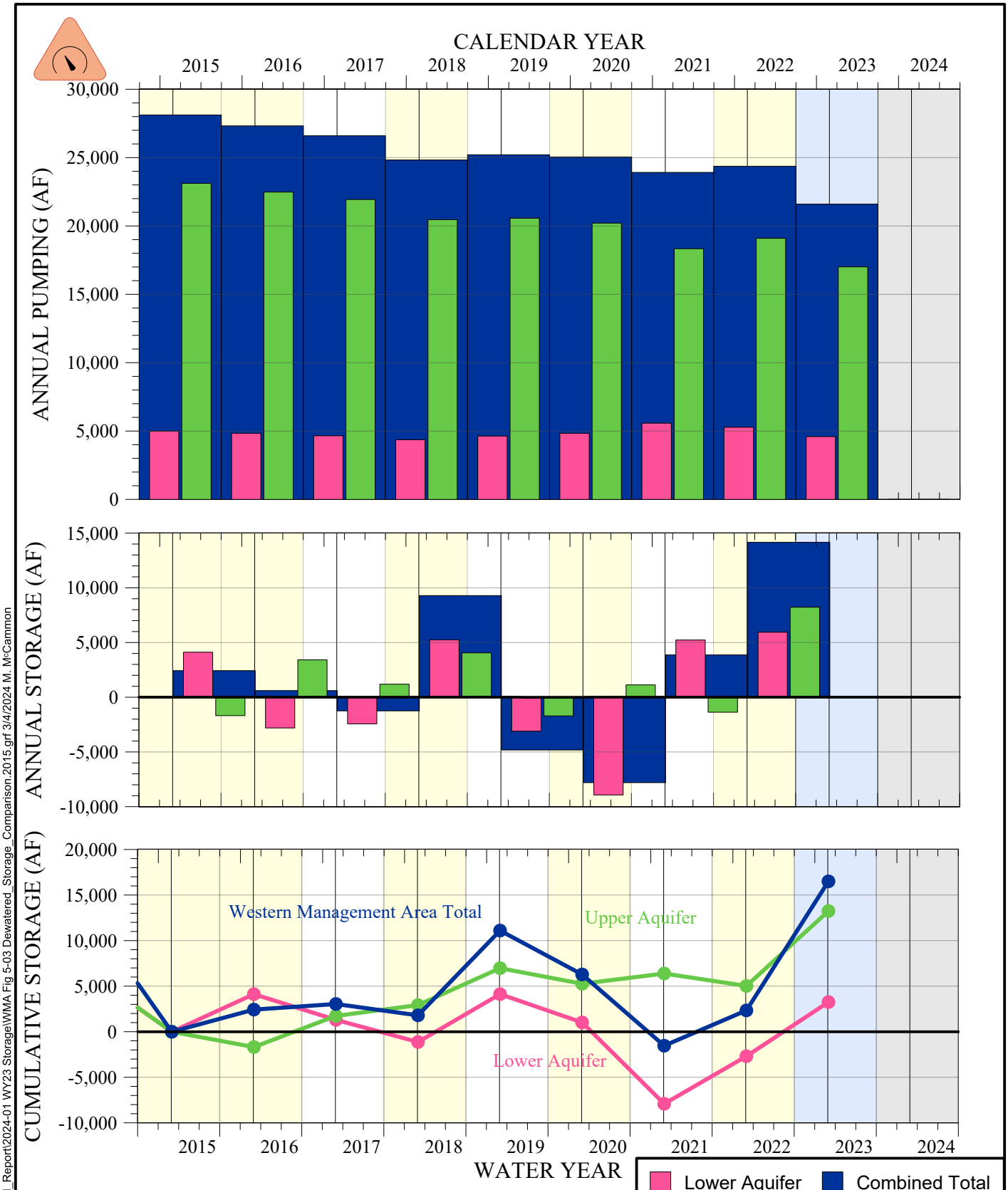
5.2 GROUNDWATER USE AND EFFECTS ON STORAGE

The SGMA regulations require that GSP Annual Reports contain "*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*."[3]

The Water Year Type is classified in Chapter 2 of this report using the same method as described in the WMA GSP. Updated groundwater use for WY 2023 is described in Chapter 4. The method for calculating the annual change in groundwater in storage is described earlier in this chapter. Annual storage change was calculated for historical years, including from WY 2015 through the present.

Annual reported groundwater use for the WMA Upper Aquifer is compared to the annual change in Upper Aquifer groundwater storage in **Figure 5-3**. The Water Year classifications shown in this figure are consistent with the classification of water years shown in Figure 2-4. The top of Figure 5-3 shows the annual reported groundwater use for the WMA Upper Aquifer, Lower Aquifer, and combined. The middle of Figure 5-3 shows the annual change in storage for the Upper Aquifer, Lower Aquifer, and combined total, and the bottom of Figure 5-3 set shows the cumulative change for the Upper Aquifer, Lower Aquifer, and combined total starting in March 2015.

[3] 23 CCR § 356.2(b)(5)(B)



Annual Pumping Data Includes Projected Data for WY 2023Q4

Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

COMPARISON OF WATER YEAR, USE, ANNUAL STORAGE, AND CUMULATIVE STORAGE RELATIVE TO MARCH 2015

Water Year Type (1942-2023)
- Wet
- No Data
- Above/Below Normal
- Dry / Critically Dry

F:\DATA\2823\Analyses\WY2023-3rd_Report\2024-01 WY23 Storage\WMA Fig 5-03 Dewatered_Storage_Comparison 2015.grf 3/4/2024 M. McCammon

CHAPTER 6: PROGRESS TOWARDS GSP IMPLEMENTATION AND SUSTAINABILITY

The SGMA regulations (Appendix 1-A) require that the SGMA Annual Reports contain "*A description of progress towards implementing the [GSP], including achieving interim milestones, and implementation of projects or management actions since the previous annual report*."[1] DWR approval of the GSP occurred on January 18, 2024, after the end of WY 2023. As indicated by the previous chapters discussing groundwater levels, water use, and storage, groundwater conditions within the WMA remain sustainable with no undesirable results for the SGMA sustainability criteria. The conditions within the WMA for the additional SGMA indicators are summarized below.

The WMA GSP Implementation of general projects and management actions identified in the WMA GSP has begun. The WMA is in the process of taking steps to ensure funding to complete the actions planned in the GSP.

6.1 SUSTAINABILITY INDICATORS

Analyses conducted for the WMA GSP indicate that Basin conditions are sustainable with no current undesirable results during WY 2023. This chapter discusses GSP-identified minimum thresholds, measurable objectives, and interim milestones[2] for both the previously discussed sustainability indicators (groundwater levels [Chapter 3], interconnected surface water [Chapter 3], and storage [Chapter 5]), and as well as the remaining sustainability indicators (seawater intrusion, water quality, and land subsidence).

1 23 CCR § 356.2(a) A description of progress towards implementing the Plan, including achieving interim milestones, and implementation of projects or management actions since the previous annual report.
2 23 CCR § 356.2(a) A description of progress towards implementing the Plan, including achieving interim milestones, and implementation of projects or management actions since the previous annual report.


Groundwater Levels


Groundwater Storage


Seawater intrusion


Degraded water quality


Land subsidence


Interconnected surface water

6.1.1 Chronic Lowering of Groundwater Levels


Chapter 3 provided data and maps for the chronic lowering of groundwater levels sustainability indicator. The WMA GSP states the following regarding monitoring groundwater levels for undesirable results:

> "Spring groundwater elevations that drop below the established groundwater elevation minimum thresholds in more than 50% of the representative monitoring wells in the Upper Aquifer or 50% of the representative monitoring wells in the Lower Aquifer for two consecutive, non-drought years[3] would correspond to an undesirable result associated with chronic lowering of groundwater elevations."

Similarly, for measurable objectives and interim milestones, the WMA GSP states:

[3] Two or more consecutive years that are classified as Dry or Critically Dry (Chapter 2, GC) will be defined as drought years. All other year types and combination of year types will be defined as non-drought years for the purpose of defining undesirable results under a groundwater sustainability plan.

"Measurable objectives are achieved when the 2011 groundwater elevation is reached in half of the representative monitoring wells (RMWs)."

The interim milestones were set to measurable objectives due to GSP's finding that the WMA conditions were sustainable with no current undesirable results.

The WMA currently has twenty-six representative groundwater level monitoring wells, thirteen each in the Lower Aquifer (**Table 6-1**) and Upper Aquifer (**Table 6-2**). These tables compare the groundwater level elevations to the sustainable management criteria for each well. The sustainable management criteria include Measurable Objectives, Early Warning, and Minimum Thresholds. These tables show all wells were above their Minimum Threshold levels for WY 2023. No undesirable results related to water levels occurred in WY 2023.

Table 6-1
Groundwater Elevations for
Lower Aquifer Groundwater Levels (feet in NAVD88)

Name	ID	Measuring Point	Reference Values			Water Year 2022		Water Year 2023	
			Measurable Objective	Early Warning	Minimum Threshold	Spring	Fall	Spring	Fall
7N/35W-26L04	17	36.10	28	11	6	18	17	33	19
7N/34W-29N7	28	68.16	43	21	15	37	25	44	35
7N/34W-22J6	22	97.81	55	33	28	46	45	48	48
7N/34W-24N1	23	131.77	56	34	29	47	46	48	48
7N/35W-27P01	44	262.55	43	25	20	38	37	40	37
7N/34W-15D3	602	193.12	58	36	31	50	47	50	51
7N/34W-14F4	52	276.04	50	28	23	39	41	44	53
7N/34W-12E1	51	388.21	62	40	35	55	54	54	54
7N/33W-19D1	49	255.05	56	33	28	48	47	47	47
7N/33W-17M1	47	329.33	62	36	31	47	45	47	44
7N/33W-28D3	81	354.04	42	30	25	44	42	44	42
7N/33W-21G2	78	421.76	85	51	46	63	60	63	60
7N/33W-27G1	80	437.03	56	36	31	53	38	51	42

n/a = No available data
NAVD88 = North American Vertical Datum of 1988

Table 6-2
Groundwater Elevations for
Upper Aquifer Groundwater Levels (feet in NAVD88)

Name	ID	Measuring Point	Reference Values			Water Year 2022		Water Year 2023	
			Measurable Objective	Early Warning	Minimum Threshold	Spring	Fall	Spring	Fall
7N/35W-17M1	2	11.92	5	5	0	10	8	8	7
7N/35W-21G2	39	22.57	8	5	0	11	10	11	7
7N/35W-23B2	40	32.50	8	5	0	7	7	12	3
7N/35W-26L1	15	36.01	30	25	20	29	28	33	29
7N/35W-26L2	16	35.72	32	23	18	25	22	34	26
7N/35W-24J4	33	59.94	30	25	20	25	21	40	28
7N/34W-29N6	27	67.59	41	31	26	33	28	45	38
6N/34W-6C4	20	104.04	42	27	22	34	n/a	n/a	n/a
7N/34W-32H2	31	77.85	45	33	28	39	n/a	n/a	n/a
7N/34W-27F9	1162	99.40	56	42	37	44	43	54	55
7N/34W-34F6	501	101.40	57	39	34	51	47	55	59
7N/34W-26Q5	60	114.00	68	49	44	55	49	67	65
7N/34W-35K9	32	106.92	80	73	68	74	75	88	84

n/a = No available data
NAVD88 = North American Vertical Datum of 1988
The Minimum Threshold for 7N/34W-35K9 was corrected based on 2020 water levels and corrected datum.

6.1.2 Reduction of Groundwater in Storage

Chapter 5 of this report addresses the reduction of groundwater in storage. In addition, progress towards sustainability for groundwater storage is tracked along with groundwater levels as discussed in Section 6.1.1.

6.1.3 Water Quality

The WMA GSP found that "Groundwater quality in the WMA is currently suitable for agricultural, domestic, and municipal supply purposes." The SGMA statute and SGMA regulations on Annual Reports do not include a discussion of general water quality (see Appendix 1-A). The WMA has included a periodic evaluation of water quality as **Appendix 6-A**. Most of the data evaluated

is sourced from Water Board datasets and inclusion is intended to support the Central Coast Water Board's water quality mission.[4]

6.1.4 Seawater Intrusion

Seawater intrusion is the inflow of seawater into the aquifer and adversely affects groundwater quality, and therefore suitability for beneficial uses. Per SGMA regulations,[5] this is characterized by relatively high concentrations of chloride. The GSP identified the 500 mg/L chloride isocontour as the key indicator for assessing seawater intrusion.

Figure 6-1 shows the location of the estimated groundwater chloride isocontour for 2023. These were primarily based on chloride concentration at the wells 7N/35W-17K20, 7N/35W-21G2, 7N/35W-27F1, and 7N35W-22A3. **Figure 6-2** shows recent salinity, chloride, and sodium trends for the two western wells (7N/35W-17K2 and 7N/35W-21G2), and **Figure 6-3** shows recent salinity, chloride, and sodium for two of the more inland wells (7N/35W-27F1 and 7N35W-22A3). These two sets of graphs show relatively little change since 2015.

4 Central Coast Regional Water Quality Control Board. Bishop, James. June 22, 2023. Public Comment Letter for The Santa Ynez River Valley Groundwater Basin – Annual Report Water Year 2022. 3 pg. https://sgma.water.ca.gov/portal/gspar/comments/214. Access date 2023-12-05.

5 23 CCR § 356.28(c)(3) Seawater Intrusion. The minimum threshold for seawater intrusion shall be defined by a chloride concentration isocontour for each principal aquifer where seawater intrusion may lead to undesirable results. Minimum thresholds for seawater intrusion shall be supported by the following: […]

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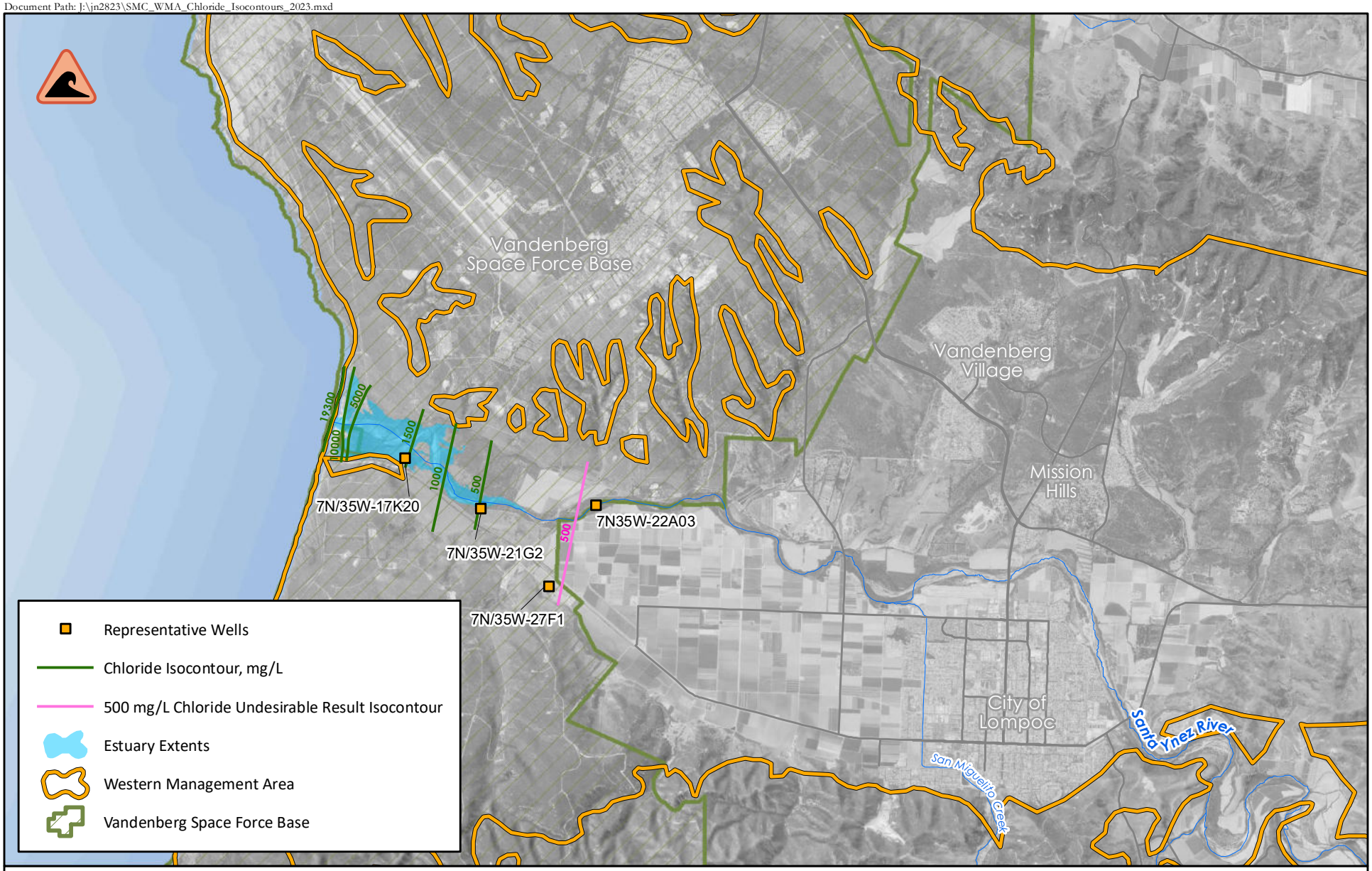

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Western Management Area
Groundwater Sustainability Agency

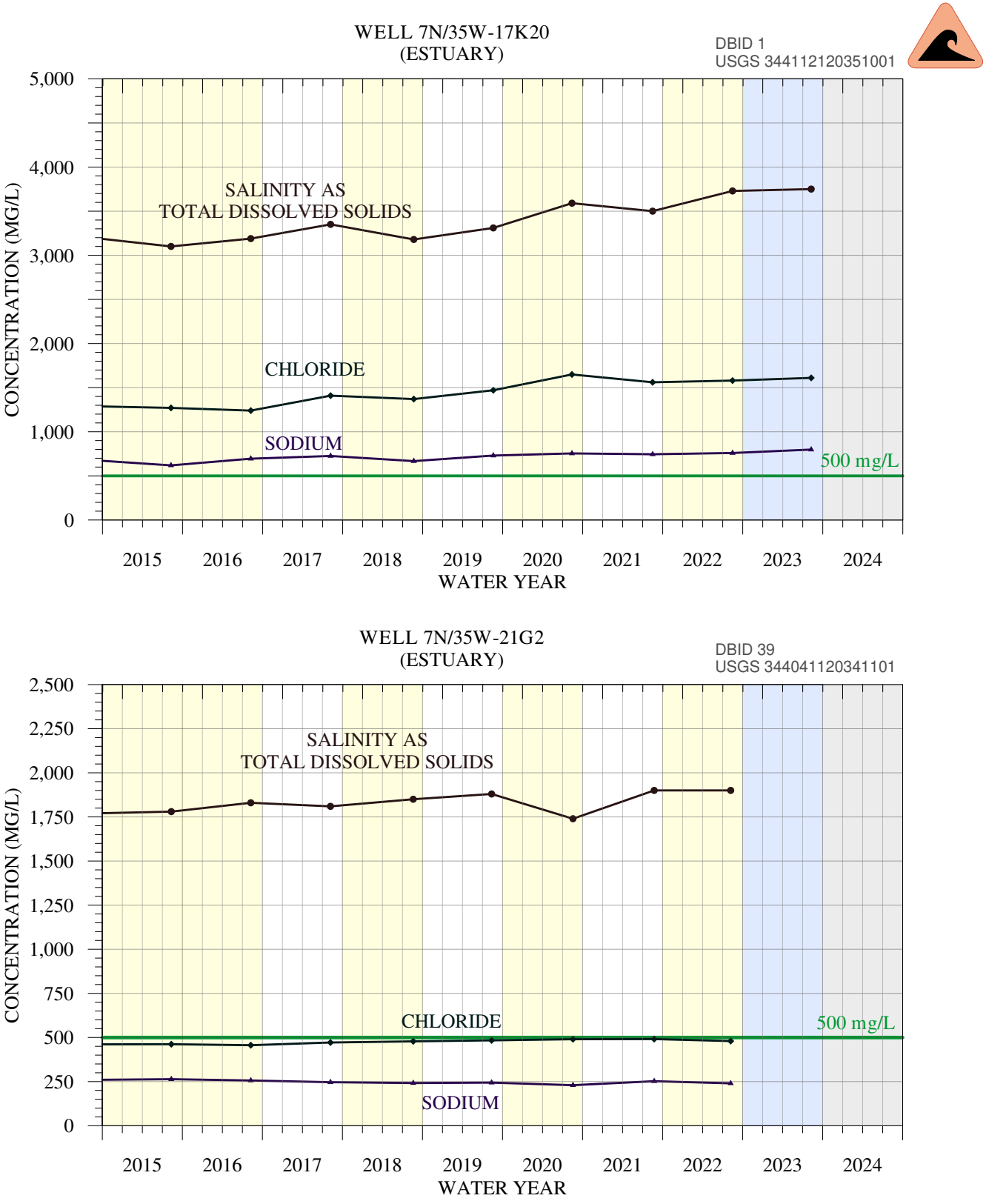
500 MG/L CHLORIDE ISOCONTOUR IN 2023
WESTERN MANAGEMENT AREA

0 0.75 1.5 Miles

N

Sources:
Pacific States Marine Fisheries Commission (2018)
NAIP (2018)

FIGURE 6-1



Data Source: COSB (2022) and USGS (2023) water quality data.

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WMA
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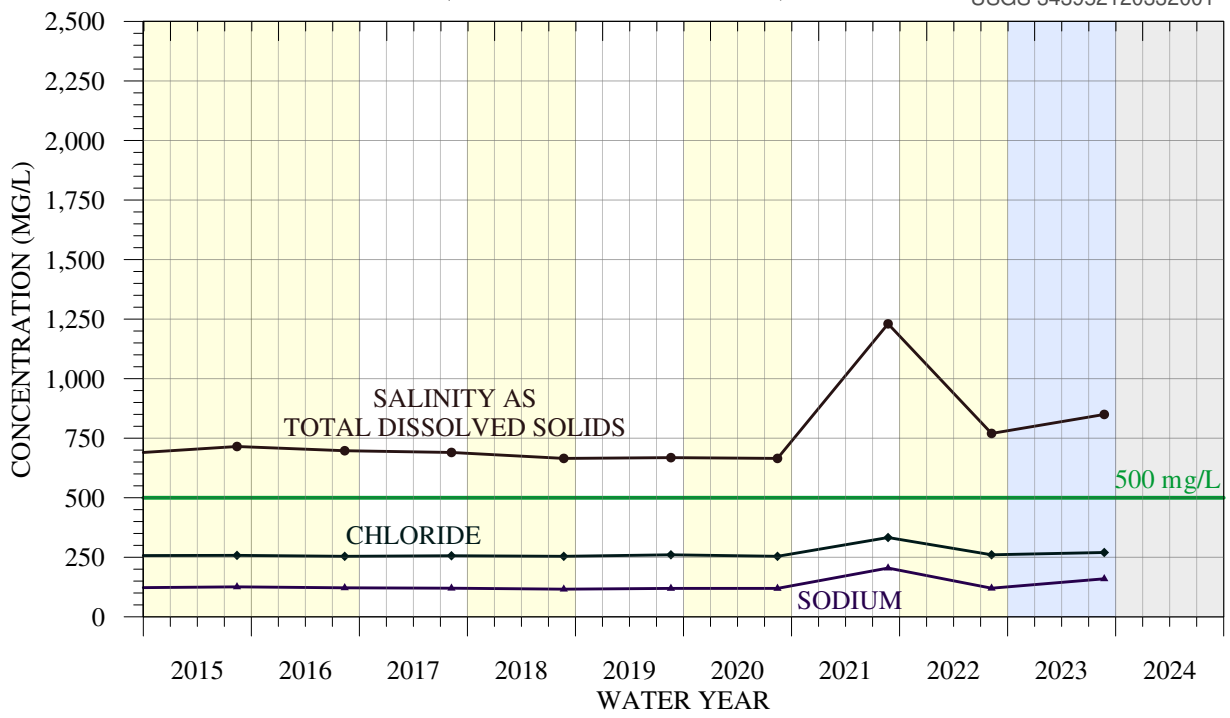
Western Management Area
Groundwater Sustainability Agency

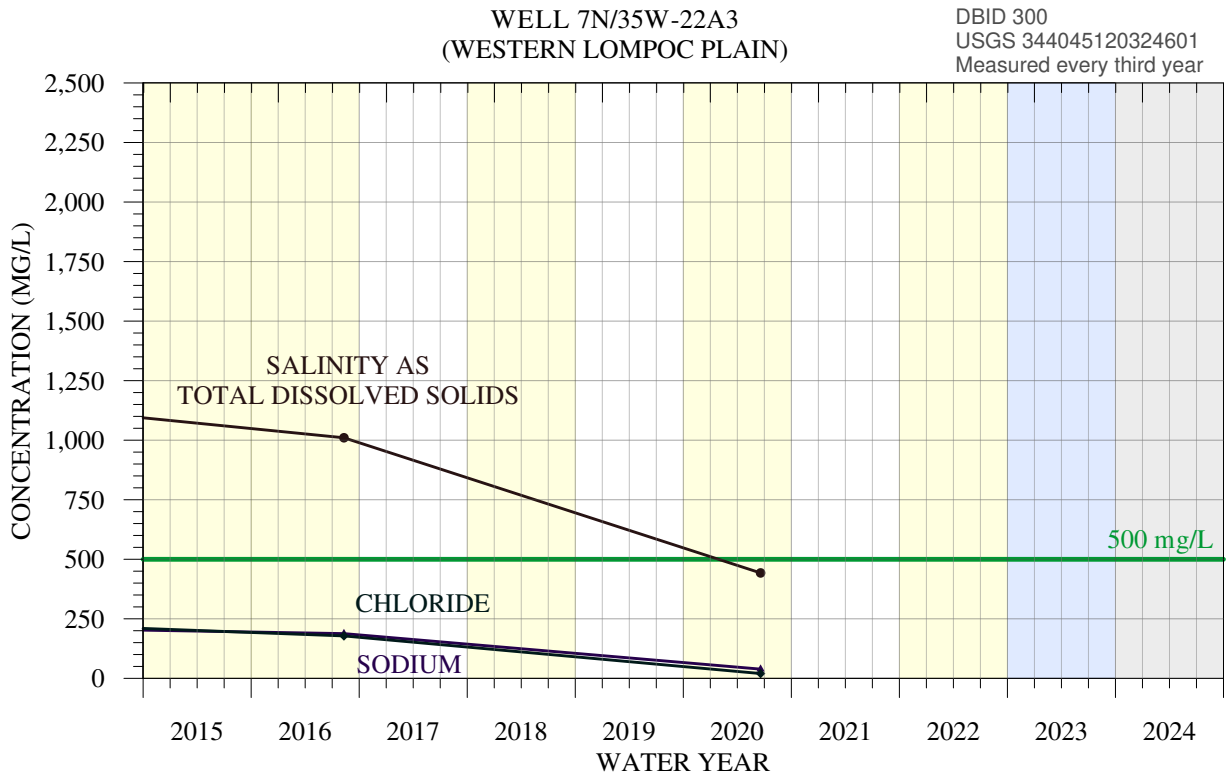
MAJOR WATER QUALITY TRENDS
SELECTED WELLS
LOMPOC PLAIN SUBAREA

Water Year Type (1942-2023)
Wet
No Data
Above/Below Normal
Dry / Critically Dry

TDS
Chloride
Sodium

F:\DATA\2823\Analyses\2023-12 WY23 Seawater\Fig 6-02 Seawater_Trends_Estuary.grf 12/12/2023 M. McCammon





Data Source: COSB (2023) and USGS (2020) water quality data.

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WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

MAJOR WATER QUALITY TRENDS
SELECTED WELLS
LOMPOC PLAIN SUBAREA

Water Year Type (1942-2023)
Wet
No Data
Above/Below Normal
Dry / Critically Dry

TDS
Chloride
Sodium

F:\DATA\2823\Analyses\2023-12 WY23 Seawater\Fig 6-03 Seawater_Trends_Plain.grf 1/10/2024 M. McCammon

6.1.5 Land Subsidence

Significant land subsidence due to groundwater withdrawal is not occurring in the WMA. Conditions in the WMA are considered to have dropped below the land subsidence minimum threshold when both (1) a decline of six inches (a half foot) from the 2015 land surface elevation because of groundwater extractions, and (2) that decline interferes with either land use or infrastructure.

Two primary sources of data are used to characterize the movement of the land surface: remote sensing area data from Interferometric Synthetic Aperture Radar (InSAR) and point data from continuous global positioning system (CGPS). Both InSAR and CGPS methods provide absolute changes in elevation and do not differentiate between land subsidence resulting from excessive groundwater extraction and other sources of vertical movement such as tectonic movement. Any significant lowering of ground levels indicated by these methods would need to be followed up to identify the cause.

The InSAR maps show the elevation change of the ground over a wide area between two points in time. **Figure 6-4** is a map comparison of October 2022 and October 2023, showing change over WY 2023. **Figure 6-5** is a map comparison of January 2015 and October 2023 which shows cumulative change since 2015. These two figures show that the vertical change is less than the InSAR method accuracy for most of the WMA.[6]

CGPS collects very high-resolution three-dimensional movement of a sensor over time. The LOMP station, located near Mission Hills (see **Figure 6-5**), is a CGPS station that has been in operation since May 15, 2015. **Figure 6-6** graphs the horizontal movement (north-south, east-west) and vertical movement (up-down). Since 2015 the graph shows movement to the north of 12 inches and movement west of 11 inches. Vertical movement is down by less than an inch, with a datum entry change in 2017. This lateral movement is aseismic tectonic movement, and not due to groundwater conditions.

Both InSAR and CGPS methods show there were no undesirable results related to land subsidence during WY 2023.

[6] Reported as 18 mm (0.71 inches) vertical accuracy at 95% confidence level in Towill (2023).

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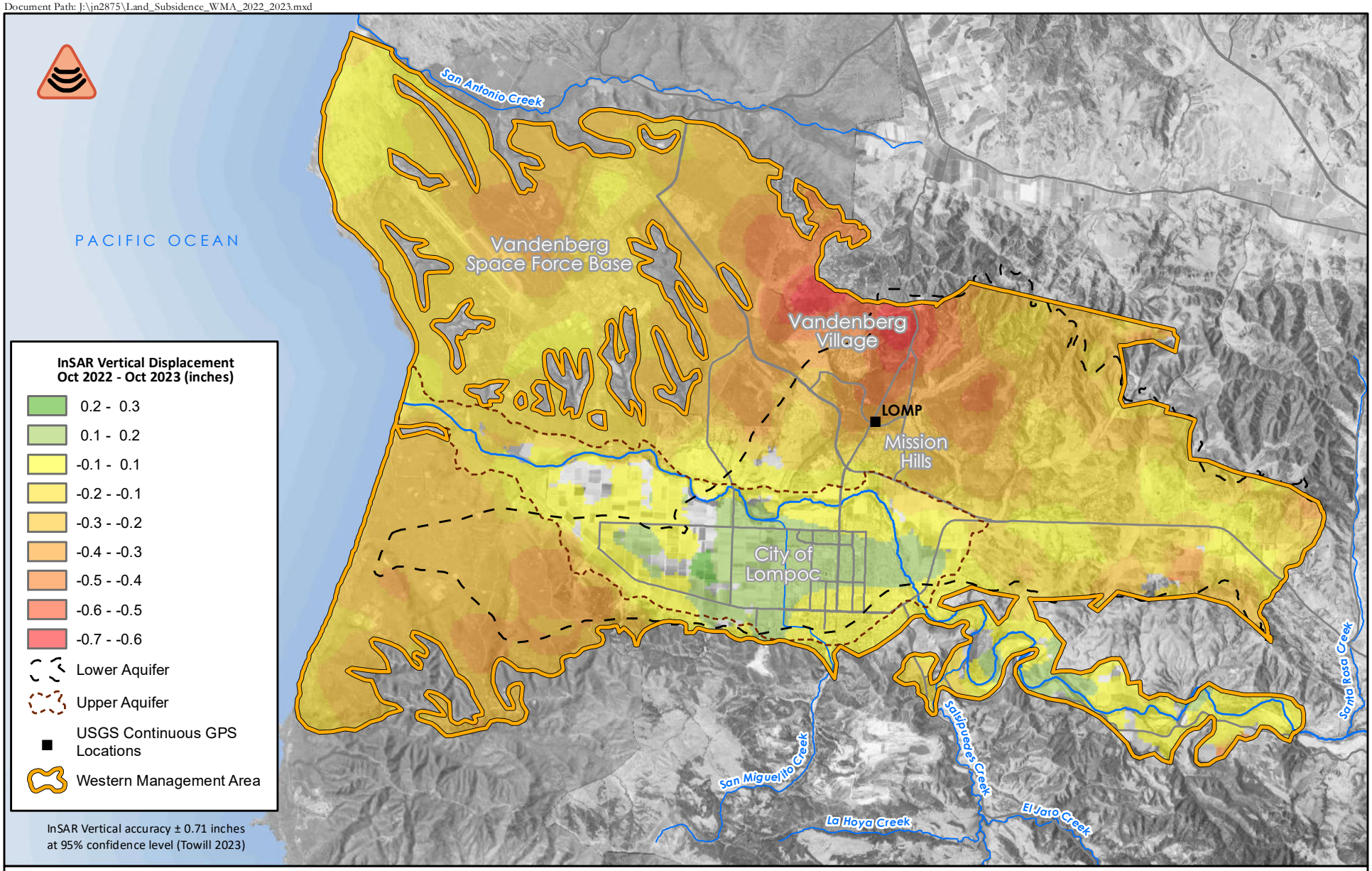

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Western Management Area
Groundwater Sustainability Agency

LAND SUBSIDENCE
OCTOBER 2022 TO OCTOBER 2023
INSAR DATA
WITHIN WESTERN MANAGEMENT AREA

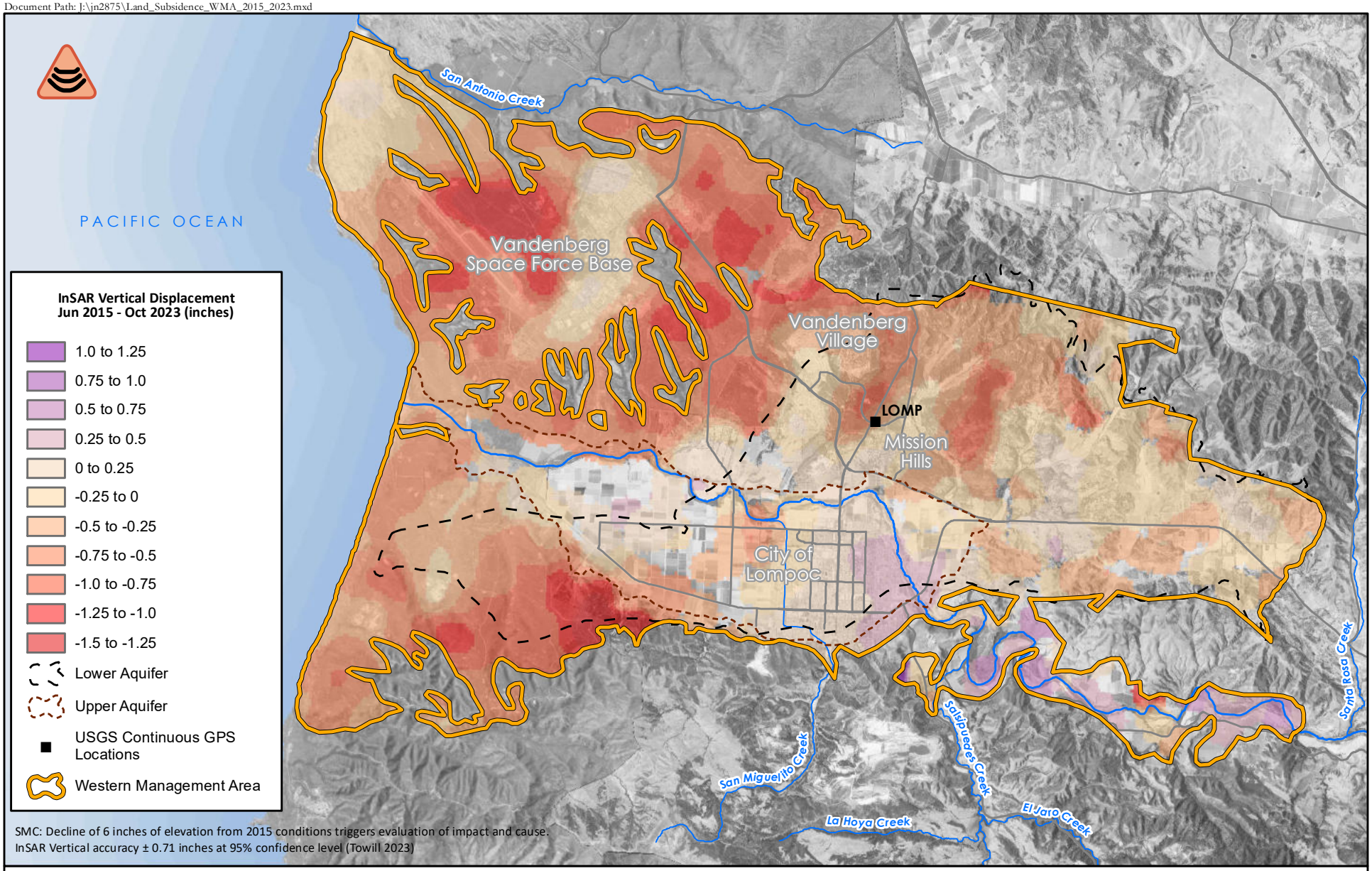
0 1 2 Miles

N

Sources:
USGS National Elevation Dataset, 2002
NAIP (2022/2012), DWR (2023)

FIGURE 6-4

Document Path: J:\jn2875\Land_Subsidence_WMA_2015_2023.mxd



SMC: Decline of 6 inches of elevation from 2015 conditions triggers evaluation of impact and cause.
InSAR Vertical accuracy ± 0.71 inches at 95% confidence level (Towill 2023)

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

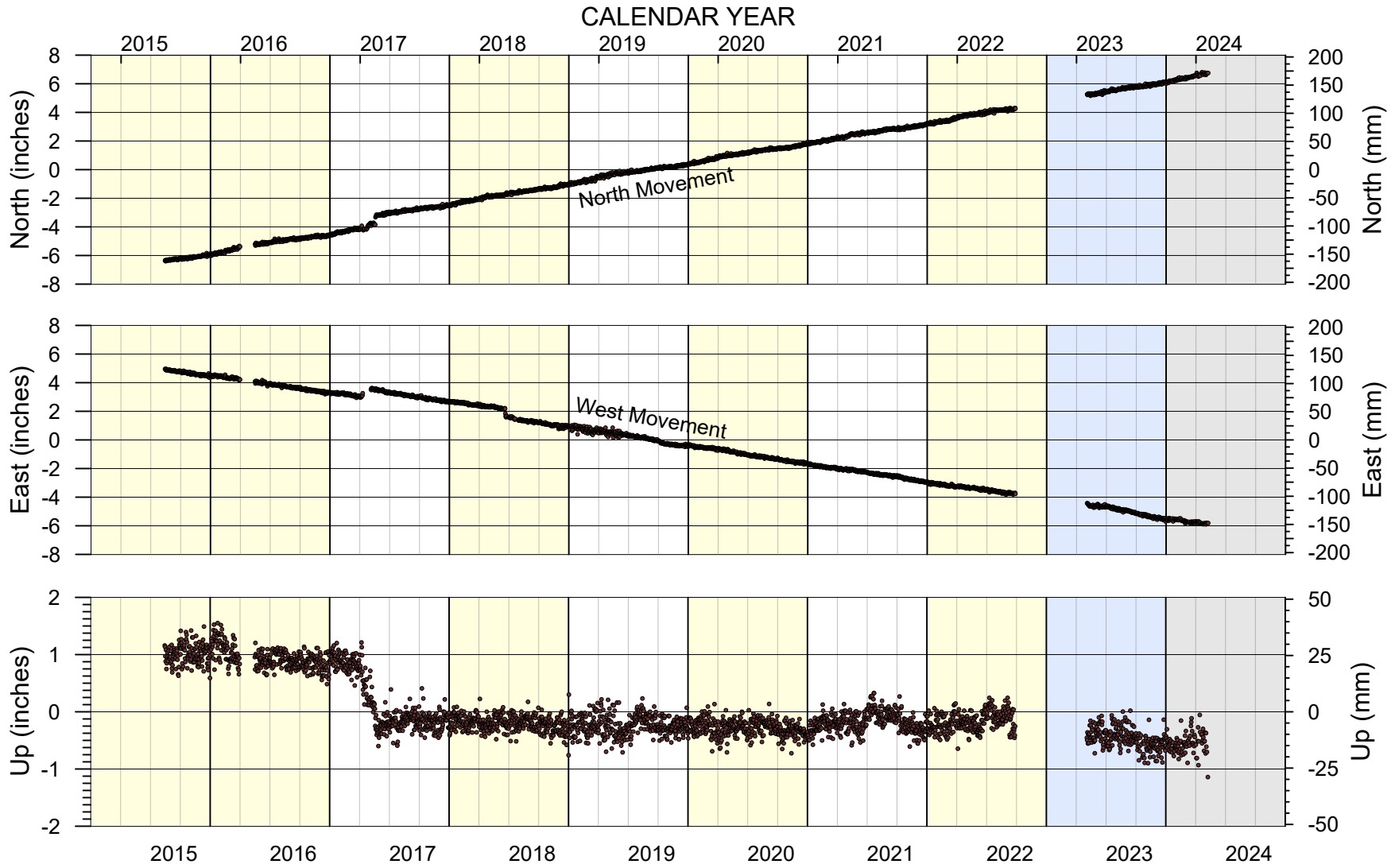
LAND SUBSIDENCE
JUNE 2015 TO OCTOBER 2023
INSAR DATA
WITHIN WESTERN MANAGEMENT AREA

0 1 2 Miles

Sources:
USGS National Elevation Dataset, 2002
NAIP (2022/2012), DWR (2023)

N

FIGURE 6-5



Decline of 6 inches of elevation from 2015 conditions triggers evaluation of impact and cause.

Source: Murray, J.R. and Svarc, J. (2017), Global Positioning System data collection, processing, and analysis conducted by the U.S. Geological Survey Earthquake Hazards Program, Seismol. Res. Lett., doi:10.1785/022016020 .

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

CONTINUOUS GLOBAL POSITIONING SYSTEM
LOMP STATION TRENDS
LAND SUBSIDENCE

Water Year Type (1942-2023)
- Wet
- No Data
- Above/Below Normal
- Dry / Critically Dry

FIGURE 6-6

F:\DATA\2823\Analyses\WY2023-3rd_Report\2023-12 WY23 CGPS Land Subsidence\Fig 6-06 WMA_CGPS WY2023_shift_scale.grf 2/16/2024 M. McCammon

6.1.6 Interconnected Surface Water and Groundwater Dependent Ecosystems

The SGMA sustainability indicator "depletion of interconnected surface water," is related to the effects of groundwater pumping on surface water flows. Under the SGMA statute, groundwater is water in the identified groundwater aquifers, "but does not include water that flows in known and definite channels"[7] such as the underflows of the Santa Ynez River through its alluvial sediments. The SWRCB, under Order WR 2019-0148 and earlier orders and decisions, regulates all flows of the Santa Ynez River. This regulation by the SWRCB extends to and includes the subsurface flows through the alluvial channel.

The groundwater level hydrographs presented in Appendixes 3-A and 3-B further address the potential depletion of interconnected surface water. As stated in the 2022 WMA GSP (Section 3b.2-6), groundwater elevations that would drop to below ten feet below 2020 groundwater elevations in two out of the three representative monitoring wells in the Upper Aquifer for two consecutive non-drought[8] years would indicate significant and undesirable results for interconnected surface water and groundwater-dependent ecosystems. Similarly, the measurable objective and interim milestone (2022 GSP, Sections 3b.4-6 and 3b.5-6) established for the depletion of interconnected surface water are groundwater elevations equal to five feet below the channel thalweg of the Santa Ynez River. **Table 6-3** summarizes the groundwater elevations at the three wells used to measure potential impacts on surface water. This table shows that all wells had water levels above the minimum threshold during WY 2023.

In WY 2023, all three representative monitoring wells were above their respective Measurable Objectives. The WMA met the groundwater elevation targets for interconnected surface water and groundwater-dependent ecosystems.

7 CWC Section 10721 (g) "Groundwater" means water beneath the surface of the earth within the zone below the water table in which the soil is completely saturated with water, but does not include water that flows in known and definite channels.

8 For this purpose, a year is a drought if it is two or more consecutive years that are classified as Dry or Critically Dry (see Chapter 2 for year classifications). All other year types and combination of year types will be defined as non-drought years for the purpose of defining undesirable results under a groundwater sustainability plan.

Table 6-3
Groundwater Elevations for Interconnected Surface Water (feet in NAVD88)

Name	ID	Measuring Point	Reference Values		Water Year 2022		Water Year 2023	
			Measurable Objective	Minimum Threshold	Spring	Fall	Spring	Fall
7N/35W-21G2	39	23	4	0	11	9	11	7
7N/34W-29F2	167	65.39	41	31	36	35	51	44
7N/34W-35K9	32	106.9	77	68	74	75	82	84

NAVD88 = North American Vertical Datum of 1988.
The Measurable Objective is 5 feet below the channel thalweg.
The Minimum Threshold is 10 feet below the 2020 groundwater level or Mean Sea Level.
The Minimum Threshold for 7N/34W-35K9 was corrected based on 2020 water levels and corrected datum.

The Cachuma Operation and Maintenance Board (COMB) Fisheries Division monitors the migration of the Southern California Steelhead/rainbow trout (*O. mykiss*) in the Santa Ynez River from Lake Cachuma to the Pacific Ocean. The COMB publishes the report concurrently or after this annual report,[9] and therefore conclusions from that report about WY 2023[10] are unavailable before the SGMA annual reporting deadline.

The most recently published COMB report was about WY 2022 (COMB, 2023). Due to "low flow conditions" during WY 2022, no trapping was conducted at the Salsipuedes Creek Migrant Traps or any of the traps along the Lower Santa Ynez River (LSYR) Mainstem Trap. The WY 2022 report identified that since 2011 only five migrant captures of *O. mykiss* have been made in the mainstem Lower Santa Ynez River (LSYR), and no *O. mykiss* migrants have been observed for 10 of the last 11 years. The "Cadwell" and "Cargasacchi" properties are within the WMA boundaries, and COMB 2022 snorkel surveys found no *O. mykiss* in either survey area. However, the COMB report indicated active beaver dams throughout the alluvial area upstream of the Lompoc Narrows, with 63 beaver dams between the Lompoc Narrows and Alisal Bridge (this area also includes part of the CMA and EMA). The WY2022 COMB report concluded that "it was highly unlikely that any LSYR Lagoon fish migrated upstream or downstream" in WY 2022.

9 The COMB Fisheries Division report on WY 2022 was published on June 9, 2023.
10 The COMB Water Year is the same as SGMA, running October 1st to September 30th.

6.2 IMPLEMENTATION OF PROJECT AND MANAGEMENT ACTIONS SINCE PREVIOUS ANNUAL REPORT

The WMA GSA continues to work on SGMA compliance and progress on projects and management actions identified in the GSP to improve sustainability (**Table 6-4**). During WY 2023 the WMA made progress on six (6) of the tasks in Table 6-4.

Table 6-4
Summary of WMA GSP Implementation Projects

Project Category	Task	Occurrence	Water Year 2023 Status
Completing Ongoing Field Investigations	Surveying Representative Wells	One Time	
	SkyTEM Airborne Geophysics	One Time	Completed
Monitoring Network Gaps	Video Logging and Sounding Wells	One Time	
	Groundwater Level Monitoring Wells (Outreach)	One Time	
	WQ Seawater Monitoring	Annual	
	SW Gage Installation (planning)	One Time	
Projects and Management Actions	Water Conservation	Annual	
	Groundwater Extraction Fee Study	5 Year	In Progress
	Feasibility Study for Recycled Water Project	One Time	
	Feasibility Study for Bioswale Stormwater Retention[A]	One Time	In Progress
	Ban on Water Softeners	One Time	In Progress
Improved Data Collection for Management	Update Well Registration Program	One Time	In Progress
	Well Metering Requirement	One Time	
Data Management	Data Updates	Annual	In Progress
Reporting and Plan Updates	SMGA WY Annual Reports	Annual	In Progress
	SGMA Five-Year Plan Assessment	5 Year	

[A] Bioswale Stormwater Retention has been integrated into a broader Stormwater Runoff Capture and Recharge project.

6.2.1 Governance Update

During Water Year 2023 (WY 2023), the WMA GSA was reformed under a separate entity using the Joint Exercise of Powers Act (JPA). This replaced the Memorandum of Agreement (MOA) which established the WMA GSA in 2017. From a practical perspective, the core provisions of the existing MOA were integrated into the draft GSA JPA, so, in effect, the JPA is consistent with the MOA while simultaneously providing the ability to exercise the powers common to the member agencies and protect the member agencies from the GSAs debts or other liabilities.

The WMA GSA Committee endorsed the articles of the GSA JPA on August 23, 2023. The GSA JPA was scheduled and was ratified by the member agencies at the beginning of WY 2024 (**Table 6-5**). The change in governance structure was communicated to DWR in January 2024.

Table 6-5
WMA GSA JPA Ratification

Member Agency	GSA JPA Ratification Date
Vandenberg Village CSD	October 3, 2023
City of Lompoc	October 17, 2023
Mission Hills CSD	October 18, 2023
Santa Ynez River Water Conservation District	October 19, 2023
County of Santa Barbara	November 28, 2023

6.2.2 Groundwater Extraction Fee Study

The GSA developed a request for proposals from qualified firms to conduct a rate study for groundwater extractors and find mechanisms to fund the implementation of the GSP. The choice of the rate study firm is scheduled to be completed early in WY 2024. The requested services will find the required revenue to support implementation for the next five years, evaluate the need for a pump charge rate and/or a parcel fee, prepare rate schedules, and offer two recommended rate/fee alternatives. The rate study will include stakeholder outreach and engagement by presenting draft rate study materials for public input and to the Citizen Advisory Group (CAG). The recommended rate/fee structures will be consistent with industry

practice for established rates in California and follow Prop 26 and 218 and the Revenue Program Guidelines by the State of California Water Resources Control Board.

6.2.3 Stormwater Runoff Capture and Recharge

The WMA GSA and member agencies (City of Lompoc) started efforts to increase stormwater recharge. Work included solicitations for grant funding from the Regional Climate Collaboratives Program. Funding was requested to start a basin-wide desktop study to find potential sites to capture and infiltrate stormwater runoff that otherwise flows to the Pacific Ocean. The original solicitation was not funded, but the City has continued to collaborate with the Community Environmental Council to secure funding from the California Natural Resources Agency.

In September 2023, DWR notified the Santa Ynez River Valley Groundwater Basin they were awarded over $5.5 million under the Sustainable Groundwater Management (SGM) Grant Program Implementation Round 2. The funding will support eight (8) projects and management components, one of which is to find and develop potential sites for stormwater capture and recharge. The work uses data and modeling to (1) screen candidate project sites suitable for stormwater runoff capture, (2) complete pre-design field investigations to confirm select candidate project site suitability, (3) develop conceptual project plans, and (4) complete preliminary project design plans for the best-suited candidate sites.

6.2.4 Water Softener Ban

A uniform water softener ordinance related to water softening/water softeners is being created that can be adopted by the three water providers in the WMA GSA (City of Lompoc, Vandenburg Village CSD, Mission Hills CSD). The goal of the ordinance is to reduce salt loads in water. Staff members met on June 1, 2023, to formulate plans for the water softener ordinance and learned the City of Lompoc's sewer use ordinance (SUO) is under review by U.S. Environmental Protection Agency (EPA) Region 9 (Pacific Southwest) office. There is no date set by the EPA to complete their review and make their decision on the SUO. When the SUO update has been approved by the EPA and adopted by the city, then the city can update the SUO requirements related to water softeners. This update will be conducted in coordination with Vandenburg Village CSD and Mission Hills CSD.

6.2.5 Update Well Registration Program

The GSA needs more detailed data about the location and number of groundwater extraction facilities, including information on current groundwater wells and new groundwater wells. Accordingly, as described in the GSP, the GSA developed a resolution to require extraction well registration, which was adopted during the September 27, 2023, meeting of the WMA GSA. The resolution requires the Property Owner of each groundwater well to provide groundwater well registration information (to the extent known to the Property owner at the time of registration) by filling out and sending a registration form issued by the Agency and returned to the Agency via U.S. mail or electronic mail. All new groundwater extraction wells shall be registered with the Agency using the same form no later than sixty (60) days after well completion. Changes to the information provided in the well registration form including, but not limited to, a change to the Property Owner or Operator of a Groundwater Extraction Facility must be reported within thirty (30) days of the change taking effect. The Agency shall keep the information contained in the registration confidential to the extent permissible under applicable law.

6.2.6 Data Updates and Reporting

The required water level, water quality, and water use data collection, processing, and Data Management System (DMS) maintenance was completed to support the preparation of the WY 2022 Annual Report and this WY 2023 Annual Report. The WMA allows public access to portions of the DMS at the following web address: https://sywater.info/

6.2.7 WMA Committee Meetings

During WY 2023 the WMA published its second annual report, for the Water Year 2022 (October 2021-September 2022). This report was the first year following the submittal of the GSP. The WMA committee approved the second annual report on March 22, 2023. The WMA committee submitted it to DWR on March 27, 2023, before the April 1 deadline.[11]

[11] CWC Section 10728 "On the April 1 following the adoption of a groundwater sustainability plan and annually thereafter, a groundwater sustainability agency shall submit a report to the department [..]"

The WMA committee met four times in WY 2023 after the completion of the WY 2022 annual report: at three regular meetings and one special meeting. At the May 24 meeting the committee reviewed a well application and the Water Agency presented Spring 2023 groundwater level measurements.[12] The August 9 special meeting included legal counsel presenting a SWRCB staff comment letter that questioned whether certain water should be categorized as surface water underflow or as groundwater. The August 23 meeting reviewed a well application and a discussion of the proposed JPA with the other two management areas. At the September 27 meeting the committee discussed another well application and passed a well registration resolution.[13] An SGMA Implementation Grant Award was also announced at this meeting.

As part of collaboration work with the SWRCB, WMA staff produced a legal letter and supporting technical analysis detailing how the WMA applied the SGMA's statute on groundwater which excludes "water that flows in known and definite channels."[14] WMA staff clarified how SGMA's groundwater definition is different and more restricted than the use in other contexts and statutes including those empowering the Santa Ynez River Water Conservation District or the general presumption that all subterranean water is "percolating groundwater."

During the fall and winter of WY 2024, the staff of all three management agencies met with DWR and SWRCB staff twice to address concerns related to non-SGMA groundwater use. As a result of these meetings, staff prepared an "Action Plan for Management of All Well Production Along the Santa Ynez River, Above the Lompoc Narrows," which includes various actions intended to, among other things, achieve the goal of educating, gaining additional information and ensuring that all water production and well owners in the Santa Ynez Alluvium Area are registered and reporting to the applicable GSA, State Board, and the Santa Ynez River Water Conservation District. This plan was circulated to DWR and SWRCB staff for comment and edits and then was endorsed by joint action of all three management area boards.

12 Presentation entitled "Santa Ynez River Valley Groundwater Basin, Western Management Area, Spring 2023 Measurements."

13 Resolution No. WMA-2023-001 "A Resolution Requiring Landowners In the Western Management Area of the Santa Ynez River Valley Groundwater Basin Groundwater Sustainability Agency to Complete a Well Registration Form"

14 CWC Section 10721 (g) "Groundwater" means water beneath the surface of the earth within the zone below the water table in which the soil is completely saturated with water, but does not include water that flows in known and definite channels.

In Water Year 2024, the WMA committee has met twice to date. This included one regular and one special meeting. The meeting minutes have not been finalized and posted at this time.

CHAPTER 7: REFERENCES

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Water Systems Consulting Inc. (WCI). 2021. 2020 Urban Water Management Plan. Final. City of Lompoc. 181 pg. SYWATER 308.

CHAPTER 8: APPENDICES

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Chapter 1 – General Information

Appendix 1-A:

Portions of Sustainable Groundwater Management Act Statute and Regulations Specific to Annual Report Requirements Effective August 15, 2016

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Portions of Sustainable Groundwater Management Act Statute and Regulations Specific to Annual Report Requirements

CALIFORNIA WATER CODE
DIVISION 6. CONSERVATION, DEVELOPMENT, AND UTILIZATION OF STATE WATER RESOURCES
PART 2.74. SUSTAINABLE GROUNDWATER MANAGEMENT
CHAPTER 6. GROUNDWATER SUSTAINABILITY PLANS

Section 10728. Annual Reporting By Groundwater Sustainability Agency To Department

On the April 1 following the adoption of a groundwater sustainability plan and annually thereafter, a groundwater sustainability agency shall submit a report to the department containing the following information about the basin managed in the groundwater sustainability plan:

(a) Groundwater elevation data.

(b) Annual aggregated data identifying groundwater extraction for the preceding water year.

(c) Surface water supply used for or available for use for groundwater recharge or in-lieu use.

(d) Total water use.

(e) Change in groundwater storage.

CALIFORNIA CODE OF REGULATIONS
TITLE 23. WATERS
DIVISION 2. DEPARTMENT OF WATER RESOURCES
CHAPTER 1.5. GROUNDWATER MANAGEMENT
SUBCHAPTER 2. GROUNDWATER SUSTAINABILITY PLANS

ARTICLE 2. Definitions

§ 351. Definitions

The definitions in the Sustainable Groundwater Management Act, Bulletin 118, and Subchapter 1 of this Chapter, shall apply to these regulations. In the event of conflicting definitions, the definitions in the Act govern the meanings in this Subchapter. In addition, the following terms used in this Subchapter have the following meanings:

[...]

(d) "Annual report" refers to the report required by Water Code Section 10728

[..]

(am) "Water year" refers to the period from October 1 through the following September 30, inclusive, as defined in the Act.

ARTICLE 4. Procedures

§ 353.4. Reporting Provisions

Information required by the Act or this Subchapter, including Plans, Plan amendments, annual reports, and five-year assessments, shall be submitted by each Agency to the Department as follows:

(a) Materials shall be submitted electronically to the Department through an online reporting system, in a format provided by the Department as described in Section 353.2.

(b) Submitted materials shall be accompanied by a transmittal letter signed by the plan manager or other duly authorized person.

ARTICLE 5. Plan Contents
SUBARTICLE 4. Monitoring Networks

§ 354.40. Reporting Monitoring Data to the Department

Monitoring data shall be stored in the data management system developed pursuant to Section 352.6. A copy of the monitoring data shall be included in the Annual Report and submitted electronically on forms provided by the Department.

ARTICLE 6. Department Evaluation and Assessment

§ 355.6. Periodic Review of Plan by Department

[...]

(b) The Department shall evaluate approved Plans and issue an assessment at least every five years. The Department review shall be based on information provided in the annual reports and the periodic evaluation of the Plan prepared and submitted by the Agency.

§ 355.8. Department Review of Annual Reports

The Department shall review annual reports as follows:

(a) The Department shall acknowledge the receipt of annual reports by written notice and post the report and related materials on the Department's website within 20 days of receipt.

(b) The Department shall provide written notice to the Agency if additional information is required.

(c) The Department shall review information contained in the annual report to determine whether the Plan is being implemented in a manner that will likely achieve the sustainability goal for the basin, pursuant to Section 355.6.

ARTICLE 7. Annual Reports and Periodic Evaluations by the Agency

§ 356. Introduction to Annual Reports and Periodic Evaluations by the Agency

This Article describes the procedural and substantive requirements for the annual reports and periodic evaluation of Plans prepared by an 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.

(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.

ARTICLE 8. Interagency Agreements

§ 357.4. Coordination Agreements

[…]

(d) The coordination agreement shall describe a process for submitting all Plans, Plan amendments, supporting information, all monitoring data and other pertinent information, along with annual reports and periodic evaluations.

Chapter 3 – Groundwater Hydrographs and Contours

Appendix 3-A:

Groundwater Level Hydrographs for Assessing Chronic Decline in Groundwater Levels, Western Management Area

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APPENDIX 3-A: GROUNDWATER LEVEL HYDROGRAPHS FOR ASSESSING CHRONIC DECLINE IN GROUNDWATER LEVELS, WESTERN MANAGEMENT AREA

WATER YEAR 2023

This appendix includes hydrographs, which are graphs of water levels in wells. These are the representative wells for monitoring groundwater level decline. As per the SGMA regulations, this includes the period from January 1, 2015 through the end of the Water Year 2023. Shown on these graphs are key SGMA criteria: measurable objective, early warning, and minimum threshold. The Appendix is organized into two sections: Upper Aquifer and Lower Aquifer.

The Groundwater Sustainability Plan (GSP) includes hydrographs of the long-term period of record. A copy of the GSP, water level data, and hydrographs are available at https://sywater.info .

LIST OF ACRONYMS AND ABBREVIATIONS

BGS	below ground surface
CASGEM	California Statewide Groundwater Elevation Monitoring
FT	feet
NAVD88	North American Vertical Datum of 1988
USBR	United States Bureau of Reclamation
USGS	United States Geologic Survey
WL	Water Level
WMA	Western Management Area

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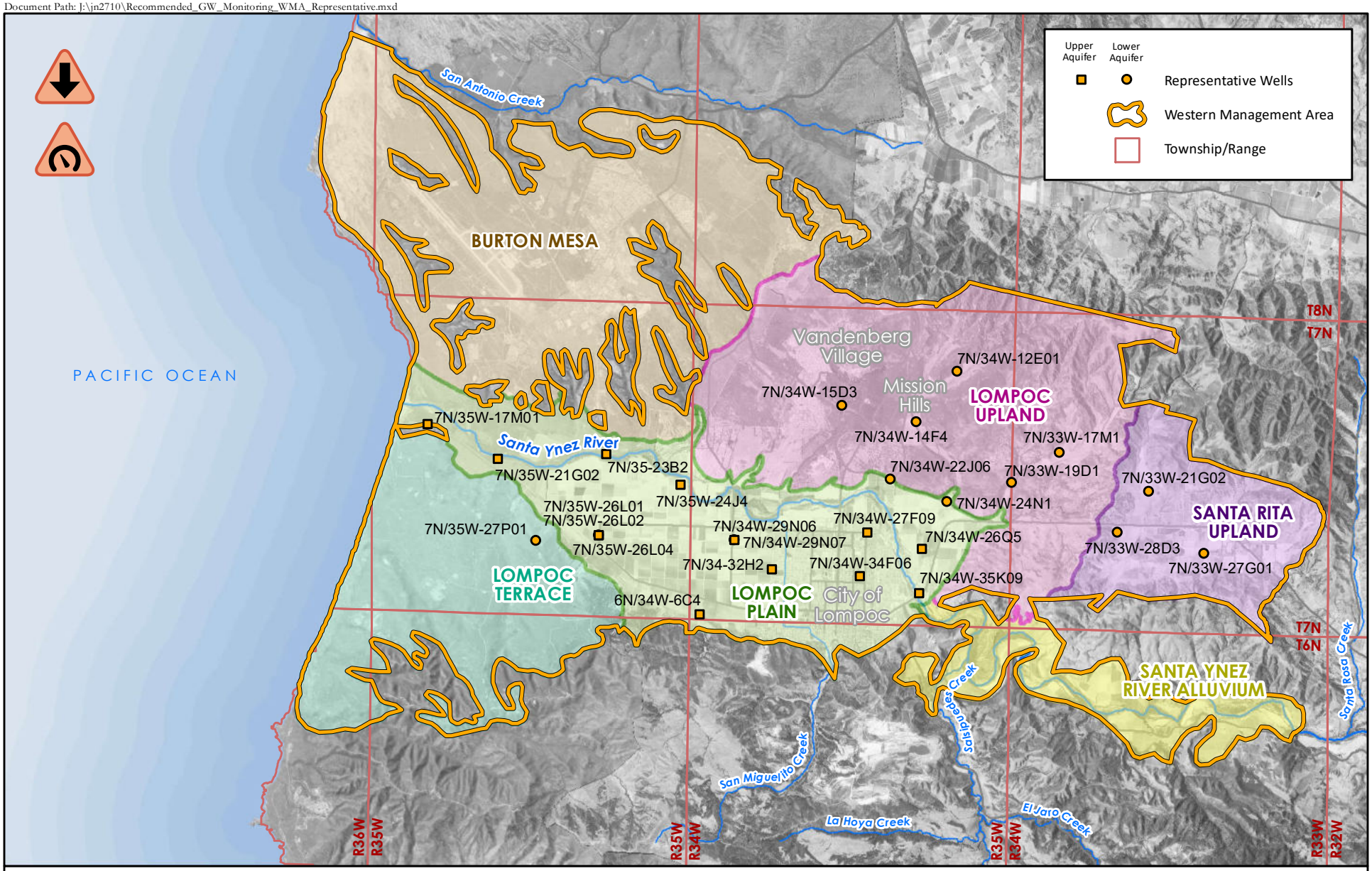


STETSON ENGINEERS INC.

WMA

Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

WMA REPRESENTATIVE MONITORING WELLS FOR GROUNDWATER LEVELS AND GROUNDWATER STORAGE

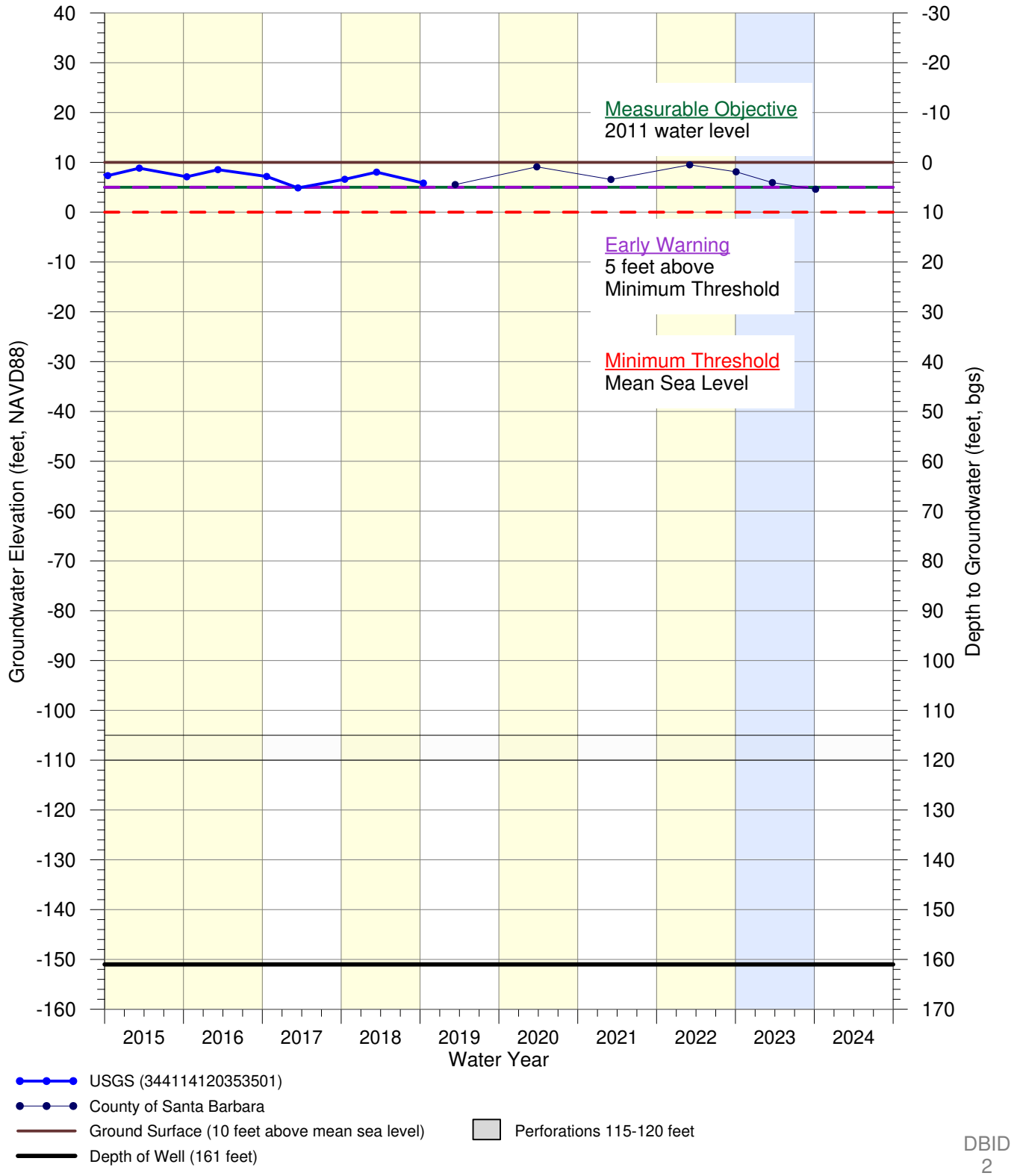
0 1 2 Miles

N

FIGURE A1-01

CASGEM ID
25268
Voluntary

WMA Representative Monitoring Well for Upper Aquifer (Lompoc Plain Subarea) 7N/35W-17M1



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2

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE MONITORING WELL
Upper Aquifer - Lompoc Plain

Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

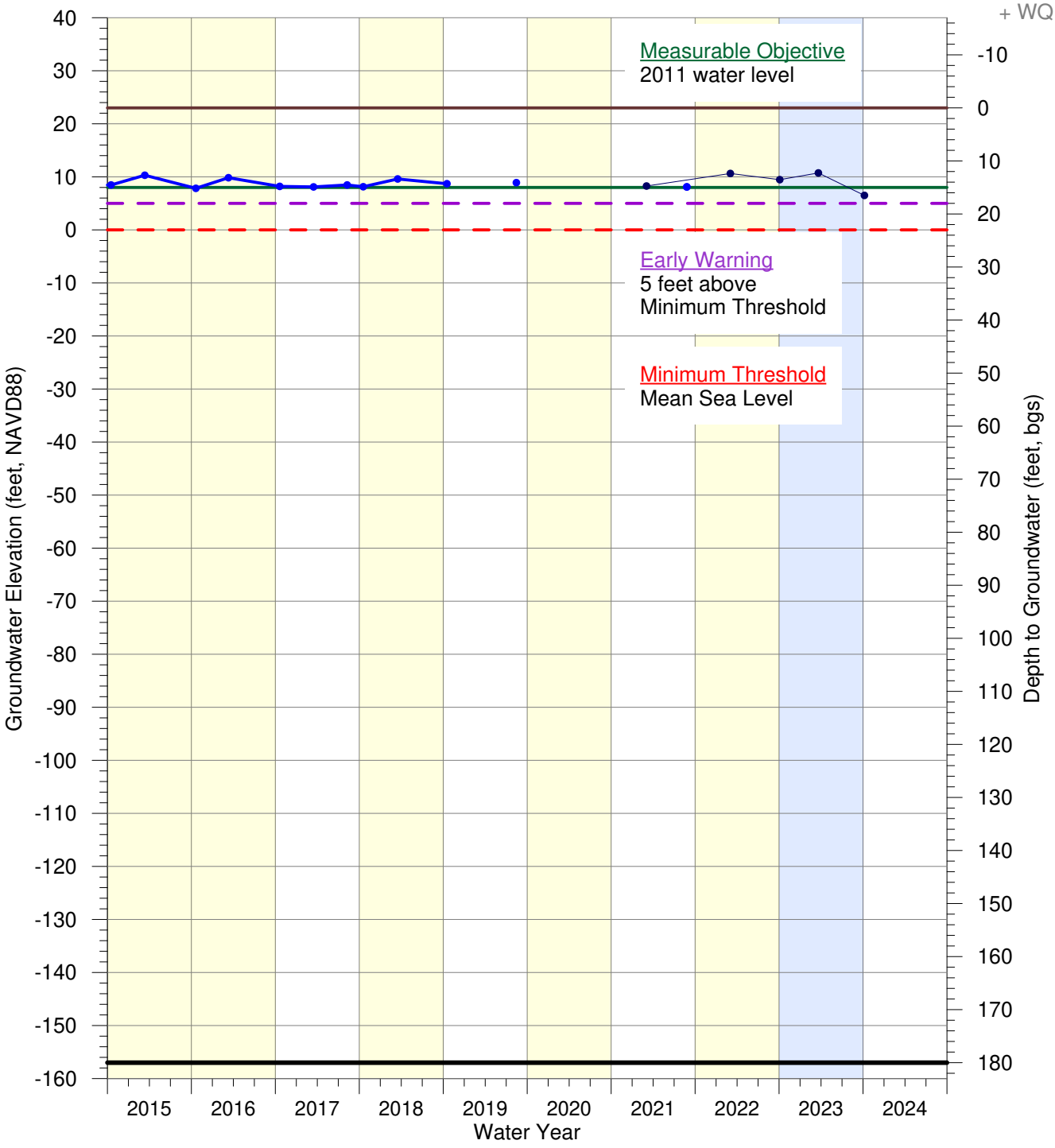
F:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A1-01 LP-U-S 2 17M1.grf 1/30/2024 M. McCammon

FIGURE A1-02

CASGEM ID
25271
Voluntary

WMA Representative Monitoring Well for Upper Aquifer (Lompoc Plain Subarea) 7N/35W-21G2

+ ISW
+ WQ



DBID
39

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE
MONITORING WELL
Upper Aquifer - Lompoc Plain

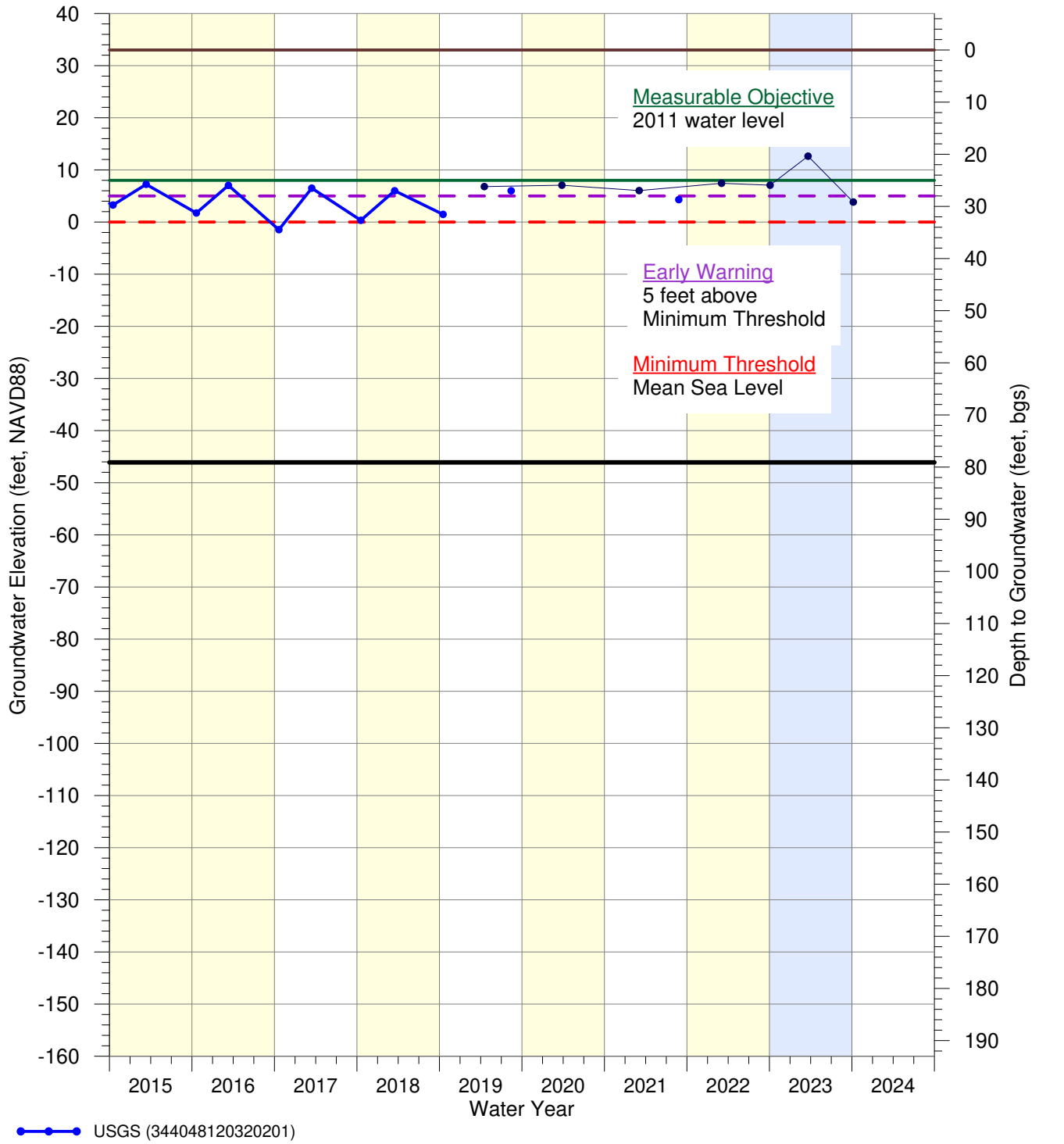
Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

F:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A1-02 LP-U-S 39 21G2.grf 1/30/2024 M. McCammon

FIGURE A1-03

CASGEM ID
49171
Voluntary

WMA Representative Monitoring Well for Upper Aquifer (Lompoc Plain Subarea) 7N/35W-23B2



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40

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE
MONITORING WELL
Upper Aquifer - Lompoc Plain

Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

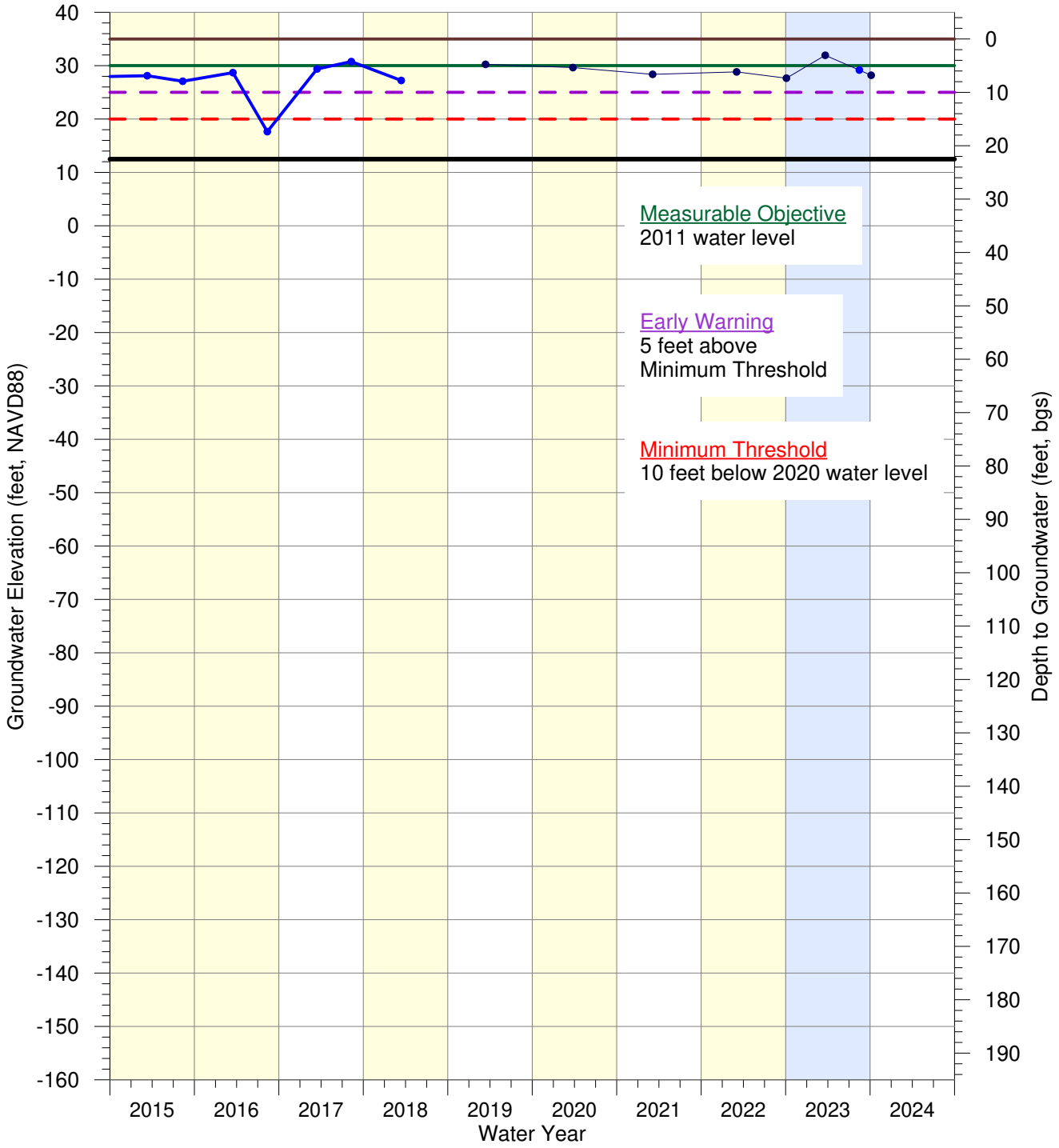
F:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A1-03 LP-U-S 40 23B2.grf 1/30/2024 M. McCammon

FIGURE A1-04

CASGEM ID
38297
Voluntary

WMA Representative Monitoring Well for Upper Aquifer (Lompoc Plain Subarea) 7N/35W-26L1

+ WQ



DBID
15

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE MONITORING WELL
Upper Aquifer - Lompoc Plain

Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

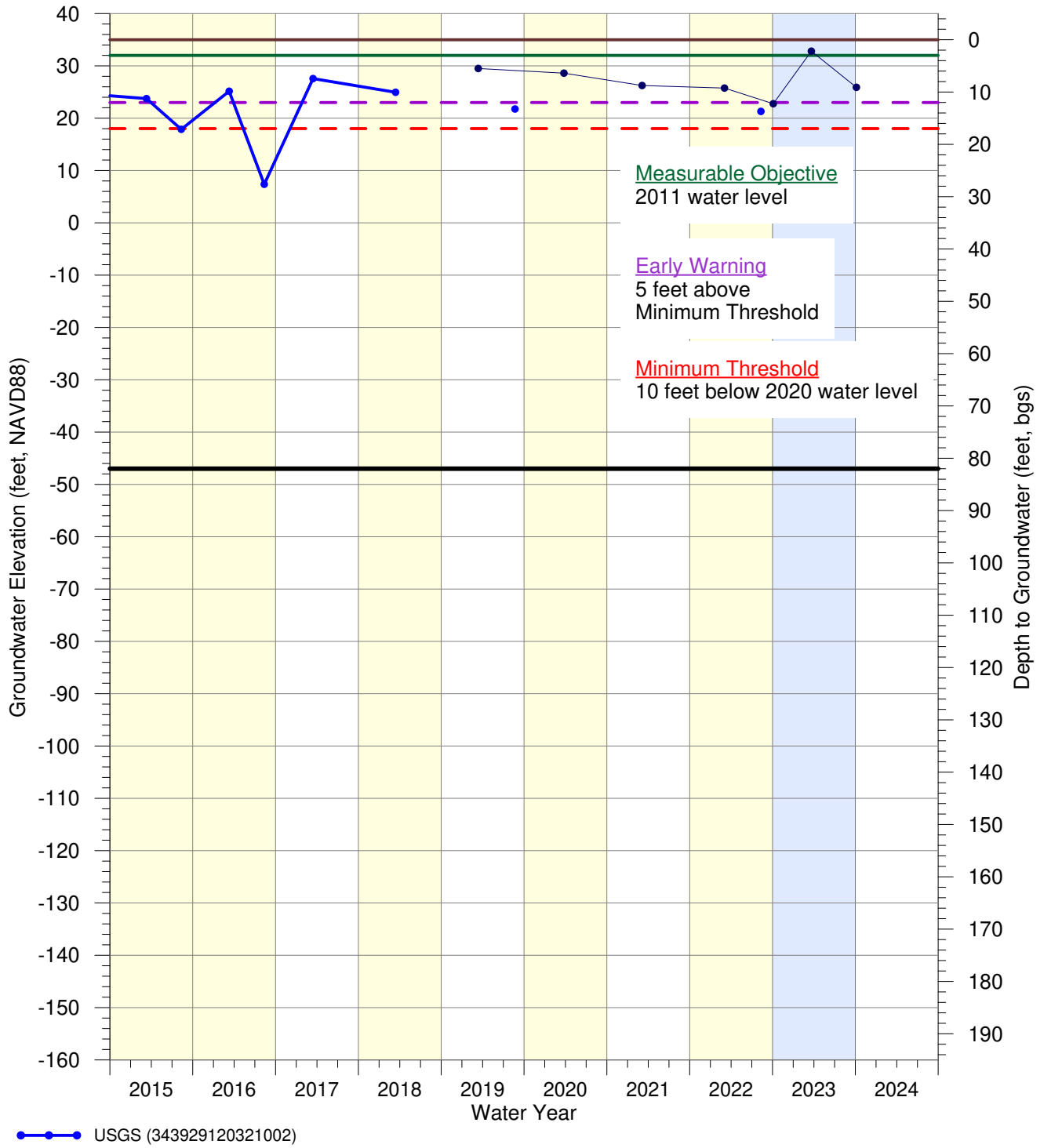
I:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A1-04 LP-U 15 26L1.grf 1/30/2024 M. McCammon

FIGURE A1-05

CASGEM ID
49162
Voluntary

WMA Representative Monitoring Well for Upper Aquifer (Lompoc Plain Subarea) 7N/35W-26L2

+ WQ



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16

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE MONITORING WELL
Upper Aquifer - Lompoc Plain

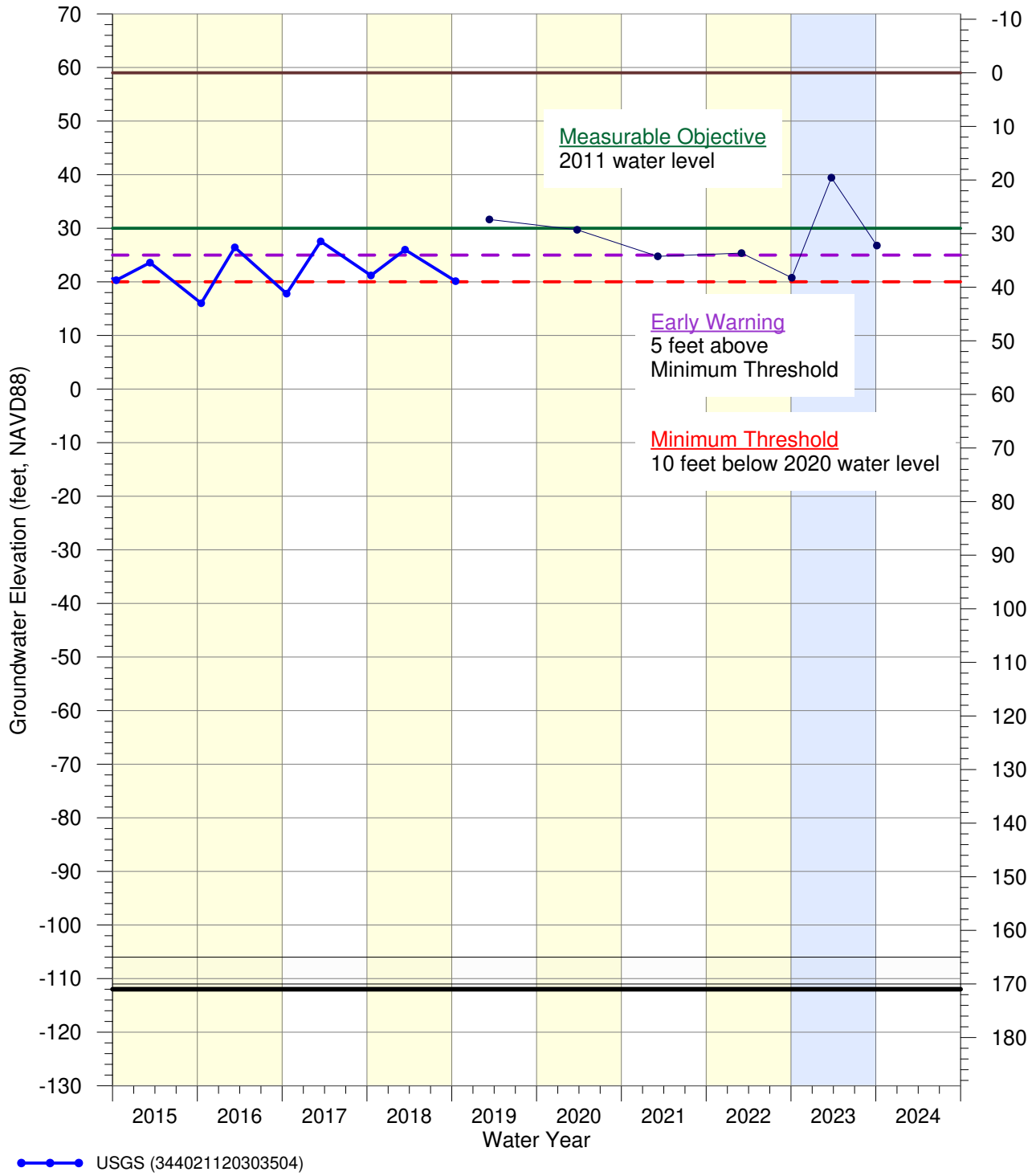
Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

I:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A1-05 LP-U 16 26L2.grf 1/30/2024 M. McCammon

FIGURE A1-06

CASGEM ID
49146
Voluntary

WMA Representative Monitoring Well for Upper Aquifer (Lompoc Plain Subarea) 7N/35W-24J4



USGS (344021120303504)
County of Santa Barbara
Ground Surface (59 feet above mean sea level)
Depth of Well (171 feet)
Perforations 165-170 feet

DBID
33

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE MONITORING WELL
Upper Aquifer - Lompoc Plain

Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

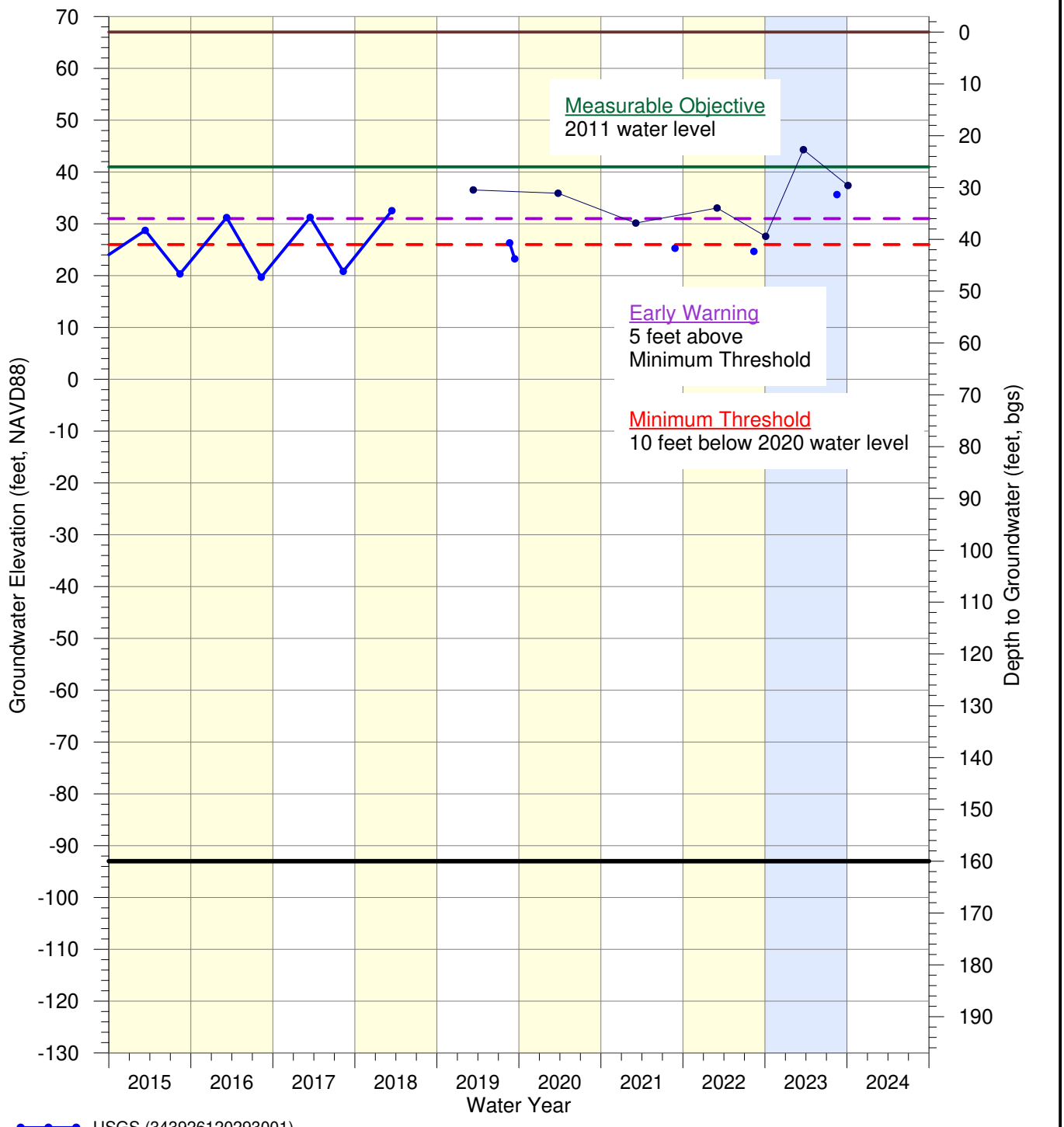
I:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A1-06 LP-U 33 24J4.grf 1/30/2024 M. McCammon

FIGURE A1-07

CASGEM ID
49148
Voluntary

WMA Representative Monitoring Well for Upper Aquifer (Lompoc Plain Subarea) 7N/34W-29N6

+ WQ



USGS (343926120293001)
County of Santa Barbara
Ground Surface (67 feet above mean sea level)
Depth of Well (160 feet), Perforations TBD

DBID
27

STETSON ENGINEERS INC.

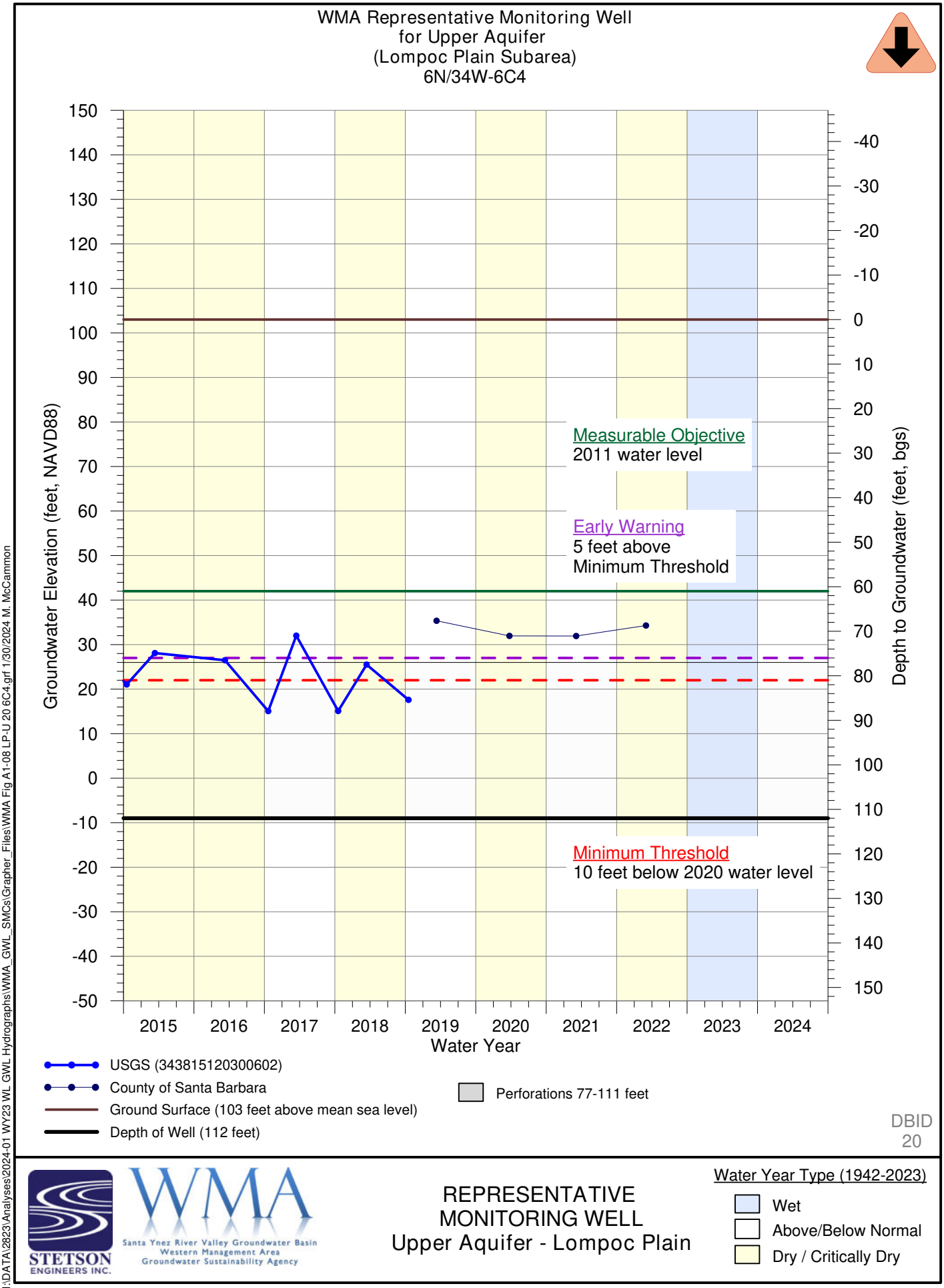
WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE MONITORING WELL
Upper Aquifer - Lompoc Plain

Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

I:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A1-07 LP-U 27 29N6.grf 1/30/2024 M. McCammon

FIGURE A1-08



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WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

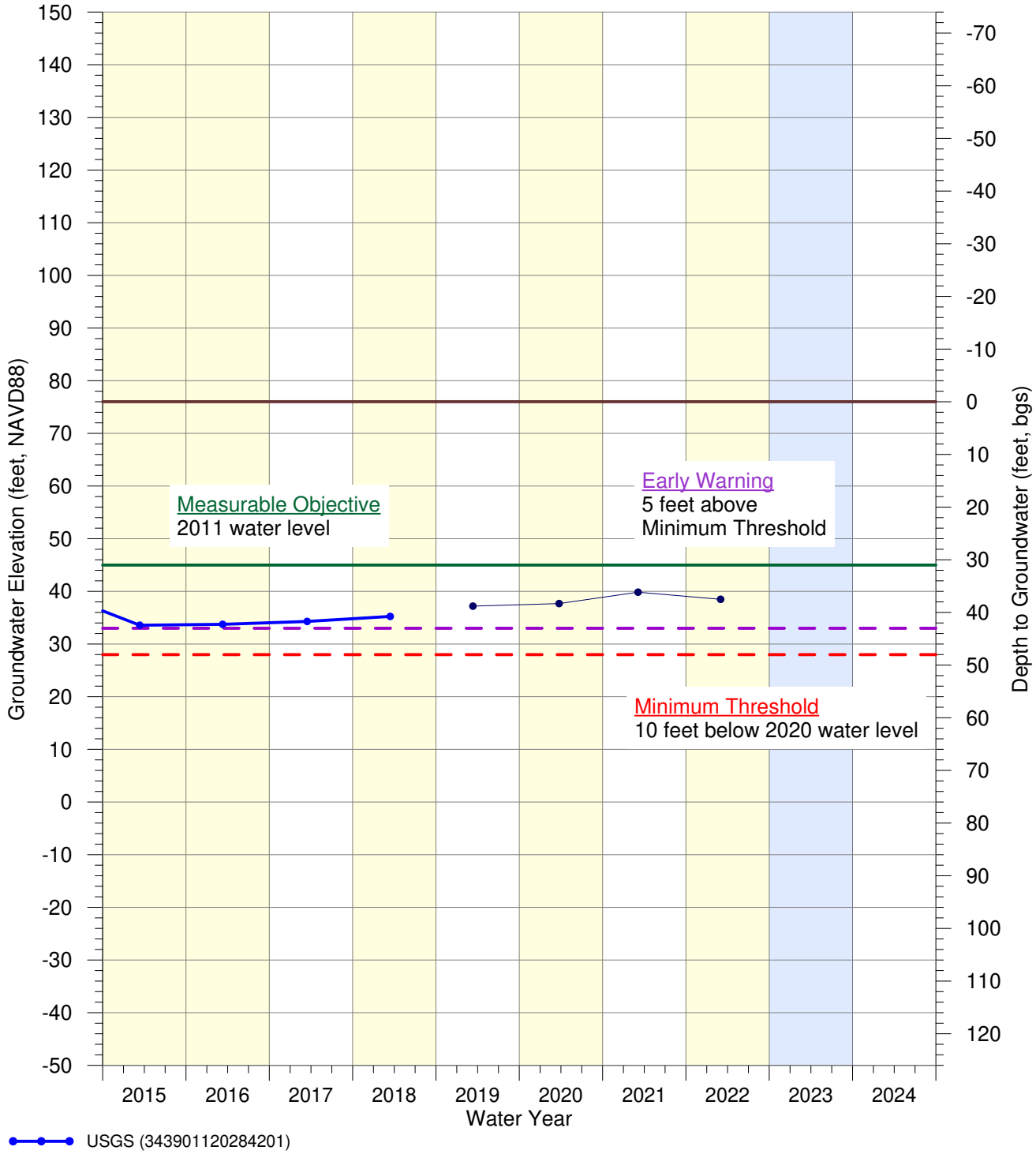
REPRESENTATIVE
MONITORING WELL
Upper Aquifer - Lompoc Plain

Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

FIGURE A1-09

CASGEM ID
49151
Voluntary

WMA Representative Monitoring Well
for Upper Aquifer
(Lompoc Plain Subarea)
7N/34W-32H2



DBID
31

STETSON ENGINEERS INC.

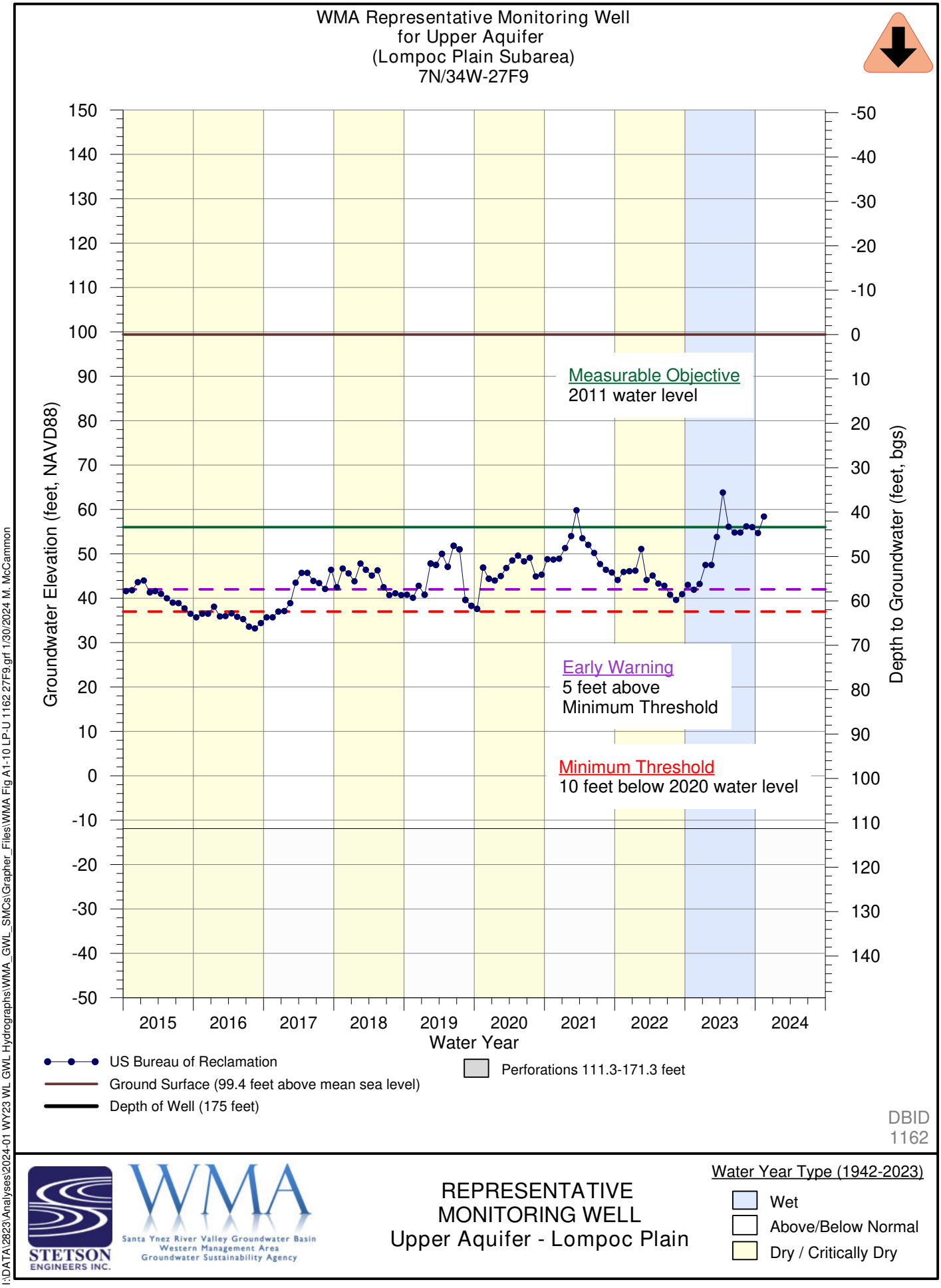
WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE
MONITORING WELL
Upper Aquifer - Lompoc Plain

Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

I:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A1-09 LP-U 31 32H2.grf 1/30/2024 M. McCammon

FIGURE A1-10



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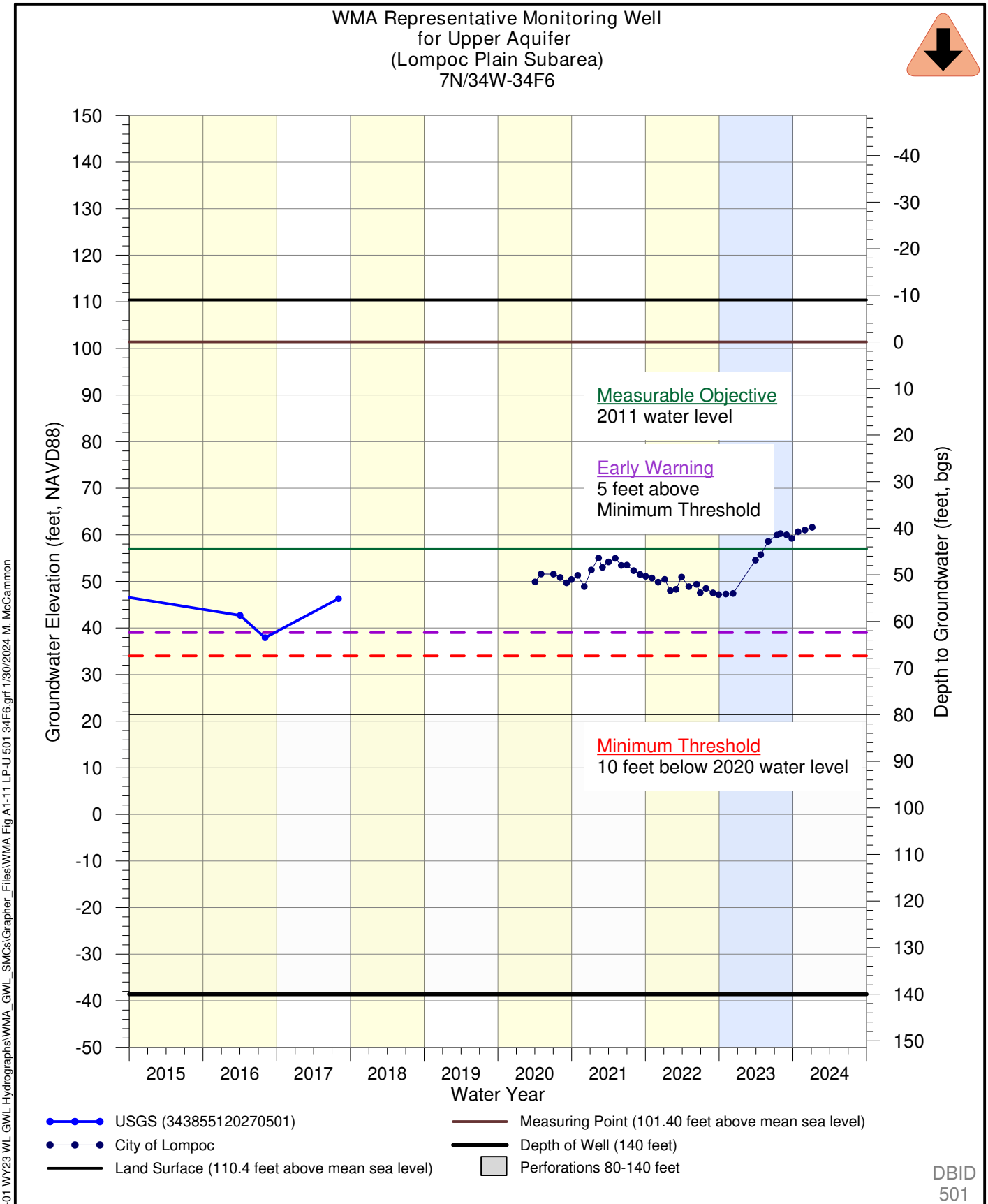
WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE
MONITORING WELL
Upper Aquifer - Lompoc Plain

Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

I:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A1-10 LP-U 1162 27F9.grf 1/30/2024 M. McCammon

FIGURE A1-11



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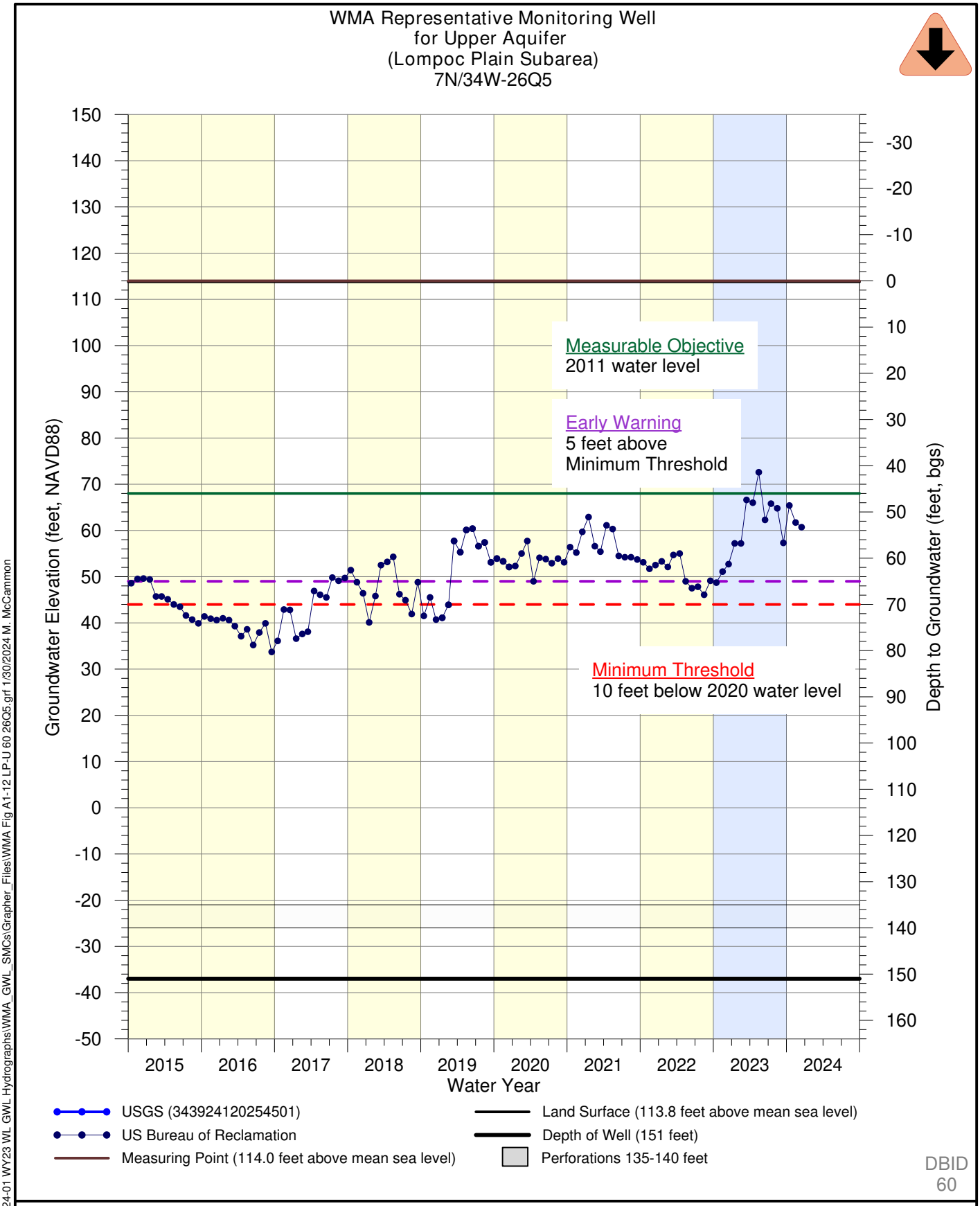
WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE
MONITORING WELL
Upper Aquifer - Lompoc Plain

Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

I:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A1-11 LP-U 501 34F6.grf 1/30/2024 M. McCammon

FIGURE A1-12



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WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE
MONITORING WELL
Upper Aquifer - Lompoc Plain

Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

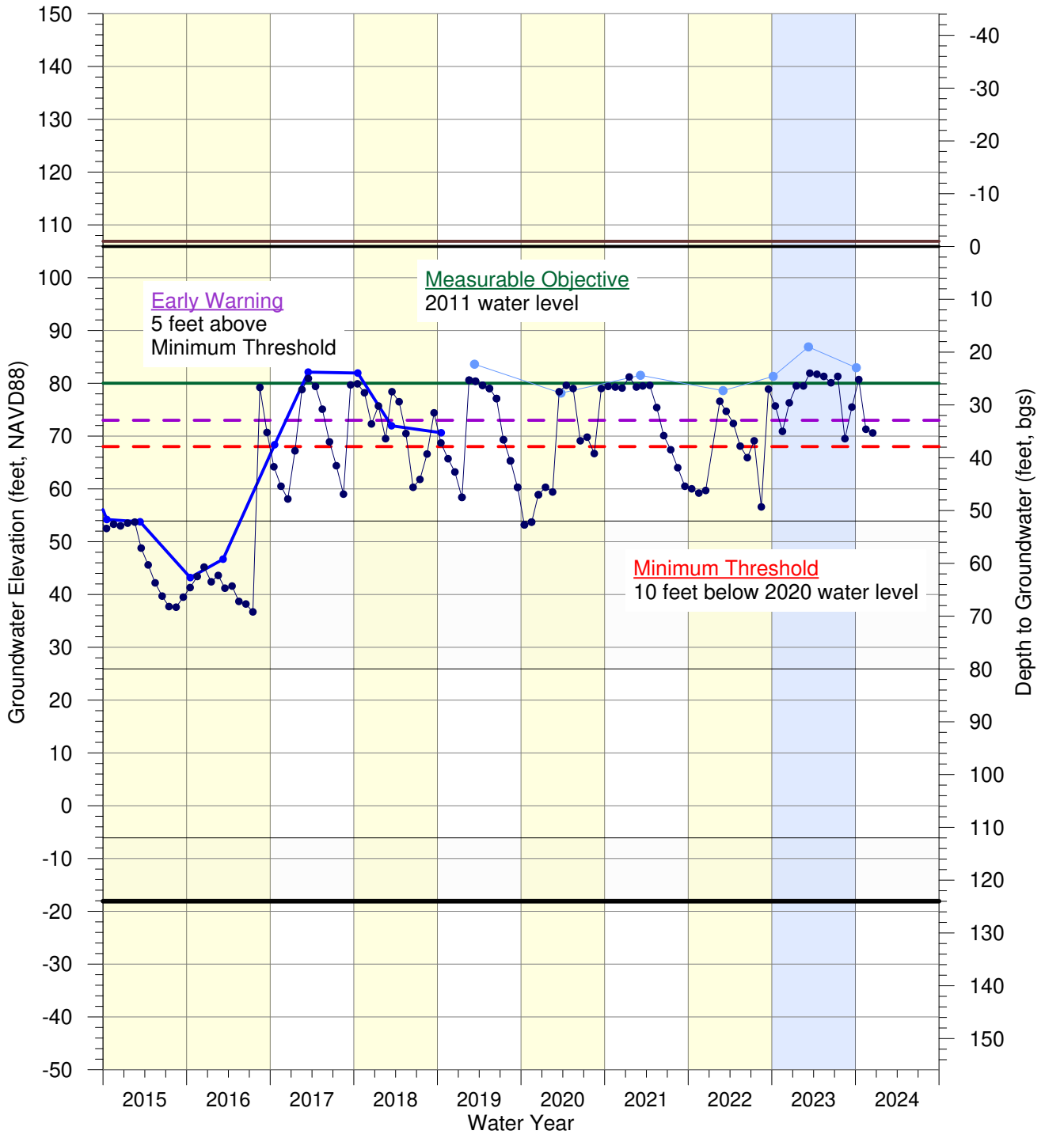
I:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A1-12 LP-U 60 26Q5.grf 1/30/2024 M. McCammon

FIGURE A1-13

CASGEM ID
49153
Voluntary

WMA Representative Monitoring Well
for Upper Aquifer
(Lompoc Plain Subarea)
7N/34W-35K9

+ ISW



US Bureau of Reclamation
USGS (343924120254501)
County of Santa Barbara
Measuring Point (106.9 feet above mean sea level)
Land Surface (105.9 feet above mean sea level)
Depth of Well (124 feet)
Perforations 52-80; 112-124 feet

DBID
32

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE
MONITORING WELL
Upper Aquifer - Lompoc Plain

Water Year Type (1942-2023)
Wet
Above/Below Normal
Dry / Critically Dry

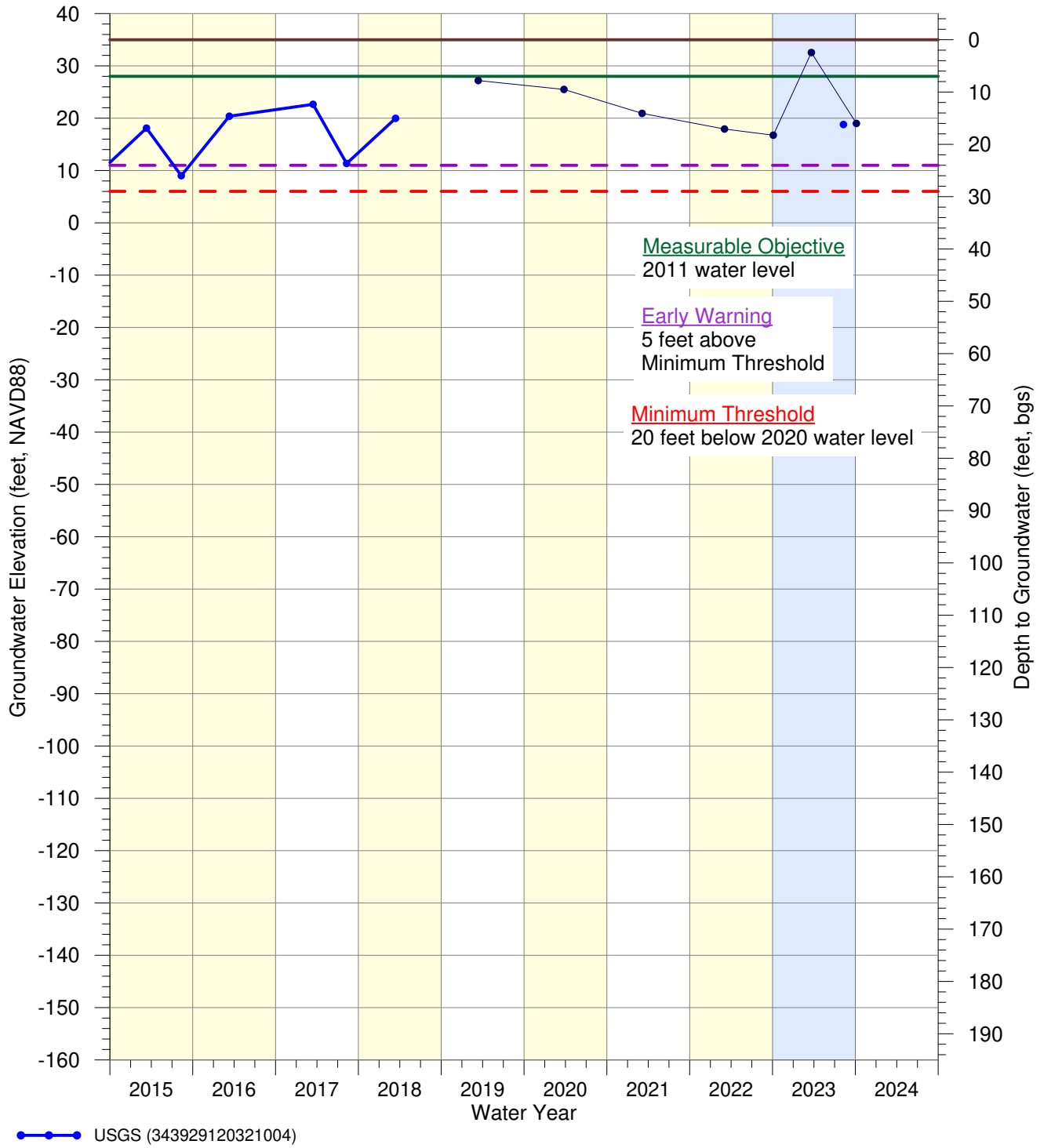
I:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A1-13 LP-U 32 35K9.grf 1/30/2024 M. McCammon

FIGURE A2-01

CASGEM ID
38298
Voluntary

WMA Representative Monitoring Well for Lower Aquifer (Lompoc Plain Subarea) 7N/35W-26L4

+ WQ



DBID
17

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE MONITORING WELL
Lower Aquifer - Lompoc Plain

Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

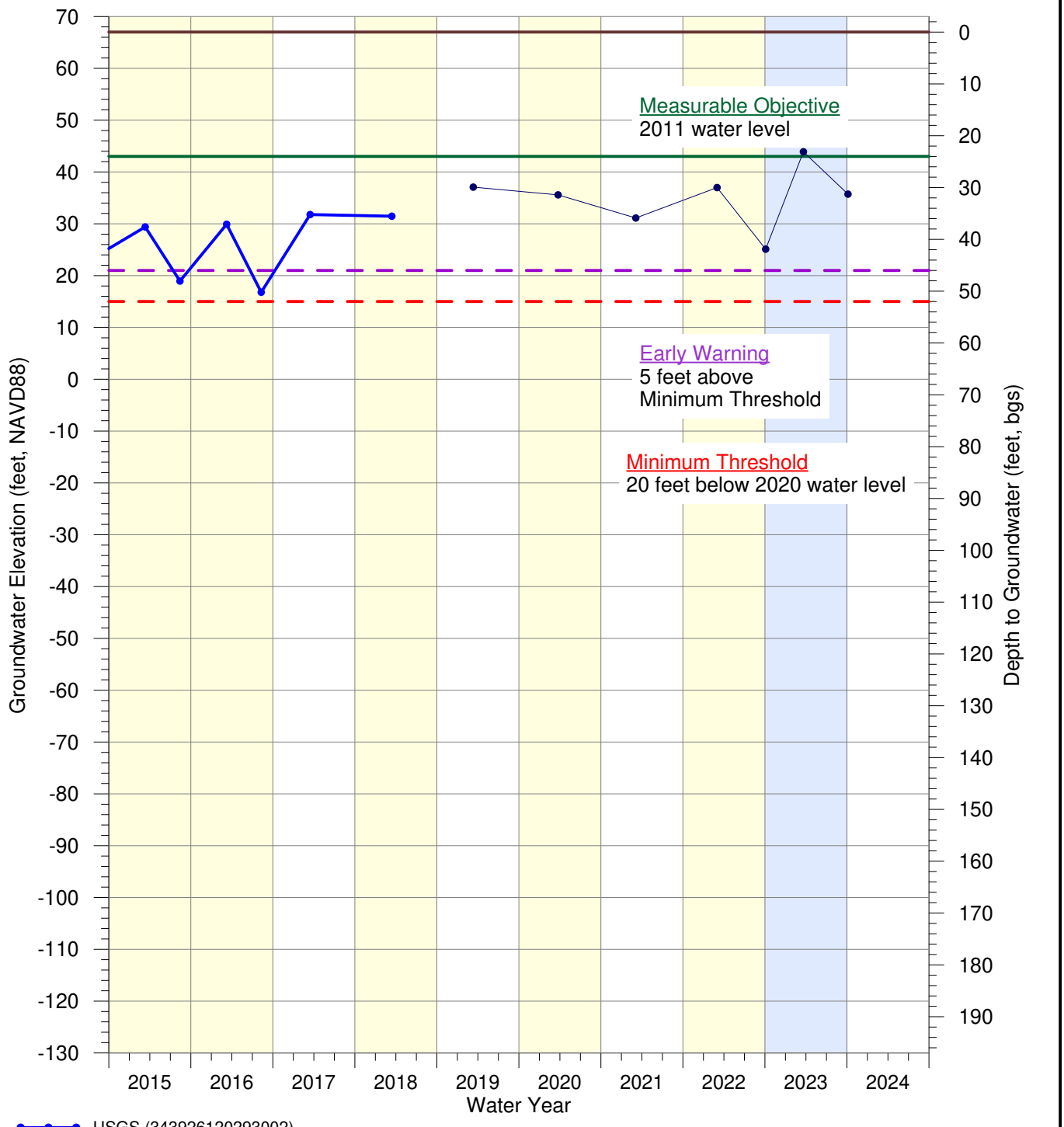
I:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A2-01 LP-L 17 26L4.grf 1/30/2024 M. McCammon

FIGURE A2-02

CASGEM ID
23538
Voluntary

WMA Representative Monitoring Well for Lower Aquifer (Lompoc Plain Subarea) 7N/34W-29N7

+ WQ



USGS (343926120293002)
County of Santa Barbara
Ground Surface (67 feet above mean sea level)
Depth of Well (420 feet); Perforations TBD

DBID
28

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE MONITORING WELL
Lower Aquifer - Lompoc Plain

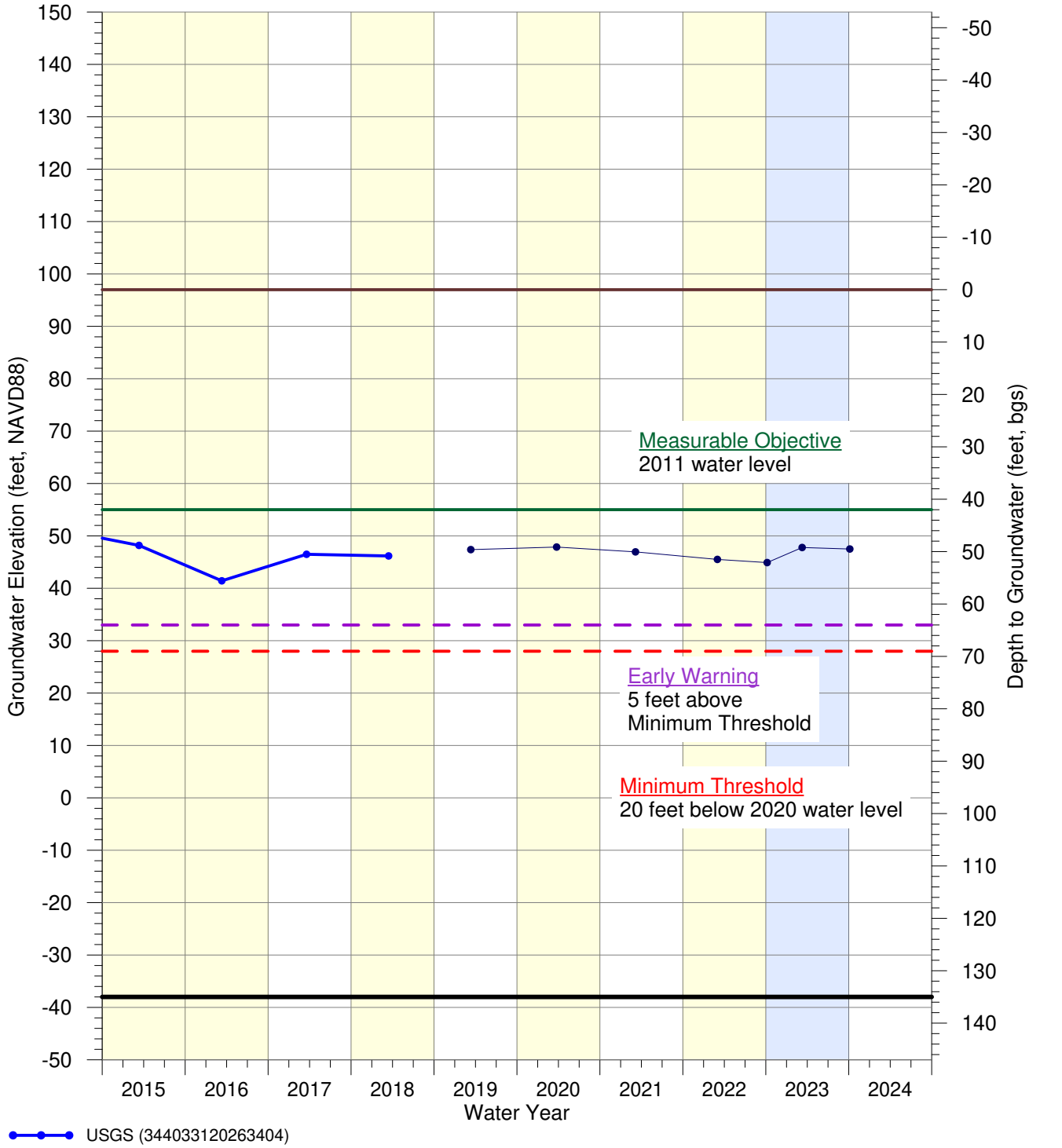
Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

I:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A2-02 LP-L 28 29N7.grf 1/30/2024 M. McCammon

FIGURE A2-03

CASGEM ID
49155
Voluntary

WMA Representative Monitoring Well for Lower Aquifer (Lompoc Plain Subarea) 7N/34W-22J6



DBID
22

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE
MONITORING WELL
Lower Aquifer - Lompoc Plain

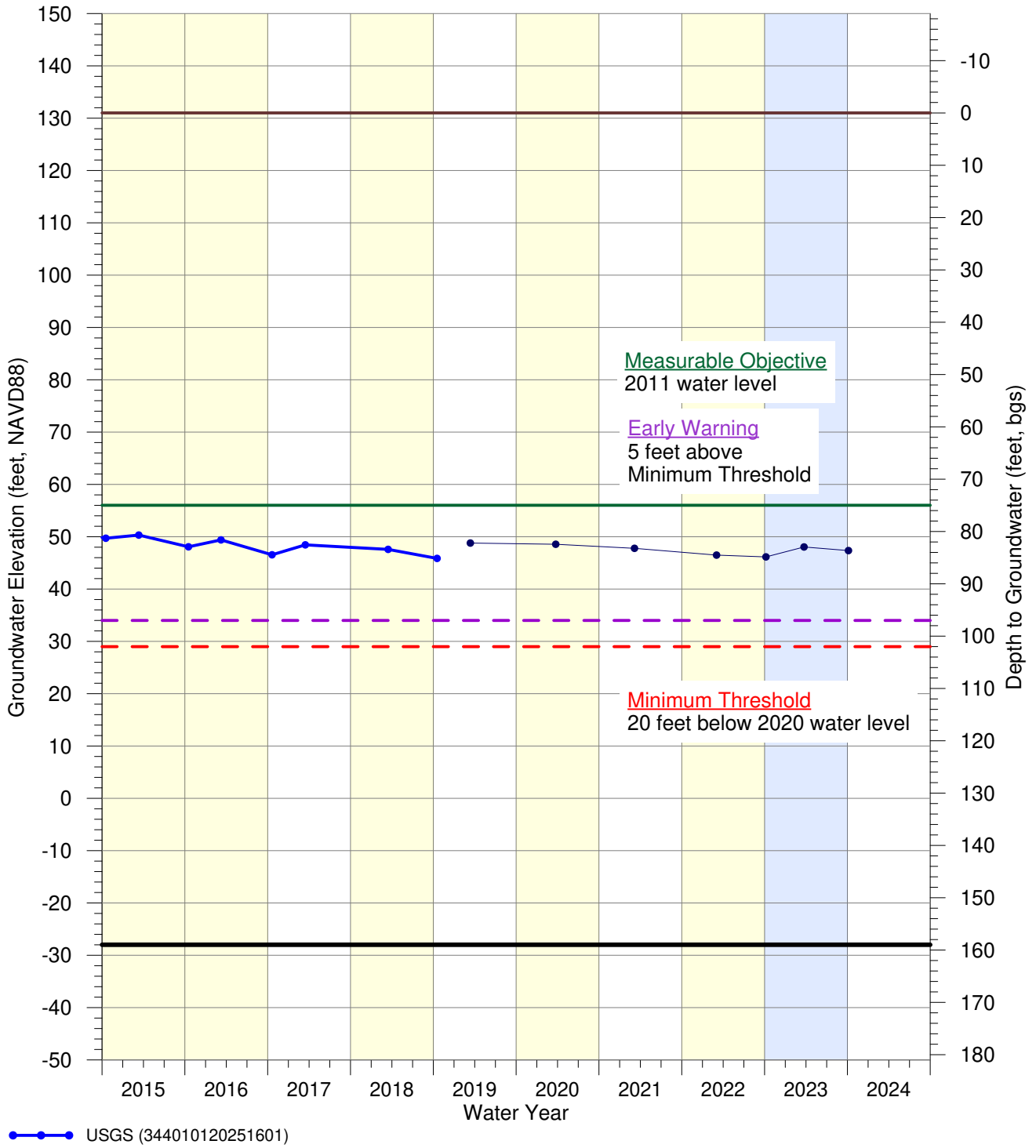
Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

I:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A2-03 LP-L 22 22J6.grf 1/30/2024 M. McCammon

FIGURE A2-04

CASGEM ID
49156
Voluntary

WMA Representative Monitoring Well for Lower Aquifer (Lompoc Plain Subarea) 7N/34W-24N1



DBID
23

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE MONITORING WELL
Lower Aquifer - Lompoc Plain

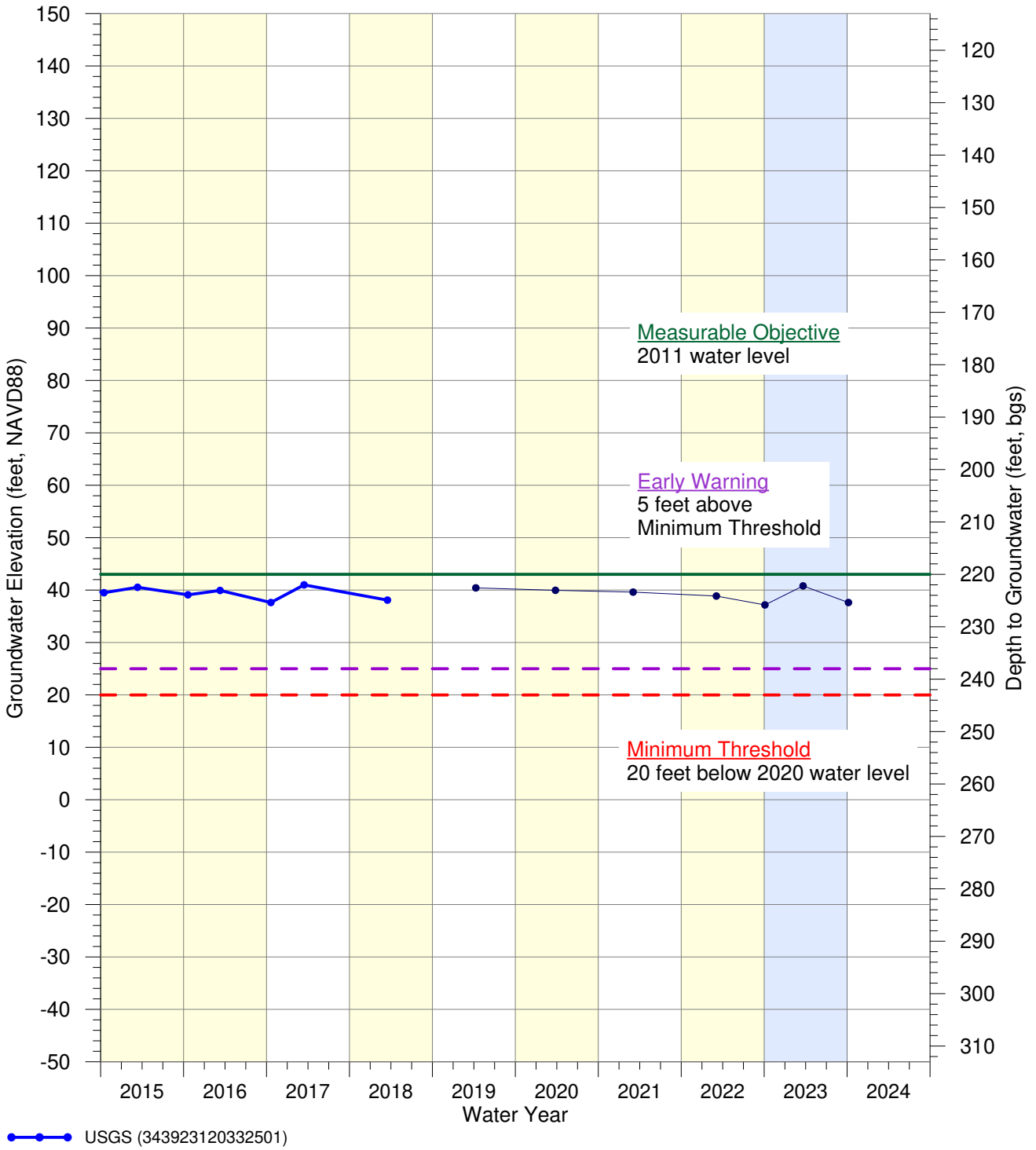
Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

I:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A2-04 LP-L 23 24N1.grf 1/30/2024 M. McCammon

FIGURE A2-05

CASGEM ID
49168
Voluntary

WMA Representative Monitoring Well
for Lower Aquifer
(Lompoc Terrace Subarea)
7N/35W-27P1



DBID
44

STETSON ENGINEERS INC.

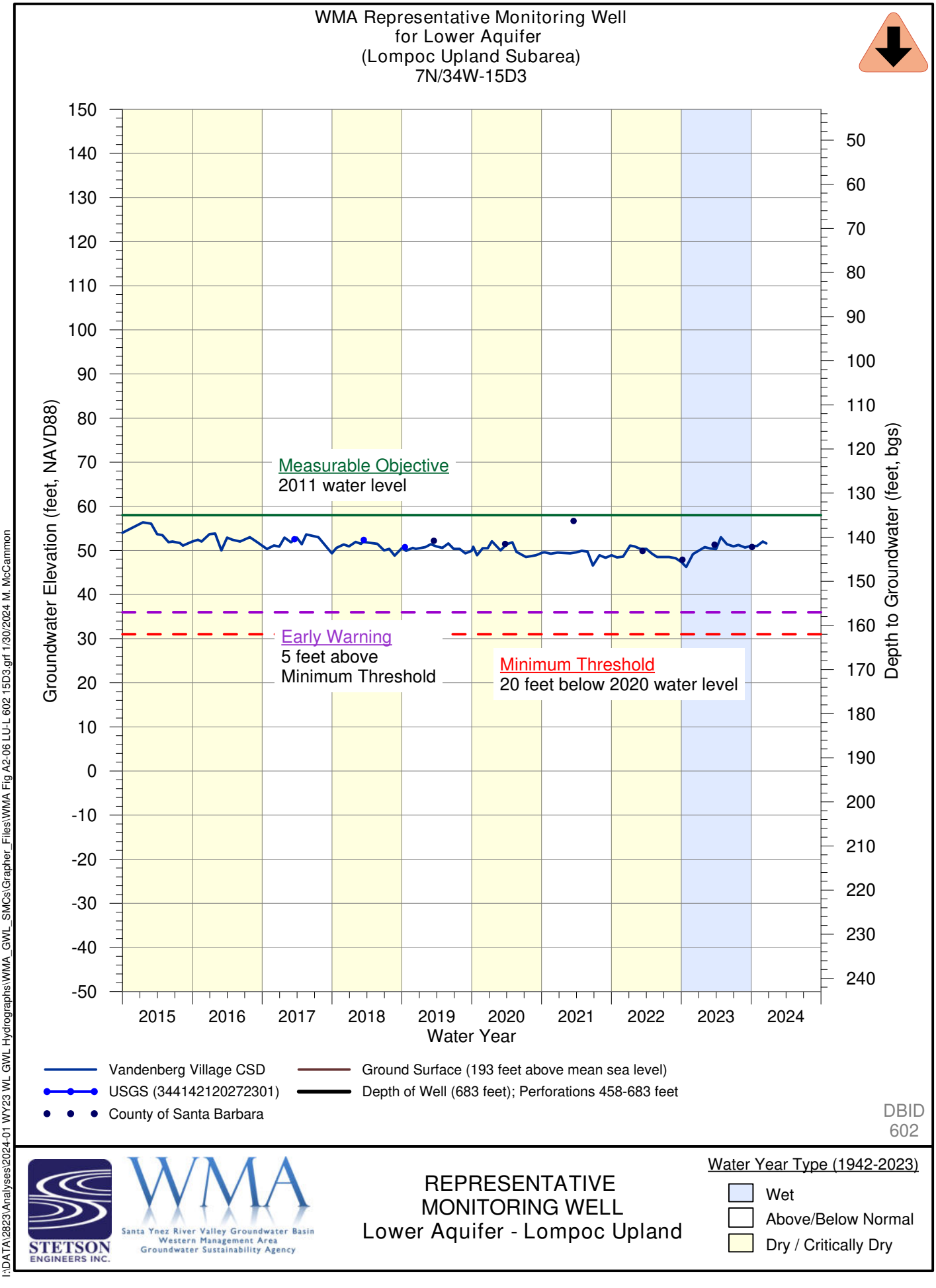
WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE
MONITORING WELL
Lower Aquifer - Lompoc Terrace

Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

I:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A2-05 LT-L 44 27P1.grf 1/30/2024 Stetson

FIGURE A2-06



STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE
MONITORING WELL
Lower Aquifer - Lompoc Upland

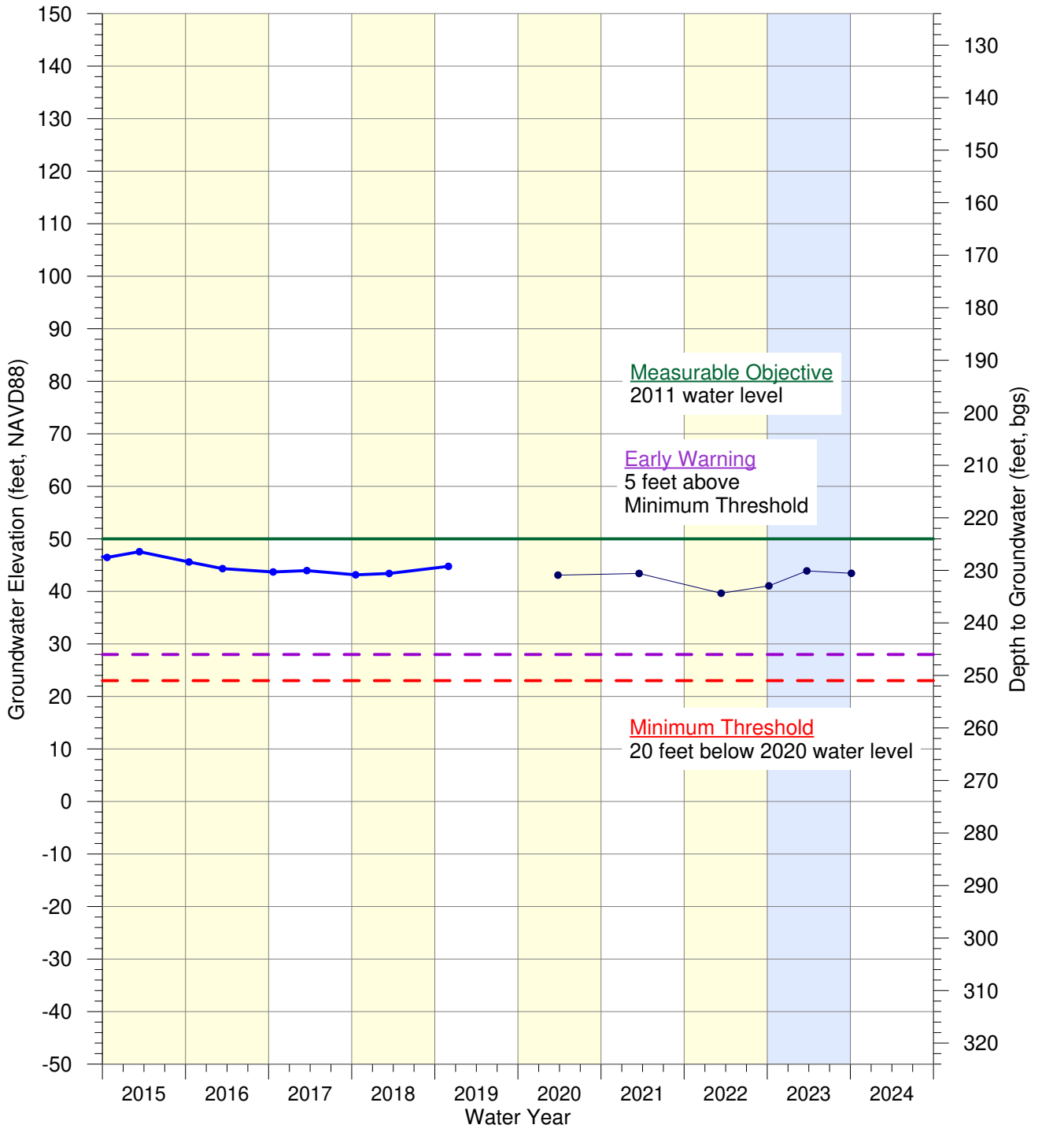
Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

I:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A2-06 LU-L 602 15D3.grf 1/30/2024 M. McCammon

FIGURE A2-07

CASGEM ID
49142
Voluntary

WMA Representative Monitoring Well for Lower Aquifer (Lompoc Upland Subarea) 7N/34W-14F4



USGS (344126120255201)
County of Santa Barbara
Ground Surface (274 feet above mean sea level)
Depth of Well (540 feet); Perforations TBD

DBID
52

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE MONITORING WELL
Lower Aquifer - Lompoc Upland

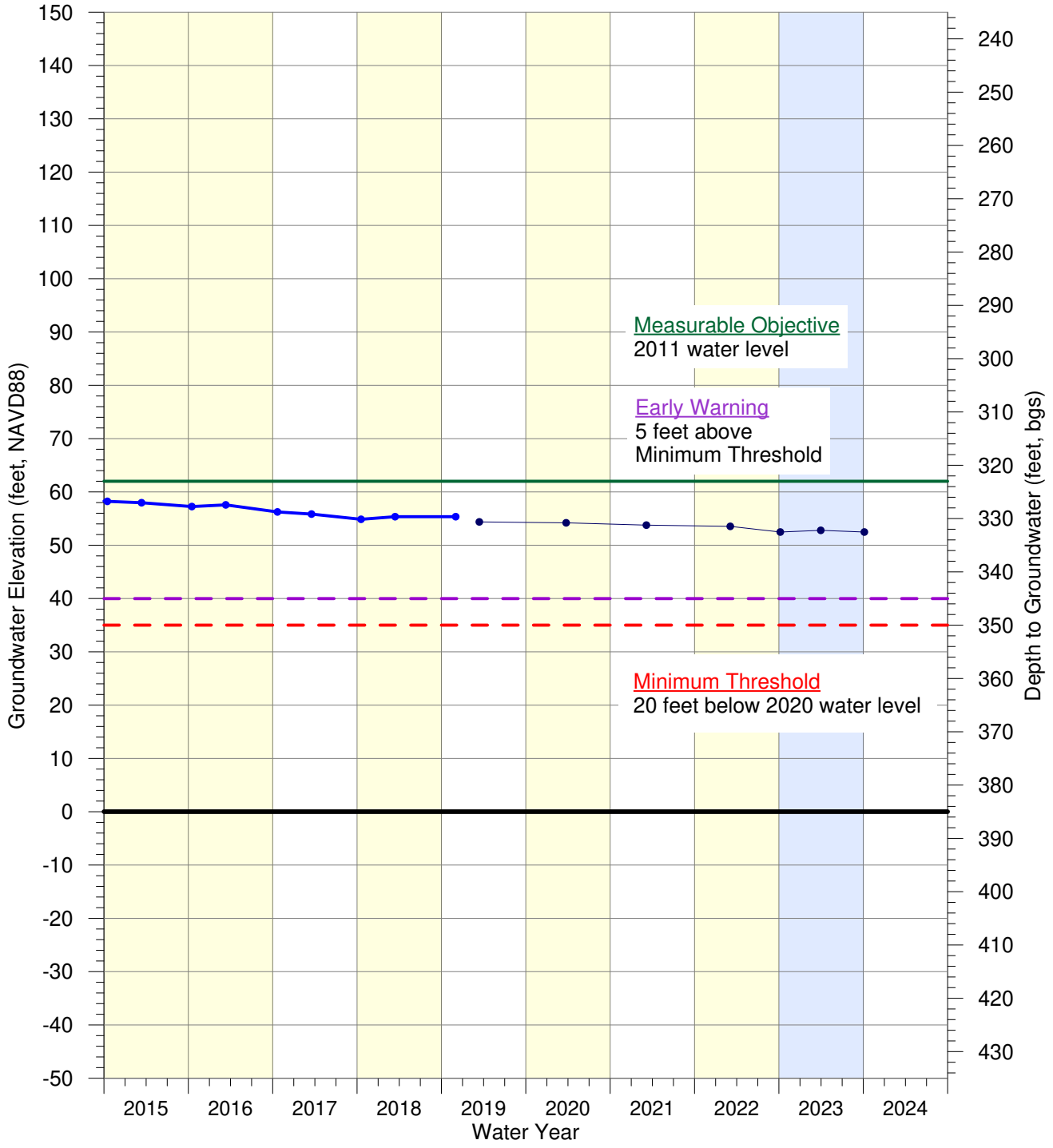
Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

I:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A2-07 LU-L 52 14F4.grf 1/30/2024 M. McCammon

FIGURE A2-08

CASGEM ID
49139
CASGEM

WMA Representative Monitoring Well for Lower Aquifer (Lompoc Upland Subarea) 7N/34W-12E1



DBID
51

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE
MONITORING WELL
Lower Aquifer - Lompoc Upland

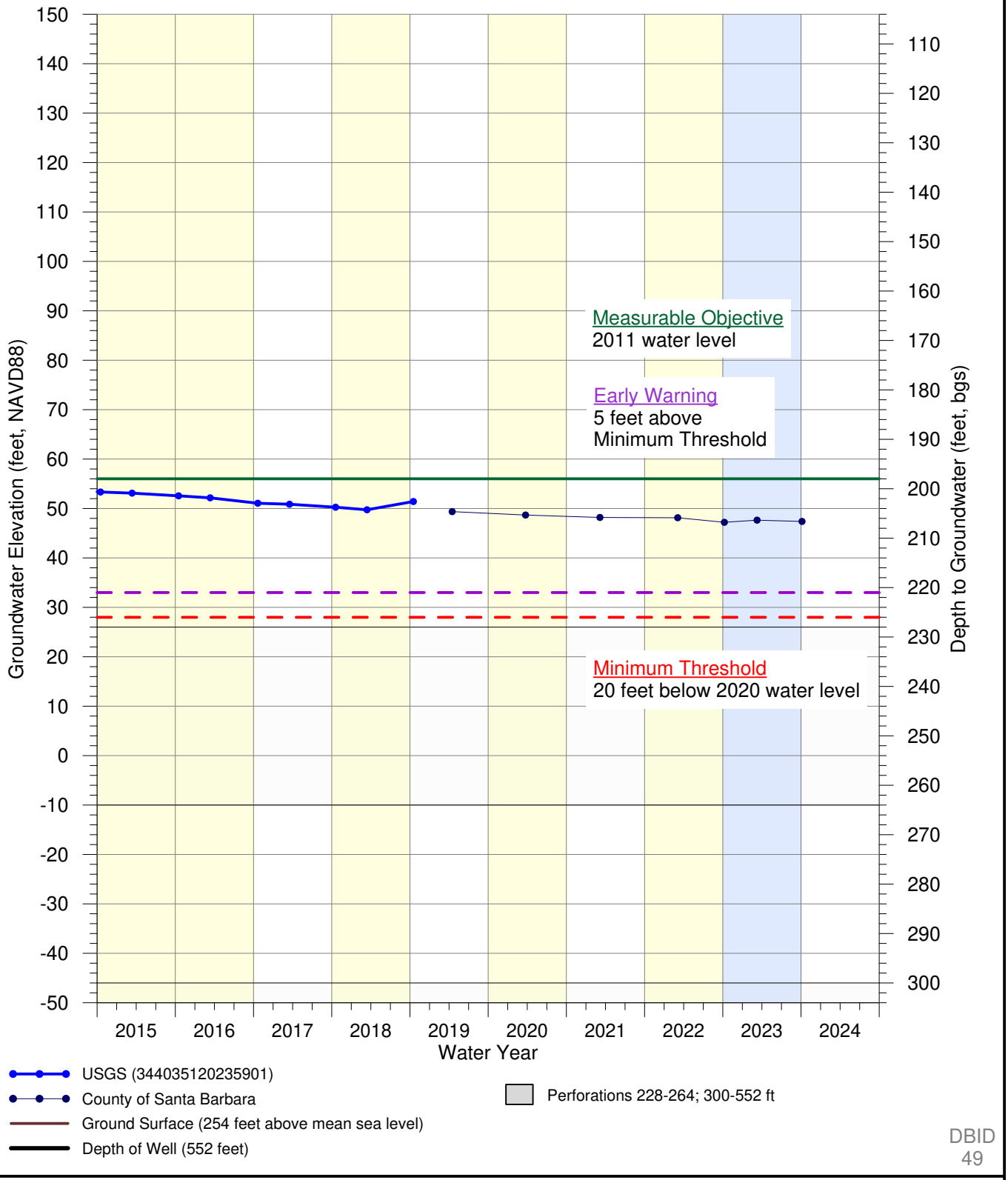
Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

I:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A2-08 LU-L 51 12E1.grf 1/30/2024 M. McCammon

FIGURE A2-09

CASGEM ID
49143
Voluntary

WMA Representative Monitoring Well for Lower Aquifer (Lompoc Upland Subarea) 7N/33W-19D1



DBID
49

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE
MONITORING WELL
Lower Aquifer - Lompoc Upland

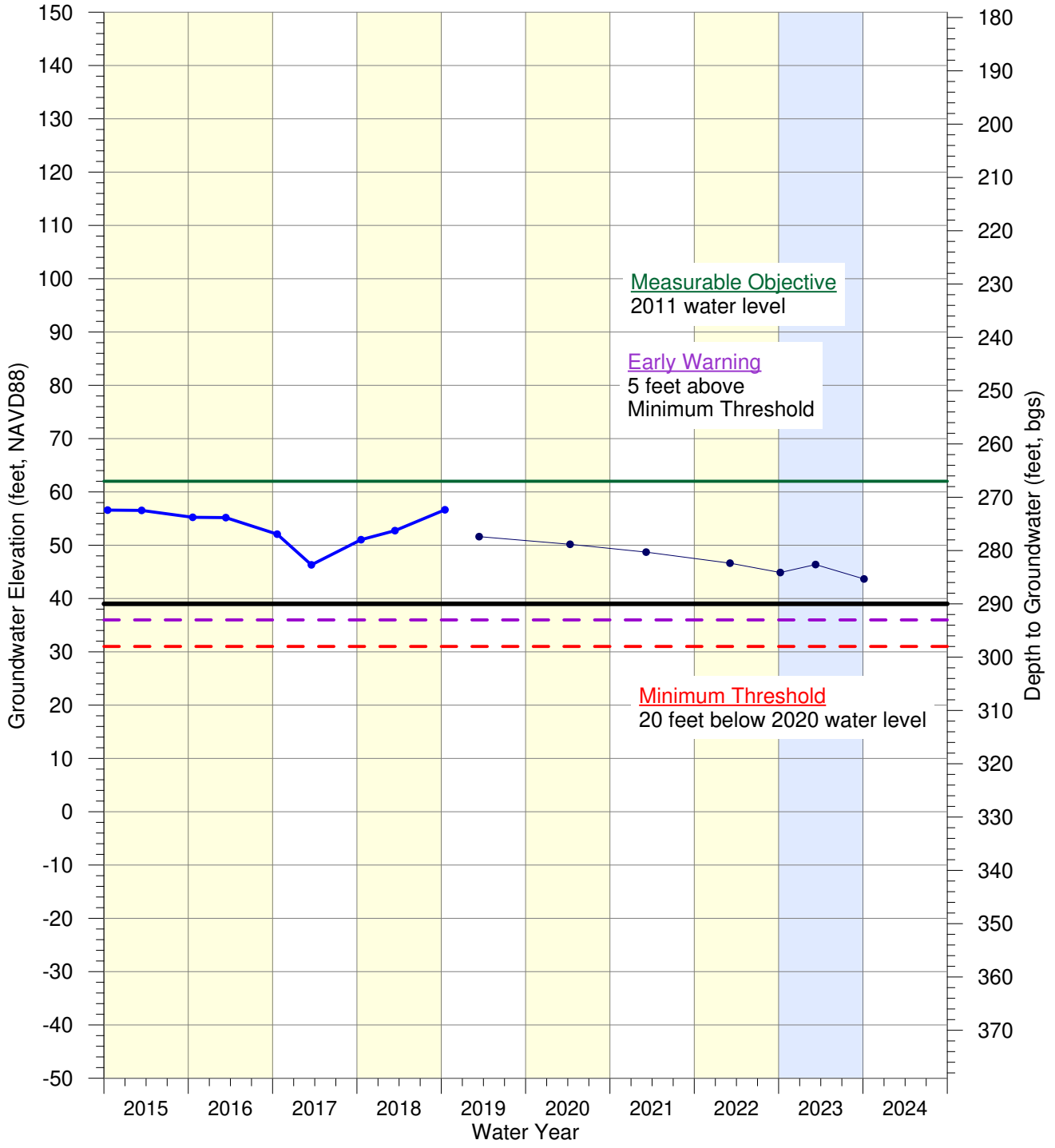
Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

I:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A2-09 LU-L 49 19D1.grf 1/30/2024 M. McCammon

FIGURE A2-10

CASGEM ID
49144
Voluntary

WMA Representative Monitoring Well for Lower Aquifer (Lompoc Upland Subarea) 7N/33W-17M1



DBID
47

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE
MONITORING WELL
Lower Aquifer - Lompoc Upland

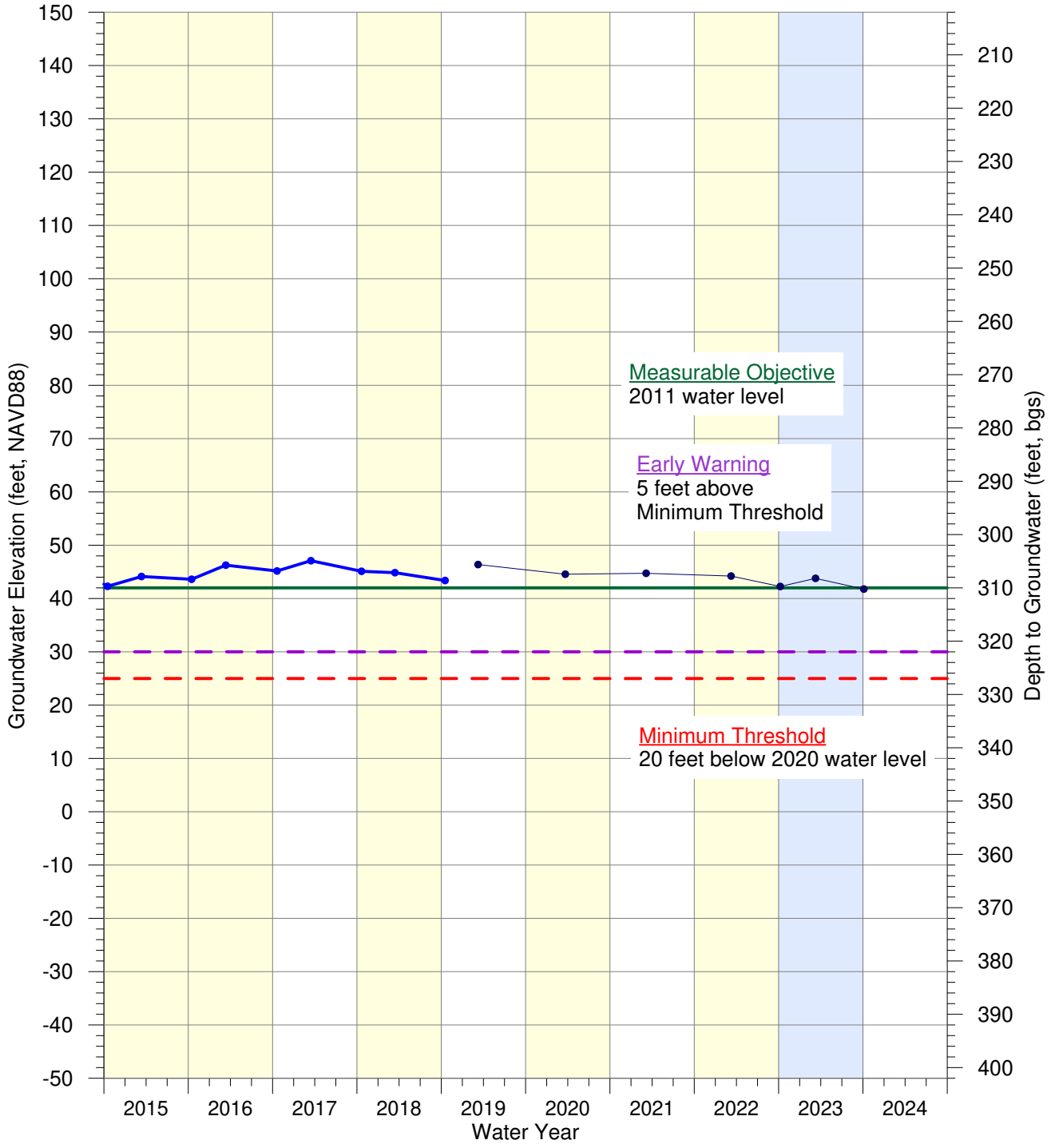
Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

I:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A2-10 LU-L 47 17M1.grf 1/30/2024 M. McCammon

FIGURE A2-11

CASGEM ID
49129
Voluntary

WMA Representative Monitoring Well for Lower Aquifer (Santa Rita Upland Subarea) 7N/33W-28D3



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81

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE
MONITORING WELL
Lower Aquifer - Santa Rita Upland

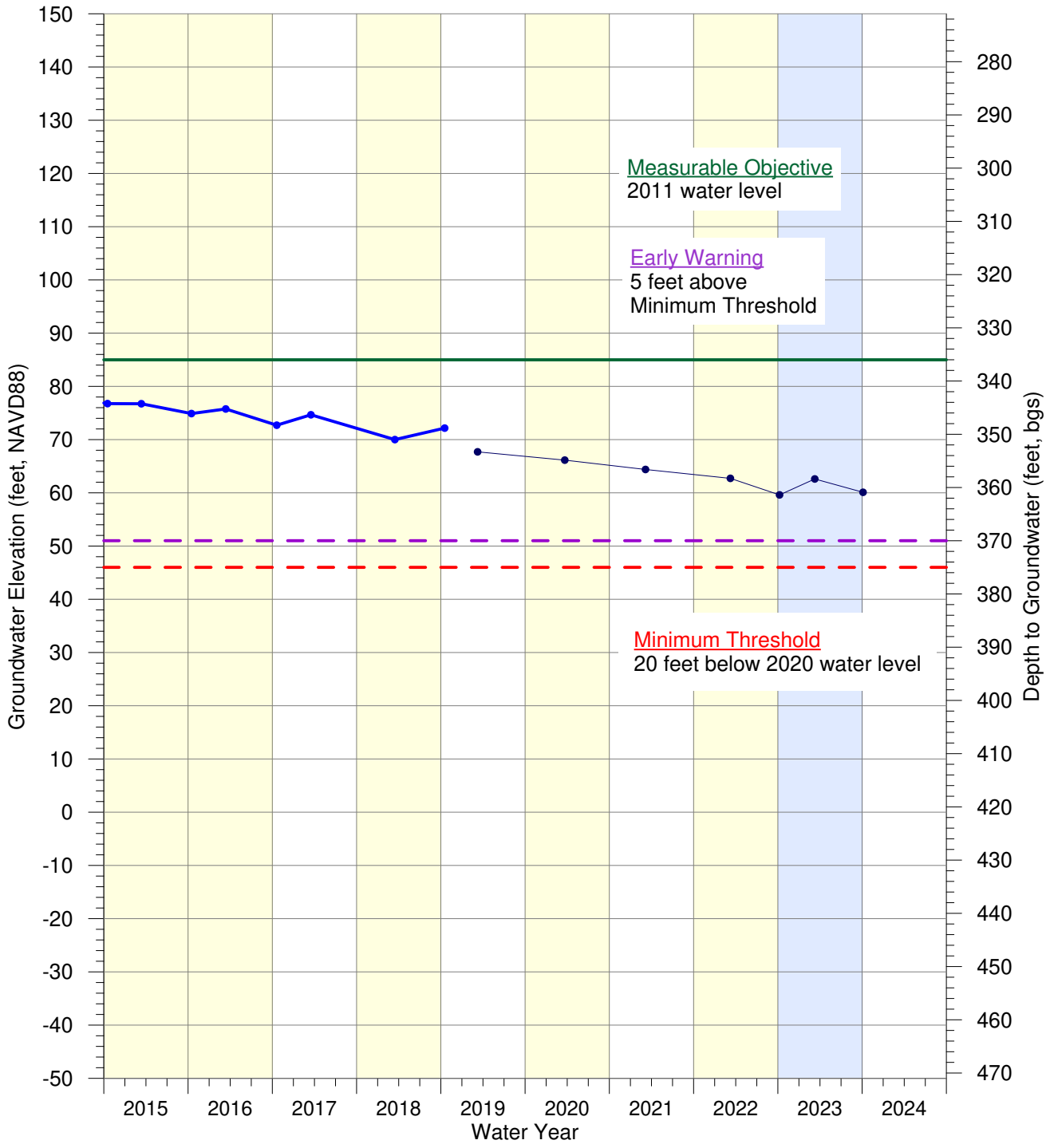
Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

I:\DATA\2823\Analyses\2024-01 WY23 WL GWL Hydrographs\WMA_GWL_SMCs\Grapher_Files\WMA Fig A2-11 SR-L 81 28D3.grf 1/30/2024 M. McCammon

FIGURE A2-12

CASGEM ID
23686
Voluntary

WMA Representative Monitoring Well for Lower Aquifer (Santa Rita Upland Subarea) 7N/33W-21G2



USGS (344025120211501)
County of Santa Barbara
Ground Surface (421 feet above mean sea level)
Depth of Well (TBD); Perforations TBD

DBID
78

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE MONITORING WELL
Lower Aquifer - Santa Rita Upland

Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

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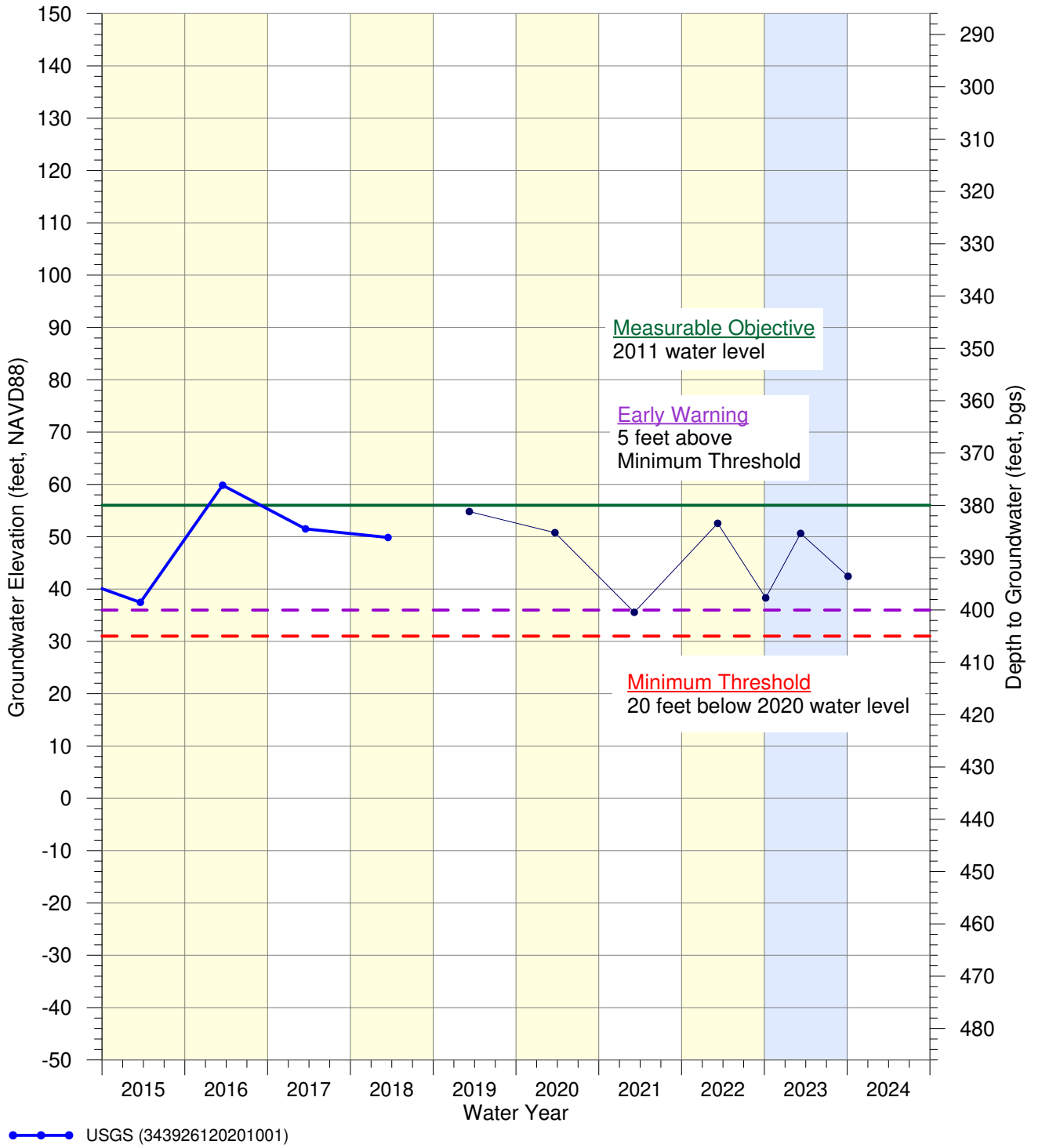
FIGURE A2-13

CASGEM ID
49132
Voluntary

WMA Representative Monitoring Well for Lower Aquifer (Santa Rita Upland Subarea) 7N/33W-27G1



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80

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE MONITORING WELL
Lower Aquifer - Santa Rita Upland

Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

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Chapter 3 – Groundwater Hydrographs and Contours

Appendix 3-B:

Groundwater Level Hydrographs for Assessing Surface Water Depletion, Western Management Area

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APPENDIX 3-B:

GROUNDWATER LEVEL HYDROGRAPHS FOR ASSESSING SURFACE WATER DEPLETION, WESTERN MANAGEMENT AREA

WATER YEAR 2023

This appendix includes hydrographs, which are graphs of water levels in wells. These are the representative wells for monitoring potential surface water depletion. As per the SGMA regulations, this includes the period from January 1, 2015 through the end of the Water Year 2023. Shown on these graphs are key SGMA criteria: measurable objective, early warning, and minimum threshold.

The Groundwater Sustainability Plan (GSP) includes hydrographs of the long-term period of record. A copy of the GSP, water level data and hydrographs are available at https://sywater.info.

LIST OF ACRONYMS AND ABBREVIATIONS

BGS	below-ground surface
CASGEM	California Statewide Groundwater Elevation Monitoring
FT	feet
NAVD88	North American Vertical Datum of 1988
USBR	United States Bureau of Reclamation
USGS	United States Geologic Survey
WL	Water Level
WMA	Western Management Area

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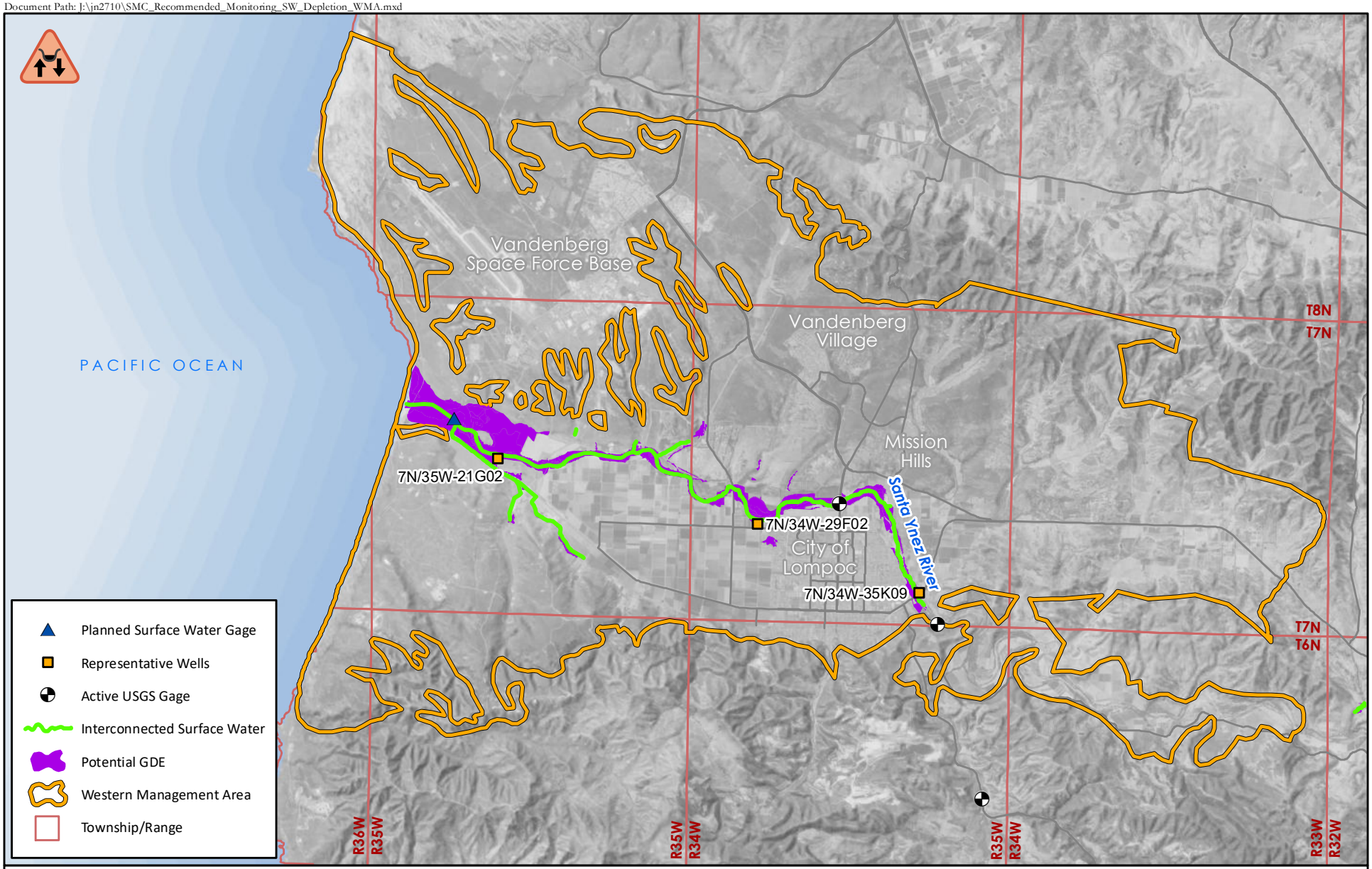


STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

WMA REPRESENTATIVE MONITORING FOR INTERCONNECTED SURFACE WATER AND GROUNDWATER DEPENDENT ECOSYSTEMS

0 1 2 Miles

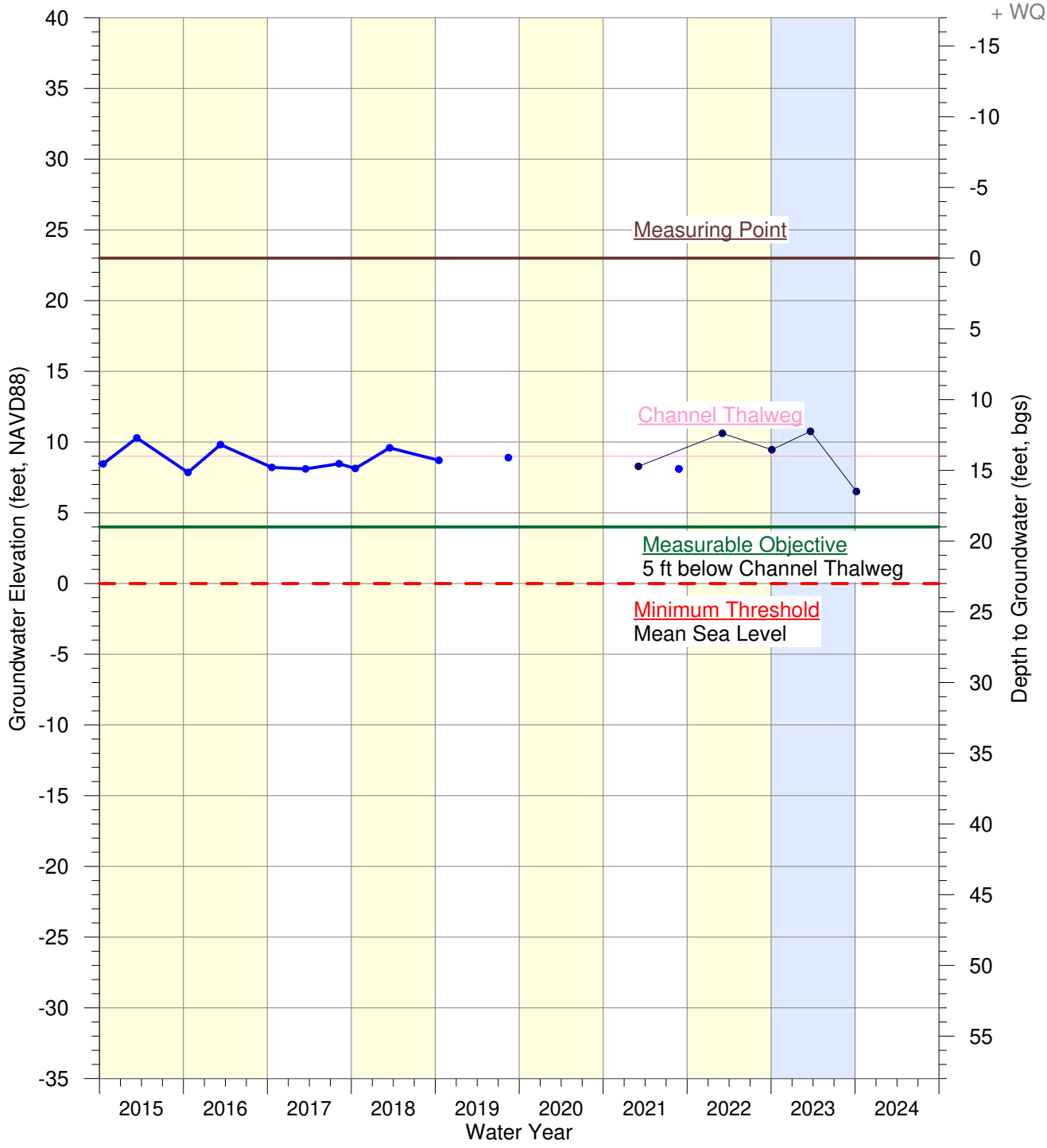
N

FIGURE B-01

CASGEM ID
25271
Voluntary

WMA Representative Monitoring Well for Interconnected Surface Water and Groundwater Dependent Ecosystems (Lompoc Plain Subarea) 7N/35W-21G2

+ GWL
+ WQ



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39

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE MONITORING WELL ASSESSING SURFACE WATER DEPLETION

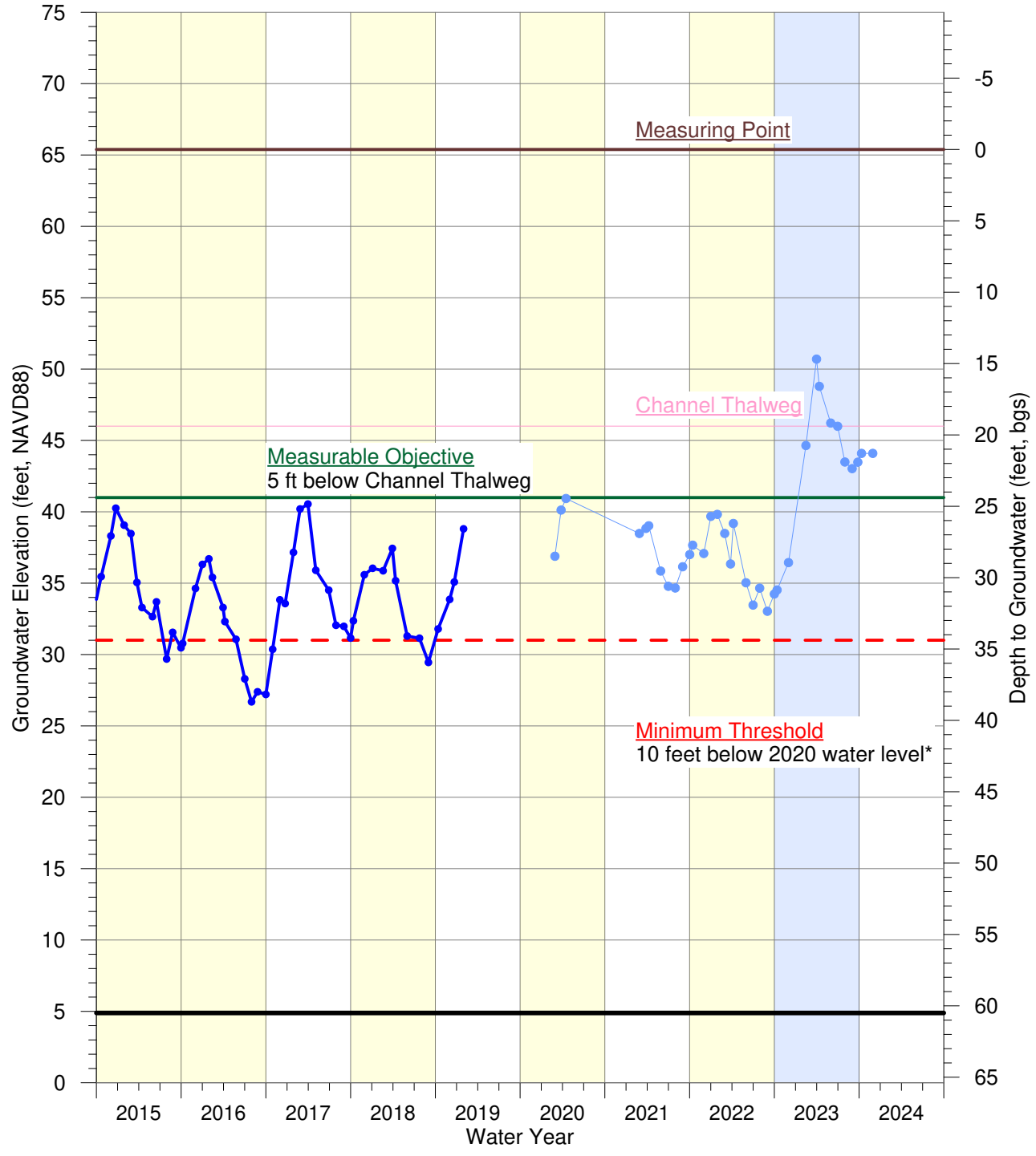
Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

I:\DATA\2823\Analyses\2024-01 WY23 GDE GWL Hydrographs\WMA_GDE_Hydrograph_Grapher\WMA Fig B-01 LP-U-S 39 21G2.grf 1/30/2024 M. McCammon

FIGURE B-02

CASGEM ID
36328
Voluntary

WMA Representative Monitoring Well for Interconnected Surface Water and Groundwater Dependent Ecosystems (Lompoc Plain Subarea) 7N/34W-29F2



DBID
167

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE MONITORING WELL ASSESSING SURFACE WATER DEPLETION

Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

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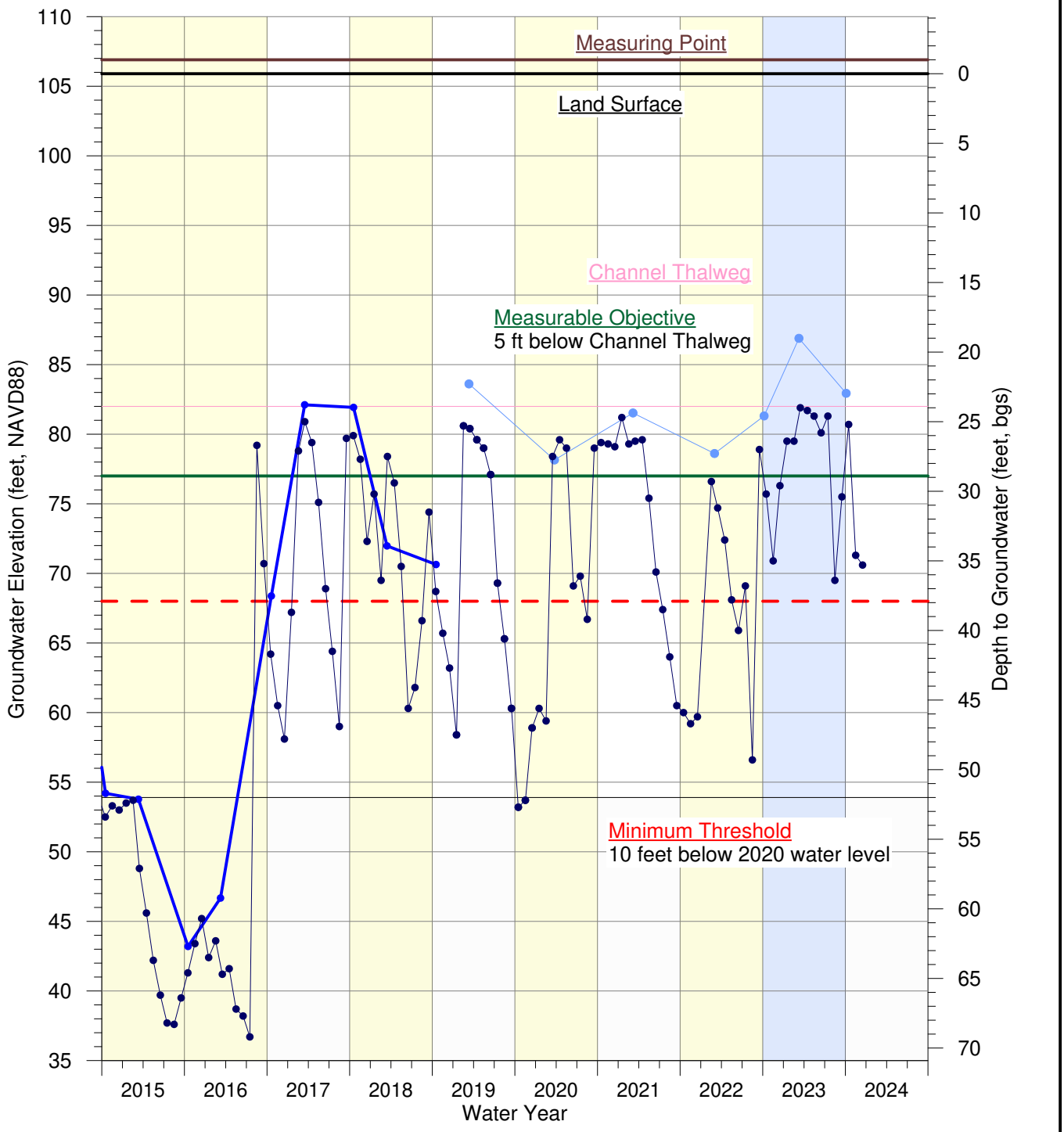
FIGURE B-03

CASGEM ID
49153
Voluntary

WMA Representative Monitoring Well for Interconnected Surface Water and Groundwater Dependent Ecosystems (Lompoc Plain Subarea)
7N/34W-35K9

+ GWL



US Bureau of Reclamation
USGS (343924120254501)
County of Santa Barbara

Measuring Point (106.9 feet above mean sea level)
Land Surface (105.9 feet above mean sea level)
Depth of Well (124 feet)
Perforations 52-80; 112-124 feet

DBID
32

STETSON ENGINEERS INC.

WMA
Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

REPRESENTATIVE MONITORING WELL ASSESSING SURFACE WATER DEPLETION

Water Year Type (1942-2023)
- Wet
- Above/Below Normal
- Dry / Critically Dry

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Chapter 6 – Groundwater Quality

Appendix 6-A:

Groundwater Quality
Western Management Area

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APPENDIX 6-A:
GROUNDWATER QUALITY,
WESTERN MANAGEMENT AREA

WATER YEAR 2023

This appendix includes a discussion of groundwater quality. Sustainable Groundwater Management Act (SGMA) statute and SGMA regulations on Annual Reports do not include discussion of general water quality (see Appendix 1-A). To support the Central Coast Water Board's water quality mission, the Western Management Area (WMA) has included the following periodic evaluation of water quality with this Third Annual Report.

LIST OF ACRONYMS AND ABBREVIATIONS

B	Boron
Cl	Chloride
DWR	Department of Water Resources
GSP	Groundwater Sustainability Plan
ILRP	Irrigated Lands Reporting Program
mg/L	milligrams per Liter
MO	Measurable Objective
MT	Minimum Thresholds
N	Nitrogen
Na	Sodium
NO_3	Nitrate
TDS	Total Dissolved Solids
SGMA	Sustainable Groundwater Management Act
SO_4	Sulfate
µg/L	micrograms per Liter (1 mg/L = 1000 µg/L)
WMA	Western Management Area

The Western Management Area (WMA) Groundwater Sustainability Plan (GSP) identified minimum thresholds (MT), measurable objectives (MO), and interim milestones (at 5 years (2027), 10 years (2032), and 15 years (2037)) for the assessment of groundwater quality. The GSP set the water quality interim milestones for all three planning periods as the same as the MO. The GSP set MTs and MOs values on a per well basis. **Table 6-A-1** identifies the wells used to assess water quality and the MTs and MOs for each water quality constituent.

Groundwater quality data collection is currently through multiple programs including by the United States Geological Survey (USGS), and two programs of the State Water Resources Control Board: Public Water System Reporting in the Safe Drinking Water Information System (SDWIS) and the California Irrigated Lands Reporting Program (ILRP). ILRP data is accessed through the GeoTracker GAMA website.

6-A-1 SALINITY - TOTAL DISSOLVED SOLIDS (TDS)

Salinity, as measured by total dissolved solids (TDS), is the dry mass of constituents dissolved in each volume of water. There are two measurements of salinity: TDS, which is a measurement of the total mass of the mineral constituents dissolved in the water, and electrical conductivity, which is a measurement of the conductivity of the solution of water and dissolved minerals. **Table 6-A-2** identifies the results of total dissolved solids at the identified wells.

6-A-2 CHLORIDE

Chloride (Cl^-) is a mineral anion and a major water-quality constituent in natural systems. Chloride is characteristically retained in solution through most of the processes that tend to separate other ions. The circulation of chloride ions in the hydrologic cycle is through physical processes. **Table 6-A-3** identifies the results for chloride at the identified wells.

Table 6-A-1
Representative Monitoring Wells for Water Quality

DMS ID	RMW Name	Principal Aquifer	Subarea	Water Quality MT (mg/L) (TDS/Cl/SO_4/B/Na/NO_3)	Water Quality MO (mg/L) (TDS/Cl/SO_4/B/Na/NO_3)
Upper Aquifer – Lompoc Plain Subarea					
511	Lompoc 11 (7N/34W-35)	UA	Lompoc Plain	1200/150/450/0.55/130/1	1000/100/400/0.4/90/1
27	7N/34W-29N6	UA	Lompoc Plain	3000/275/1250/1.1/275/ -	1500/250/600/1/225/ -
15	7N/35W-26L01	UA	Lompoc Plain	3000/550/1100/0.75/300/60	1500/250/600/0.5/200/10
16	7N/35W-26L02	UA	Lompoc Plain	800/175/150/0.2/90/1	500/125/110/0.1/60/1
39	7N/35W-21G2	UA	Lompoc Plain	2000/500/500/0.5/300/1	1500/450/400/0.4/225/1
3150	AGL020004874	UA	Lompoc Plain	2400/300/600/ - /150/3	1500/200/500/ - /100/2
506	Lompoc 6 (7N/34W-27K07)	UA	Lompoc Plain	1100/100/400/0.5/90/1	1000/75/250/0.4/70/1
139	7N/34W-27K05	UA	Lompoc Plain	1180/125/450/0.5/100/ -	1000/80/250/0.4/75/ -
170	7N/34W-27K04	UA	Lompoc Plain	1100/100/400/0.45/90/2	1000/90/250/0.4/80/1
Lower Aquifer – Lompoc Plain Subarea					
17	7N/35W-26L04	LA	Lompoc Plain	1000/200/200/0.2/80/1	500/150/150/0.125/70/1
28	7N/34W-29N7	LA	Lompoc Plain	1200/175/350/0.65/130/1	1000/150/250/0.5/110/1
171	7N/34W-27K06	LA	Lompoc Plain	1250/150/350/0.45/130/ -	1000/125/250/0.4/110/ -
Lower Aquifer – Lompoc Upland Subarea					
608	VVCSD 3B (7N/34W-15E3)	LA	Lompoc Upland	600/175/125/0.175/100/1	500/150/100/0.1/90/1
706	MH CSD 7	LA	Lompoc Upland	550/125/125/0.2/70/1	500/100/100/0.1/50/1
Lower Aquifer – Santa Rita Upland Subarea					
3172	AGL020021642	LA	Santa Rita Upland	800/125/250/ - /100/ -	500/75/100/ - /60/ -
3223	AGL020035942	LA	Santa Rita Upland	- /- /- /- /- / -	- /- /- /- /- / -
1304	Vista Hills MWC #4	LA	Santa Rita Upland	550/75/150/0.35/60/3	450/40/125/0.2/50/2
1305	Vista Hills MWC #5	LA	Santa Rita Upland	- /- /- /- /- / -	- /- /- /- /- / -

Note: Data unavailable at the Vista Hills MWC #4 data, nearby well Vista Hills MWC #5 included in following tables,

DMS = Data Management System, RMW = Representative Monitoring Well

Table 6-A-2
Salinity as Total Dissolved Solids (TDS) in mg/L, Representative Monitoring Wells for Water Quality

Well Information		Criteria		Recent Data			
DMS ID	RMW Name	MT	MO	Concentration	Date	Source	Currently Exceeds MT?
Upper Aquifer – Lompoc Plain Subarea							
511	Lompoc 11 (7N/34W-35)	1,200	1,000	1,120	2023-01-11	SDWIS	No
27	7N/34W-29N6	3,000	1,500	2,750	2022-08-11	USGS	No
15	7N/35W-26L01	3,000	1,500	2,680	2018-08-23	USGS	No
16	7N/35W-26L02	800	500	677	2022-08-09	USGS	No
39	7N/35W-21G2	2,000	1,500	1,900	2021-08-24	USGS	No
3150	AGL020004874	2,400	1,500	1,200	2017-09-26	ILRP	No
506	Lompoc 6 (7N/34W-27K07)	1,100	1,000	1,000	2023-02-01	SDIWS	No
139	7N/34W-27K05	1,180	1,000	1,020	2022-08-15	USGS	No
170	7N/34W-27K04	1,100	1,000	1,050	2019-08-19	USGS	No
Lower Aquifer – Lompoc Plain Subarea							
17	7N/35W-26L04	1,000	500	846	2023-08-08	USGS	No
28	7N/34W-29N7	1,200	1,000	977	2021-08-25	USGS	No
171	7N/34W-27K06	1,250	1,000	950	2021-08-18	USGS	No
Lower Aquifer – Lompoc Upland Subarea							
608	VVCSD 3B (7N/34W-15E3)	600	500	510	2023-02-21	SDWIS	No
706	MH CSD 7	550	500	530	2023-07-26	SDWIS	No
Lower Aquifer – Santa Rita Upland Subarea							
3172	AGL020021642	800	500	564	2022-04-28	ILRP	No
3223	AGL020035942	-	-	679	2022-04-04	ILRP	No
1304	Vista Hills MWC #4	550	450	-	-	SDWIS	n/a
1305	Vista Hills MWC #5	n/a	n/a	1,000	2021-03-29	SDWIS	n/a

Notes: All concentrations are mg/L, n/a = not assessed, MT = Minimum Threshold, MO = Measurable Objective, TDS = Total Dissolved Solids

Table 6-A-3
Chloride (Cl) in mg/L,
Representative Monitoring Wells for Water Quality

Well Information		Criteria		Recent Data			
DMS ID	RMW Name	MT	MO	Concentration	Date	Source	Currently Exceeds MT?
Upper Aquifer – Lompoc Plain Subarea							
511	Lompoc 11 (7N/34W-35)	150	100	100	2023-01-11	SDWIS	No
27	7N/34W-29N6	275	250	230	2022-08-11	USGS	No
15	7N/35W-26L01	550	250	478	2018-08-23	USGS	No
16	7N/35W-26L02	175	125	158	2022-08-09	USGS	No
39	7N/35W-21G2	500	450	491	2021-08-24	USGS	No
3150	AGL020004874	300	200	200	2017-09-26	ILRP	No
506	Lompoc 6 (7N/34W-27K07)	100	75	82	2023-02-01	SDWIS	No
139	7N/34W-27K05	125	80	76.9	2022-08-15	USGS	No
170	7N/34W-27K04	100	90	71.4	2019-08-19	USGS	No
Lower Aquifer – Lompoc Plain Subarea							
17	7N/35W-26L04	200	150	168	2023-08-08	USGS	No
28	7N/34W-29N7	175	150	134	2021-08-25	USGS	No
171	7N/34W-27K06	150	125	149	2021-08-18	USGS	No
Lower Aquifer – Lompoc Upland Subarea							
608	VVCSD 3B (7N/34W-15E3)	175	150	150	2023-02-21	SDWIS	No
706	MH CSD 7	125	100	110	2023-07-26	SDWIS	No
Lower Aquifer – Santa Rita Upland Subarea							
3172	AGL020021642	125	75	79	2017-11-15	ILRP	No
3223	AGL020035942	-	-	57.6	2019-12-09	ILRP	No
1304	Vista Hills MWC #4	75	40	-	-	SDWIS	n/a
1305	Vista Hills MWC #5	n/a	n/a	98	2021-03-29	SDWIS	n/a

Notes: All concentrations are mg/L, n/a = not assessed, MT = Minimum Threshold, MO = Measurable Objective, Cl = Chloride

6-A-3 SULFATE

Sulfate (SO_4^{2-}) is a naturally occurring anion and a major water quality constituent. **Table 6-A-4** identifies the results for sulfate at the identified wells.

6-A-4 BORON

Boron (B) is a trace water quality constituent, and plants have specific tolerance limits for boron concentrations in irrigation water. **Table 6-A-5** identifies the results for boron at the identified wells.

6-A-5 SODIUM

Sodium (Na^+) is a mineral cation and a major water-quality constituent in natural systems. The 2019 Central Coast Basin Plan indicates the primary concern for sodium in irrigation water is the sodium absorption ratio (SAR). The sodium absorption ratio is the relative concentration of sodium to calcium and magnesium and is managed to maintain soil permeability. **Table 6-A-6** identifies the results for this sodium at the identified wells.

6-A-6 NITRATE

Nitrogen is the primary atmospheric gas, however, its presence in water is related to the breakdown of organic waste. Total nitrogen in groundwater is the sum of organic nitrogen and the three inorganic forms: nitrate (NO_3^-), nitrite (NO_2^-), and ammonia (NH_3). Nitrate concentrations are reported either as nitrate (the full mass of the nitrate anion) or as nitrogen (the mass of the Nitrogen). In some cases, a combined nitrate-nitrite as nitrogen is reported. **Table 6-A-7** identifies the results for nitrate at the identified wells.

Table 6-A-4
Sulfate (SO_4) in mg/L,
Representative Monitoring Wells for Water Quality

Well Information		Criteria		Recent Data			
DMS ID	RMW Name	MT	MO	Concentration	Date	Source	Currently Exceeds MT?
Upper Aquifer – Lompoc Plain Subarea							
511	Lompoc 11 (7N/34W-35)	450	400	375	2023-01-11	SDWIS	No
27	7N/34W-29N6	1,250	600	1,240	2022-08-11	USGS	No
15	7N/35W-26L01	1,100	600	953	2018-08-23	USGS	No
16	7N/35W-26L02	150	110	105	2022-08-09	USGS	No
39	7N/35W-21G2	500	400	443	2021-08-24	USGS	No
3150	AGL020004874	600	500	480	2017-09-26	ILRP	No
506	Lompoc 6 (7N/34W-27K07)	400	250	339	2023-02-01	SDWIS	No
139	7N/34W-27K05	450	250	350	2022-08-15	USGS	No
170	7N/34W-27K04	400	250	358	2019-08-19	USGS	No
Lower Aquifer – Lompoc Plain Subarea							
17	7N/35W-26L04	200	150	180	2023-08-08	USGS	No
28	7N/34W-29N7	350	250	308	2021-08-25	USGS	No
171	7N/34W-27K06	350	250	302	2021-08-18	USGS	No
Lower Aquifer – Lompoc Upland Subarea							
608	VVCSD 3B (7N/34W-15E3)	125	100	110	2023-02-21	SDWIS	No
706	MH CSD 7	125	100	96	2023-04-11	SDWIS	No
Lower Aquifer – Santa Rita Upland Subarea							
3172	AGL020021642	250	100	239	2017-11-15	ILRP	No
3223	AGL020035942	-	-	226	2019-12-09	ILRP	No
1304	Vista Hills MWC #4	150	125	-	-	SDWIS	n/a
1305	Vista Hills MWC #5	n/a	n/a	500	2021-03-29	SDWIS	n/a

Notes: All concentrations are mg/L, n/a = not assessed, MT = Minimum Threshold, MO = Measurable Objective, SO_4 = Sulfate

Table 6-A-5
Boron (B) in µg/L,
Representative Monitoring Wells for Water Quality

Well Information		Criteria		Recent Data			
DMS ID	RMW Name	MT	MO	Concentration	Date	Source	Currently Exceeds MT?
Upper Aquifer – Lompoc Plain Subarea							
511	Lompoc 11 (7N/34W-35)	550	400	Less than 100	2023-01-11	SDWIS	No
27	7N/34W-29N6	1,100	1,000	1,130	2022-08-11	USGS	**Yes**
15	7N/35W-26L01	750	500	584	2018-08-23	USGS	No
16	7N/35W-26L02	200	100	121	2022-08-09	USGS	No
39	7N/35W-21G2	500	400	420	2021-08-24	USGS	No
3150	AGL020004874	-	-	-	-	-	n/a
506	Lompoc 6 (7N/34W-27K07)	500	400	Less than 100	2023-01-02	SDWIS	No
139	7N/34W-27K05	500	400	488	2022-08-15	USGS	No
170	7N/34W-27K04	450	400	416	2019-08-19	USGS	No
Lower Aquifer – Lompoc Plain Subarea							
17	7N/35W-26L04	200	125	118	2023-08-08	USGS	No
28	7N/34W-29N7	650	500	546	2021-08-25	USGS	No
171	7N/34W-27K06	450	400	429	2021-08-18	USGS	No
Lower Aquifer – Lompoc Upland Subarea							
608	VVCSD 3B (7N/34W-15E3)	175	100	Less than 100	2023-02-21	SDWIS	No
706	MH CSD 7	200	100	120	2023-04-11	SDWIS	No
Lower Aquifer – Santa Rita Upland Subarea							
3172	AGL020021642	-	-	-	-	-	n/a
3223	AGL020035942	-	-	-	-	-	n/a
1304	Vista Hills MWC #4	350	200	-	-	SDWIS	n/a
1305	Vista Hills MWC #5	n/a	n/a	630	2021-03-29	SDWIS	n/a

Notes: All concentrations are µg/L, 1 mg/L = 1000 µg/L, n/a = not assessed, MT = Minimum Threshold, MO = Measurable Objective, B = Boron

Table 6-A-6
Sodium (Na) in mg/L,
Representative Monitoring Wells for Water Quality

Well Information		Criteria		Recent Data			
DMS ID	RMW Name	MT	MO	Concentration	Date	Source	Currently Exceeds MT?
Upper Aquifer – Lompoc Plain Subarea							
511	Lompoc 11 (7N/34W-35)	130	90	93	2023-01-11	SDWIS	No
27	7N/34W-29N6	275	225	261	2022-08-11	USGS	No
15	7N/35W-26L01	300	200	237	2018-08-23	USGS	No
16	7N/35W-26L02	90	60	80.9	2022-08-09	USGS	No
39	7N/35W-21G2	300	225	252	2021-08-24	USGS	No
3150	AGL020004874	150	100	120	2017-09-26	ILRP	No
506	Lompoc 6 (7N/34W-27K07)	90	70	76	2023-01-02	SDWIS	No
139	7N/34W-27K05	100	75	82.6	2022-08-15	USGS	No
170	7N/34W-27K04	90	80	84.4	2019-08-19	USGS	No
Lower Aquifer – Lompoc Plain Subarea							
17	7N/35W-26L04	80	70	76.7	2023-08-08	USGS	No
28	7N/34W-29N7	130	110	114	2021-08-25	USGS	No
171	7N/34W-27K06	130	110	125	2021-08-18	USGS	No
Lower Aquifer – Lompoc Upland Subarea							
608	VVCSD 3B (7N/34W-15E3)	100	90	89	2023-02-21	SDWIS	No
706	MH CSD 7	70	50	64	2023-07-26	SDWIS	No
Lower Aquifer – Santa Rita Upland Subarea							
3172	AGL020021642	100	60	100	2017-11-15	ILRP	No
3223	AGL020035942	-	-	56	2019-12-09	ILRP	n/a
1304	Vista Hills MWC #4	60	50	-	-	SDWIS	n/a
1305	Vista Hills MWC #5	n/a	n/a	110	2022-09-29	SDWIS	n/a

Notes: All concentrations are mg/L, n/a = not assessed, MT = Minimum Threshold, MO = Measurable Objective, Na = Sodium

Table 6-A-7
Nitrate as Nitrogen (NO_3 as N) in mg/L, Representative Monitoring Wells for Water Quality

Well Information		Criteria		Recent Data			
DMS ID	RMW Name	MT	MO	Concentration	Date	Source	Currently Exceeds MT?
Upper Aquifer – Lompoc Plain Subarea							
511	Lompoc 11 (7N/34W-35)	1	1	Less than 0.09	2023-01-11	SDWIS (as NO_3)	No
27	7N/34W-29N6	-	-	Less than 0.04	2022-08-11	USGS (as NO_3)	No
15	7N/35W-26L01	60	10	45.40	2018-08-23	USGS (as NO_3)	No
16	7N/35W-26L02	1	1	Less than 0.04	2022-08-09	USGS (as NO_3)	No
39	7N/35W-21G2	1	1	Less than 0.04	2021-08-24	USGS (as NO_3)	No
3150	AGL020004874	3	2	1.7	2017-09-26	ILRP	No
506	Lompoc 6 (7N/34W-27K07)	1	1	Less than 0.09	2023-01-02	SDWIS (as NO_3)	No
139	7N/34W-27K05	-	-	Less than 0.04	2022-08-15	USGS (as NO_3)	No
170	7N/34W-27K04	2	1	0.91	2019-08-19	USGS (as NO_3)	No
Lower Aquifer – Lompoc Plain Subarea							
17	7N/35W-26L04	1	1	Less than 0.04	2023-08-08	USGS (as NO_3)	No
28	7N/34W-29N7	1	1	Less than 0.04	2021-08-25	USGS (as NO_3)	No
171	7N/34W-27K06	-	-	Less than 0.04	2021-08-18	USGS (as NO_3)	No
Lower Aquifer – Lompoc Upland Subarea							
608	VVCSD 3B (7N/34W-15E3)	1	1	0.10	2023-02-21	SDWIS (as NO_3)	No
706	MH CSD 7	1	1	Less than 0.09	2023-07-26	SDWIS (as NO_3)	No
Lower Aquifer – Santa Rita Upland Subarea							
3172	AGL020021642	-	-	Not Detected	2022-04-28	ILRP (NO_3 + NO_2)	No
3223	AGL020035942	-	-	Less than 0.06	2022-04-04	ILRP (NO_3 + NO_2)	No
1304	Vista Hills MWC #4	3	2	-	-	SDWIS	n/a
1305	Vista Hills MWC #5	n/a	n/a	Less than 0.09	2022-09-29	SDWIS (as NO_3)	n/a

Notes: All concentrations are mg/L, values reported as NO_3 converted to NO_3 as N, values NO_3 + NO_2 as N as reported,
n/a = not assessed, MT = Minimum Threshold, MO = Measurable Objective,
NO_3 = Nitrate, NO_2 = Nitrite, N = Nitrogen

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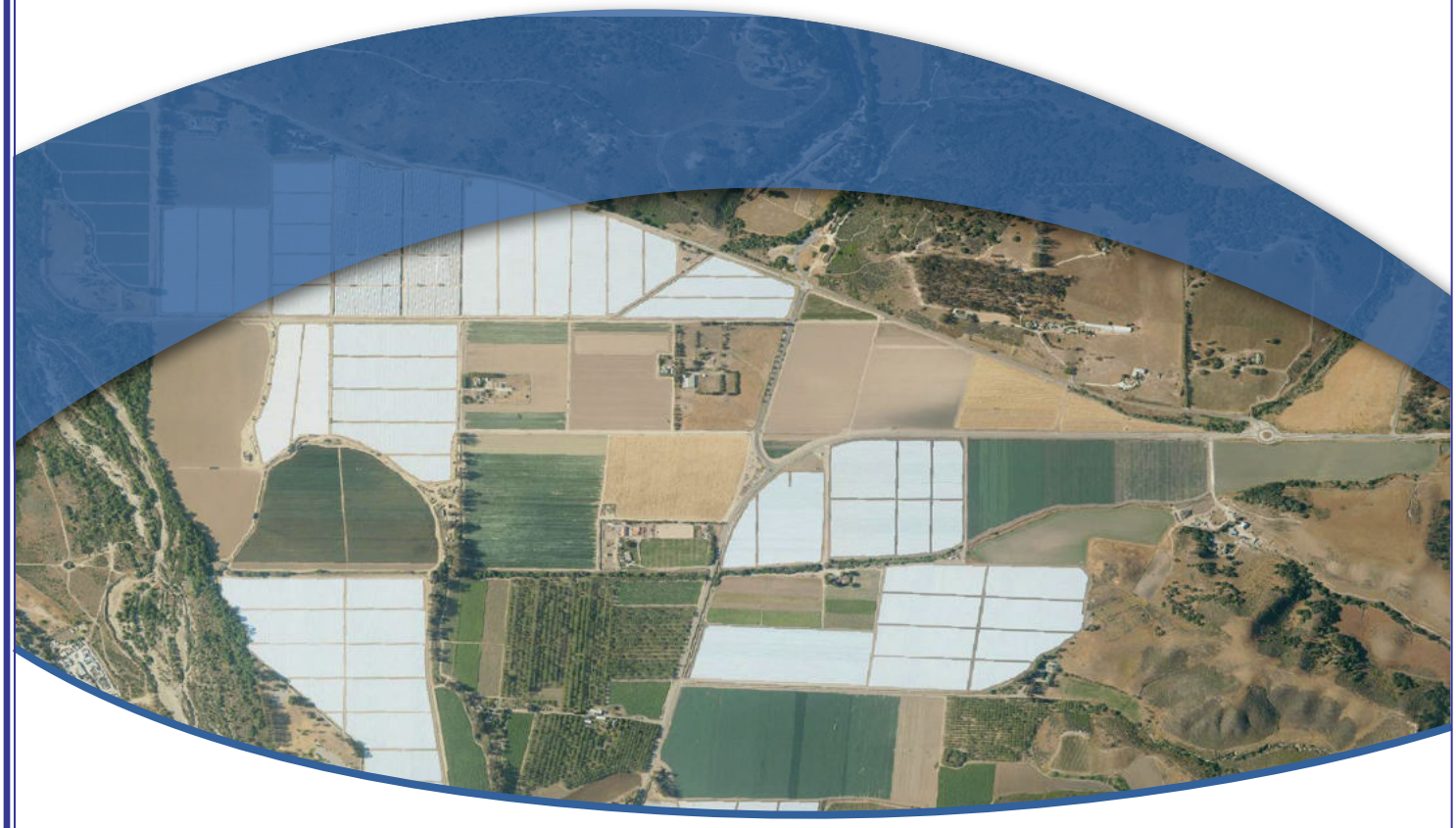
Third Annual Report Water Year 2023
Groundwater Sustainability Plan

WMA

Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency



STETSON
ENGINEERS INC.