

FINALPUBLIC DRAFT

LOS OSOS BASIN PLAN
GROUNDWATER MONITORING PROGRAM
2025 ANNUAL MONITORING REPORT

Prepared for the
BASIN MANAGEMENT COMMITTEE

JUNEMAY 2026

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Acronyms used in this Annual Report

AEM	Aerial Electromagnetic
BBMR	Basin Boundary Modification Request
BMC	Basin Management Committee
BOS	San Luis Obispo County Board of Supervisors
CASGEM	California Statewide Groundwater Elevation Monitoring
CCRWQCB	Central Coast Regional Water Quality Control Board
CEC	Constituents of Emerging Concern
CHG	Cleath-Harris Geologists
DEET	Diethyl-meta-toluamide
DDW	Division of Drinking Water
DWR	Department of Water Resources
EFH	Equivalent Freshwater Head
FW	First Water
GMO	Growth Management Ordinance
GSA	Groundwater Sustainability Agency
GSI	GSI Water Solutions
GSWC	Golden State Water Company
ISJ	Interlocutory Stipulated Judgment
LA	Lower Aquifer
LOBP	Los Osos Basin Plan
LOCP	Los Osos Community Plan
LOCSA	Los Osos Community Services District
LOHCP	Los Osos Habitat Conservation Plan
LOWRF	Los Osos Water Recycling Facility
Lynker	Lynker One Water Hydrologic
MCL	Maximum Contaminant Level
NAVD 88	North American Vertical Datum of 1988
NDMA	N-Nitrosodimethylamine
NDMC	National Drought Mitigation Center
NGVD 29	National Geodetic Vertical Datum of 1929
NOAA	National Oceanic and Atmospheric Administration
PFAS	Per- and polyfluoroalkyl Substances
S&T	S&T Mutual Water Company
SGMA	Sustainable Groundwater Management Act
SNMP	Salt and Nutrient Management Plan
SWRCB	State Water Resource Control Board
TAC	Technical Advisory Committee
TDS	Total Dissolved Solids
UA	Upper Aquifer
USDA	United States Department of Agriculture
WRFP	Water Recycling Funding Program
WSC	Water Systems Consulting



EXECUTIVE SUMMARY

The Los Osos Basin Plan Groundwater Monitoring Program – 2025 Annual Report (Annual Report) describes activities related to the Los Osos Basin Plan (LOBP) Groundwater Monitoring Program and provides results and interpretation of these activities for calendar year 2025. The LOBP Groundwater Monitoring Program is necessary to accomplish the following continuing goals set forth in Section 2.4 of the LOBP (ISJ Group, 2015):

1. Provide for a continuously updated hydrologic assessment of the Los Osos Groundwater Basin (Basin), its water resources and Sustainable Yield.
2. Create a water resource accounting which is able to meet the information needs for planning, monitoring, trading, environmental management, utility operations, land development and agricultural operations.

The LOBP Groundwater Monitoring Program is also necessary to support other goals of the LOBP, including halting or reversing seawater intrusion, establishing a long-term environmentally and economically sustainable and beneficial use of the Basin, and the equitable allocation of costs associated with Basin management.

Groundwater Production

Groundwater production for calendar year 2025 is summarized in Table ES-1 below. Reported Purveyor (Los Osos Community Services District, Golden State Water Company, and S&T Mutual Water Company) production has increased 3.8 percent compared to 2024, while total Basin production is estimated to have decreased by 0.6 percent compared to 2024.

Table ES-1. Groundwater Production		
Description	2024 Production in Acre-Feet	2025 Production in Acre-Feet
Los Osos Community Services District	491	494
Golden State Water Company	505	538
S&T Mutual Water Company	26	29
Purveyor Subtotal (metered)	1,022	1,061
Domestic wells ¹	110	110
Community facilities ¹	50	40
Agricultural wells ¹	510	470
Total Estimated Production¹	1,690	1,680

¹ Rounded to the nearest 10 acre-feet. Production from non-metered wells (Domestic, Community, Agricultural) estimated per methods described in Appendix F and LOBP Section 4 and Section 7.5.



Basin Status

The status of the Basin in terms of key parameters and metrics is listed below, along with the page reference for definitions and additional details on each key parameter:

Precipitation (p. 41). The Basin received above average rainfall in calendar year 2025. San Luis Obispo County started 2025 with no drought to abnormally dry conditions in January; by end of the calendar year in December 2025 no drought conditions were reported (NDMC/USDA/NOAA, 2026).

Seawater Intrusion Front (p. 57). The seawater intrusion front in Zone D retreated between Fall 2024 and Fall 2025. This interpretation is based on localized conditions contoured to represent regional trends. The seawater intrusion front in Zone E moved inland at LA11 between Fall 2024 and Fall 2025. Seawater intrusion into Zone E is a significant threat to Basin sustainability and has been for decades. Zone E intrusion is interpreted to be laterally pervasive in the Western Area, and the overall trend indicates a worsening condition over time.

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Basin Yield Metric (p. 71). The Basin Yield Metric was steady between 2024 and 2025 (no change) and meets the LOBP goal in 2025. An update to the Basin sustainable yield was approved in Fall 2025 based on the Transient Model, which is expected to lower the Basin Yield Metric in 2026 (Section 7.5.1).

Water Level Metric (p. 75). The Water Level Metric decreased between Spring 2024 and Spring 2025 (a deterioration) and has not reached the target value.

Chloride Metric (p. 77). The Chloride Metric decreased between Fall 2024 and Fall 2025 (an improvement) but has not reached the target value.

Nitrate Metric (p. 78). The Nitrate Metric decreased between Winter 2024 and Winter 2025 (an improvement) but has not reached the target value.

Upper Aquifer Water Level Profile (p. 81). Water levels in the Upper Aquifer along the bay remain safely above the Protective Elevation, except for near well UA5, where chloride concentrations have increased but remain at relatively low concentrations.

Recommendations for improving the quality and availability of data are contained in Section 9 of the Annual Report. Recommendations from the 2024 Annual Report that were completed in 2025 included construction and calibration of the Transient Model and development of updated Sustainable Yield estimates with the second Program C well and other LOBP programs, continued water quality monitoring at UA5, and a discussion of Chromium-6 and PFAS concentrations in purveyor wells.

Recommendations from 2024 that are on-hold, in progress, or planned for 2026 include re-evaluating the Water Level, Chloride, and Nitrate Metrics (in progress), and continuing to implement recommendations for new monitoring well construction to help characterize Lower Aquifer seawater intrusion (Sweet Spring monitoring well cluster planned; Section 7.3).



LOBP Metrics

As described in Section 7.5 (“Basin Metrics”) of this Annual Report, the LOBP established several Basin metrics to evaluate nitrate impacts to the Upper Aquifer, seawater intrusion into the Lower Aquifer, and the effect of management efforts of the Basin Management Committee (BMC). These metrics allow the BMC, regulatory agencies, and the public to evaluate the status of nitrate levels and seawater intrusion, and the impact of implementation of the LOBP programs in the Basin through objective, numerical criteria that can be tracked over time. The status of key Basin metrics is summarized in Table ES-2.

Table ES-2. LOBP Metric Summary			
Metric¹	LOBP Goal	Calculated Value from 2025 Data	Change in Condition from 2024
Basin Yield Metric²	80 or less	71	No change from 71 (steady)
Water Level Metric	8 feet above mean sea level or higher	3.5 feet above mean sea level	Decrease from 4.1 ft. (deterioration)
Chloride Metric	100 mg/L or lower	230 mg/L	Decrease from 249 mg/L (improvement)
Nitrate Metric	10 mg/L or lower	12.9 mg/L (NO ₃ -N)	Decrease from 15.7 mg/L (improvement)

¹Revisions to the Water Level, Chloride, and Nitrate Metrics are currently in progress.

²An update to the Basin sustainable yield was approved by the BMC in Fall 2025 based on the Transient Model, which is expected to lower the Basin Yield Metric in 2026 (Section 7.5.1).

Approval of the Annual Monitoring Report by the BMC does not constitute unanimous approval of actions listed under Section 5.11.4 (Approval Requirements) of the Stipulated Judgment or setting the Sustainable Yield for a given year. These actions require a separate action and unanimous approval by the BMC.

Adaptive Management

In addition to the programs described in the LOBP, the following additional initiatives were under evaluation or completed by the BMC in 2025 through adaptive management. Details regarding the status of each program listed below are provided in Section 10 of this Annual Report.

- Basin Metrics
- Program C Adaptive Management
- Lower Aquifer Nitrate Investigation
- Evaluation of Water Conservation Measures



- Water Recycling Funding Program (WRFP) Study/Transient Groundwater Model
- Discussion and Recommendation of Criteria for Future Growth



LOBP Infrastructure Programs

The status of LOBP infrastructure programs is summarized in Table ES- 3.

Table ES-3. Basin Infrastructure Projects				
Project Name	Parties Involved	Funding Status	Capital Cost	Status
Program A				
Water Systems Interconnection	LOCSD/ GSWC			Completed
Upper Aquifer Well (8 th Street)	LOCSD		\$307,000	Completed
South Bay Well Nitrate Removal	LOCSD			Completed
Palisades Well Modifications	LOCSD			Completed
Blending Project (Skyline Well)	GSWC			Completed
Water Meters	S&T			Completed
Program B				
LOCSD Wells	LOCSD	Not Funded	LOBP: \$2.7 mil	Project not initiated
GSWC Wells	GSWC	Not Funded	LOBP: \$3.2 mil	Project not initiated
Community Nitrate Removal Facility	LOCSD/GSWC/S&T	GSWC Portion Funded	GSWC: \$1.23 mil	GSWC's Program A Blending Project might be capable of expanding to be the first phase of the Program B Community Nitrate Removal Facility.



Project Name	Parties Involved	Funding Status	Capital Cost	Status
Program C				
Expansion Well No. 1 (Los Olivos)	GSWC			Completed
Expansion Well No. 2	LOCSD	LOCSD	LOBP: \$2.5 mil	The Bay Oaks well is completed and operational as of January 2026.
Expansion Well 3 and LOVR Water Main Upgrade	GSWC/LOCSD	Cooperative Funding	LOBP: \$1.6 mil	The deferral from Program C for this project was removed by the BMC on August 16, 2023.
LOVR Water Main Upgrade	GSWC	May be deferred	LOBP: \$1.53 mil	Project may not be required, depending on the pumping capacity of the drilled Program C wells. It may be deferred to Program D.
S&T/GSWC Interconnection	S&T/GSWC	Pending	LOBP: \$30,000	Currently on hold pending further evaluation of the project.



Project Name	Parties Involved	Funding Status	Capital Cost	Status
Program D				
Shift production within the Lower Aquifer from the Western Area to the Eastern Area of the Basin				Currently being considered for deferment through Adaptive Management. BMC to review on an annual or semi-annual basis.
Program M				
New Zone D/E Lower Aquifer monitoring well in Cuesta by the Sea	All Parties			Completed
Sweet Springs Monitoring Well	All Parties	\$150,000 in Rose Foundation Grant Funding, \$50,000 match from LOCS D's 2025 BMC contributions	TBD	In progress, anticipated completion in 2026.
Program U				
Creek Discharge Program	All Parties		TBD	These activities are currently on hold. The Transient Model and Water Recycling Funding Study are intended to better inform the BMC on the most effective opportunities for increasing the sustainable yield of the Basin.
8 th and El Moro Urban Storm Water Recovery Project	All Parties		TBD	These activities are currently on hold. The Transient Model and Water Recycling Funding Study are intended to better inform the BMC on the most effective opportunities for increasing the sustainable yield of the Basin.



1. INTRODUCTION

The Los Osos Groundwater Basin (the Basin) was adjudicated in October 2015 (*Los Osos Community Services District v. Southern California Water Company [Golden State Water Company] et al.* (San Luis Obispo County Superior Court Case No. CV 040126) and is managed by the Los Osos Groundwater Basin Management Committee (BMC), consisting of representatives from Los Osos Community Services District (LOCSD), Golden State Water Company (GSWC), S&T Mutual Water Company (S&T), and the County of San Luis Obispo (County). This is the eleventh Annual Report for the Basin.

The 2025 Annual Report (Annual Report) describes Basin activities related to the Los Osos Basin Plan (LOBP) Groundwater Monitoring Program and provides results and interpretation of these activities. The LOBP Groundwater Monitoring Program is necessary to accomplish the following continuing goals set forth in Section 2.4 of the LOBP (ISJ Group, 2015):

1. Provide for a continuously updated hydrologic assessment of the Basin, its water resources and sustainable yield.
2. Create a water resource accounting which is able to meet the information needs for planning, monitoring, trading, environmental management, utility operations, land development and agricultural operations.

The LOBP Groundwater Monitoring Program is also necessary to support other LOBP goals, including halting or reversing seawater intrusion, establishing a long-term environmentally and economically sustainable and beneficial use of the Basin, and the equitable allocation of costs associated with Basin management (ISJ Group, 2015). The program will provide significant overlap with several regulatory requirements, including:

- The Sustainable Groundwater Management Act (SGMA)
- California Statewide Groundwater Elevation Monitoring (CASGEM) Program
- State Water Resource Control Board's (SWRCB) salt and nutrient monitoring guidelines as adopted in the state Recycled Water Policy. The County Board of Supervisors adopted the Salt and Nutrient Management Plan (SNMP) for the Los Osos Groundwater Basin on January 23, 2018. The SNMP has been reviewed by the Regional Water Quality Control Board.
- Recycled Water Management Plan requirements for the Los Osos Water Recycling Facility (LOWRF)

This report was prepared by Cleath-Harris Geologists (CHG). Confluence Engineering Solutions (ConfluenceES) contributed to the Executive Summary and Section 10.



2. BACKGROUND

In August 2008, the Superior Court of the State of California for the County of San Luis Obispo (Court) approved an Interlocutory Stipulated Judgment (ISJ) between LOCSD, GSWC, S&T, and the County. Under the ISJ, these Parties formed a working group, undertaking technical studies and management discussions that produced the LOBP in January 2015. The LOBP presents a comprehensive groundwater management strategy and serves as the cornerstone of a physical solution to address the significant problems facing the Basin, including seawater intrusion and elevated nitrate concentrations, and for restoration of Basin water resources, while respecting existing water rights. The LOBP Groundwater Monitoring Program is a key component of the LOBP, providing water level and water quality data that serve as measures of effectiveness for LOBP programs and activities with respect to the restoration of Basin water resources. A Stipulated Judgment was approved by the Court on October 14, 2015 and covers the plan areas shown in Figure 1.

In 2019, the Department of Water Resources (DWR) separated the Los Osos Valley groundwater basin (Bulletin 118 basin 3-08) into two jurisdictional subbasins, the Los Osos Area Subbasin and the Warden Creek Subbasin (DWR, 2019). The Los Osos Area Subbasin lies within the LOBP plan area and overlaps with the LOBP Basin but does not replace or update the scientific boundary defined in the 2015 Basin adjudication (see Section 2.2.4 for details). A figure showing the DWR Los Osos Subbasin boundary and the LOBP Basin boundary is included in Appendix A.

2.1 Groundwater Monitoring History

Groundwater monitoring has been performed by public agencies, water purveyors, and consultants for various Basin studies and programs over several decades. A list of historical investigations, monitoring reports, and monitoring programs with a major focus on Basin water levels and water quality through 2025 is included in Appendix A.

2.2 LOBP Groundwater Monitoring Program Design

The purpose of the LOBP Groundwater Monitoring Program is to collect and organize groundwater data on a regular basis for use in management of the Basin. Design of the LOBP Groundwater Monitoring Program is detailed in Section 7 of the LOBP. The basic elements of the program are as follows:

- Monitor long-term groundwater level trends in a network of wells for three monitoring groups within the Basin: First Water (FW), Upper Aquifer (UA), and Lower Aquifer (LA). These terms are defined in Section 2.2.1 below. The abbreviations are used for network well numbering purposes (e.g. Lower Aquifer well 43 is LA43).



Insert Figure 1 Basin Location and Plan Areas



- Monitor seasonal fluctuations and long-term water quality trends at selected wells in each of the three monitoring groups.
- Compare hydrologic data pertinent to Basin management, including groundwater production from the two principal water supply aquifers (Upper Aquifer and Lower Aquifer), wastewater disposal and recycled water use, local precipitation data and County stream gage records for Los Osos Creek.
- Collect data sufficient to evaluate the effectiveness of Basin management strategies adopted in the LOBP via established metrics.

There are currently 96 wells in the 2025 LOBP Groundwater Monitoring Program, including 45 BMC member agency monitoring wells, 18 municipal wells (active and inactive) and 33 private wells (Appendix B). Private well participation in the monitoring program during 2025 was approximately 65 percent (22 out of 33 wells in Spring, 21 out of 33 in the Fall). “Private” wells refer to domestic wells, agricultural irrigation wells, and monitoring wells that are not controlled by BMC member agencies.

Existing groundwater monitoring wells were selected to achieve, to the degree possible, horizontal, and vertical coverage throughout the Basin. The LOBP Groundwater Monitoring Program coverage within the Basin is shown in Figures 2, 3, and 4. Correlation between LOBP Groundwater Monitoring Program well numbers and state well numbers, along with well construction information and monitoring tasks are included in Appendix B.

Despite the relatively high density of available monitoring locations in the Basin, only a few of the wells are dedicated to monitoring Lower Aquifer Zone E, which is the deepest aquifer in the Basin and the most susceptible to seawater intrusion. Close to half of the 96 wells in the monitoring network as of 2025 are water supply wells, which are not specifically designed for groundwater monitoring, and may include mixed aquifer zone completions and wellbore leakage. There is a need for additional monitoring locations in the Lower Aquifer (see Section 2.2.5).

2.2.1 Water Level Monitoring

Water level monitoring is a fundamental tool for characterizing Basin hydrogeology and is performed at LOBP Groundwater Monitoring Program locations. Groundwater elevations in wells are measures of hydraulic head in an aquifer. Groundwater moves in the direction of decreasing head, and groundwater elevation contours can be used to show the general direction and hydraulic gradient associated with groundwater movement. Changes in the amount of groundwater in storage within an aquifer can also be estimated based on changes in hydraulic head, along with other parameters.



Insert Figure 2 Groundwater monitoring program first water wells



Insert Figure 3 Groundwater monitoring program upper aquifer wells



Insert Figure 4 Groundwater monitoring program lower aquifer wells



Sixteen monitoring network wells are equipped with transducers as of 2025, to provide an efficient and high level of resolution for tracking dynamic changes in Basin groundwater levels. Of the 96 wells currently included in the 2025 LOBP Groundwater Monitoring Program, 33 are representative of First Water, 19 are representative of the Upper Aquifer, and 44 wells are representative of the Lower Aquifer. Spatially, five water level monitoring wells are located in the Dunes and Bay Area, 31 wells are located in the Western Area, 40 wells are located in the Central Area, and 20 wells are located in the Eastern Area.

First Water

The First Water group refers to wells screened within the first 50 feet of saturated sediments across the Basin, regardless of the aquifer (Figure 5). First Water is the interface where percolating waters, including precipitation and return flows from irrigation and wastewater, mix with Basin waters. This interface occurs within unconfined sediments and generally rises and falls seasonally with water level fluctuations. Where First Water is close to ground surface, it also impacts drainage and is associated with flooding issues in low-lying areas. First Water extends across the Basin, and may be present in dune sands, Paso Robles Formation deposits, or Los Osos Creek alluvium (Figure 5). Selected First Water wells, including those in downtown Los Osos are used to represent the Perched Aquifer, Upper Aquifer, and Alluvial Aquifer for water level contouring.

Upper Aquifer

The Upper Aquifer (Zone C) refers to the non-perched aquifer above the regional aquitard (Figure 5). As noted above, a portion of the Upper Aquifer may also be considered First Water in certain Basin areas. Historically, the Upper Aquifer was developed as the main water supply for the community and is still the main source of water for rural residential parcels. Beginning in the late 1970's, purveyor production from the Lower Aquifer became the main source of water for the community. A significant increase in Upper Aquifer production could be implemented under LOBP infrastructure Program B. Monitoring the Upper Aquifer in the urban area (properties contained within the Urban Reserve Line as shown in Figure 10 of the LOBP) is important to the Purveyors and rural residential parcels.

Lower Aquifer

The Lower Aquifer refers to water bearing sediments below the regional aquitard. There are both Paso Robles Formation and Careaga Formation deposits in the Lower Aquifer. The base of the Lower Aquifer is claystone and sandstone bedrock, although the effective base of fresh water lies above bedrock at the western edge of the Basin, due to the presence of seawater intrusion. There are two separate Lower Aquifer zones defined for Basin management and seawater intrusion mitigation. Zone D lies between the regional aquitard (AT2 clay) and a deeper aquitard (AT3 clay). Zone E is below the AT3 clay (Figure 5). Lower Aquifer Zone D is currently the main water supply source for the community.



Insert Figure 5 Basin aquifers



Seawater intrusion is a major concern for the Lower Aquifer. The seawater intrusion front corresponds to the position of the 250 mg/L chloride concentration isopleth, which has been advancing inland for decades, and continues to advance under current Basin conditions, based on the monitoring program data. A significant reduction in Lower Aquifer production in the Western Area, together with other LOBP programs, is necessary to halt, slow and/or reverse intrusion.

2.2.2 Groundwater Quality Monitoring

Groundwater quality monitoring refers to the periodic collection and chemical or physical analysis of groundwater from wells. The analytical requirements are highly variable, depending on the purpose of monitoring. General minerals and nitrate are common water quality constituents of analysis for groundwater basin investigations. There are many other classes of water quality constituents of concern, however, such as volatile organic compounds, inorganic compounds (metals), petroleum hydrocarbons or emerging contaminants. Chromium-6 has been a concern in shallow wells as described in the 2015 Annual Groundwater Monitoring Report (CHG, 2015) and remains a concern in 2025. Perfluoroalkyl and Polyfluoroalkyl substances (PFAS) have also become a concern in recent years and are being monitored in public water supply wells throughout California. A discussion of Chromium-6 concentrations and PFAS concentrations in groundwater at purveyor wells is included in Section 4.2.3.

Monitoring Constituents

Constituents of analysis for the LOBP Groundwater Monitoring Program have been selected to evaluate salt loading and associated nitrate impacts, seawater intrusion, and wastewater disposal. Table 1 lists the general mineral constituents, including nitrate, which will be monitored as part of the program, although additional constituents are quantified in the general mineral suite performed by the analytical laboratory (See Appendix C). Total Dissolved Solids (TDS) and specific conductance are standard measures for groundwater mineralization and salinity. Temperature and pH are parameters that are routinely measured during sampling to confirm that the groundwater samples represent the aquifer. Table 1 presents constituents to be tested in the wells designated for water quality monitoring, which are distributed laterally and vertically across the Basin (Figures 2, 3 and 4).

The Lower Aquifer (via wells LA4, LA14, and LA40) are also monitored using down hole geophysics once every three years (natural gamma and induction logs) to provide a unique measure of seawater intrusion over time in one location within the Basin. Vertical movement of the freshwater-seawater interface has historically averaged two to three feet per year between 1985 and 2015 (CHG, 2015). The practical resolution of the methodology for measuring vertical interface movement is close to five feet, so a three-year monitoring frequency provides sufficient time to identify movement, based on the historical data. LA4 is located at Sea Pines Golf Course in the Western Area, LA14 is located at the north end of Palisades Avenue, and LA40 is on Lupine Avenue. Seawater is highly conductive, compared to fresh water, and an induction log performed in a borehole penetrating the fresh water/seawater interface shows the vertical transition from fresh water to seawater.



Table 1. Water Quality Monitoring Constituents ¹		
Constituent	Reporting Limit	Units
Specific Conductance	1.0	μS/cm
pH (field)	0.01	pH units
Temperature (field)	0.1	°F
TDS	20	mg/L
Carbonate Alkalinity	10	mg/L
Bicarbonate Alkalinity	10	mg/L
Total Alkalinity as CaCO ₃	10	mg/L
Chloride	1.0	mg/L
Nitrate – Nitrogen	0.1	mg/L
Sulfate	0.5	mg/L
Boron	0.1	mg/L
Calcium	1.0	mg/L
Magnesium	1.0	mg/L
Potassium	1.0	mg/L
Sodium	1.0	mg/L

¹From LOBP (ISJ Group, 2015)

Constituents of Emerging Concern

Monitoring Constituents of Emerging Concern (CECs) is a requirement of salt and nutrient management plans adopted pursuant to the SWRCB Recycled Water Policy (SWRCB, 2009). Such monitoring can measure potential dilution and soil-aquifer treatment of recycled water constituents, and travel time and movement of recycled water.

The initial CECs to be monitored are listed in [TableTableTable 2](#), and were selected based on the SWRCB Recycled Water Policy. There are three types of CECs, each of which has a different function. Health-based indicators directly monitor the presence of classes of constituents in groundwater, while performance-based and surrogate indicators measure the effectiveness of the wastewater treatment process. The list of CECs is not intended to be comprehensive, but meant to be representative. CECs may be added to (or removed from) the monitoring list once data has been collected and analyzed, subject to approval by the BMC.

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Table 2. CEC Monitoring Constituents¹

Constituent or Parameter	Type of Constituent	Type of Indicator	Reporting Limit (µg/L)
17β-estradiol	Steroid Hormones	Health	0.004
Triclosan	Antimicrobial		0.008
Caffeine	Stimulant		0.004
NDMA (N-Nitrosodimethylamine)	Disinfection Byproduct		0.002
Gemfibrozil	Pharmaceutical Residue	Performance	0.004
DEET (Diethyl-meta-toluamide)	Personal Care Product		0.004
Iopromide	Pharmaceutical Residue		0.004
Sucralose	Food additive		0.020
Ammonia	N/A	Surrogate	N/A
Nitrate-Nitrogen	N/A		N/A
Total Organic Carbon	N/A		N/A
UV Light Absorption	N/A		N/A
Specific Conductance	N/A		N/A

¹From LOBP (ISJ Group, 2015)

2.2.3 Monitoring Frequency

Monitoring frequency is the time interval between data collection. Seasonal fluctuations relating to groundwater levels or quality are typically on quarterly or semi-annual cycles, correlating with seasonal precipitation, recharge, water levels, and often well production. The monitoring schedule for groundwater levels collected under the LOBP Groundwater Monitoring Program will coincide with seasonal water level fluctuations, with higher levels (i.e. elevations) in April (Spring) and lower levels in October (Fall). The LOWRF Groundwater Monitoring Program (First Water and Upper Aquifer groups) is conducted in June and December, although water levels at many of these wells are also measured under the LOBP program in April and October for use in water level contouring and groundwater storage calculations. A semi-annual monitoring frequency provides a measure of seasonal cycles, which can then be distinguishable from the long-term trends. At the transducer-monitored locations, water level measurements are recorded automatically on a daily basis and downloaded during the regular semi-annual water level monitoring events.

The monitoring frequency for water quality sampling and analyses performed under the LOBP Groundwater Monitoring Program will generally be once per year in October (Fall), when groundwater levels (i.e. elevations) are seasonally low and many water quality constituents have historically been at a higher concentration than their corresponding Spring measurement. Lower Aquifer groundwater monitoring will also be performed in April (Spring) as a means of tracking seawater intrusion in greater detail. The schedule for water quality testing performed under the LOWRF Groundwater Monitoring Program (First Water and Upper Aquifer) is in June and December.



2.2.4 SGMA Activities

SGMA took effect on January 1, 2015 and requires that certain actions be taken in groundwater basins designated as either high or medium priority by DWR, including the Basin. Prior to 2019, DWR had identified the Los Osos Valley groundwater basin as a high priority basin subject to critical conditions of overdraft due to seawater intrusion and nitrate impairment (DWR, 2014, 2016, 2018a). The majority of SGMA requirements, however, including formation of a Groundwater Sustainability Agency (GSA) and development and implementation of a Groundwater Sustainability Plan, did not apply to the LOBP plan areas covered by the Stipulated Judgment, since this portion of the DWR Basin is adjudicated.

In order to comply with SGMA, the County formed the Los Osos Fringe Areas GSA to cover Basin areas between the 2016 Bulletin 118 Los Osos Valley groundwater basin boundaries (Basin 3-8) and the LOBP adjudicated area boundary, which were designated as “fringe areas”. A Basin Boundary Modification Request (BBMR) was initiated in 2018 (DWR, 2018b). The Los Osos BBMR included scientific external and jurisdictional subdivision modifications intended to improve the community’s ability to sustainably manage the Basin. The proposed boundary modifications would better align DWR’s Bulletin 118 Basin boundary with current scientific data as well as existing management boundaries in the Basin.

In 2019, DWR published the final basin boundary modifications updating Bulletin 118 and reassessing groundwater basin prioritizations (DWR, 2019). The Los Osos Valley groundwater basin was separated into two jurisdictional subbasins, the Los Osos Area Subbasin (3-08.01) and the Warden Creek Subbasin (3-08.02). Both subbasins are designated as very low priority for SGMA, although the Los Osos Area subbasin is still classified as subject to critical overdraft due to seawater intrusion (DWR, 2021). The Los Osos Area Subbasin, with the exception of minor fringe areas, lies within the LOBP plan area and overlaps with the LOBP Basin, but does not replace or update the scientific boundary defined in the 2015 Basin adjudication. A figure showing the DWR Los Osos Subbasin boundary and the LOBP Basin boundary is included in Appendix A.

2.2.5 Additional Basin Studies

Several Basin studies and activities in addition to regular groundwater monitoring were authorized or completed in 2025, including:

- In February of 2025, LA 14 and LA 16 were modified from their original constructions to only tap water in aquifer Zone E as monitoring wells. This was done in order to more completely understand the movement of the seawater intrusion front; and 2025 is the first year they have been sampled with this intent. This has resulted in a change in their static water levels compared to those taken previously. Monitoring these wells will reduce data gaps and enhance the understanding of Zone E seawater intrusion.



- Planning and funding for the Transient Model was initiated in 2021. In 2022, the project was combined with the Recycled Water Funding Program Grant Initiative (see Section 10.2), and began in 2023. The Transient Model was completed in October 2025 and replaces the existing steady-state model.
- A Sustainable Yield estimate for calendar year 2026 of 2,000 acre-feet was approved by the BMC at the October 15, 2025 Board of Directors meeting. This is the first change in the Sustainable Yield since 2021, and reflects a reduction of 380 acre-feet from prior years. The 2026 Sustainable Yield estimate was developed using the Transient Model, which was completed in 2025.
- In October of 2024, the BMC approved the construction of a new lower aquifer monitoring well near the Sweet Springs nature preserve that will fill Lower Aquifer water quality data gaps in the region for the purpose of tracking seawater intrusion. The construction of this well is expected to take place in 2026.
- On January 28, 2026, the BMC approved preparation of an agricultural irrigation water use estimate using remote sensing data for the 2025 Annual Report. The results of the enhanced estimate have been included herein for comparison with the current methodology.

Other BMC activities performed in 2025 are summarized in Section 10.2

3. CONDUCT OF WORK

This Annual Report covers monitoring activities performed during the 2025 calendar year. While information from prior years is included in data presentation and interpretation, the conduct of work and detailed groundwater monitoring results reported herein are for 2025.

3.1 Services Provided

All 2025 groundwater monitoring data compiled for this report, unless described otherwise, comes from the following monitoring programs:

- San Luis Obispo County Public Works, Semi-Annual Water Level Monitoring Program: water level data.
- Purveyor water supply well monitoring: water level, water quality and production data.
- LOWRF Waste Discharge Order R3-2011-0001 Groundwater Monitoring Program (CCRWQCB, 2011): water level and water quality data.
- LOBP Groundwater Monitoring Program: water level and water quality data.



3.2 Field Methods

Groundwater level measurement and groundwater sampling are the primary field activities performed for the LOBP Groundwater Monitoring Program. Field activities include measuring and recording water levels in wells and collecting groundwater samples for laboratory analytical testing. The field methods approved for use in the LOBP Groundwater Monitoring Program are presented in Appendix D. These methods are recommended for services performed directly for the BMC and for other monitoring programs that contribute data to the LOBP Groundwater Monitoring Program.

3.2.1 Elevation Datum

The original survey for wells in the County's Semi-Annual Water Level Monitoring Program was based on the National Geodetic Vertical Datum of 1929 (NGVD 29), which has been replaced in land surveying practice by the North American Vertical Datum of 1988 (NAVD 88). Monitoring network wells were re-surveyed in 2003, 2005, 2020 and 2021 using NAVD 88. LA42, LA43, and LA44 were surveyed in October 2025 along with a re-survey of LA16 following its modification to a Zone E well in February of 2025. Wellhead elevations are shown in Tables 3 through 8.

3.2.2 Water Level Monitoring Procedures

Groundwater level monitoring typically uses an electric sounder or steel tape. If the well is equipped and active, monitoring would take place when the pump is off and the water level is relatively static. Sixteen monitoring network wells are currently equipped with a pressure transducer, allowing for automatic water level data collection between regular (manual) monitoring events. These devices are placed below the water surface in a well and record changes in pressure that occur in response to changes in the height of the water column above the transducer. Detailed water level monitoring procedures are included in Appendix D.

3.2.3 Groundwater Sampling Procedures

Groundwater sampling procedures ensure collection of a representative groundwater sample from an aquifer for water quality analysis. Unused or unequipped wells are purged of standing or stagnant water prior to sampling. Stabilization of field measurements for conductivity, pH, and temperature, along with minimum purge volumes, are included in the approved methods. Sampling procedures for general mineral and nitrate sampling (with additional procedures for wastewater indicator compounds) are presented in Appendix D.



3.3 Monitoring Staff Affiliations

Monitoring services that contributed data to the 2025 Annual Report were performed by staff or consultants affiliated with the following agencies:

- San Luis Obispo County monitoring programs. Beginning in 2022, the County has contracted Semi-Annual Water Level Program monitoring services in the Los Osos Basin to outside consultants. The Spring and Fall 2025 monitoring events were conducted by PHDM Environmental Services. The County Public Works Department staff continue to collect and maintain precipitation and stream gage records. CHG performed semi-annual (June and December) water level monitoring and water quality sampling at selected private wells and monitoring wells for the LOWRF Groundwater Monitoring Program (data from this program is used in the LOBP Groundwater Monitoring Program).
- Los Osos Water Purveyors (LOCSD, GSWC, S&T). Water agency staff performed semi-annual water level monitoring and water quality sampling at municipal water supply wells.
- Los Osos BMC (LOCSD, GSWC, S&T, and County). CHG performed semi-annual (April and October) water level monitoring, water quality sampling at private wells, monitoring wells, and municipal supply wells for the LOBP Groundwater Monitoring Program.

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4. MONITORING RESULTS

The results of groundwater monitoring activities performed in 2025 for the various Basin monitoring programs are summarized below. Overlap between the LOBP Groundwater Monitoring Program and other ongoing monitoring programs are shown in Appendix B. Laboratory analytical reports of groundwater samples collected for the LOWRF Groundwater Monitoring Program are contained in their respective June and December 2025 monitoring program reports (CHG, 2025).

4.1 Water Level Monitoring Results

Tables 3 through 8 present the results of groundwater level measurements at LOBP Groundwater Monitoring Program wells, as reported by the various monitoring programs. Available water levels for wells labeled “private” are not reported herein, but those listed as measured have been used for aggregated water level contour maps. Private wells refer to domestic wells, agricultural irrigation wells, and monitoring wells that are not controlled by BMC member agencies.

Most of the Spring and Fall water levels were measured in April and October 2025, respectively, for the County Semi-Annual Water Level Monitoring Program and the LOBP Groundwater Monitoring Program. The LOWRF Groundwater Monitoring Program schedule moved from April to June and from October to December beginning in Fall 2016. For consistency with the LOBP



Groundwater Monitoring Program, however, CHG also monitored water levels at selected LOWRF monitoring program wells in April and October 2025, rather than using the June and December 2025 LOWRF monitoring event values.

Table 3. Spring 2025 Water Levels – First Water

Well ID	State Well Number	R. P. Elevation (feet NAVD 88)	Date	Water Level (feet NAVD 88)	
				Depth	Elevation
FW1	30S/10E-13A7		PRIVATE (not measured)		
FW2	30S/10E-13L8	32.63	4/1/2025	21.2	11.4
FW3	30S/10E-13G	50.95	4/1/2025	38.27	12.7
FW4	30S/10E-13H	49.33	4/2/2025	19.90	29.4
FW5	30S/10E-13Q2	101.27	4/1/2025	78.37	22.9
FW6	30S/10E-24A	193.04	4/11/2025	137.54	55.5
FW7	30S/10E-24Ab		Not measured (damaged)		
FW8	30S/11E-7L4	45.76	4/1/2025	37.90	7.9
FW9	30S/11E-7K3	90.71	4/1/2025	53.60	37.1
FW10	30S/11E-7Q1	25.29	4/11/2025	8.1	17.2
FW11	30S/11E-7R2	61.93	4/2/2025	23.34	38.6
FW12	30S/11E-18C2	34.55	4/1/2025	19.20	15.4
FW13	30S/11E-18B2	79.89	4/2/2025	21.28	58.6
FW14	30S/11E-18E1		PRIVATE (not measured – destroyed)		
FW15	30S/11E-18N2	125.53	4/2/2025	69.07	56.5
FW16	30S/11E-18L11	88.02	4/2/2025	40.39	47.6
FW17	30S/11E-18L12	103.85	4/2/2025	20.66	83.2
FW18	30S/11E-18P	143.92	4/11/2025	21.14	122.8
FW19	30S/11E-18J7	125.74	4/2/2025	24.24	101.5
FW20	30S/11E-8Mb	94.75	4/4/2025	44.51	50.2
FW21	30S/11E-8N4	95.99	4/4/2025	38.64	57.4
FW22	30S/11E-17F4		PRIVATE (measured)		
FW23	30S/11E-17N4		PRIVATE (measured)		
FW24	30S/11E-17J2		PRIVATE (measured)		
FW25	30S/11E-17R1		PRIVATE (not measured)		
FW26	30S/11E-20A2		PRIVATE (measured)		
FW27	30S/11E-20L1		PRIVATE (measured)		
FW28	30S/11E-20M2		PRIVATE (measured)		
FW29	30S/11E-20A1		PRIVATE (not measured)		
FW30	30S/11E-18R1		PRIVATE (measured)		
FW31	30S/11E-19A	214.67	4/11/2025	28.20	186.5
FW32	30S/11E-21D14		PRIVATE (measured)		
FW33	30S/11E-18D1S		PRIVATE (measured)		

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Table 4. Spring 2025 Water Levels – Upper Aquifer					
Well ID	State Well Number	R. P. Elevation (feet NAVD 88)	Date	Water Level (feet NAVD 88)	
				Depth	Elevation
UA1	30S/10E-11A1	16.01	4/17/2025	13.73	2.3
UA2	30S/10E-14B1	23.9	4/17/2025	21.14	2.8
UA3	30S/10E-13F1	17.57	4/14/2025	7	10.6
UA4	30S/10E-13L1	40.31	4/11/2025	29.58	10.7
UA5	30S/11E-7N1	10.66	4/15/2025	5.8	4.9
UA6	30S/11E-18L8	79.18	4/4/2025	52.96	26.2
UA7	30S/11E-18L7	79.16	4/4/2025	63.05	16.1
UA8	30S/11E-18K7	137.17	4/3/2025	117.39	19.8
UA9	30S/11E-18K3	123.42	4/14/2025	101	22.4
UA10	30S/11E-18H1	110.02	4/11/2025	91.42	18.6
UA11	30S/11E-17D	PRIVATE (not measured)			
UA12	30S/11E-17E9	107.39	4/3/2025	85.97	21.4
UA13	30S/11E-17E10	107.81	Out of Service		
UA14	30S/11E-17P4	PRIVATE (not measured)			
UA15	30S/11E-20B7	PRIVATE (not measured)			
UA16	30S/11E-17L4	PRIVATE (measured)			
UA17	30S/11E-17E1	PRIVATE (measured)			
UA18	30S/11E-17F2	PRIVATE (measured)			
UA19	30S/11E-7Q__	26.80	4/4/2025	17.08	9.7



Table 5. Spring 2025 Water Levels – Lower Aquifer

Well ID	State Well Number	R. P. Elevation (feet NAVD 88)	Date	Water Level (feet NAVD 88)	
				Depth	Elevation
LA1	30S/10E-2A1	23.13	4/17/2025	15.78	7.4
LA2	30S/10E-11A2	16.07	4/17/2025	10.88	5.2
LA3	30S/10E-14B2	23.89	4/17/2025	20.9	3.0
LA4	30S/10E-13M1	42.7	4/17/2025	43.03	-0.3
LA5	30S/10E-13L7	37.87	4/1/2025	30.9	7.0
LA6	30S/10E-13L4	70.02	4/11/2025	62.09	7.9
LA7	30S/10E-13P2	PRIVATE (not measured)			
LA8	30S/10E-13N	141.36	4/25/2025	133.83	7.5
LA9	30S/10E-24C1	180.34	4/17/2025	170	10.3
LA10	30S/10E-13J1	98.33	4/14/2025	97	1.3
LA11	30S/10E-12J1	8.43	4/2/2025	3.14	5.3
LA12	30S/11E-7Q3	27.75	4/15/2025	25.8	2.0
LA13	30S/11E-18F2	103.57	4/10/2025	98.68	4.9
LA14	30S/11E-18L6	79.52	4/11/2025	72.74	6.8
LA15	30S/11E-18L2	88.08	4/15/2025	88.5	-0.4
LA16	30S/11E-18M1	109.53 ¹	4/11/2025	105.13	4.4
LA17	30S/11E-24A2	212.82	4/4/2025	199.73	13.1
LA18	30S/11E-18K8	137.13	4/3/2025	131.46	5.7
LA19	30S/11E-19H2	257.35	4/11/2025	255.43	1.9
LA20	30S/11E-17N10	141.22	4/14/2025	142	-0.8
LA21	30S/11E-17E7	107.22	4/4/2025	105.19	2.0
LA22	30S/11E-17E8	107.27	4/4/2025	135.1	-27.8
LA23 to LA30	PRIVATE (measured LA 24 – LA30, LA 23 not measured)				
LA31	30S/10E-13M2	(Mixed aquifer – used for water quality only)			
LA32	30S/11E-18K9	(Mixed aquifer – used for water quality only)			
LA33	30S/11E-17A1	PRIVATE (measured)			
LA34	30S/11E-8F	26.15	4/2/2025	3.83	22.3
LA35	30S/11E-21Bb	86.80	4/11/2025	65	21.8
LA36	30S/11E-21Ja	PRIVATE (not measured)			
LA37	30S/11E-21B1	81.61	4/11/2025	57.92	23.7
LA38	30S/11E-21E	PRIVATE (measured)			
LA39	30S/11E-18K_	123.17	4/14/2025	136	-12.8
LA40	30S/10E-13Ba	11.47	4/7/2025	7	4.5
LA41	30S/10E-13Bb	11.46	4/9/2025	5.57	5.9
LA42	30S/10E-13Ja	52.46 ¹	4/11/2025	48.08	4.4
LA43	30S/10E-13Jb	51.98 ¹	4/11/2025	47.54	4.4



LA44	30S/11E-18R	177.33 ¹	Not Measured
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1: Reference point survey updated in 2025

Table 6. Fall 2025 Water Levels – First Water

Well ID	State Well Number	R. P. Elevation (feet NAVD 88)	Date	Water Level (feet NAVD 88)	
				Depth	Elevation
FW1	30S/10E-13A7	PRIVATE (not measured)			
FW2	30S/10E-13L8	32.63	10/1/2025	21.82	10.8
FW3	30S/10E-13G	50.95	10/1/2025	39.24	11.7
FW4	30S/10E-13H	49.33	10/1/2025	24.40	24.9
FW5	30S/10E-13Q2	101.27	10/15/2025	79.43	21.8
FW6	30S/10E-24A	193.04	10/15/2025	139.64	53.4
FW7	30S/10E-24Ab	Not measured (damaged)			
FW8	30S/11E-7L4	45.76	10/1/2025	38.51	7.3
FW9	30S/11E-7K3	90.71	10/1/2025	54.71	36.0
FW10	30S/11E-7Q1	25.29	10/10/2025	9.20	16.1
FW11	30S/11E-7R2	61.93	10/1/2025	24.70	37.2
FW12	30S/11E-18C2	34.55	10/1/2025	20.01	14.5
FW13	30S/11E-18B2	79.89	10/1/2025	23.45	56.4
FW14	30S/11E-18E1	PRIVATE (not measured – destroyed)			
FW15	30S/11E-18N2	125.53	10/1/2025	69.52	56.0
FW16	30S/11E-18L11	88.02	10/1/2025	41.96	46.1
FW17	30S/11E-18L12	103.85	10/1/2025	22.23	81.6
FW18	30S/11E-18P	143.92	10/3/2025	23.00	120.9
FW19	30S/11E-18J7	125.74	10/1/2025	26.47	99.3
FW20	30S/11E-8Mb	94.75	10/1/2025	45.90	48.9
FW21	30S/11E-8N4	95.99	10/1/2025	40.27	55.7
FW22	30S/11E-17F4	PRIVATE (measured)			
FW23	30S/11E-17N4	PRIVATE (measured)			
FW24	30S/11E-17J2	PRIVATE (measured)			
FW25	30S/11E-17R1	PRIVATE (not measured)			
FW26	30S/11E-20A2	PRIVATE (measured)			
FW27	30S/11E-20L1	PRIVATE (measured)			
FW28	30S/11E-20M2	PRIVATE (measured)			
FW29	30S/11E-20A1	PRIVATE (not measured)			
FW30	30S/11E-18R1	PRIVATE (measured)			
FW31	30S/11E-19A	214.67	10/10/2025	28.06	186.6
FW32	30S/11E-21D14	PRIVATE (measured)			
FW33	30S/11E-18D1S	PRIVATE (measured)			



Table 7. Fall 2025 Water Levels – Upper Aquifer

Well ID	State Well Number	R. P. Elevation (feet NAVD 88)	Date	Water Level (feet NAVD 88)	
				Depth	Elevation
UA1	30S/10E-11A1	16.01	10/28/2025	12.38	3.6
UA2	30S/10E-14B1	23.9	10/28/2025	19.59	4.3
UA3	30S/10E-13F1	17.57	10/15/2025	7	10.6
UA4	30S/10E-13L1	40.31	10/10/2025	28.98	11.3
UA5	30S/11E-7N1	10.66	10/15/2025	6.2	4.5
UA6	30S/11E-18L8	79.18	10/3/2025	53.16	26.0
UA7	30S/11E-18L7	79.16	10/3/2025	62.77	16.4
UA8	30S/11E-18K7	137.17	10/6/2025	114.99	22.2
UA9	30S/11E-18K3	123.42	10/15/2025	101	22.4
UA10	30S/11E-18H1	110.02	10/10/2025	91.65	18.4
UA11	30S/11E-17D	PRIVATE (not measured)			
UA12	30S/11E-17E9	107.39	10/8/2025	85.47	21.9
UA13	30S/11E-17E10	107.81	10/15/2025	88.90	18.9
UA14	30S/11E-17P4	PRIVATE (not measured)			
UA15	30S/11E-20B7	PRIVATE (not measured)			
UA16	30S/11E-17L4	PRIVATE (measured)			
UA17	30S/11E-17E1	PRIVATE (measured)			
UA18	30S/11E-17F2	PRIVATE (measured)			
UA19	30S/11E-7Q_	26.80	10/2/2025	17.07	9.7



Table 8. Fall 2025 Water Levels – Lower Aquifer

Well ID	State Well Number	R. P. Elevation (feet NAVD 88)	Date	Water Level (feet NAVD 88)	
				Depth	Elevation
LA1	30S/10E-2A1	23.13	10/28/2025	15.60	7.5
LA2	30S/10E-11A2	16.07	10/28/2025	9.97	6.1
LA3	30S/10E-14B2	23.89	10/28/2025	20.86	3.0
LA4	30S/10E-13M1	42.70	10/16/2025	43.03	-0.3
LA5	30S/10E-13L7	37.87	10/30/2025	31.3	6.6
LA6	30S/10E-13L4	70.02	10/15/2025	61	9.0
LA7	30S/10E-13P2	PRIVATE (not measured)			
LA8	30S/10E-13N	141.36	10/6/2025	133.8	7.6
LA9	30S/10E-24C1	180.34	10/14/2025	171	9.3
LA10	30S/10E-13J1	98.33	10/14/2025	95	3.3
LA11	30S/10E-12J1	8.43	10/2/2025	2.25	6.2
LA12	30S/11E-7Q3	27.75	10/15/2025	26.3	1.5
LA13	30S/11E-18F2	103.57	10/8/2025	98.58	5.0
LA14	30S/11E-18L6	79.52	10/3/2025	72.83	6.7
LA15	30S/11E-18L2	88.08	10/15/2025	86.60	1.5
LA16	30S/11E-18M1	109.53 ¹	10/9/2025	104.91	4.6
LA17	30S/11E-24A2	212.82	10/5/2025	202.11	10.7
LA18	30S/11E-18K8	137.13	10/6/2025	130.94	6.2
LA19	30S/11E-19H2	257.35	10/3/2025	256.39	1.0
LA20	30S/11E-17N10	141.22	10/14/2025	139	2.2
LA21	30S/11E-17E7	107.22	10/3/2025	106.88	0.3
LA22	30S/11E-17E8	107.27	10/8/2025	135.01	-27.7
LA23 to LA30	PRIVATE (measured LA 24 – 27,29, 30; LA 23 & 28 not measured)				
LA31	30S/10E-13M2	(Mixed aquifer – used for water quality only)			
LA32	30S/11E-18K9	(Mixed aquifer – used for water quality only)			
LA33	30S/11E-17A1	PRIVATE (measured)			
LA34	30S/11E-8F	28.17 ¹	10/2/2025	7.57	20.6
LA35	30S/11E-21Bb	86.80	10/10/2025	75	11.8
LA36	30S/11E-21Ja	PRIVATE (not measured)			
LA37	30S/11E-21B1	81.61	10/10/2025	67.08	14.5
LA38	30S/11E-21E	PRIVATE (measured)			
LA39	30S/11E-18K	123.17	10/15/2025	128	-4.8
LA40	30S/10E-13Ba	11.47	10/10/2025	6.36	5.1
LA41	30S/10E-13Bb	11.46	10/10/2025	5.15	6.3
LA42	30S/10E-13Ja	52.46 ¹	10/10/2025	47.87	4.6
LA43	30S/10E-13Jb	51.98 ¹	10/10/2025	48.23	3.8
LA44	30S/11E-18R	177.33 ¹	Not Measured		

1: Reference point survey updated in 2025 (new LA34 RP applies only to measurements after Spring 2025)



4.2 Water Quality Results

Available Fall 2025 water quality results for First Water and Upper Aquifer monitoring wells designated for water quality reporting in the LOBP Groundwater Monitoring Program are presented in Table 9. The LOBP Groundwater Monitoring Program does not include Spring 2025 water quality monitoring at First Water or Upper Aquifer Wells. Available Spring and Fall 2025 water quality for Lower Aquifer monitoring wells designated for water quality reporting in the LOBP Groundwater Monitoring Program are presented in Tables 10 and 11. Groundwater monitoring field logs and laboratory analytical reports for the 2025 LOBP Groundwater Monitoring Program are included in Appendix C.

Some of the constituents of analysis that are part of the LOBP Groundwater Monitoring Program listed in Table 1 are not included in the LOWRF Groundwater Monitoring Program. The missing constituents include specific conductance, alkalinity (bicarbonate, carbonate, and total), calcium, magnesium, and potassium.

Lower Aquifer wells LA2 and LA3 on the Morro Bay sand spit are scheduled for water quality monitoring every five years to track changes in salinity at the coast (2015 LOBP). The sand spit wells were due to be sampled in the Fall of 2025, but access was not permitted, and the event has been rescheduled to Fall of 2026. The next sampling event after Fall 2026 will be in the Fall of 2030 to make up for the schedule delay.

4.2.1 Nitrate and Chloride Results

Results for First Water wells indicate elevated nitrate concentrations across much of the central and western areas, which are attributed to historical septic system discharges in high-density residential areas (LOBP; ISJ Group, 2015). A more extensive compilation of shallow water quality, including nitrate and TDS concentration maps, are presented for June and December 2025 in the County's LOWRF Groundwater Monitoring Program reports (CHG, 2025). Nitrate concentration trends are tracked using the Nitrate Metric (see Section 7.5.3).

Lower Aquifer water quality results for 2025 show six wells impacted by seawater intrusion, based on chloride concentrations over 250 mg/L. Five of the six wells had been identified in previous annual reports. These five wells are LA10 (Western Area, Zone D/E), LA11 (Central Area Zone E), LA31 (Western Area Zone C/D; intrusion in Zone D), LA40 (Western Area Zone E), and LA42 (Western Area, Zone E). The sixth well, LA16 (Central Area Zone E), is a large-diameter public supply well completed in Zones D and E that was modified in 2025 to reduce the purge volumes required for sampling and to isolate Lower Aquifer Zone E. LA16 had last been sampled in 2005, but was subject to Upper Aquifer influence due to borehole leakage and could not be used for seawater intrusion monitoring. Following modification to isolate Zone E, dilution from the low-chloride waters of Zone C (through borehole leakage) and D was eliminated. There is also a



seventh well, LA15 (Western Area Zone D), which has chloride concentrations below 250 mg/L but is showing a trend of increasing chlorides. The overall trend in chloride concentration and seawater intrusion is tracked using the Chloride Metric (see Section 7.5.3).



Table 9. Fall 2025 Water Quality Results – First Water and Upper Aquifer

LOBP Well	State Well Number	Date	SC	pH (field)	TDS	Alkalinity			Cl	NO3-N	SO4	B	Ca	Mg	K	Na	T (field)
						CO3	HCO3	Total as CaCO3									
			μS/cm	pH units	mg/L												
FW2*	30S/10E-13L8	12/2/2025	572	6.88	380	--	--	--	86	14	--	--	--	--	--	68	66.20
FW5	30S/10E-13Q2	10/15/2025	791	7.19	530	<10	110	90	160	5.6	49.4	0.2	33	24	2	75	65.30
FW6	30S/10E-24A	10/15/2025	878	7.15	500	<10	180	150	160	3.0	54	0.2	28	21	2	110	68.00
FW10	30S/11E-7Q1	10/13/2025	549	7.13	360	<10	100	80	63	13.5	40.4	0.2	22	18	3	55	66.74
FW15*	30S/11E-18N2	12/4/2025	751	7.16	450	--	--	--	130	22	--	--	--	--	--	60	66.20
FW16*	30S/11E-18L11	12/1/2025	349	7.30	200	--	--	--	44	4.8	--	--	--	--	--	37	66.92
FW17*	30S/11E-18L12	12/1/2025	368	7.07	220	--	--	--	28	12	--	--	--	--	--	31	66.92
FW22*	30S/11E-17F4	12/4/2025	1104	6.72	560	--	--	--	280	0.16	--	--	--	--	--	77	64.76
FW28	30S/11E-20M2	10/1/2025	878	7.78	580	<10	420	350	57	<0.4	58.5	0.1	63	54	1	37	60.44
UA1	30S/10E-11A1	Not Sampled															
UA3	30S/10E-13F4	10/6/2025	539	6.71	350	<10	80	60	76	15.9	20.4	<0.1	21	16	1	50	62.78
UA9	30S/11E-18K3	10/6/2025	354	6.76	270	<10	60	50	49	9.1	6.2	<0.1	16	13	<1	28	65.84
UA12*	30S/11E-17E9	12/4/2025	576	7.30	340	--	--	--	55	15.0	--	--	--	--	--	43	66.20
UA13	30S/11E-17E10	Not Sampled															

NOTES: *Field Reading*, "--" = no result available; SC = specific conductance; TDS = total dissolved solids; CO3 = carbonate; HCO3= bicarbonate; CaCO3 = total alkalinity as calcium carbonate; Cl = chloride; NO3-N = nitrate as nitrogen; SO4 = sulfate; B = boron; Ca = calcium; Mg = magnesium; K = potassium; Na = sodium; T = temperature; μS/cm = microsiemens per centimeter; mg/L = milligrams per liter; °F = degrees Fahrenheit; < indicates less than Practical Quantitation Limit as listed in laboratory report.

* = results from the LOWRF Groundwater Monitoring Program sampling event in December 2025 (CHG, 2025)



Table 10. Spring 2025 Water Quality Results – Lower Aquifer

LOBP Well	State Well Number	Date	SC	pH (field)	TDS	Alkalinity			Cl	NO3-N	SO4	B	Ca	Mg	K	Na	T (field)
			μS/cm	pH units		CO3	HCO3	CaCO3									°F
					mg/L												
LA8	30S/10E-13N	4/1/2025	452	7.85	270	<10	60	50	88	6.9	15.5	<0.1	17	16	2	40	65.12
LA9	30S/10E-24C1	4/2/2025	549	7.60	350	<10	70	60	100	7.0	19.1	<0.1	21	19	2	48	68.00
LA10	30S/10E-13J1	4/2/2025	894	7.58	750	<10	80	70	210	2.2	14.2	<0.1	51	45	2	33	69.00
LA11	30S/10E-12J1	4/2/2025	2060	7.64	1240	<10	340	280	430	<0.4	193	0.2	106	119	5	94	68.90
LA12	30S/11E-7Q3	4/1/2025	848	7.78	470	<10	320	260	98	<0.4	56.3	0.2	48	45	2	55	69.26
LA13	30S/11E-18F2	4/10/2025	625	7.99	350	<10	310	250	42	<0.4	28.3	0.1	32	35	2	47	71.78
LA14	30S/11E-18L6	4/22/2025	893	7.61	530	<10	350	290	84	<0.4	92.1	<0.1	69	51	2	34	71.42
LA15	30S/11E-18L2	4/16/2025	913	7.39	560	<10	260	210	160	0.7	34.7	<0.1	53	47	2	39	68.54
LA16	30S/11E-18M1	4/21/2025	732	7.59	400	<10	190	150	140	<0.4	25.7	<0.1	39	34	2	40	69.80
LA18	30S/11E-18K8	4/3/2025	667	7.66	420	<10	270	220	64	<0.4	60.9	<0.1	55	31	2	35	72.14
LA20	30S/11E-17N10	4/2/2025	593	7.50	310	<10	270	230	44	1.4	26.4	0.1	35	33	2	39	66.00
LA22	30S/11E-17E8	4/16/2025	473	7.43	280	<10	170	140	47	6.0	15.2	<0.1	25	24	1	28	68.18
LA30	30S/11E-20H1	4/10/2025	910	7.89	550	<10	410	340	58	<0.4	87.3	0.1	68	58	1	39	64.58
LA31	30S/10E-13M2	4/17/2025	1290	7.75	750	<10	90	70	300	1.0	69.6	0.1	32	30	5	136	64.04
LA32	30S/11E-18K9	4/1/2025	500	7.71	280	<10	200	160	50	1.4	24.0	<0.1	27	27	1	33	69.26
LA39	30S/11E-18K_	4/2/2025	607	7.50	340	<10	300	240	39	0.5	30.5	<0.1	34	34	2	41	71.00
LA40	30S/10E-13Ba	4/7/2025	8830	7.41	9070	<10	280	230	2700	<0.4	249	<0.1	693	590	6	211	70.16
LA41	30S/10E-13Bb	4/9/2025	744	7.41	420	<10	340	280	52	<0.4	48.4	<0.1	49	37	2	46	70.52
LA42	30S/10E-13Ja	4/14/2025	6090	7.51	5220	<10	270	220	2100	<0.4	166	<0.1	576	345	5	96	70.70
LA43	30S/10E-13Jb	4/14/2025	712	7.47	390	<10	330	270	55	<0.4	41.0	<0.1	42	38	2	39	68.72

NOTES: “-” = no result available; SC = specific conductance; TDS = total dissolved solids; CO3 = carbonate; HCO3= bicarbonate; CaCO3 = total alkalinity as calcium carbonate; Cl = chloride; NO3-N = nitrate as nitrogen; SO4 = sulfate; B = boron; Ca = calcium; Mg = magnesium; K = potassium; Na = sodium; T = temperature; μS/cm = microsiemens per centimeter; mg/L = milligrams per liter; °C = Celsius (some values converted from degrees Fahrenheit as reported on field logs); < indicates less than Practical Quantitation Limit as listed in laboratory report.



Table 11. Fall 2025 Water Quality Results – Lower Aquifer

LOBP Well	State Well Number	Date	SC	pH (field)	TDS	Alkalinity			Cl	NO3-N	SO4	B	Ca	Mg	K	Na	T (field)
						CO3	HCO3	Total as CaCO3									
			µS/cm	pH units	mg/L										°F		
LA8	30S/10E-13N	10/1/2025	446	7.80	330	<10	60	50	84	6.7	8.9	<0.1	16	16	1	37	65.30
LA9	30S/10E-24C1	10/6/2025	597	6.84	400	<10	80	60	120	6.6	19.9	<0.1	23	21	2	51	64.04
LA10	30S/10E-13J1	10/6/2025	945	6.86	750	<10	80	70	240	3.1	15	<0.1	53	47	2	36	65.48
LA11	30S/10E-12J1	10/2/2025	2080	7.60	1480	<10	330	270	390	<0.4	184	0.2	114	124	5	97	69.62
LA12	30S/11E-7Q3	10/1/2025	846	7.66	560	<10	310	250	98	0.4	50.4	0.2	47	45	2	52	69.62
LA13	30S/11E-18F2	10/8/2025	613	8.12	330	<10	260	220	57	<0.4	29.1	<0.1	28	32	2	52	72.86
LA14	30S/11E-18L6	10/23/2025	892	7.53	580	<10	350	290	82	<0.4	91.2	<0.1	68	50	2	35	72.86
LA15	30S/11E-18L2	10/2/2025	943	7.78	590	<10	240	190	160	1.1	31.9	<0.1	65	59	2	46	69.08
LA16	30S/11E-18M1	10/9/2025	1320	7.58	820	<10	200	170	330	<0.4	24.3	<0.1	83	70	3	49	70.88
LA18	30S/11E-18K8	10/6/2025	657	7.58	440	<10	260	210	49	<0.4	61.3	<0.1	54	29	2	35	73.04
LA20	30S/11E-17N10	10/6/2025	505	7.24	350	<10	200	160	43	3.2	21.5	0.1	28	26	2	33	67.64
LA22	30S/11E-17E8	10/8/2025	473	7.57	280	<10	170	140	48	6.5	14	<0.1	28	25	2	30	68.36
LA30	30S/11E-20H1	10/2/2025	910	7.67	600	<10	410	340	57	<0.4	76.8	0.1	67	58	1	39	66.20
LA31	30S/10E-13M2	10/16/2025	1470	7.66	900	<10	100	80	390	0.9	73.9	0.1	35	33	6	165	67.10
LA32	30S/11E-18K9	10/1/2025	507	7.40	320	<10	200	160	52	1.4	18.9	<0.1	27	27	1	31	69.62
LA39	30S/11E-18K_	10/6/2025	609	7.04	370	<10	290	240	38	0.5	29.4	<0.1	34	34	1	40	68.54
LA40	30S/10E-13Ba	10/20/2025	8990	7.28	8570	<10	270	220	3200	<0.4	259	<0.1	736	601	7	219	70.70
LA41	30S/10E-13Bb	10/21/2025	730	7.44	470	<10	340	280	52	<0.4	44.4	<0.1	49	37	2	44	69.80
LA42	30S/10E-13Ja	10/16/2025	5980	7.42	6710	<10	260	210	2000	<0.4	462	<0.1	564	234	5	96	71.78
LA43	30S/10E-13Jb	10/16/2025	678	7.40	420	<10	340	280	43	<0.4	37	<0.1	43	39	2	40	70.16

NOTES: *LA10 chloride result affected by wellbore leakage (see Section 7.5.3); “-” = no result available; SC = specific conductance; TDS = total dissolved solids; CO3 = carbonate; HCO3= bicarbonate; CaCO3 = total alkalinity as calcium carbonate; Cl = chloride; NO3-N = nitrate as nitrogen; SO4 = sulfate; B = boron; Ca = calcium; Mg = magnesium; K = potassium; Na = sodium; T = temperature; µS/cm = microsiemens per centimeter; mg/L = milligrams per liter; °F = degrees Fahrenheit.



4.2.2 CEC Results

CEC sampling was conducted at well FW5 and FW6 in October 2025 (CEC constituents list and reporting limits shown in Table 2). FW6, which is the first monitoring well hydraulically downgradient of the Broderson Site, was originally designated in the LOBP (along with FW26) as a CEC monitoring well. Due to extreme drought conditions when CEC testing started in 2016, there was insufficient water for representative CEC testing at FW6, so FW5 was used as a replacement (CHG, 2017). Following Broderson mound development and higher than normal rainfall in 2019, CEC testing at FW6 was possible beginning in Fall 2020 (testing at FW5 continued). Wells FW5 and FW6 are both hydraulically downgradient of the Broderson leach field site, where most of the recycled water from LOWRF is discharged into the Basin, and where high-density (>1 per acre) septic systems were active prior to being connected to the sewer. LOWRF Monitoring did not include CEC analyses in 2025.

FW26 is located in the Los Osos Creek Valley, where there are low-density (<1 per acre) septic systems (Figure 2). FW26 is normally included in the CEC analyses every Fall, but the well pump has not been operational since 2022, and it is still unavailable for sampling. A creek valley well to fill in this gap may be considered for future sampling events. CEC results are presented in Table 12, with laboratory reports included in Appendix C.

Table 12. CEC Monitoring Results			
Constituent or Parameter	Units	FW5	FW6
		10/15/2025	
Health-based			
17β-estradiol	ng/L	ND (<4)	ND (<4)
Triclosan	ng/L	ND (<8)	ND (<8)
Caffeine	ng/L	ND (<4)	ND (<4)
NDMA	ng/L	ND (<2)	ND (<2)
Performance-based			
Gemfibrozil	ng/L	ND (<4)	ND (<4)
DEET	ng/L	ND (<4)	ND (<4)
Iopromide	ng/L	ND (<4)	ND (<4)
Sucralose ¹	ng/L	16,000	11,000
Surrogate			
Ammonia	mg/L	ND (<0.1)	ND (<0.1)
Nitrate-Nitrogen	mg/L	6	3.2
Total Organic Carbon	mg/L	0.77	1
UV Light Absorption	1/cm	0.014	0.016
Specific Conductance	µmhos/cm	790	870

¹ Concentration is an estimated value above calibration range

ND (<) = indicates less than Method Reporting Limit as listed in laboratory report ("not detected")



The CEC Laboratory results, and a summary sheet of the CEC constituents tested, along with analytical method information, are included in Appendix C. Constituents detected above the reporting limits and listed in Table 12 are discussed below.

Sucralose, an artificial sweetener, was reported at 16,000 nanograms per liter (ng/L) in groundwater from FW5 and is an indicator of wastewater influence (i.e. originating from sources of wastewater including septic discharges or recycled water discharges). Sucralose was detected in FW6 at 11,000 ng/L. Laboratory reports indicated that these concentrations are estimated values above the calibration range. Nitrate-nitrogen was reported at 6 mg/L in groundwater from FW5, and 3.2 mg/L in FW6. NDMA (N-Nitroso-dimethylamine) was not detected in either FW5 or FW6. NDMA is a byproduct of ion-exchange water treatment and chloride, ozone, or chloramine disinfection. CEC-constituent testing of recycled water quality from LOWRF was discontinued in 2024. The last CEC testing data is from December 2023 (CHG, 2023).

Results of the CEC testing are interpreted to indicate wastewater influence at FW5, based on sucralose and nitrate concentrations. However, sucralose concentrations decreased from 23,000 ng/L to 16,000 ng/L at FW5 between 2024 and 2025. Nitrate-nitrogen concentrations at the well decreased from 8.7 mg/L in 2024 to 6 mg/L in 2025. Concentrations of these constituents have shifted significantly in the direction of LOWRF recycled water discharge quality since CEC monitoring began in 2016, when sucralose was 280 ng/L and nitrate nitrogen was 26 mg/L in groundwater collected from FW5 (CHG, 2016b).

FW6 is the sentry well for Broderson recycled water discharges entering the Basin. As expected, the CEC results for FW6 also show recycled water influence attributed to Broderson discharges. The nitrate-nitrogen concentrations are an order of magnitude less than concentrations detected prior to Broderson site operation and have been similar to LOWRF effluent. Sucralose concentrations at FW6 have increased over time, and are significantly elevated relative to the initial value of 2,300 ng/L measured in 2020. Sucralose is a food additive and there is no State Notification Level (NL) for sucralose concentrations in drinking water.

A review of CEC testing constituents and locations is recommended. With several years of available data at the CEC wells, the list of CEC constituents may be reviewed to determine whether some of the constituents being tested are unnecessary, or if there are others that would be useful to include. Now that wastewater influence from Broderson discharges has reached both FW5 and FW6, which are relatively close to the community leach field, it may be beneficial to move the sampling locations to other wells that are farther away, in order to obtain new information. The well pump at FW26 has also not been functional the last four years, and alternatives may be considered for finding another well to sample in the vicinity, or re-evaluating the necessity for continued CEC sampling in the Creek Valley.



4.2.3 Chromium-6 and PFAS Compounds

While this Annual Report is intended to focus on the contaminants of concern described in the Basin Plan, including nitrate and seawater intrusion, other constituents of concern may be addressed to the extent that they impact water supplies. A discussion of Chromium-6 and PFAS concentrations in groundwater at purveyor wells was recommended in the 2024 Annual Report and is provided below.

Chromium-6

Chromium-6 concentrations in groundwater at purveyor wells was previously discussed in the 2015 Annual Report. Chromite (iron chromium oxide ore) deposits are naturally occurring in San Luis Obispo County, and are associated with serpentinite bodies (Smith and Griggs, 1944). Other sources of chromium in groundwater are associated with contamination from industrial activities such as metal plating and leather tanning, and from paints, dyes, and wood preservatives. Chromium is typically stable and non-toxic as Chromium-3, but when oxidized can be converted to Chromium-6. The Maximum Contaminant Level (MCL) in California for Chromium-6 is 10 µg/L. Out of 14 purveyor wells with available test results for 2024-2026, two Upper Aquifer wells had concentrations above the MCL. Both these wells are in Baywood Park where there are no known sources of industrial chromium contamination. Chromium-6 concentrations have been detected in groundwater at low levels across the urban area in both Upper and Lower Aquifer wells, indicating a natural source is present. A summary of maximum Chromium-6 concentrations from available test results is presented in Appendix E. The maximum detected concentrations from available samples are useful for screening purposes but do not directly represent compliance determinations; running annual averages would be necessary. The Chromium-6 compliance deadline for systems with 1,000-9,990 service connections is January 2028.

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)

Per- and Polyfluoroalkyl Substances (PFAS) are a group of man-made chemicals that include Perfluorooctanoic Acid (PFOA), Perfluorooctane Sulfonate (PFOS), and many others. While consumer products are a large source of exposure to these chemicals for most people, drinking water can be an additional source in the communities where these chemicals have infiltrated water supplies. Such contamination is typically associated with a specific facility, including near groundwater recharge facilities where recycled water is used; industrial facilities where these chemicals were produced or used to manufacture other products; an airfield where they were used for firefighting; or wastewater treatment plants or landfills where products containing the chemicals were disposed of (GSWC, 2025).

There are six PFAS compounds being monitored by the purveyors (PFOA, PFOS, PFHxS, PFBS, PFNA, and PFDA). Four of these compounds (PFOA, PFOS, PFHxS, and PFBS) have California Division of Drinking Water (DDW) Notification Levels (NLs) and Response Levels (RLs). NLs and RLs are health-based advisory levels. Four PFAS compounds also have MCLs regulated under the U.S. EPA National Primary Drinking Water Regulation.



Out of the 13 wells with available test results for 2024–2026, there were four wells that reported one or more PFAS compounds with maximum concentrations exceeding one or more standard. These include two Upper Aquifer wells and two Lower Aquifer wells. A summary of the maximum PFAS concentrations from available test results is in Appendix E. The maximum detected concentrations from available samples are useful for screening purposes but do not directly represent compliance determinations; confirmation sampling and evaluation of running annual averages would be necessary. The original federal compliance deadline is 2029, although the U.S. Environmental Protection Agency (USEPA) intends to extend the deadline for PFOA/PFOS until 2031 and rescind the other MCLs.

4.3 Geophysics

Seawater is highly conductive, compared to fresh water, and an induction log performed in a borehole penetrating the fresh water/seawater interface will show the vertical transition from fresh water to seawater. Because natural gamma emissions are not affected by changes in water quality, the gamma ray log can be used as a depth calibration tool when comparing induction logs from different monitoring events. The fresh water/seawater interface on geophysical logs is selected where resistivity becomes a relatively straight and vertical line close to zero ohm-meters. This interface does not correspond to the 250 mg/L chloride concentration isopleth used to delineate the seawater intrusion front in contour maps, but represents a much greater chloride concentration transition that is used for relative comparison between geophysical surveys.

Geophysical monitoring events have been performed in 1985, 2004, 2009, 2014, 2015, 2018, 2021 and 2024 at LA4 and LA14. The fresh water/seawater interface at LA4 rose approximately 50 feet between 1985 and 2009, with Lower Aquifer production reaching historical highs. Since 2009, induction logging at well LA4 indicates the fresh water/seawater interface has dropped approximately 20 feet in elevation in response to a general reduction in the west side Lower Aquifer pumping, and remains stable at approximately 320 feet depth in the borehole through 2024. No evidence of seawater intrusion has been observed in geophysical logging at Lower Aquifer monitoring well LA14. Now that LA14 has been modified for water quality sampling, geophysical monitoring is no longer needed at this well in order to track seawater intrusion. Historical geophysical records were included in the 2023 Annual Report (CHG, 2024) and the 2024 geophysical records are shown in Appendix E of the 2024 Annual Report (CHG, 2025). Geophysical monitoring events were completed in 2019, 2021, and 2024 at LA40. The fresh water/seawater interface is interpreted to have remained unchanged at approximately 410 feet depth between monitoring events (CHG, 2025). The next scheduled geophysical logging will be in October of 2027.

5. GROUNDWATER PRODUCTION

Land use and water use areas overlying the Basin, including Purveyor service areas, agricultural parcels, domestic parcels, and community facilities are included in Appendix F. Annual Basin groundwater production between 1970 and 2013 was reported in the LOBP (ISJ Group, 2015).



Tables 13 and 14 present municipal and Basin production beginning in calendar year 2013.

Table 13. Municipal Groundwater Production (2013-2025)				
Year	LOCSD	GSWC	S&T	Total
	Acre-Feet¹			
2013	726	689	55	1,470
2014	634	564	48	1,246
2015	506	469	32	1,007
2016	519	453	31	1,003
2017	568	450	32	1,050
2018	522	464	32	1,018
2019	506	454	31	991
2020	527	502	34	1,063
2021	503	491	32	1,026
2022	496	491	29	1,016
2023	487	470	27	984
2024	491	505	26	1,022
2025	494	538	29	1,061

Note: ¹Metered production

Table 14. Estimated Basin Groundwater Production (2013-2025)					
Year	Purveyors	Domestic	Community	Agriculture	Total
	Acre-Feet¹				
2013	1,470	200	140	750	2,560
2014	1,246	220	130	800	2,400
2015	1,007	220	140	800	2,170
2016	1,003	220	140	800	2,160
2017	1,050	220	130	670	2,070
2018	1,018	220	120	670	2,030
2019	991	220	60	630	1,900
2020	1,063	220	80	650	2,010
2021	1,026	220	130	620	2,000
2022	1,016	220	90	680	2,010
2023	984	110	60	500	1,650
2024	1,022	110	50	510	1,690
2025	1,061	110	40	470	1,680

Note: ¹All figures except Purveyors rounded to the nearest 10 acre-feet. Production from non-metered wells (Domestic, Community, Agricultural) estimated per methods described in Appendix G and LOBP Section 4 and Section 7.5. Domestic production beginning in 2023 uses recommended updates from 2023 Water Offset Study (see Appendix G).



Table 14 shows the recent trend in Basin water use, which is an overall decline since 2013. Produced water from purveyors has remained at a relatively consistent rate since 2015. The estimate of private domestic water use in 2025 has been reduced significantly from previous years, based on the recommendations of the 2023 Water Offset Study (Maddaus Water Management, 2023). The decrease is directly attributable to the community trending towards drought-tolerant landscaping and a reduction in private lawns, based on a comparison of CHG’s study (CHG, 2009b) and the recent Maddaus study. Although the decrease was implemented in 2023, there has likely been a gradual reduction in private domestic water use from wells over time.

Community facilities water use had been relatively stable until 2019, when recycled water deliveries began for golf course studies. Estimated agricultural irrigation has been lower in 2025 compared to prior years (details in Appendix G). Overall declines in Basin production since 2015 are primarily from declines in estimated (non-purveyor) production values, rather than metered purveyor production.

Figure 6 shows the historical pumping distribution between Basin aquifers since 1970, along with the pumping distribution in the Western Area. Figure 7 shows the historical pumping distribution for the Central and Eastern Areas. There was an estimated 22 percent reduction in Basin production over the last 10 years (Figure 6). Over the last five-year period, overall Lower Aquifer production in the Basin declined, although in the Western Area annual production from the Lower Aquifer has increased by 44 acre-feet.

On January 28, 2026, the BMC approved preparation of an agricultural irrigation water use estimate using remote sensing data for the 2025 Annual Report. The results of the enhanced estimate have been included as a Technical Memorandum in Appendix G2 for comparison with the current methodology.

Purveyor municipal production data are based on meter readings and reported to the closest acre-foot. Domestic groundwater production estimates through 2022 are based on the last reported water use estimates for 2013 from the LOBP, with minor adjustments in 2016 for the inclusion of additional residences in the Eastern Area (CHG, 2017). Beginning with the 2023 Annual Report, the domestic water production estimates are based on the estimates from the 2023 Water Offset Study. Production estimates for community facilities and agricultural wells are based on a daily soil-moisture budget using local precipitation, land use, and evapotranspiration data (Appendix G). Basin groundwater production, which combines metered and unmetered production estimates, is reported to the closest 10 acre-feet. Unmetered production estimates currently account for approximately 60 percent of the total production in the Basin, of which agricultural irrigation is the greatest unmetered component. Potential uncertainty in Basin production has been estimated at +/- 100 acre-feet, or approximately 10 percent of the unmetered production component and five percent of the Sustainable Yield of the Basin (LOBP page 47; ISJ Group, 2015).



Insert Figure 6 Basin production Basin Total and Western Area



Insert Figure 7 Basin production Central and Eastern Areas



6. PRECIPITATION AND STREAMFLOW

Precipitation data are currently available from the County rain gage located at the former Los Osos landfill (Station #727). Continuous precipitation records for Station #727 are available beginning with the 2006 rainfall year (July 2005 through June 2006), and show that rainfall has averaged 16.87 inches, with a minimum of 6.83 inches in the 2014 rainfall year and a maximum of 34.74 inches in the 2023 rainfall year. Precipitation for the 2025 rainfall year (July 1 2024 – June 30 2025) was 12.03 inches (dry), but for the 2025 calendar year rainfall measured 19.52 inches (above average). Records for Station #727 through the calendar year 2025 are included in Appendix H.

Historically, precipitation records at rain gage stations were compiled by the County for the LOCSD maintenance yard on 8th Street (Station #177), at the South Bay fire station on 9th Street (Station #197), and at two private volunteer stations (Station #144.1 in the Los Osos Creek Valley and Station #201.1 on Broderson Avenue). The longest active period of record in the vicinity is at the Morro Bay Fire Department (Station #152). A summary of precipitation data for these stations is presented in Table 15.

Station No.	Name	Period of Record (rainfall years)	Average Annual Precipitation (inches)
144.1	Bender	1955-1987	19.17
152	Morro Bay Fire Dept.	1959-2025 (active)	16.01
		2006-2025 (active)	13.9*
177	CSA9 Baywood Park	1967-1980	17.49
197	South Bay Fire	1975-2001	19.52
201.1	Simas	1976-1983	21.16
727	Los Osos Landfill	2006-2025 (active)	16.87*

*Averages are lower than normal, based on correlation with Station #152 long-term dataset

Figure 8 shows the long-term cumulative departure from mean precipitation at Station #152. Note that between 2006 and 2025 (the period of record for Station #727), rainfall at Station #152 was averaging 13.9 inches per year, two inches per year less than the long-term normal (Table 15). This indicates that the average of 16.87 inches per year at Station #727 is also likely below normal. Once data for Los Osos Landfill Station #727 becomes more representative of long-term climatic conditions, it would be appropriate to use the gage in the cumulative departure from mean precipitation graph.

The U.S. Drought Monitor, a partnership of federal agencies, monitors drought conditions across the country based on various climatological indexes and data inputs. San Luis Obispo County started 2025 with no drought to abnormally dry conditions in January; by end of the calendar year in December 2025 no drought conditions were reported (NDMC/USDA/NOAA, 2026).



Insert Figure 8 Cumulative departure from mean rainfall at Morro Bay fire department



The recently completed Transient Model is a numerical groundwater flow and transport model that uses a long-term average annual rainfall of 18.3 inches across the Basin, developed from a compilation of available data from local rain gauges since 1955. As shown in the cumulative departure curve in Figure 8, the climate has been drier than normal since 2006, with a cumulative drop of 45 inches from the long-term average, equivalent to 2.4 inches per year below average. Station #727 records begin in 2006, therefore, the current average rainfall of 16.87 for that station is interpreted to be below the long-term average for the Basin.

Los Osos Creek drains the Clark Valley watershed. Streamflow on Los Osos Creek is monitored by the County stream gage (formerly Gage #6, now Sensor 751) at the Los Osos Valley Road bridge. The location has been gaged intermittently since 1976, with 18 years of reported flow records ending in 2001. The average flow measured on Los Osos Creek at the gage (drainage area of 7.6 square miles) was 3,769 acre-feet per year between 1976 and 2001 (San Luis Obispo County, 2005). Development of a rating curve for Sensor 751 to convert historical stage data into flow measurements was completed in 2023 (CHG, 2023a). CHG processed County stage data for 16 years between 2008 and 2023. When the 16 additional years of flow are added to the 18 years of historical flow data, the average annual flow at the gage is 3,128 acre-feet per year. A summary of the available annual streamflow data is in Appendix H.

Streamflow was recorded at the gage for 96 individual days during the 2025 water year (October 1, 2024 to September 30, 2025). The dates and maximum stage value from Sensor #751 for the peak flow days in each month are listed below in Table 16.

Table 16. Maximum Stream Stage for Los Osos Creek, 2025 Water Year	
Date	Maximum Stream Stage County Sensor #751 (feet)
10/25/2024	0.77
11/10/2024	0.54
12/12/2024	0.41
01/14/2025	0.42
02/13/2025	5.50
03/13/2025	2.97
04/01/2025	2.61
05/07/2025	0.42
06/18/2025	0.36
07/15/2025	0.36
08/13/2025	0.35
09/30/2025	0.42

Graphs of the available stream stage data over time for water years 2011 through 2025 are included in Appendix H.



Warden Creek (Figure 1) drains approximately nine square miles of the eastern Los Osos Valley. This creek flows along 3,700 feet of the northern Basin boundary, at low invert elevations (less than 20 feet above sea level) in an area underlain by shallow bedrock. The U.S. Geological Survey reported winter flows in Warden Creek similar to Los Osos Creek, but with greater baseflow during the summer, because Warden Creek serves as a drain (point of groundwater discharge) for shallow groundwater at the north end of the Los Osos Creek floodplain (Yates and Wiese, 1988).

7. DATA INTERPRETATION

Groundwater level and groundwater quality data for 2025, together with selected historical data, have been used to develop the following information:

- Groundwater elevation contour maps for the Perched Aquifer, Upper Aquifer (with Alluvial Aquifer), and Lower Aquifer for both Spring and Fall 2025 conditions.
- Water level hydrographs for wells representative of aquifers in the Western, Central, and Eastern Areas of the Basin.
- The lateral extent of seawater intrusion and the Fall 2025 position of the seawater intrusion front.
- Estimates of groundwater in storage for Spring and Fall 2025, including amount above mean sea level.
- Estimates of changes to groundwater in storage from Spring 2024 to Spring 2025, including the volume of seawater intrusion.
- Basin Yield Metric, Basin Development Metric, Water Level Metric, Chloride Metric, and Nitrate Metric.
- Upper Aquifer Water Level Profile

7.1 Water Level Contour Maps

Water level contour maps for Spring 2025 are presented in Figures 9, 10, and 11 for the Perched Aquifer, Upper Aquifer with Alluvial Aquifer, and Lower Aquifer, respectively. Corresponding water level contour maps for Fall 2025 are presented in Figures 12, 13, and 14. The water level elevations are shown at a 5-foot contour interval for the Upper and Lower Aquifers, and a 10-foot contour interval for the perched aquifer, based on the ordinary kriging interpolation method, which provides a best (least-squares) estimate of values at unmeasured points based on the mapped values.



Insert Figure 9 Spring water level contours perched aquifer



Insert Figure 10 Spring water level contours upper aquifer and alluvial aquifer



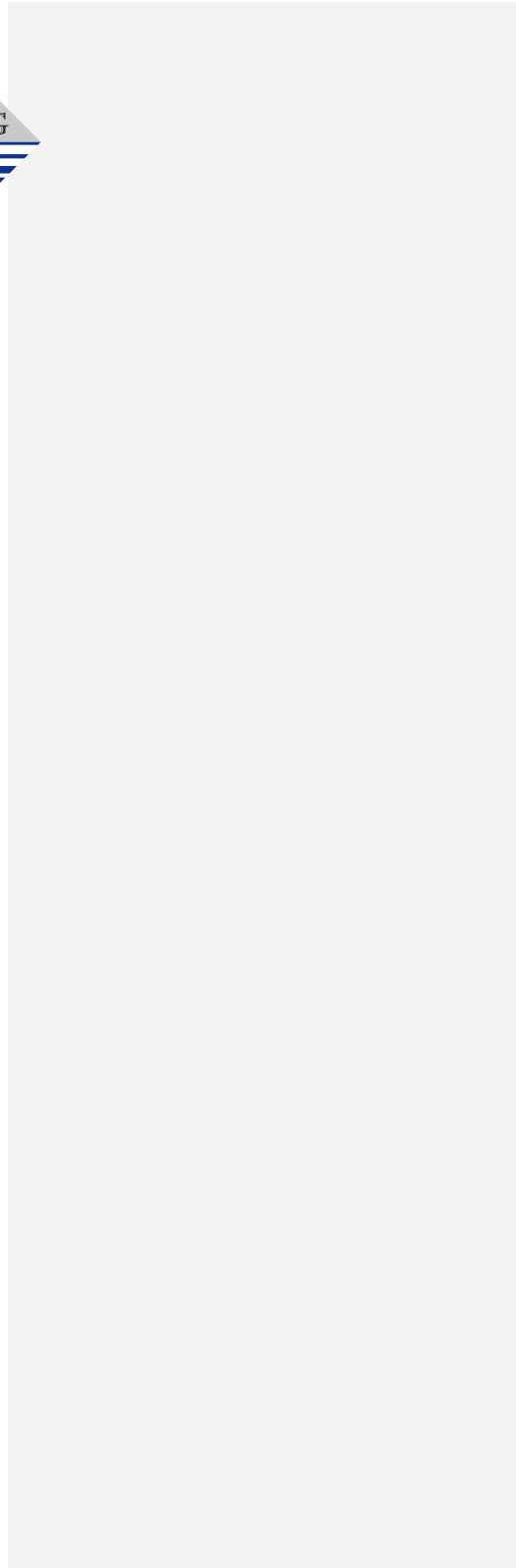
Insert Figure 11 Spring water level contours lower aquifer



Insert Figure 12 Fall water level contours perched aquifer



Insert Figure 13 Fall water level contours upper aquifer and alluvial aquifer





Insert Figure 14 Fall water level contours lower aquifer



Water level data available from private irrigation and domestic wells were used in the development of the water level contour maps, although these water levels are not listed in the data tables in this report (Table 3 through 8). Private well participation in the monitoring program during 2025 was approximately 65 percent (22 out of 33 wells in Spring, 21 out of 33 in the Fall). With completion of the 2025 wellhead elevation survey, all of the LOBP monitoring network wells that are used for water level monitoring now have surveyed NAVD 88 elevations.

Perched Aquifer water level contour maps (Figures 9 and 12) show the highest groundwater elevations at Well FW31 in the Bayridge Estates (at the Bayridge Estates recycled water disposal field), with a radial direction of groundwater flow from the higher topographic elevations to lower elevations. Overall Perched Aquifer groundwater levels decreased approximately 3 feet from Spring to Fall 2025, which is normal (water levels typically decline in the fall and recover in the spring). The average seasonal water level decline in the Perched Aquifer over the last five years has been 2.7 feet, followed by water level recovery in the spring.

Contour maps for the Upper Aquifer and Alluvial Aquifer (Figures 10 and 13) show the highest groundwater elevations are at the southern edge of the Los Osos Creek alluvial valley. The general direction of groundwater flow is to the northeast along the creek valley and to the northwest toward the Morro Bay estuary. Significant features include a pumping depression interpreted to be present in the area of downtown Los Osos, and a groundwater high interpreted to be present beneath dune sand ridges in Baywood Park. Upper Aquifer groundwater elevation contours averaged approximately 2.2 feet of water level decline from Spring to Fall 2025, which is normal. The average seasonal water level decline in the Upper Aquifer over the last five years has been 2.2 feet, followed by water level recovery in the spring.

Contour maps for the Lower Aquifer (Figures 11 and 14) show the highest groundwater elevations are at the southern edge of the Los Osos Creek alluvial valley and near the eastern Basin boundary. The steep hydraulic gradient between the Upper Creek Valley and downtown Los Osos suggests significant permeability restrictions between these two areas, possibly fault related (Yates and Wiese, 1988; Cleath & Associates, 2005). Groundwater flow in the Lower Aquifer is generally toward Central Area pumping depressions which are below sea level. Lower Aquifer groundwater elevations averaged approximately 2.2 feet of water level decline from Spring to Fall 2025, which is less decline than normal. The average seasonal water level decline in the Lower Aquifer over the last five years has been 3.4 feet, followed by water level recovery in the spring.

7.2 Water Level Hydrographs

Water level hydrographs for representative First Water, Upper Aquifer, and Lower Aquifer wells have been compiled for the Western and Central Basin Areas, including one of the Lower Aquifer wells in the Dunes and Bay Area. These wells present the general water level trends. The hydrographs are shown in Figures 15, 16, and 17, respectively. Due to the modification of LA16 that has limited it to Zone E only, there has been a significant drop in the well's water level.



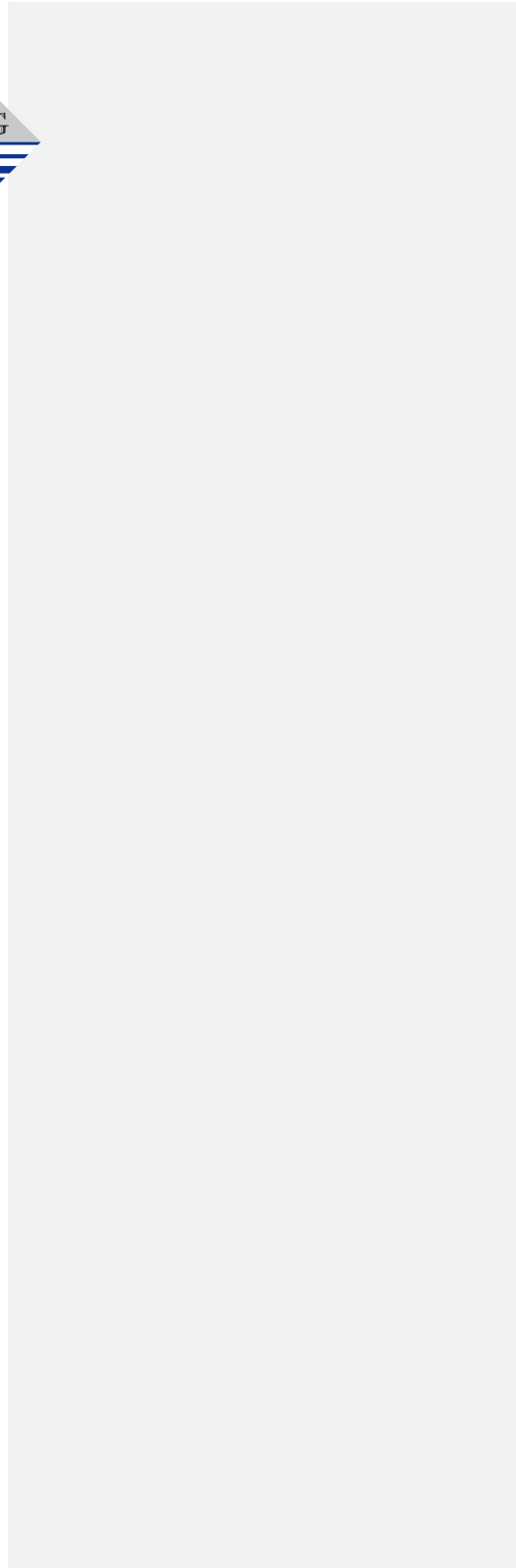
Insert Figure 15 water level hydrographs perched aquifer/first water



Insert Figure 16 water level hydrographs upper aquifer



Insert Figure 17 water level hydrographs perched lower aquifer





The Spring-to-Spring water level trends, based on representative hydrographs, show generally declining water levels in First Water and the Upper Aquifers since the wet period in the late 1990's through the most recent severe drought, with recovery beginning in 2017. By Spring 2023 and through 2025, Upper Aquifer water levels are generally recovered to non-drought conditions.

Perched Aquifer water level hydrographs in Figure 15 (FW13 and FW10) show recovery during the 2017 and 2023 wet years, but between these wet years and in 2025, water levels have declined back to 2015 drought levels. These wells are in the LOWRF collection area, where perched water levels may be impacted by the lack of septic return flows since 2017. Overall Perched Aquifer water levels are normal (non-drought range), based on groundwater elevation contours and storage calculations.

For Lower Aquifer wells, water levels have been generally rising since 2010. LA16 was modified to isolate Zone E beginning in 2025, which resulted in sudden drop in water level of approximately 7 feet. Adjusting for this, the Spring-to-Spring water level trend over the last ten years (2015-2025), based on representative Central and Western wells, was an increase of 0.38 feet of rise per year (Figure 17).

Hydrographs for sixteen wells equipped with pressure transducers are shown in Appendix I. Transducer locations are shown in Figures 2, 3, and 4. The transducers have been installed to provide greater detail of water level trends and fluctuations. There are three First Water wells, two Upper Aquifer wells, and eleven Lower Aquifer wells equipped with transducers. Seven of the transducer hydrographs were initiated in 2016-17, the rest from 2021-2025. Data from these wells has been interpreted to show the following trends:

- There was a relatively sharp water level decline in many Central and Western Area Lower Aquifer Wells in the Summer of 2025, followed by complete recovery in the Fall. This decline and recovery is shown in the hydrographs for LA13, LA14, LA16, and LA19; (averaging 4.6 feet of decline before recovering), and is interpreted to be the result of well interference from pumping a Lower Aquifer well.
- FW6 is screened in the Upper Aquifer near the Broderson leach field in the Western Area of the Basin. Starting in June 2017, water levels have shown a rise of approximately 25 feet through 2025 (Appendix I). The rise in water level is credited to groundwater mounding on the regional aquitard beneath the Broderson leach field. This mounding is expected to increase the downward hydraulic gradient and promote leakage through the regional aquitard, which will help to mitigate seawater intrusion in the Western Area. Beginning in mid-2022, the hydrograph at FW6 shows an undulating behavior in the water levels, which is interpreted to indicate that the Broderson groundwater mound is reaching stabilization.
- FW10 is screened at the top of the Upper Aquifer in the Central Area of the Basin, while UA4 and UA10 are screened at the base of the Upper Aquifer in the Western Area and Central Area of the Basin, respectively. These wells have displayed seasonal fluctuations



of two to five feet (i.e., lower elevations during the summer and higher elevations during the winter and spring), including one to two feet of interference related to nearby pumping wells. Overall water level trends have been relatively flat (FW10) to rising slightly (UA4 and UA10) since 2016 (Appendix I). [UA4 water levels include tidal influence.](#)

- FW27 is screened in the Alluvial Aquifer in the Eastern Area of the Basin. The well was equipped with a transducer in April of 2017, near the seasonal high-water period, and has shown seasonal fluctuations since then between approximately 15 and 40 feet (Appendix I). The relatively large seasonal fluctuations are attributable to the well's location in the upper Los Osos Creek alluvial valley (Figure 2), where the majority of seasonal recharge from stream seepage in the Basin occurs.
- LA37 is screened in the Lower Aquifer in the Eastern Area of the Basin. It displays a seasonal fluctuation of approximately six to seven feet, including interference related to nearby pumping wells. Overall water level trends have been flat since 2017, with a general rise of approximately five feet in 2023 and slightly declining through 2025 (Appendix I).
- LA13 displays a seasonal fluctuation of approximately five to seven feet. Overall water level trends have been mostly rising since 2016 (Appendix I). In 2022, LA13 underwent modification in order to stabilize the old steel casing and to convert it into a monitoring well. It remains screened in the Lower Aquifer in the Central Area of the Basin; but a liner was installed to isolate Zone E. The well completion (modification) report and construction diagram were presented in the 2022 Annual Report (CHG, 2023b).

Seven transducers were installed in 2021, and have 5 years of recorded data. The y-axis (vertical scale) of the hydrographs at the wells with newly installed transducers are set to 10 feet (instead of 50 feet), due to the short monitoring interval. The hydrographs from these wells are interpreted to show the following trends:

- Tidal influence is observed in the hydrographs for LA11, LA40 and LA41, which are dedicated Lower Aquifer monitoring wells close to the bay, [and in the hydrograph for UA4, which is an Upper Aquifer well close to the bay \(discussed above\).](#) The tidal influence is interpreted to be a result of pressure loading and unloading to aquifers underlying the bay as the tides ebb and flow. Overall short-term trends, besides the dominant tidal effects and seasonal fluctuation, are stable water levels in LA11; stable in LA40, and stable to rising water levels in LA41. According to the transducer recording, LA11 may have been flowing artesian for a brief period in early 2023. If so, this would likely be the first time the well has flowed in over 40 years (semi-annual hydrograph in Figure 17).
- LA14 and LA16 underwent modification in February of 2025, isolating aquifer pressures and waters of Lower Aquifer Zone E. After removing the influence from Zone D, there was a reduction in aquifer pressure that caused an approximate seven-foot water level drop in LA16. LA6, LA14, LA16 (prior to modification), and LA19 show seasonal fluctuations and overall steady to slightly rising water level trends as of December 2025.



- Transducers at LA42 and LA43 were installed in 2024 and have compiled two years of data. The hydrographs show seasonal fluctuations, along with the previously discussed water level decline in the Summer of 2025, with subsequent full recovery.

7.3 Seawater Intrusion

The estimated position of the Fall 2025 seawater intrusion front in Lower Aquifer Zone D, along with selected prior years, are shown in Figures 18a and 18b. There is limited information to represent current Lower Aquifer Zone E intrusion in a plan view figure, but a generalized plan view interpretation of Zone E intrusion using current data and data from prior years is included in Figure 18c. The seawater intrusion front corresponds to the position of the 250 mg/L chloride concentration isopleth, based on water quality samples from Lower Aquifer wells.

The addition of LA41 (Lupine Avenue Zone D) in 2019 contributed to a refinement of the location of the seawater intrusion front in Zone D along the bay, compared to prior years, and resulted in a more westerly (improved) position compared to previous years. Figure 18a shows the seawater intrusion front for years prior to installation of LA41, while Figure 18b shows the intrusion front for years when LA41 data was available.



Insert Figure 18a Seawater intrusion front western area lower aquifer zone D (2005-2018)



Insert Figure 18b Seawater intrusion front western area lower aquifer zone D (2019-2025)



Insert Figure 18c Seawater intrusion front western area lower aquifer zone E



Based on the contours in Figure 18b, seawater intrusion in Zone D has decreased between Fall 2024 and Fall 2025, with the intrusion front remaining east of LA10 (similar to the position shown for 2021). Figure 18b is a simplification of Basin conditions, and the calculated position of the intrusion front and associated velocity of the intrusion front movement can vary significantly from year to year, and from Spring to Fall due to localized chloride fluctuations, particularly at well LA10. The seawater intrusion front shown in Figure 18b is generally representative of Zone D, although LA10 is completed in both Lower Aquifer Zone D and the top of Zone E. The Zone E intrusion shown in Figure 18c has advanced inland of LA11 on the north and LA16 on the south. The farthest inland extent of intrusion is interpreted to be between LA15 and LA18.

Contouring for the intrusion front (250 mg/L chloride isopleth) shown in Figures 18a, 18b, and 18c uses the ordinary kriging interpolation method, which provides a best (least-squares) estimate of values at unmeasured points based on the mapped values. Chloride concentrations at Dunes and Bay Area wells LA2 and LA3 were not analyzed in 2025, but in general they are two orders of magnitude greater than the Western Area wells and are not used for contouring the intrusion front in the Western Area. The ordinary kriging interpolation method involves weighted linear interpolation, whereas the chloride concentrations approaching wells LA2 and LA3 on the sandspit do not appear to follow linear gradients. There is a data gap south of the intrusion front in Zone D (Between LA8 and LA15; Figure 18b) where a surrogate data point was introduced to constrain the kriging algorithm.

The location of the intrusion front is also shown in cross-section on Figure 19 and Figure 20 (cross-section alignments shown in Figure 1). Figure 19 (Basin cross-section B-B') runs from the sandspit to the eastern Basin boundary. The intrusion front in the Upper Aquifer remains beneath the sandspit, based on the triennial geophysics performed at LA4 (see Section 4.3) and on water quality data from active bayfront municipal supply well UA3. In Zone E, the intrusion front reached LA15 (Palisades Avenue) in 2013, after which the zone was sealed off from production. There has been no evidence of further inland movement east of Palisades Avenue along the B-B' cross-section, based on the latest geophysics at LA14 (Section 4.3) and on water quality monitoring at Zone E monitoring well LA32 (10th Street) and the recently modified LA14. Movement of the Zone E front in the vicinity of LA11 had been steadily advancing for years, then appeared to have stalled in 2024. Intrusion has restarted at LA11 in 2025; with 430 mg/L in Spring 2025 and 390 mg/L in Fall of 2025 (Figure 20). Chloride concentrations at LA40 increased between 2019 and 2021, remained stable through Spring of 2023, and then increased to the highest concentration to date in Fall of 2023 and Spring 2024 at 3,200 mg/L before declining to 2,900 mg/L chloride in Fall 2024. Elevated chloride concentrations continue at LA40 in 2025, with 2,700 mg/L in Spring 2025 and 3,200 mg/L in Fall 2025. Seawater intrusion into Zone E is a significant threat to Basin sustainability and has been for decades.

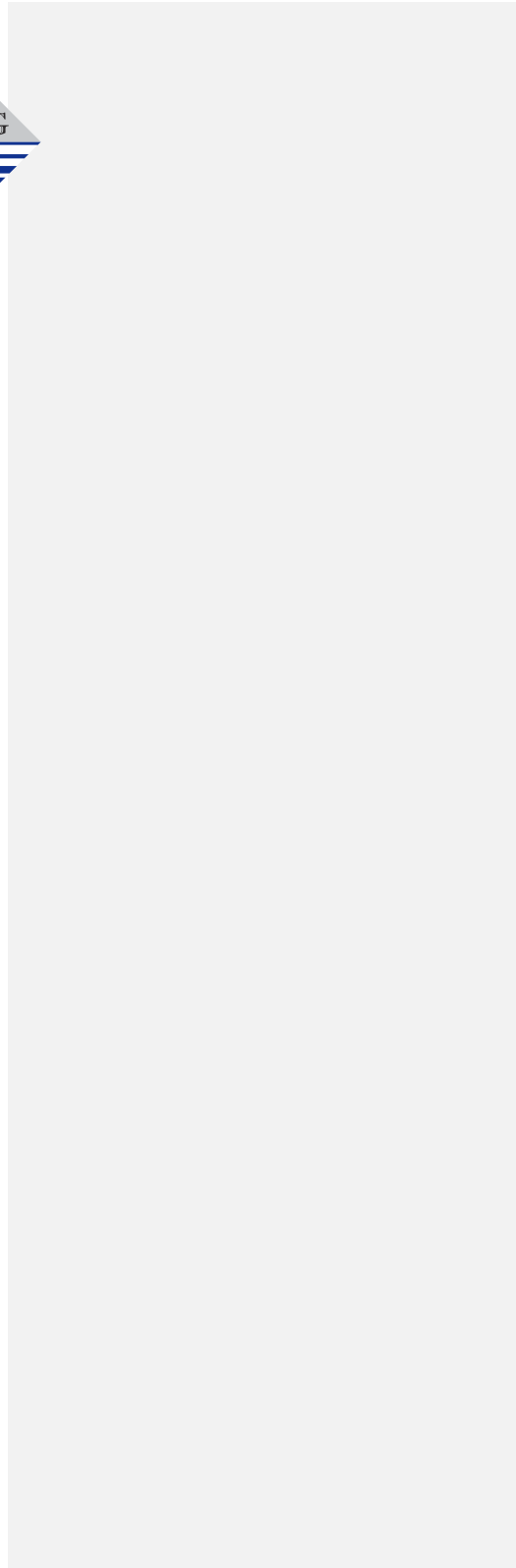
Figure 20 (section E-E') runs from Morro Bay on the north to the Los Osos fault on the south, and crosses section B-B' at Los Osos Valley Road (Figure 1). Zone D intrusion is interpreted in section E-E' to have reached LA10 near the middle of the Basin, with the lateral extent along the section constrained by LA40 on the north, and by the rising limb of the syncline on the south.



Insert Figure 19 SWI cross-section B-B



Insert Figure 20 SWI cross-section E-E





The intrusion front is not present in Zone D along the Basin synclinal axis at the Lupine Avenue nested monitoring well location, where the chloride concentration in LA41 is 52 mg/L. Water quality results for the new Skyline Drive monitoring well cluster (LA42/LA43) are similar to Lupine Avenue (LA40/LA41), confirming no intrusion in Zone D (42 mg/L chloride in LA43) and intrusion in Zone E (2,000 mg/l chloride in LA42).

Chloride concentration data and graphs for Lower Aquifer wells in the Basin are included in Appendix J. Besides the wells where active intrusion has been observed in recent years (LA10, LA11, and LA40), most other wells show a relatively stable (flat) chloride trend. Chlorides at LA15, however, have increased overall since 2021. This well currently pumps from Zone D, but was a mixed Zone D/E well prior to 2013. While the level of chloride (160 mg/L) remains below the threshold of the intrusion front (250 mg/L), chloride concentrations at LA15 have increased by 47% percent over the past five years.

In Zone E, seawater intrusion is interpreted to be laterally pervasive in the Western Area, based on the elevated chloride concentrations in LA40 (Lupine Avenue), LA42 (Skyline Drive), historical data at LA15 (Palisades Avenue), and LA11 (Pasadena Drive). Although the intrusion front appeared to have stalled at LA11 in 2024, chloride concentrations increased in 2025. This overall trend indicates a worsening condition over time. Additional deep monitoring wells are needed to further define the extent and movement of intrusion in both Zone D and Zone E. Summary tables with historical water quality for individual Lower Aquifer wells are included in Appendix J for reference, along with graphs of chloride concentrations over time at individual wells.

Seawater intrusion in Zone E is anticipated to be halted through a combination of reduced pumping in the Western Area together with increased recharge across the regional aquitard, following development of the groundwater mound beneath the Broderson disposal site. The redistribution of pumping and development of the Broderson groundwater mound are both still in progress, although the mound appears to be reaching a stabilized condition in the Upper Aquifer in 2025.

Recommendations for well modifications and new Lower Aquifer well locations were provided in a draft 2022 Technical Memorandum (CHG, 2022b). Through 2025, all three recommended well modifications (LA13, LA14, and LA16), and one new Lower Aquifer monitoring well cluster (Skyline Drive; LA42/LA43) have been completed. LA13 shows no seawater intrusion at that location in Zone E (Figure 18c). The new Skyline monitoring well cluster shows no intrusion in Zone D (LA43; Figure 18b), with intrusion in Zone E (LA42; Figure 18c). The two well modifications completed in 2025 (LA 14 and LA16) are documented in Appendix K. An additional new well cluster near the Sweet Springs Preserve is scheduled to be completed in 2026 and will help fill data gaps in characterizing and monitoring Zone E intrusion.

Continuing efforts to improve the definition of seawater intrusion and close data gaps are needed. In particular, better definition of the Zone D intrusion front in the Western Area along the synclinal axis of the Basin (near LA10 and LA6) is recommended. This may be accomplished with a deep well cluster in the vicinity of LA10 and with modification of LA6 (an inactive municipal supply well).



7.4 Groundwater in Storage

Groundwater in storage for Basin areas and aquifers has been estimated through a systematic approach of water level contouring, boundary definition, volume calculations, and aquifer property estimation. The methodology was developed to facilitate change in storage calculations from year to year. An example storage calculation for the Eastern Area is shown in Appendix L.

There are uncertainties with groundwater storage estimates. A sensitivity analysis was performed for the 2017 Annual Report (CHG, 2018a). The analysis evaluated variables related to tape bias/survey error, specific yield error, and data gaps. Results of the sensitivity analysis indicated the potential error for storage and change in storage was within 20 percent (+/- 20 percent) of the estimated storage values for most variables and storage compartments.

Storage estimates were performed for Spring and Fall 2025 and included separate estimates for the following areas and aquifers shown in Figure 21:

- Perched Aquifer
- Western Area Upper Aquifer
- Western Area Lower Aquifer
- Central Area Upper Aquifer
- Central Area Lower Aquifer
- Eastern Area Alluvial and Lower Aquifer

The various storage compartments are shown conceptually in Figure 21. Storage estimates for the Lower Aquifer in the Western and Central Areas combine fixed pore space volume and confined pore space volume components. The fixed volume component of storage is based on the specific yield of the aquifer sediments and is fixed because the Lower Aquifer is never dewatered in the Western and Central Areas. The confined component adds a relatively small volume of transient storage associated with the aquifer pressure and is based on the storativity of the aquifer. Specific yield values for aquifer zones are shown in Table 17. Detailed lithologic log correlations were provided in the 2018 Annual Report (CHG, 2019b).



Aquifer Zone	Specific yield¹ (percent of volume)
Zone A&B	12.8
Zone C	10.2
Zone D	8.8
Zone E	10.5
Qal ²	13.0
Zones D&E ³	9.8
Qal, Zones D&E ⁴	10.1

Notes: ¹ Weighted specific yield values based on log correlations shown in the 2018 Annual Report.
² Los Osos Creek Valley alluvium
³ Used for Central Area storage calculations
⁴ Used for Eastern Area storage calculations



Insert Figure 21 Basin storage compartments



Beginning in 2018, Basin storage calculations have been based on specific yields for each individual aquifer zone. Confined and semi-confined aquifer storativity values are typically orders of magnitude less than the specific yield. The average specific yield for Basin sediments is estimated to range from 9.8 percent to 13 percent (Table 17). The storativity value used for the confined aquifer in the Western and Central Areas is estimated at 0.0008 (Cleath & Associates, 2005).

The storage component of the Lower Aquifer in the Western Area Zone D represents the groundwater volume with a chloride concentration of 250 mg/L or less. Zone E in the Western Area is excluded from the storage calculations, because chloride concentrations are interpreted as mostly above 250 mg/L (Figure 18c and Figure 21).

All storage calculations were based on upper and lower contoured surfaces specific to the aquifer (fixed volume and confined volume were combined). For example, elevation contours on the base of the Perched Aquifer were used as the lower bounding surface for Perched Aquifer storage calculations, so no storage was assigned to unsaturated pore space between the base of the perched aquifer and saturated Upper Aquifer sediments (Figure 21). Appendix L includes a list of wells used for 2025 groundwater elevation contours and associated upper surfaces for storage calculations. Fixed surfaces used for storage calculations (base of perched aquifer, base of Upper Aquifer, base of Lower Aquifer Zone D, and base of permeable sediments) were developed from existing contour maps and control points presented in prior reports (Cleath & Associates, 2003, 2005; CHG, 2016a). Table 18 summarizes the estimates of fresh groundwater in storage for 2025.

Table 18. Groundwater in Storage Spring and Fall 2025 (<250 mg/L Chloride)						
Basin Area	Aquifer	Zone	Spring 2025		Fall 2025	
			Total	Above Sea Level	Total	Above Sea Level
			ACRE-FEET			
Western and Central	Perched	A, B	6,000	6,000	5,700	5,700
	Upper	C	29,500	7,700	28,700	6,800
Western	Lower ¹	D ²	16,000	<10	15,200	<10
Central	Lower ¹	D, E	55,100	<10	55,100	<10
Eastern	Alluvial and Lower	Alluvial, D, E	19,600	5,100	18,800	4,300
TOTAL			126,200	18,800	123,500	16,800

NOTES:¹Includes fixed and confined storage.

²Western Area Zone E not included due to chloride>250 mg/L.

Total estimated fresh groundwater in storage for the Basin (excluding Dunes and Bay Area) averaged 126,200 acre-feet in Spring 2025, with an estimated 18,800 acre-feet above sea level (Table 18). There was a calculated net seasonal storage decline of 2,700 acre-feet between Spring 2025 and Fall 2025, with 800 acre-feet of that being a loss of freshwater storage in Lower Aquifer



Zone D. Changes to freshwater storage in Zone D are based on shifts in the position of the 250 mg/L contour line as shown in Figure 18b (results for Fall monitoring events shown). Storage losses are recoverable.

There are approximately 71,000 acre-feet of fresh groundwater in storage within the Lower Aquifer in the Western Area Zone D and Central Area Zones D and E (Table 18). Because groundwater levels in the Lower Aquifer within the Western and Central Areas average more than 100 feet above the top of the aquifer, dewatering is unlikely, and this volume of storage will only change with movement of the seawater intrusion front. The Lower Aquifer storage includes a relatively small component (less than 200 acre-feet) of confined pore space volume, representing water that is available without dewatering any portion of the Lower Aquifer (the pressure component). Water is relatively incompressible, so once the pore spaces of an aquifer have been filled, substantial confining pressure is required to further increase the storage volume. Conversely, there is a much greater drop in aquifer water levels for storage withdrawals under confined conditions, compared to unconfined conditions. This smaller storage volume assumes a confined aquifer storativity of 0.0008, compared to the unconfined specific yields of 0.098 to 0.13. Table 19 compares Spring 2024 groundwater in storage with Spring 2025.

Table 19. Change in Storage Spring 2024 to Spring 2025 (<250 mg/L Chloride)

Basin Area	Aquifer	Zone	Spring 2024		Change from Spring 2024 to Spring 2025	
			Total	Above Sea Level	Total	Above Sea Level
			ACRE-FEET			
Western and Central	Perched	A, B	6,300	6,300	-300	-300
	Upper	C	29,800	8,000	-300	-300
Western	Lower ¹	D ²	16,200	<10	-200	0
Central	Lower ¹	D, E	55,100	<10	0	0
Eastern	Alluvial and Lower	Alluvial, D, E	20,000	5,500	-400	-400
TOTAL			127,400	19,800	-1,200	-1,000

NOTES:¹Includes fixed and confined storage.

² Western Area Zone E not included due to chloride>250 mg/L.

As reported in Table 19, there was a loss of 200 acre-feet of freshwater storage in the Lower Aquifer in the Western and Central Areas between Spring 2024 and Spring 2025. There was a loss of 1,000 acre-feet in fresh water storage in other areas of the Basin over the same period, resulting in a net loss in Basin storage of 1,200 acre-feet between Spring 2024 and Spring 2025. Note that Spring to Spring storage is a measure of annual change, while Spring to Fall storage is a measure of seasonal fluctuation.



Groundwater in storage above sea level is a measure of basin health and sustainability. Basin production from both the Upper and Lower Aquifers needs to be replenished over time from storage above sea level, otherwise seawater intrusion will advance inland. Most of the groundwater stored in the Lower Aquifer is below sea level. Therefore, to be sustainable, water pumped from the Lower Aquifer in the Western and Central areas needs to be replenished by an equal amount of recharge from the Upper Aquifer, boundary inflows, or inflows from the Eastern area where storage is mostly above sea level. The Basin model can simulate these dynamic processes, but tracking groundwater in storage from monitoring data, similar to tracking associated water levels or water quality, also reflects these complex processes.

Storage estimates show the volume of Spring groundwater in storage has been relatively stable to slightly rising in the Basin over the last five years; until a decline this last year. Table 20 shows the Spring and Fall storage estimates from 2018 to 2025. Rainfall totals are based on the San Luis Obispo County rainfall year; for example, rain year 2025 would be totaled from July 1, 2024 to June 30, 2025.

Table 20. Groundwater in Storage above Sea Level			
Rain Year	Spring	Fall	Rainfall (Sta. 727)*
	acre-feet		inches
2018	17,000	15,100	13.63
2019	17,600	16,600	23.82
2020	17,700	15,800	13.60
2021	17,400	15,200	13.94
2022	16,800	15,000	13.58
2023	19,400	17,900	34.74
2024	19,800	18,000	21.63
2025	18,800	16,800	12.0

*SLO County Rainfall Year reporting (July1 – June30)

The seasonal change in groundwater storage above sea level (spring to fall) has averaged 1,760 acre-feet per year since 2018, which appears reasonable considering that there is a similar amount of average annual groundwater production in the basin (1,870 acre-feet per year). The 1,000 acre-feet of loss in estimated groundwater storage above sea level between Spring 2024 and Spring 2025 is the largest year-to-year loss in storage since 2018; but the overall groundwater in storage is still higher than most years (Table 20). The changes in groundwater storage above sea level generally show declines during periods of below normal rainfall and increases during above normal rainfall years.



Average water levels declined approximately 1-2 feet between Spring 2024 and Spring 2025 in the Perched Aquifer and Upper Aquifer, and declined approximately 3 feet in the Lower Aquifer over the period.

7.5 Basin Metrics

LOBP Section 1.3.1 established two methods for measuring progress in management of seawater intrusion (ISJ Group, 2015): one based on comparing annual groundwater extractions with the estimated Sustainable Yield of the Basin as calculated by the Basin numerical groundwater model, and one based on evaluating water level and water quality data from the LOBP Groundwater Monitoring Program. The first method involves the Basin Yield Metric and the Basin Development Metric, while the latter method involves the Water Level Metric, The Chloride Metric, and the Nitrate Metric.

7.5.1 Basin Sustainable Yield

One of the components used to calculate the Basin Yield Metric is the Sustainable Yield. On October 13, 2025, the BMC considered and adopted a revised methodology for estimating Sustainable Yield, along with a Sustainable Yield for Year 2026. This was the second revision to the Sustainable Yield methodology since 2015. The Sustainable Yield for 2021 and prior years was estimated (using the steady-state Basin model) as the maximum amount of water that may be extracted from the Basin with no further inland advance of the front (i.e. a stationary front under steady-state conditions) and with none of the active wells producing water with chloride concentration in excess of 250 mg/L (ISJ Group, 2015). In 2021 the BMC added the condition that no further inland advance is allowed from threshold lines drawn parallel to the coast that represent the 2021 position of the seawater intrusion front in the Lower Aquifer. Finally, in October 2025, the BMC adopted a 50-year planning horizon over which the threshold lines condition would apply. This planning horizon was selected to align with SGMA's planning and implementation horizon, and was needed in order to use the Transient Model, which was completed in 2025 and replaces the steady-state Basin Model for informing and supporting Basin management actions ([see Section 10.2 - WRF Study/Transient Groundwater Model for a complete list of references](#)).

In accordance with the Stipulated Judgement Section 4.2, the BMC used the updated methodology to adopt a Sustainable Yield value for 2026. Based on developed purveyor infrastructure capacity for year-end 2025, along with the updated methodology, a Sustainable Yield of 2,000 acre-feet was approved for Year 2026 by the BMC. For Year 2025 Basin Metric calculations, however, the Sustainable Yield remains unchanged from 2024 at 2,380 acre-feet.

7.5.2 Basin Yield Metric

The Basin Yield Metric compares the actual amount of groundwater extracted in a given year with the estimated Sustainable Yield of the Basin under then-current conditions. Sustainable Yield for



Year 2025 was estimated, based on the Adaptive Method and the Basin model, as the maximum amount of groundwater that may be extracted from the Basin with a stationary seawater intrusion front at a position no further inland than the 2021 position, and with none of the active wells producing water with chloride concentration in excess of 250 mg/L (CHG, 2022a, Appendix M). A chloride concentration of 250 mg/L is the recommended limit for drinking water (one-half of the Secondary Maximum Contaminant Level Upper Limit of 500 mg/L). Further assumptions for the Basin Yield Metric in 2025 are that the Broderson mound is at 50 percent development (CHG 2022a, Appendix M) and the long-term rainfall average for the Basin is 16.8 inches per year. The Basin Yield Metric for 2025 is a ratio expressed as follows:

$$\frac{\text{2025 Groundwater Production}}{\text{2025 Sustainable Yield}} * 100$$

Groundwater production in 2025 was 1,680 acre-feet. The Sustainable Yield of the Basin with the infrastructure in place at year-end 2025 is 2,380 acre-feet¹, and the resulting Basin Yield Metric for 2025 is 71. The LOBP objective for the Basin Yield Metric is 80 or less, and has been maintained in 2025. Approval of the Annual Monitoring Report by the BMC does not constitute unanimous approval of actions listed under Section 5.11.4 (Approval Requirements) of the Stipulated Judgment or setting the Sustainable Yield for a given year. These actions require a separate action and unanimous approval by the BMC.

The estimated Sustainable Yield is not just a volume of water that can be pumped from anywhere in the Basin, however. Sustainability is achieved through a balanced distribution of groundwater pumping across the Basin, both vertically and laterally, that precludes the inland advance of the intrusion front across the 2021 threshold lines, and with no active well producing water with chloride concentrations above 250 mg/L, over a 50-year planning horizon. Long-term climatic conditions are incorporated into the estimated Sustainable Yield.

Figure 22 compares the Basin Yield Metric and area production in the Basin. The Basin Yield Metric has dropped from an average of 106 between 2010 and 2014 to 71 in 2025. The current Sustainable Yield baseline scenario (i.e. BYM 100) using the Transient Model is also provided for comparison in Figure 22. Note that the Sustainable Yield adopted by the BMC for 2026 is 2,000 acre-feet per year (AFY), which is expected to increase the Basin Yield Metric.

¹2015 LOBP established the Sustainable Yield methodology and estimated it to be 2,450 AFY. The subsequent 2015 Stipulated Judgement set the default Sustainable Yield at 2,400 AFY. On June 30, 2016, the BMC unanimously approved the 2015 Annual Report with a Sustainable Yield of 2,450 AFY. On June 21, 2017, the BMC unanimously approved the 2016 Annual Report with a Sustainable Yield of 2,760 AFY. On June 16, 2021, the BMC approved submitting the 2020 Final Draft Annual Report to the Court with a Sustainable Yield of 2,760 AFY, but clarified that approval of the report should not be construed as “evaluating, setting, or establishing” the sustainable yield under the terms of the Stipulated Judgement. In October 2021, a Sustainable Yield of 2,380 AF for 2022 was approved by the BMC. In December 2022, a Sustainable Yield of 2,380 AF for 2023 was approved by the BMC. In December 2023, a Sustainable Yield of 2,380 AF for 2024 was approved by the BMC. In October 2024, a Sustainable Yield of 2,380 AF for 2025 was approved by the BMC. The 2026 Sustainable Yield of 2,000 AF approved in October 2025 will be used for the Basin Yield Metric in next year’s Annual Report.



Insert Figure 22 Basin yield metric comparison



Seawater intrusion in Zone E appears to have increased at LA11 in 2025 (Appendix J). Water levels at LA11 reached 40-year highs in 2023, although they remain a few feet below the Ghyben-Herzberg relation threshold for avoiding intrusion into the well. Besides the wells where active intrusion has been observed (LA10, LA11, and LA40), most other wells show a relatively stable (flat) chloride trend. Chlorides in Zone D at LA15, however, have increased overall since 2021, and while the level of chloride (160 mg/L) remains below the threshold of the intrusion front (250 mg/L), chloride concentrations at LA15 have increased by approximately 47 percent over the past five years.

The steady-state Basin model was developed in 2009 and has been in use since then with no significant changes. A peer review was conducted by Stetson Engineers (2010) which characterized the model as an appropriate planning tool that could be utilized as intended, and that would benefit from updates as more data is collected. A peer review of the model is also required by the Stipulated Judgement every 10 years. In 2025, the Transient Model was completed as part of the Los Osos Water Recycling Funding Program grant project (Section 2.2.5). The Transient Model was used for estimating Year 2026 Basin sustainable yield.

7.5.3 Basin Development Metric

The Basin Development Metric compares the estimated Sustainable Yield of the Basin in a given year with the estimated maximum Sustainable Yield of the Basin with all potential LOBP Program projects implemented (see Section 10 for a brief overview of LOBP Programs). The Basin Development Metric for 2025 is a ratio expressed as follows:

$$\frac{\text{2025 Sustainable Yield}}{\text{Maximum Sustainable Yield}} * 100$$

The 2025 Sustainable Yield is estimated at 2,380 acre-feet. The Maximum Sustainable Yield with all LOBP projects implemented was estimated at 3,500 acre-feet in the LOBP, but has not been re-evaluated using the Adaptive Method or the Transient Model. Therefore, no Basin Development Metric has been calculated for 2025. The purpose of the metric is to inform the BMC on the percentage of the Basin's Maximum Sustainable Yield that has been developed. There is no LOBP objective for the Basin Development Metric.

The Transient Model was used as part of the WRF Study to evaluate the Sustainable Yield for various recycled water projects. For perspective, the greatest overall Basin Sustainable Yield in the WRF Study was for the Upper Aquifer development scenario, which was estimated at 2,405 AFY. A supplemental water project is also being considered (see Section 10), which would add a nominal 300 acre-feet of supply to the Basin. If both these projects are implemented, the effective Sustainable Yield (as available Basin supply) would be close to 2,700 AFY, which is significantly less than the 3,500 AFY Maximum Sustainable Yield estimate from the LOBP.



7.5.4 Water Level, Chloride, and Nitrate Metrics

The Water Level, Chloride, and Nitrate Metrics are measurements of the effectiveness of Basin management. The Water Level and Chloride Metrics address changes in the Lower Aquifer related to seawater intrusion mitigation, while the Nitrate Metric addresses changes in First Water and the Upper Aquifer related to nitrate contamination mitigation.

Water Level Metric

The Water Level Metric is defined as the average Spring groundwater elevation, measured in feet above mean sea level, in five Lower Aquifer wells. These wells are LA2, LA3, LA11, LA14, and LA16 (Figure 4).

Two Water Level Metric wells (LA14 and LA16) are positioned in the Western Area near the current seawater intrusion front (250 mg/L chloride isopleth) and one well is in the Central Area on the bay front (LA11). As Basin production is redistributed through the Basin infrastructure program, these Water Level Metric wells will monitor Lower Aquifer groundwater levels in critical areas near the seawater intrusion front. The last two Water Level Metric wells are located on the Morro Bay sand spit (LA2 and LA3), where monitoring will help evaluate regional effects, rather than just localized water level rebound. Figure 23 graphs historical trends in the metric. Table 21 presents the 2025 Water Level Metric. Water Level Metric well locations are shown in Figure 4.

Metric Well	Spring 2025 Groundwater Elevation (feet above sea level – NGVD 29 Datum*)
LA2	2.39
LA3	0.19
LA11	2.49
LA14	3.98
LA16**	8.32 (Spring 2024 value used for Metric)**
Water Level Metric (average)	3.50

Data Source: LOBP and County Groundwater Monitoring Programs

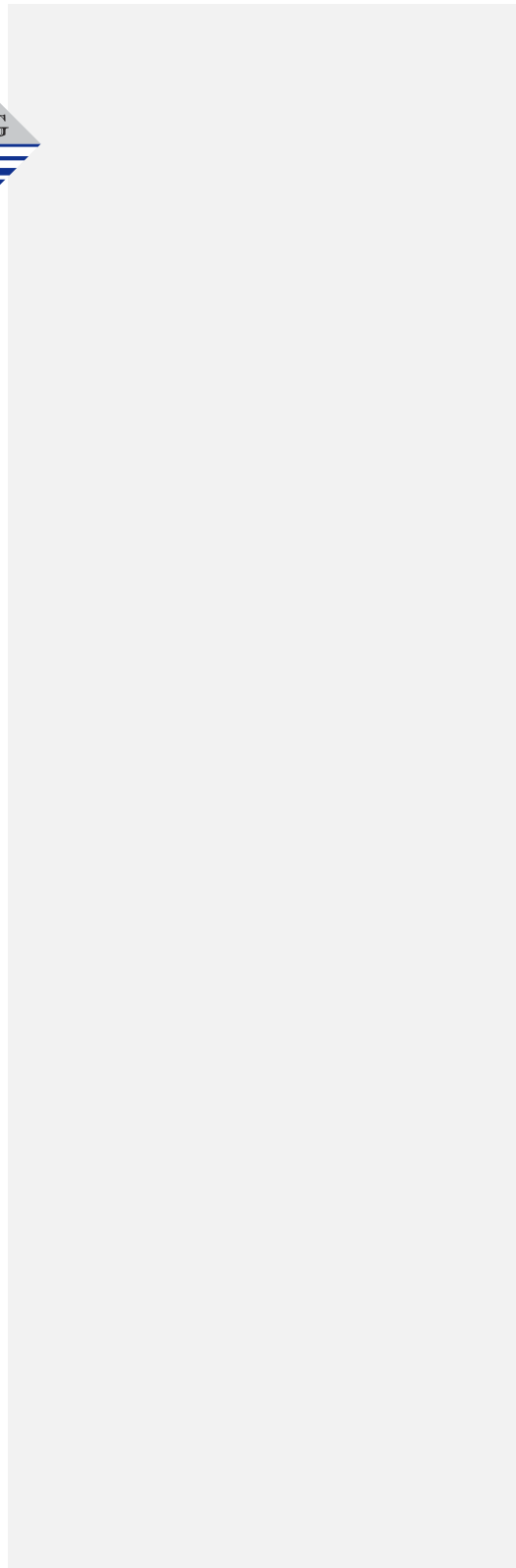
*Subtracted 2.8 feet from NAVD 88 elevations in Table 5 to convert to NGVD 29 datum for metric.

**LA16 was modified in 2025 to isolate Zone E for water quality monitoring and water levels at the well are no longer comparable with the historical data used for the Water Level Metric. The Spring 2024 groundwater elevation at LA16 of 8.32 feet NGVD 29 was used for the 2025 Water Level Metric calculation.

The NGVD 29 datum has been used for the Water Level Metric through 2025 because it matched the steady-state Basin model datum and conveniently equates zero elevation with mean sea level. Groundwater elevations have been adjusted to the NGVD 29 datum using a 2.8 feet downward shift, based on North American Vertical Datum Conversion (VERTCON) data reviewed for the Basin, as published by the National Geodetic Society. A Basin metric review and update is underway that will shift the Water Level Metric to the current NAVD 88 elevation datum.



Figure 23 chloride and water level metric





The Spring 2025 Water Level Metric is 3.5 feet NGVD 29 (approximately 6.3 feet NAVD 88). Mean sea level is approximately 0 feet in the NGVD 29 datum, and 2.8 feet in the NAVD 88 datum for the central coast of California, where the Basin is located. The metric was rising (an improvement) from 2005 through 2018, likely in response to a decrease in Lower Aquifer production. Following a flat interval between 2018 and 2020, the metric continued rising through 2023. There has been a dip in the Water Level Metric in 2024 and 2025 which is likely a correction following the large increase between 2022 and 2023 (Figure 23). Since 2015, the Water Level Metric has increased by 3 feet. The LOBP objective for the Water Level Metric is 8 feet NGVD 29 or higher (ISJ Group, 2015).

Included in Figure 23 are projected trendlines for the Water level and Chloride Metric from the LOBP. The actual metrics are not expected to follow straight lines, but the trendlines are useful to depict the general nature of the anticipated trends. Several years of continued rise in the Water Level metric is expected before reaching the LOBP objective.

A re-evaluation of the Water Level Metric (and other metrics discussed below) is currently in progress (Section 10.2). There have been new monitoring wells drilled and modifications made to existing wells (including Water Level Metric well LA16) that provide better coverage for tracking water levels and water quality in Lower Aquifer Zone E, which is where seawater intrusion appears most active. Metric well LA16 now provides both Zone E water level and water quality data. As a result of the modification, however, the recent Zone E water levels at LA16 are not directly comparable to the historical LA16 data used for the Water Level Metric. The Spring 2024 water level at LA16 was used for the 2025 metric calculation, which avoids the effect of LA16 well modification and allows the remaining metric wells to represent the water level trend. There have been no corrections for tidal effects in the Water Level Metric calculation, and this is being addressed in the metric re-evaluation.

Chloride Metric

The Chloride Metric is defined as the weighted average concentration of chlorides in four key Lower Aquifer wells. One key well (LA10) is within the historical path of seawater intrusion (Cleath & Associates, 2005). Reduction in pumping from the Lower Aquifer should result in measurable declines in chloride concentrations at this well, as the hydraulic head in the Lower Aquifer increases and the inland movement of seawater decreases or is reversed. The Chloride Metric target level is 100 mg/L or lower, and the LOBP Groundwater Monitoring Program schedule for measuring the Chloride Metric is in the Spring and Fall.

The three other key wells are on the perimeter of the seawater intrusion front (LA8, LA11, and LA12). Wells LA11 and LA12 monitor Lower Aquifer chloride concentrations in the northern portion of the Basin, while LA8 monitors chloride concentrations in the southern portion. When calculating the Chloride Metric, the concentration of Well LA10 is given twice the weight of the other three wells, in order to increase the sensitivity of the metric to management actions (refer to the LOBP for a description of the development of the metric). The Chloride Metric is a



simplification of Basin conditions and can vary significantly from year to year due to localized chloride fluctuations, particularly at well LA10 due to wellbore leakage from the Upper Aquifer (2018 Annual Report, Appendix J) and potential upconing effects in Zone E. Table 22 presents the Spring and Fall 2025 Chloride Metric. Figure 23 graphs historical values in the metric. Chloride Metric well locations are shown in Figure 4.

Table 22. 2025 Chloride Metric		
Metric Well (Aquifer Zone)	Spring 2025 Chloride Concentrations	Fall 2025 Chloride Concentrations
LA8 (Zone D)	88 mg/L	84 mg/L
LA10 (Zone D/E)	210 mg/L (double counted for average)	290 mg/L (double counted for average)*
LA11 (Zone E)	430 mg/L	390 mg/L
LA12 (Zone D)	98 mg/L	98 mg/L
Chloride Metric (weighted average)	207 mg/L	230 mg/L

Data Source: LOBP Groundwater Monitoring Program (Appendix C)

*The reported chloride value of 240 mg/L at LA10 in Fall 2025 was affected by Upper Aquifer leakage, therefore the value was substituted with 290 mg/L from a purveyor sample result with lower nitrate concentration from August 2025 in order to calculate the chloride metric.

Seawater intrusion is typically most active in the fall, when water levels (fresh water pressures) are lowest, although chloride concentrations at individual wells may vary based on local influences. A comparison between Spring 2025 and Fall 2025 shows an increase in the metric, and the Chloride Metric has decreased relative to the target value between Fall 2024 (249 mg/L) and Fall 2025 (230 mg/L), indicating a slight improvement during 2025 (Figure 23). Figure 23 includes projected trendlines for the Water level and Chloride Metric from the LOBP. As with the Water Level Metric, a re-evaluation of the Chloride Metric is currently in progress (Section 10.2).

Table 22 lists the Lower Aquifer zone tapped by the individual Chloride Metric wells. Two wells are in Zone D, one is Zone E, and one is mixed Zone D/E. The Zone E and Zone D/E wells show the greatest impact from seawater intrusion, and Zone E is interpreted to have much higher chloride concentrations than Zone D in most of the Western Area (Figure 19).

Nitrate Metric

The Nitrate Metric is defined as the average concentration of nitrate in five First Water key wells located in areas of the Basin that have been impacted by elevated nitrate concentrations. The Nitrate Metric data is obtained from the LOWRF Groundwater Monitoring Program’s winter sampling event and focuses on shallow, adversely impacted wells to track changes in nitrate concentrations in groundwater over time. Table 23 presents the Nitrate Metric for 2025. Figure 24 graphs historical values in the metric, along with the 5-year average for 2002-2006 and a 5-year running average beginning in 2020. The Nitrate Metric target level is 10 mg/L or lower. Nitrate Metric well locations are shown in Figure 2.



Metric Well	Winter 2025 Nitrate-Nitrogen (NO₃-N) Concentrations
FW2	14 mg/L
FW6	3 mg/L
FW10	13.5 mg/L
FW15	22 mg/L
FW17	12 mg/L
Nitrate Metric (average)	12.9 mg/L

Data Source: LOWRF Groundwater Monitoring Program (CHG 2025)

The Nitrate Metric for Winter 2025 was calculated at 12.9 mg/L nitrate-nitrogen (NO₃-N), which is above the Maximum Contaminant Level of 10 mg/L (the drinking water standard). There was a 2.8 mg/L decrease in the Nitrate Metric from Winter 2024 (15.7 mg/L), to Winter 2025, which is an improvement in conditions (Figure 24). The greatest decrease in NO₃-N over the last several years was measured at key well FW6, where concentrations measured 15 mg/L in 2016 and have declined to 3 mg/L in 2024. FW6 is hydraulically downgradient of the Broderson site, and NO₃-N declines are largely attributable to recycled water discharges at Broderson. In 2025, another well hydraulically downgradient of the Broderson site (FW5; not a metric well) continues to show decline in nitrate concentrations, from 8.2 mg/L NO₃-N in 2024 to 5.6 mg/L in 2025.

Independent of LOBP actions, construction, and operation of the community sewer system and LOWRF have largely stopped nitrate loading in the Basin from septic disposal within the wastewater service area. Nitrate concentrations in First Water (includes portions of the Perched Aquifer and Upper Aquifer) are expected to begin declining over the next decade, and this year in 2025 the Nitrate Metric reached the lowest point recorded in the last 23 years. The five-year running average (currently 2020-2025), which represents long term trends, continues to decrease (Figure 24).

Included in Figure 24 is the projected trendline for the Nitrate Metric from the LOBP. The actual metric is not expected to follow straight lines, but a trendline is useful to depict the general nature of the anticipated trend. The anticipated trend following wastewater project implementation was several years of stable (but elevated) nitrate-nitrogen concentrations, followed by a gradual and long-term decline in the Nitrate Metric, reaching the LOBP objective mid-century.



Insert Figure 24 nitrate metric



Lower Aquifer Nitrate

The Nitrate Metric is specific to the Upper Aquifer, however, nitrate is also a concern in areas of the Lower Aquifer. Nitrate concentrations in Lower Aquifer groundwater have been increasing historically, and a reduction in nitrate loading to the Basin does not prevent the movement of existing nitrate from the Upper Aquifer into the Lower Aquifer, which is expected to continue adversely impacting Lower Aquifer water quality. Septic discharges are still occurring in certain portions of the basin where the sewer collection system was not installed.

A 2019 Technical Memorandum prepared for the BMC (CHG, 2019a) identified two areas where nitrate concentrations were threatening Lower Aquifer community water supply wells, one in the Western Area near LA8 and LA9, and the other in the Central Area near LA21 and LA22 (Figure 4). S&T funded an investigation focused on identifying the sources of Lower Aquifer nitrate in groundwater produced by LA8, which concluded that septic system discharges from Cabrillo Estates appeared to be the primary source, although there were others (CHG, 2021b). The BMC subsequently authorized Phase 2 of the Lower Aquifer Nitrate investigation, which has since been delayed, pending ongoing discussions between the Regional Board and the County of San Luis Obispo (Section 10).

7.5.5 Upper Aquifer Water Level Profile

Metrics allow the BMC, regulatory agencies, and the public to evaluate the status of nitrate concentrations and seawater intrusion in the Basin through objective, numerical criteria that can be tracked over time (LOBP; ISJ Group, 2015). The Upper Aquifer has a Nitrate Metric, but does not have a Water Level Metric or Chloride Metric because seawater intrusion is not occurring in the Upper Aquifer. Seawater intrusion affects chloride concentrations in groundwater and moves primarily in response to changes in water levels and associated hydraulic head in an aquifer.

A Water Level Metric and Chloride Metric for the Upper Aquifer was recommended in the 2016 Annual Report to provide the BMC with a management tool for addressing the potential for seawater intrusion into the Upper Aquifer as Upper Aquifer production increases. There are only a few Upper Aquifer wells, however, along the shoreline of the Morro Bay estuary where seawater intrusion would be most likely to occur. An alternative management tool proposed for the Upper Aquifer is the Water Level Profile. The benefit of a profile, rather than a metric, is that spatial information is included. Conditions for seawater intrusion along the Water Level Profile could occur before an equivalent metric-based threshold is reached, since there is no averaging in the Water Level Profile. Metrics were not designed for early detection, which is what is needed for Upper Aquifer seawater intrusion monitoring.

Seawater has a density that is 1.025 times greater than fresh water. For every foot of fresh water head above sea level, the seawater interface will be displaced 40 feet below sea level, according to the Ghyben-Herzberg relation (Freeze and Cherry, 1979). Using the Ghyben-Herzberg relation and elevation contours on the base of the Upper Aquifer, a profile showing the groundwater elevations needed to avoid seawater intrusion beneath the bay shoreline (the Protective Elevation)



has been prepared, along with the Spring 2025 Upper Aquifer groundwater elevations along the same profile, adjusted to the NGVD 29 datum. The resulting comparison of the Upper Aquifer Water Level Profile and the Protective Elevation is shown in Figures 25 and 26.

Most water levels along the Water Level Profile in Spring 2025 were above the Protective Elevation; UA5 was only slightly below, which is an Upper Aquifer supply well along the bay in Baywood Park (Figure 25). Spring 2025 water levels shown above ground surface in low-lying areas near the bay represent artesian pressures in the aquifer, and incorporate pressure measured in an artesian well at Sweet Springs. Groundwater seeps and springs are common along the bay shoreline, including Sweet Springs and the 3rd Street marsh.

If water levels decline below the Protective Elevation, there would be a theoretical potential under hydrostatic conditions (zero hydraulic gradient) for seawater intrusion to occur at the base of the Upper Aquifer. Water levels have been below the Protective Elevation in the past along portions of the profile without any seawater intrusion detected, particularly during drought periods (e.g. mid 1970's at UA5 and early 1990's at UA3).

Water levels at UA5 declined below the Protective Elevation in 2021, 2022, 2024 and 2025. Chloride concentrations from UA5 available from purveyor records indicated a relatively sharp rise in chlorides between Fall 2020 (32 mg/L) and Fall 2021 (64 mg/L), with continued increases through Spring and Fall 2023 (76 mg/L and 69 mg/L, respectively). The Spring 2025 chloride concentration remained steady at 68 mg/L but it showed a significant decrease to 28 mg/L in Fall 2025. Although these chloride concentrations are relatively low (250 mg/L is the recommended limit and 500 mg/L is the upper limit for drinking water), continued monitoring by the water purveyor is warranted.

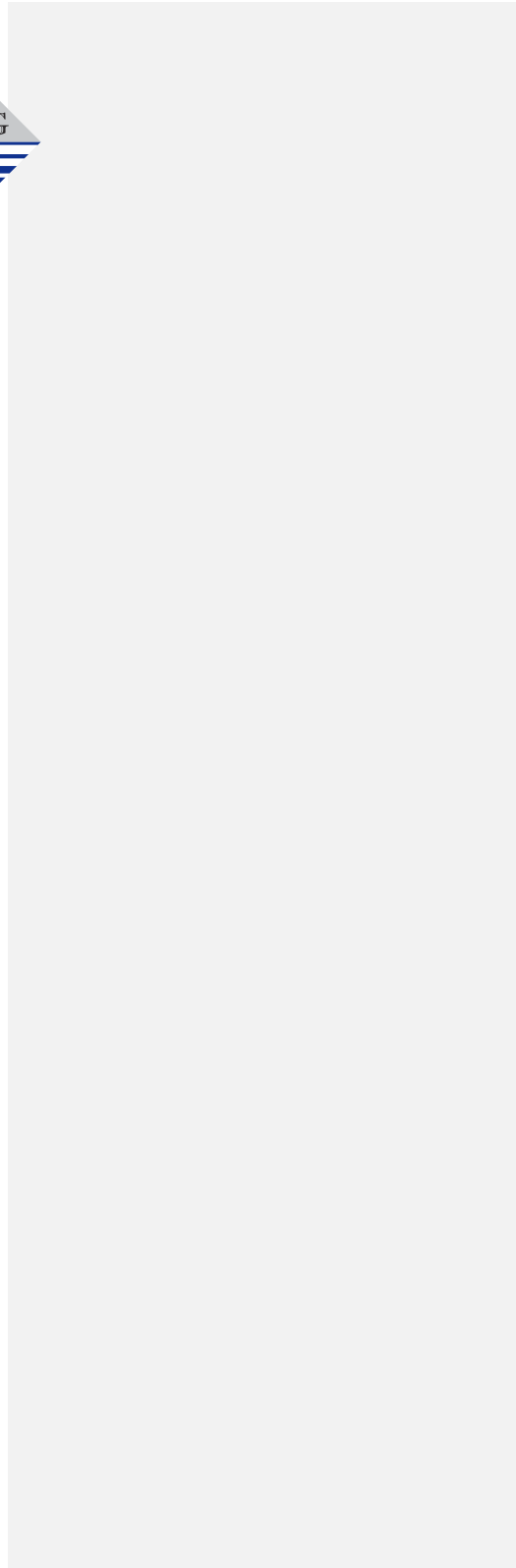
There have been no corrections for potential tidal effects to water levels used in the Water Level Profile. This is being addressed in the metric re-evaluation.



Insert Figure 25 Upper Water Level Profile Orientation



Insert Figure 26 – Water Level Profile





8. BASIN STATUS

The status of the Basin in 2025 is summarized as follows:

- The Basin received above average rainfall in calendar year 2025. San Luis Obispo County started 2025 with no drought to abnormally dry conditions in January; by end of the calendar year in December 2025 no drought conditions were reported (NDMC/USDA/NOAA, 2026).
- Groundwater production for the Basin totaled an estimated 1,680 acre-feet in the 2025 calendar year, which is a decrease of 10 acre-feet from 2024. Purveyor groundwater production increased by approximately 40 acre-feet, while production for community facilities decreased by an estimated 10 acre-feet in 2025, compared to 2024. Production for agricultural irrigation decreased by an estimated 40 acre-feet, and private domestic production remained steady at 110 acre-feet in 2025.
- Average water levels declined by approximately 1-2 feet between Spring 2024 and Spring 2025 in the Perched Aquifer and Upper Aquifer, and declined approximately 3 feet in the Lower Aquifer over the period.
- Seawater intrusion in Zone D has decreased between 2024 and 2025, although the intrusion front remains east of LA10 (similar to the position shown for 2021) and LA15 on Palisades Avenue near the boundary between the Western and Central Areas has reported a 47 percent increase in chloride concentrations over the last five years. Zone E seawater intrusion is pervasive in the Western Area. In the Central Area, Zone E seawater intrusion continues to advance inland of LA11.
- The Basin Yield Metric for 2025 is 71, which is below the LOBP goal of 80. However, the Sustainable Yield estimate for 2026 has been reduced from prior years, and the Basin Yield Metric is expected to increase in 2026, potentially over the LOBP goal of 80.
- The Basin Development Metric was not estimated in 2025, pending application of the updated Sustainable Yield methodology and Transient Model to all LOBP programs. There is no LOBP objective for the Basin Development Metric.
- The Water Level Metric decreased between 2024 and 2025 from 4.1 feet to 3.5 feet, which is a deterioration in conditions, and remains several feet below the target value of 8 feet.
- The Chloride Metric decreased relative to the 100 mg/L target value between Fall 2024 (249 mg/L) and Fall 2025 (230 mg/L), indicating an improvement of conditions in 2025.
- The Nitrate Metric remains above the 10 mg/L target value, decreasing from 15.7 mg/L NO₃-N in 2024 to 12.9 mg/L NO₃-N in 2025, indicating an improvement of conditions.
- Upper Aquifer water levels were above the Protective Elevation along the bay, except for near UA5. Chloride concentrations at UA5 have increased over time, but remain low and are being closely monitored.



9. RECOMMENDATIONS

The following LOBP Groundwater Monitoring Program recommendations from the 2024 Annual Report were completed in 2025, or are in progress and planned for completion in 2026:

- Updating the Maximum Sustainable Yield now that the location of the second Program C well is finalized and the Transient Model is completed, including revised expectations for recycled water availability and revisions to the Sustainable Yield methodology (Section 7.5.2). – ***Partially completed - selected WRFPS Study Sustainable Yield scenarios included second Program C well and other LOBP programs.***
- Re-evaluate Water Level Metric target after completion of wellhead surveys (Section 7.5.3). This task has been expanded to include Water Level, Chloride, and Nitrate Metric updates – ***In progress (2026)***
- A peer review of the Basin model is required by the Stipulated Judgement every 10 years. Upgrading to a fully transient Basin model was recommended prior to the next peer review (Section 7.5.2). Planning and funding efforts for a transient Basin model was initiated in 2021. The transient Basin model would replace the existing steady-state model, once completed. – ***Transient Model completed***
- Water levels at UA5 are below the Protective Elevation for the fourth consecutive year. Continued close monitoring of UA5 water quality by the water purveyor is recommended (Section 7.5.4). – ***Ongoing***
- Install the Sweet Springs Lower Aquifer monitoring well in order to better monitor the movements of the seawater intrusion front (Section 2.2.5). A location for the cluster has been finalized in 2025– ***Planned for 2026***
- A discussion of Chromium-6 concentrations and PFAS concentrations in purveyor wells was recommended for the 2025 Annual Report - ***Completed***

The following additional LOBP Groundwater Monitoring Program recommendations are provided for BMC consideration. Recommendations on Adaptive Management are provided in Section 10.

- Continue to implement recommendations for well modifications and new monitoring well constructions to help characterize Lower Aquifer seawater intrusion. Following completion of the Sweet Springs monitoring well cluster, consider locating a new Zone D and Zone E monitoring well cluster in the vicinity of LA10, along with the modification of LA6 (Zone D) to facilitate groundwater quality monitoring (Section 7.3).
- A review of CEC testing constituents and locations is recommended (Section 4.2.2).



• At the May 29, 2026 BMC Board meeting, the BMC agreed to add a report appendix with responses to public and Board comments on the Public Draft of the Annual Report. These comments and responses are in Appendix M.

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10. STATUS OF BASIN METRICS, BMC INITIATIVES AND LOBP PROGRAM IMPLEMENTATION

The LOBP provides for periodic review of the implementation of the LOBP through establishment of an Adaptive Management Plan that allows the BMC to do the following:

- Evaluate trends of key Basin metrics;
- Identify additional data needs;
- Report the data analysis to various interested parties;
- Modify the LOBP programs and schedule, if necessary, in response to current conditions and observed trends in the Basin;
- Modify procedures to utilize current best management practices; and
- Modify pumping, treatment, and/or water reuse procedures in response to Basin conditions and trends that show signs of water quality degradation, including increased levels of contamination and/or increased levels of seawater intrusion.

The following sections provide a status update on the Basin metrics, BMC Initiatives and LOBP Program implementation. The Adaptive Management Plan offers a tool with which the BMC can modify the LOBP programs, based on the performance of Basin metrics and other monitoring results, to better meet overall LOBP objectives.

10.1 Basin Metrics

As noted in Section 7 (“Data Interpretation”) of this Annual Report, the LOBP established several metrics to measure nitrate impacts to the Upper Aquifer, seawater intrusion into the Lower Aquifer, and the effect of management efforts on the Basin. These metrics allow the BMC, regulatory agencies and the public to evaluate the status of nitrate levels, seawater intrusion, and the impact of implementation of the LOBP programs, through objective and numerical criteria that can be tracked over time. The 2025 metric values are summarized in Table 24 for easy reference during discussion and evaluation of the LOBP programs.



Table 24. LOBP Metric Summary

Metric¹	LOBP Goal	Calculated Value from 2025 Data	Change in Condition from 2024
Basin Yield Metric²: Comparison of current well production to Sustainable Yield ²	80 or less	71	No change from 71 (steady)
Water Level Metric: Average groundwater elevation in 5 key wells in the Lower Aquifer	8 feet above mean sea level or higher	3.5 feet above mean sea level	Decrease from 4.1 ft. (deterioration)
Chloride Metric: Weighted average chloride concentration in 4 key wells in the Lower Aquifer	100 mg/L or lower	230 mg/L	Decrease from 249 mg/L (improvement)
Nitrate Metric: Average nitrate concentration in 5 key wells in the Upper Aquifer	10 mg/L or lower	12.9 mg/L (NO ₃ -N)	Decrease from 15.7 mg/L (improvement)

¹Revisions to the Water Level, Chloride, and Nitrate Metrics are currently in progress.

²An update to the Basin sustainable yield was approved by the BMC in Fall 2025 based on the Transient Model, which is expected to lower the Basin Yield Metric in 2026 (Section 7.5.1).

10.2 Update on BMC Initiatives

Based on the Basin status (Section 8) and recommendations (Section 9), the BMC will evaluate

²On October 27th, 2021 the BMC unanimously adopted a new methodology for calculating the Sustainable Yield for Basin that reduced the Sustainable Yield estimate from 2,760 to 2,380 AF for Calendar Year 2022. A Sustainable Yield estimate of 2,380 AF was subsequently adopted for Calendar Years 2023, 2024, and 2025. An update to the sustainable yield is expected in Fall 2025 based on the transient model, which could change the Basin Yield Metric.



opportunities to develop and pursue additional measures to improve Groundwater Monitoring and Management. The following is an update on additional measures related to BMC Groundwater Monitoring and Management:

Program C Adaptive Management. At its [April 20, 2022 Meeting](#), the BMC approved CHG to evaluate the re-inclusion of the 3rd Well into Program C. Additional detail regarding the history of the 3rd Program C Well is available in the [April 20, 2022 BMC agenda packet](#). This analysis includes evaluation of the anticipated increase in the Sustainable Yield that the 2nd and 3rd Program C Wells would provide utilizing the updated criteria for calculating the Sustainable Yield approved by the BMC at their [October 27, 2021 meeting](#). The findings from the analysis were presented to the BMC at their [August 16, 2023 BMC Meeting](#), where the BMC approved removal of the deferral of the 3rd Well from Program C.

Lower Aquifer Nitrate Investigation. On [March 15, 2023](#) the BMC received a presentation from representatives from the Central Coast Regional Water Quality Control Board (CCRWQCB) on the Lower Aquifer Nitrate Contamination Investigation Update, which had been initiated by S&T in 2021 (CHG, 2021b). Further BMC investigations into the Lower Aquifer nitrate contamination in the western portion of the Los Osos Basin are currently on hold pending ongoing discussions between the CCRWQCB and the County of San Luis Obispo. Additional information on the Lower Aquifer Nitrate Investigation is included in Section [7.5.4 Water Level, Chloride, and Nitrate Metrics](#) of this Annual Report.

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Evaluation of Water Conservation Measures. To improve the understanding of the effectiveness of existing conservation programs and the future conservation potential within the community, the purveyors collaborated with the County on a [Title 19 Water Offset Study](#) to update water usage estimates for urban and rural residences sourcing water from the Los Osos Groundwater Basin, propose new water conservation measures for the retrofit-to-build program, and estimate remaining water savings potential for the community. This study was completed and published in June 2023. Findings from the study were utilized to inform proposed modifications to Title 8 (Health and Sanitation Ordinance) and Title 19 (Building and Construction Ordinance) of the [County Code](#) for evaluation by County Board of Supervisors (BOS) in 2024. The Title 19 retrofit-to-build program is currently active.

WRFP Study/Transient Groundwater Model: At its [October 27, 2021 meeting](#), the BMC authorized the preparation of a Water Recycling Funding Program (WRFP) Grant Application and to request access to the \$150,000 of funding that the County budgeted to develop a transient groundwater model. The LOCSD is the lead agency for the grant on behalf of the BMC and on February 2, 2022 submitted an application for a WRFP grant to develop a transient model and analyze recycled water and supplemental water projects to improve the sustainability of the Basin (WRFP Study). The BMC and the Los Osos CSD were notified of the award of the grant in January 2023 and all the required documents were signed and fully executed. The Los Osos CSD released the Request for Proposals for the



WRFP Study on February 27, 2023 and proposals were due March 31st, 2023. The WRFP Study Consultant Selection Committee reviewed the proposals and interviewed the two top ranked consulting firms and the BMC approved Cleath-Harris Geologist (CHG) to complete the WRFP Study on [May 17, 2023](#).

A proposed modification to the schedule for completion of the WRFP Study was executed on March 7, 2025 by the SWRCB to allow for additional time to incorporate published data from the Department of Water Resources (DWR) Aerial Electromagnetic (AEM) Survey. The BMC and LOCSB received the agreement amendment from the SWRCB which reflected the updated schedule. CHG incorporated findings from the AEM data, completed calibration, and met with the Technical Advisory Committee (TAC) and Peer Review Consultant on March 14, 2025, March 29, 2025, and April 9, 2025 to discuss the Transient Model calibration and recycled water/supplemental water supply alternatives.

The Peer Review Consultant GSI Water Solutions (GSI) provided feedback to CHG, which is incorporated into the [Transient Model Construction/Calibration TM](#) and the groundwater model. Their comments are available in Appendix N of the Construction/Calibration TM dated June 2025. In addition to GSI's peer review, the County coordinated a review by Lynker One Water Hydrologic (Lynker) and their comments have been incorporated and are included in Appendix N of the June 2025 Transient Model Construction/Calibration TM.

The Transient Model Construction/Calibration TM and Baseline Scenario Results were brought to the BMC at the regularly scheduled [June 18, 2025 BMC Meeting](#). Cleath-Harris Geologists provided a presentation on these items at the [August 20, 2025 BMC meeting](#). At the [July 16, 2025 meeting](#) the lead consultant preparing the Engineering Report component of the WRFP Study, Water Systems Consulting (WSC), provided a presentation on the current status of the WRFP Study Supply Alternatives Analysis. The Draft Project Report was submitted to the SWRCB on September 9, 2025. The Final Draft WRFP report was approved by the BMC Board at the [November 12, 2025 Special BMC Meeting](#). The Final Draft was submitted to SWRCB. SWRCB provided the Final Approval Letter on January 21, 2026.

Discussion and Recommendation of Criteria for Future Growth. At its [May 17, 2017 Meeting](#), the BMC provided input on the Los Osos Community Plan (LOCP), including consideration of Basin metrics and defined goals as they relate to the timing of future growth within the Basin. At this meeting, the BMC authorized the release of a letter to the County Planning Department and Coastal Commission staff recommending that future development should be subject to the following provisions:

1. Any growth projections in the updated LOCP should be consistent with the water supply estimates provided in the LOBP.
2. The LOCP should acknowledge any infrastructure projects contemplated by the LOBP that would require coastal planning action subject to the authority of the



Coastal Commission. This provision would help expedite completion of any affected projects.

3. Amendments to the County’s Growth Management Ordinance (GMO) [separate from the LOCP/LCP] should provide a growth rate for Los Osos consistent with the adaptive management provisions of the LOBP. In particular, the rate of growth must be set so that the monitoring provisions of the LOBP confirm the adequacy of a sustainable water supply in support of any contemplated future growth.

On [December 15, 2020, the County Board of Supervisors](#) adopted the LOCP and Final Environmental Impact Report and tentatively adopted amendments to the GMO that would establish a residential growth rate for the Los Osos urban area. The LOCP and GMO amendments were approved by the County [BOS on October 29, 2024](#). On October 29, 2024, the County BOS approved an updated version of Title 26 of the County Code (i.e. GMO) which established a 0.4% growth rate for Los Osos in Calendar Year 2025. [On December 10, 2024, the County BOS](#) adopted a resolution establishing the maximum annual allocation for Calendar Year 2025 for the unincorporated county, including an allocation of 25 new dwelling units in Los Osos. The LOCP and amendments to the Estero Area Plan were certified by the [California Coastal Commission at a hearing on December 11, 2024](#). Both the [LOCP](#) and the [Estero Area Plan](#) are now in effect.

On December 10, 2024, the County BOS approved funding for the implementation of the Los Osos Habitat Conservation Plan (LOHCP). This funding will be used to pursue mitigation credits for habitat conservation through fee title or easement acquisition, fund habitat restoration projects, and fund staffing needed to implement the plan. Staff returned to the BOS in February 2025 where the BOS adopted the fee which will allow applicants to pay into the LOHCP to offset disturbance caused by development. At this time, the San Luis Obispo Department of Planning and Building does not have mitigation credits available for purchase. Credits are anticipated to be available for purchase in mid-2026. More information can be found on the County’s website (Development in Los Osos Page) which will be updated as information becomes available.

At the December 15, 2020 County BOS meeting, the GMO was amended to include the updated LOCP and framework for the annual growth rate for new residential development in Los Osos. Section 26.01.070 – General Procedures Subsection 11 of the GMO states “the annual growth rate shall be established based on review of the best available groundwater monitoring data. The department shall conduct such review and provide a recommendation to the board of supervisors. Such review shall include consideration of recommendations from the Los Osos Basin Management Committee and the groundwater sustainability director’s review of such recommendations.”

In February 2025, the County of San Luis Obispo (County) requested the BMC provide a letter recommendation for the CY 2026 Growth Rate. The BMC’s letter recommendation



was requested for use by the County’s Groundwater Sustainability Director for reference and consideration in preparing a letter recommendation from the County’s Groundwater Sustainability Director to the County BOS regarding the Calendar Year (CY) 2026 Growth Rate for Los Osos. The Growth Rate is established on an annual basis by the County BOS in accordance with the provisions for the GMO.

BMC Staff brought a proposed recommendation letter to the BMC at [the October 15, 2025 Los Osos BMC Board of Directors Meeting](#). The BMC voted 3-0, with the County abstaining, to provide the County Groundwater Sustainability Director with the letter recommending a growth rate of 0% for 2026. The recommendation was based on the reduced Sustainable Yield estimate predicted utilizing the newly developed Transient Groundwater Model (Transient Model) and the uncertainty of impacts from the growth rate approved for 2025 but not yet implemented. The letter was provided to the County Groundwater Sustainability Director on October 25, 2025, shortly after the BMC meeting.

At the [December 16, 2025 County BOS Meeting](#), the County’s Groundwater Sustainability Director brought a letter, dated November 6, 2025, to the County BOS recommending the County BOS adopt a CY 2026 Growth Rate for the Los Osos Urban Reserve Line of 0.4%. The BMC’s recommendation letter is included as an attachment to the letter provided to the County BOS. At the December 16, 2025 Meeting the County BOS adopted County’s Groundwater Sustainability Director’s proposed growth rate of 0.4%.

10.3 LOBP Programs

The LOBP outlines a number of programs developed to meet the goals of the various metrics outlined above. The BMC has analyzed the impacts of implementing various combinations of programs on the Basin³. In particular, the BMC modeled the impact of each combination on the Basin Yield Metric, Water Level Metric, and Chloride Metric. Based on this analysis, the LOBP recommends the following programs for immediate implementation:

- Groundwater Monitoring Program;
- Urban Water Use Efficiency Program;
- Urban Water Reinvestment Program;
- Basin Infrastructure Programs A and C; and
- Wellhead Protection Program.

Two additional programs were included in the LOBP and will be considered by the BMC for implementation if the County and the Coastal Commission were to allow future development in

³The LOBP analyzed the following seven potential programs: (1) Groundwater Monitoring Program; (2) Urban Water Use Efficiency Program; (3) Water Reinvestment Program; (4) Basin Infrastructure Program; (5) Supplemental Water Program; (6) Imported Water Program; (7) Wellhead Protection Program.



Los Osos as part of the LOCP and the LOHCP: (1) Basin Infrastructure Program B; and (2) either Basin Infrastructure Program D or the Agricultural Water Reinvestment Program.

As described above, the County and Coastal Commission have permitted future development within the limitations of the LOHCP and the LOCP. In 2025, the BMC developed a transient model and analyzed recycled water and supplemental water projects to improve the sustainability of the Basin (WRF Study). The findings from the WRF Study will help inform the BMC on which Programs to consider implementing in the future.

10.3.1 Groundwater Monitoring Program

In order to allow calculation of the above metrics with a higher degree of accuracy, the BMC has implemented the Groundwater Monitoring Program. The Groundwater Monitoring Program is designed to collect, organize and report data regarding the health of the Basin from a current network of 96 wells.⁴ In addition to facilitating the calculation of metrics, this data provides information needed to manage the Basin for long-term sustainability. Implementation of the Groundwater Monitoring Program also satisfies various external monitoring requirements, such as the former California Statewide Groundwater Elevation Monitoring Program (CASGEM), now the Adjudicated Basins Annual Reporting System which is integrated into the SGMA Portal's Monitoring Network Module, and waste discharge and recycled water permits for the LOWRF. Monitoring under the program began in 2014 and will continue to occur in the spring and fall of each year when water levels are typically at their highest and lowest. This Annual Report represents the thirteenth monitoring event under the Groundwater Monitoring Program. The BMC plans to continue to report the values for all Basin metrics and other relevant, non-proprietary data to the Parties, the Court and the public in its future Annual Reports. Additional recommendations and planned actions relating to the Groundwater Monitoring Program are described in Section 9. Table 26 summarizes the status of the various implementation tasks set forth in the LOBP that is related to the Groundwater Monitoring Program.

In September 2024, the BMC was awarded \$150,000 from the Rose Foundation's Central Coast Community-Based Water Quality Grant Program for the construction of a new, lower aquifer monitoring well (the Sweet Springs Monitoring Well). This Monitoring Network improvement near the intersection of Ramona Ave and 5th Street or Pismo Ave and 5th Street (final location TBD), could help fill a gap in the BMC's monitoring network between the Pasadena Well (LA11) and the Cuesta-by-Sea/Lupine Wells (LA40/41). With the observation of increasing chloride concentrations in LA11, a new Sweet Springs Monitoring Well would help the BMC better detect seawater intrusion potentially occurring in that portion of the Basin. The project is anticipated to be completed by the end of 2026.

⁴The wells are distributed laterally across the Western, Central and Eastern Areas and vertically among First Water and the Upper and Lower Aquifers. Eighteen existing wells and two new wells have been added to the program since 2015.



10.3.2 Urban Water Use Efficiency Program

In order to reduce annual groundwater production from the Basin, and thus reduce the Basin Yield Metric, the LOBP recommends implementation of the Urban Water Use Efficiency Program. As described previously, the purveyors and the County completed an updated evaluation of the conservation potential for the community in 2023. The results of this evaluation informed the BMC and the BMC Parties on the potential future water savings that could be achieved through conservation efforts and program, and were utilized to inform proposed modifications to Title 8 (Health and Sanitation Ordinance) and Title 19 (Building and Construction Ordinance) of the [County Code](#) which were adopted by the County BOS in 2024. Additional information on the status of the current water conservation programs offered by the BMC Parties can be found on their respective websites.

Table 26. Basin Groundwater Monitoring Program Status

Recommended Implementation Measure	Current Status	Funding Status	Projected Completion
Wellhead Surveys: Perform wellhead surveys to establish reference point elevations and locations		Complete	
Protocols and Objectives: Establish well monitoring protocols and data quality objectives		Complete	
Water Level Monitoring: Assign water level monitoring responsibilities to the Parties or other stakeholders		Complete	
Access to Private Wells: Contact private well owners to request permission for participation in the groundwater elevation and water quality portions of the Groundwater Monitoring Program		Complete	
Water Quality Monitoring: Assign water quality monitoring responsibilities. The BMC will adopt a set of procedures for recording groundwater elevations and sampling for water quality.		Complete	
Data: Assign data compilation, organization and reporting duties		Complete	



10.3.3 Urban Water Reinvestment Program

Implementation of the Urban Water Reinvestment Program was recommended in the LOBP to increase the Sustainable Yield of the Basin (and thus further reduce the Basin Yield Metric). The Water Reinvestment Program will accomplish the LOBP’s goal of reinvesting all water collected and treated by the LOWRF in the Basin, either through disposal via percolation to the aquifers or reuse. Water treated by the LOWRF will be of a sufficient quality to directly percolate into the Basin or to reuse for landscape or agricultural irrigation purposes. The planned uses of that water are listed in Table 27, along with the actual uses and amounts of reused water from 2025⁵.

Potential Use	LOBP Planned Annual Volume (AFY)	Actual Annual Volume in 2025 (AFY)
Broderson Leach Fields	448	422
Bayridge Estates Leach Fields	33	14
Urban Reuse ⁶	63	8
Sea Pines Golf Course	40	74
Los Osos Valley Memorial Park	50	0
Agricultural Reuse	146	3
Construction Water	0	0
Total	780	521

The LOWRF construction was completed in March 2016. Through the end of 2022, the sewer service area had connected 99.5 percent of parcels that are required to connect, with approximately 29 properties remaining to connect. In 2025 treated wastewater plant effluent flows averaged approximately 464,735 gallons per day and totaled 521 AF for the year. Average wastewater flows are lower than anticipated due to conservation measures implemented by the community. Projecting the average flow per connection for 100 percent of the parcels required to connect results in a total estimated treated effluent volume of 540 AFY, which is 240 AFY less than the 780 AFY the LOBP anticipated for recycled water available for the urban water reinvestment program.

Recycled water in 2025 was conveyed to the Broderson and Bayridge Estates leach fields, Agricultural users, Sea Pines Golf Course, Los Osos Middle School, Monarch Grove, Los Osos Community Park, and the median in Los Osos Valley Road between South Bay Blvd and Fairchild Way.

⁵This Table was reproduced (with slight edits) from Table 2 of the LOBP.

⁶Urban reuse includes Los Osos Middle School irrigation, Monarch Grove Elementary School irrigation, Los Osos Community Park irrigation, and irrigation for the Los Osos Valley Road median between South Bay Blvd and Fairchild Way.



The anticipated groundwater mound⁷ resulting from infiltration of treated wastewater disposal to leach fields at the Broderson site was detected hydraulically downgradient beginning in June 2017. As of 2025, it is estimated that the Broderson mound is reaching stabilization. Additional information on the current status of the Broderson Mound can be found in Section 7.2 Water Level Hydrographs of this Annual Report.

The BMC received final notification of obtaining grant funding in Calendar Year 2023 for the development of a Transient Groundwater Model and completion of a recycled water and supplemental water supply alternatives study. This study analyzed benefits of delivering recycled water to Broderson, Bay Ridge, Sea Pines and/or other future locations (e.g. ag reuse, school landscape irrigation, Los Osos Creek, etc.). The study additionally evaluated opportunities to utilize recycled for Indirect and Direct Potable Reuse to improve water supply conditions in the Basin. The study was completed in November 2025.

10.3.4 Basin Infrastructure Programs

Implementation of the Basin Infrastructure Program is designed to reduce Purveyor groundwater production from the Lower Aquifer in the Western Area and replace it with additional pumping from the Upper Aquifer and Central and Eastern Areas. This shift is anticipated to increase the Basin's Sustainable Yield, which in turn will help lower or improve the Basin Yield Metric if groundwater production does not increase.

The Program is divided into four parts, designated Programs A through D. Programs A and B shift groundwater production from the Lower Aquifer to the Upper Aquifer, and Programs C and D shift production within the Lower Aquifer from the Western Area to the Central and Eastern Areas, respectively. A fifth program, Program M, was also established to implement the development of a Groundwater Monitoring Program outlined in Chapter 7 of the LOBP, and new Lower Aquifer monitoring wells in the Cuesta by the Sea area and at the eastern end of Skyline Drive were completed in 2019 and 2023 respectively. The new Lower Aquifer Sweet Springs Monitoring Well is anticipated to be completed in 2026. Table 28 provides an overview of the status of the Projects that are currently moving forward or have been completed. Note, no projects are currently moving forward in Program D, thus they are not shown in Table 28.

10.3.5 Wellhead Protection Program

The Wellhead Protection Program is designed to protect water quality in the Basin by managing activities within a delineated source area or protection zone around drinking water wells. This program consists primarily of the Purveyors conducting Drinking Water Source Assessment and Protection surveys for each of their wells, as well as construction and operation of the LOWRF. The BMC will evaluate opportunities for specific actions to protect water quality in the Basin as deemed appropriate in the future, though no specific actions are recommended at this time.

⁷Cleath & Associates, 2000, Hydrogeologic Investigation of the Broderson Site, Phase 2 Impacts Assessment, prepared for Los Osos Community Services District, November 2000.



Table 28. Basin Infrastructure Projects

Project Name	Parties Involved	Funding Status	Capital Cost	Status
Program A				
Water Systems Interconnection	LOCSD/ GSWC			Completed
Upper Aquifer Well (8 th Street)	LOCSD		\$307,000	Completed
South Bay Well Nitrate Removal	LOCSD			Completed
Palisades Well Modifications	LOCSD			Completed
Blending Project (Skyline Well)	GSWC			Completed
Water Meters	S&T			Completed
Program B				
LOCSD Wells	LOCSD	Not Funded	LOBP: \$2.7 mil	Project not initiated
GSWC Wells	GSWC	Not Funded	LOBP: \$3.2 mil	Project not initiated
Community Nitrate Removal Facility	LOCSD/GSWC/S&T	GSWC Portion Funded	GSWC: \$1.23 mil	GSWC’s Program A Blending Project might be capable of expanding to be the first phase of the Program B Community Nitrate Removal Facility.



Project Name	Parties Involved	Funding Status	Capital Cost	Status
Program C				
Expansion Well No. 1 (Los Olivos)	GSWC			Completed
Expansion Well No. 2	LOCSD	LOCSD	LOBP: \$2.5 mil	The Bay Oaks well is completed and operational as of January 2026.
Expansion Well 3 and LOVR Water Main Upgrade	GSWC/LOCSD	Cooperative Funding	LOBP: \$1.6 mil	The deferral from Program C for this project was removed by the BMC on August 16 th , 2023.
LOVR Water Main Upgrade	GSWC	May be deferred	LOBP: \$1.53 mil	Project may not be required, depending on the pumping capacity of the drilled Program C wells. It may be deferred to Program D.
S&T/GSWC Interconnection	S&T/GSWC	Pending	LOBP: \$30,000	Currently on hold pending further evaluation of the project.



Project Name	Parties Involved	Funding Status	Capital Cost	Status
Program D				
Shift production within the Lower Aquifer from the Western Area to the Eastern Area of the Basin				Currently being considered for deferment through Adaptive Management. BMC to review on an annual or semi-annual basis.
Program M				
New Zone D/E Lower Aquifer monitoring well in Cuesta by the Sea	All Parties			Completed
New Zone D/E Lower Aquifer monitoring wells at the eastern end of Skyline Drive	All Parties			Completed
Sweet Springs Monitoring Well	All Parties	\$150,000 in Rose Foundation Grant Funding	\$50,000 match from LOCSD's BMC contribution	In progress, anticipated completion in 2026.
Program U				
Creek Discharge Program	All Parties		TBD	These activities are currently on hold. The Transient Model and Water Recycling Funding Study are intended to better inform the BMC on the most effective opportunities for increasing the Sustainable Yield of the Basin.
8 th and El Moro Urban Storm Water Recovery Project	All Parties		TBD	These activities are currently on hold. The Transient Model and Water Recycling Funding Study are intended to better inform the BMC on the most effective opportunities for increasing the Sustainable Yield of the Basin.



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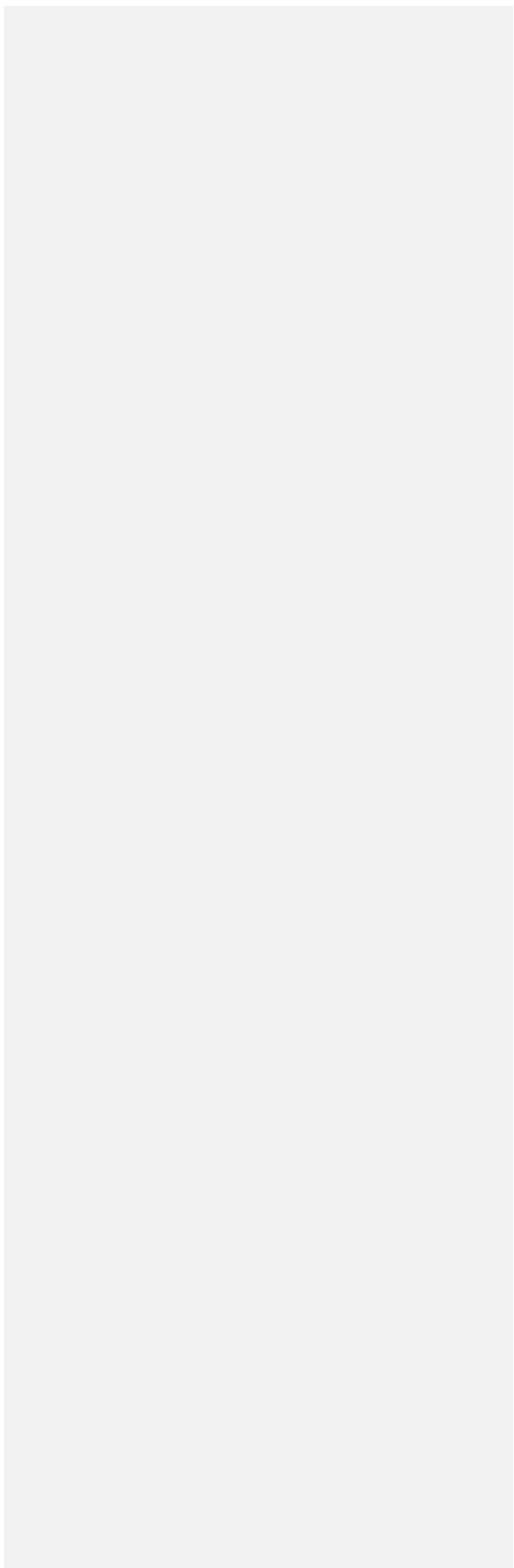
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APPENDIX A
Groundwater Monitoring History



Groundwater Monitoring History

Groundwater monitoring has been performed by public agencies, water purveyors, and consultants for various Basin studies and programs over several decades. The following lists include historical investigations, monitoring reports, and monitoring programs with a major focus on Basin water levels and water quality through December 31, 2024, which is the end of the period covered by this Annual Report. Figure A1 compares the scientific basin boundary used for the LOBP and prior work with the new jurisdictional boundary defined by the DWR for the Los Osos Area Subbasin.

Historical Investigations

- *Los Osos-Baywood Ground Water Protection Study* (DWR, 1973);
- *Morro Bay Sandspit Investigation* (DWR, 1979);
- *Los Osos -Baywood Park Phase I Water Quality Management Study* (Brown & Caldwell, 1983);
- *Hydrogeology and Water Resources of the Los Osos Valley Ground-Water Basin, San Luis Obispo County, Water-Resources Investigation 88-4081* (U.S. Geological Survey; Yates and Wiese, 1988);
- *Task F – Sanitary Survey and Nitrate Source Study* (Metcalf & Eddy, 1995);
- *Sea Water Intrusion Assessment and Lower Aquifer Source Investigation of the Los Osos Valley Groundwater Basin* (Cleath & Associates, 2005);
- *Task 3 Upper Aquifer Water Quality Characterization* (Cleath & Associates, 2006);
- *Los Osos Valley Groundwater Basin Fringe Areas Characterization, Technical Memorandum* (CHG, 2018b).
- *Los Osos Valley Groundwater Basin Boundary Modification Request, Technical Memorandum* (CHG, 2018c).

Monitoring Reports:

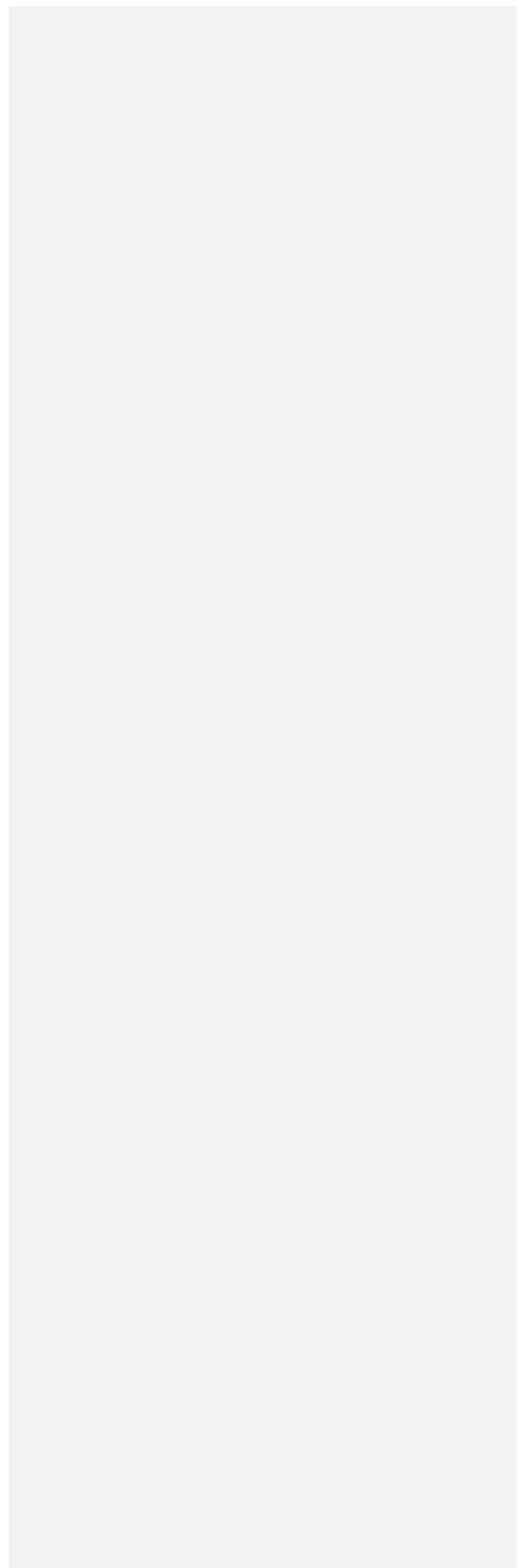
- *Baywood Groundwater Study – Fourth Quarter 1998 (San Luis Obispo County Engineering Department, 1999);*
- *Quarterly and Semi-Annual Groundwater Monitoring Reports for the Los Osos Nitrate Monitoring Program (Cleath & Associates, 2002-2006)*
- *Water Quality Monitoring Results Summary, November 2009-January 2010, Los Osos Valley Groundwater Basin (CHG, 2010);*
- *Semi-Annual Groundwater Monitoring Reports for Los Osos Water Recycling Facility Baseline Groundwater Quality Monitoring (CHG, 2012-2013);*
- *Semi-Annual Groundwater Monitoring Reports for Los Osos Water Recycling Facility Baseline Groundwater Quality Monitoring (Rincon Consultants, 2014, 2016-2023; CHG, 2015, 2024, 2025);*
- *Semi-Annual Groundwater Monitoring Reports for Lower Aquifer (CHG, 2014-2015);*
- *Annual Groundwater Monitoring Reports for Los Osos Basin Plan (CHG, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024);*
- Consumer Confidence Reports (Water Quality Reports) published annually by the water purveyors.

Monitoring Programs:

- *San Luis Obispo County Public Works, Semi-Annual Water Level Monitoring Program. Period of record for individual wells varies; most begin in 1970's and 1980's, and some end in 1999; program remains active.*
- *Purveyor Water Supply Well Monitoring per SWRCB-Division of Drinking Water requirements. Period of record for individual wells varies; program remains active.*
- *2002-2006 Los Osos Nitrate Monitoring Program. Water levels measured quarterly to semi-annually; program ended October 2006.*
- *2012-2024 Los Osos Water Recycling Facility Groundwater Monitoring Program. Water levels measured semi-annually, currently on a June and December schedule; program remains active.*
- *2014-2015 Lower Aquifer Monitoring Program. Water levels measured semi-annually; program ended in 2015 (replaced by LOBP Groundwater Monitoring Program).*

In addition to water quality and water level reporting, this 2025 Annual Report compiles groundwater production, precipitation, and stream flow data from water purveyors (LOCSD, GSWC, and S&T, providing metered production records) and San Luis Obispo County Department of Public Works, providing precipitation at the Los Osos Landfill and stream flow data for Los Osos Creek. Purveyor municipal production data are based on meter readings. Domestic groundwater production estimates through 2022 are based on the last reported water use estimates for 2013 from the LOBP, with minor adjustments in 2016 for the inclusion of additional residences in the Eastern Area (CHG, 2016). Beginning in 2022, domestic groundwater production is based on updated estimates in the Los Osos Water Offset Study (Maddaus Water Management, 2023). Production estimates for community facilities and agricultural wells are based on a soil-moisture budget using local precipitation, land use, and evapotranspiration data (Appendix G).

APPENDIX B
Los Osos Basin Plan
Groundwater Monitoring Program Well Information



APPENDIX C

Field Logs and Laboratory Analytical Reports for 2025 BMC Monitoring

Note: There are no Groundwater Monitoring Field Logs for Wells LA9, LA10, LA20, UA9, and UA3; These wells were sampled by owner (GSWC).

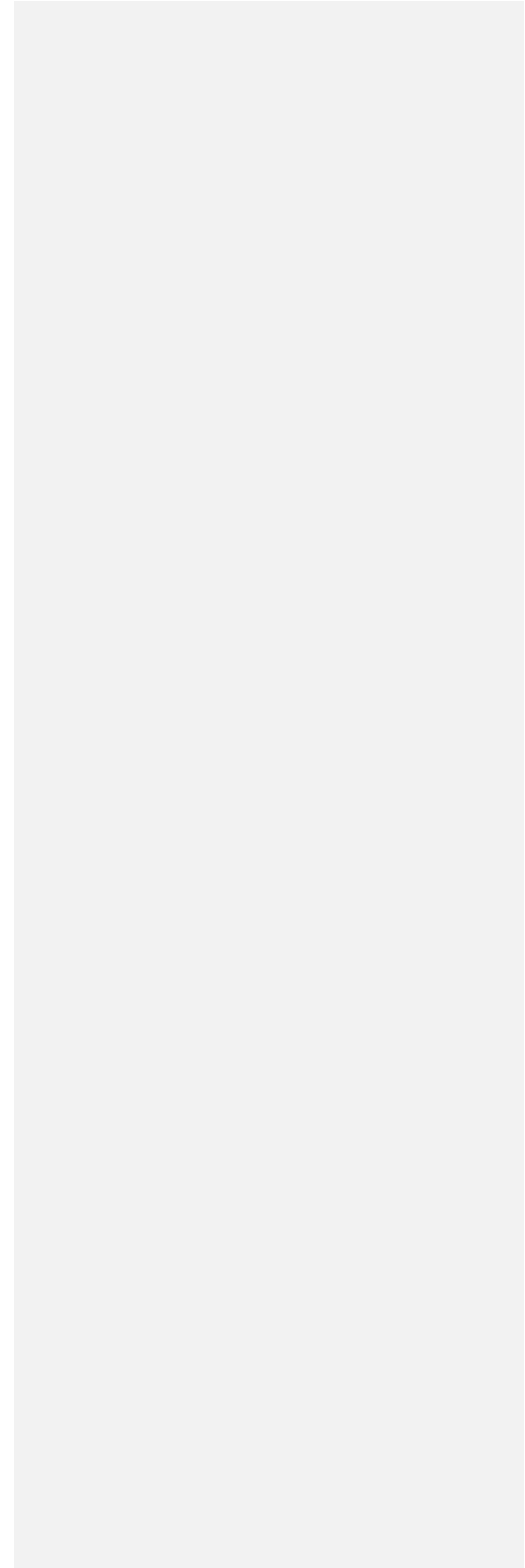
Spring 2025 Field Logs and Analytical Results

Fall 2025 Field Logs and Analytical Results

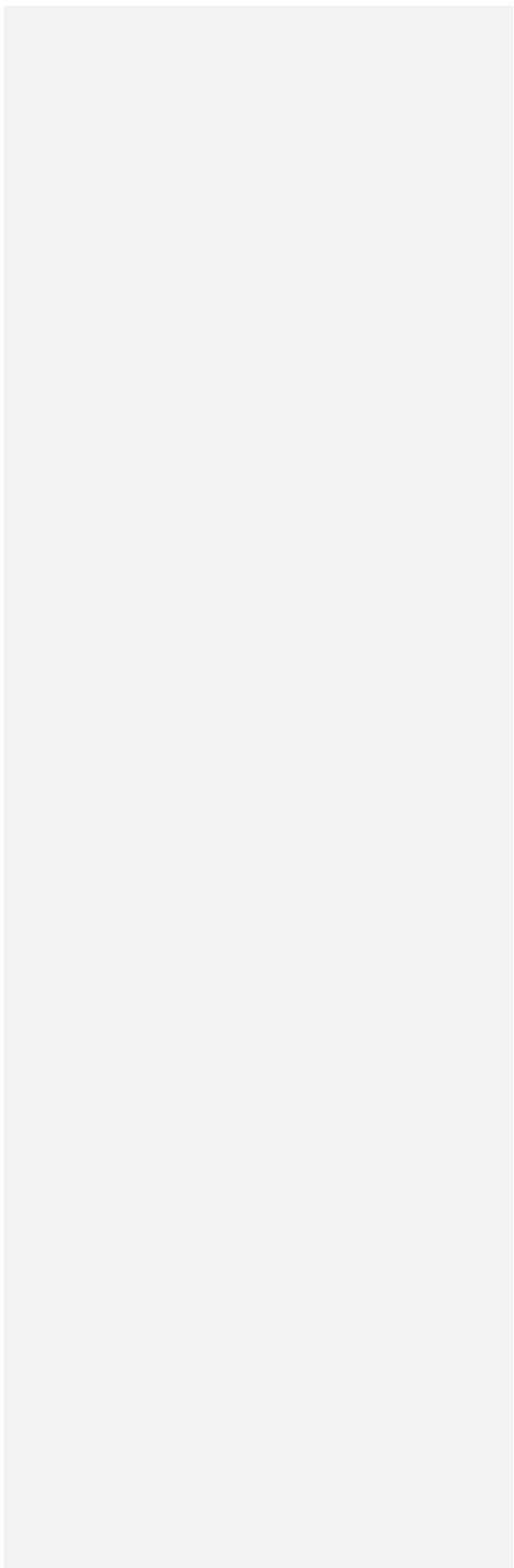
CEC Testing

APPENDIX D

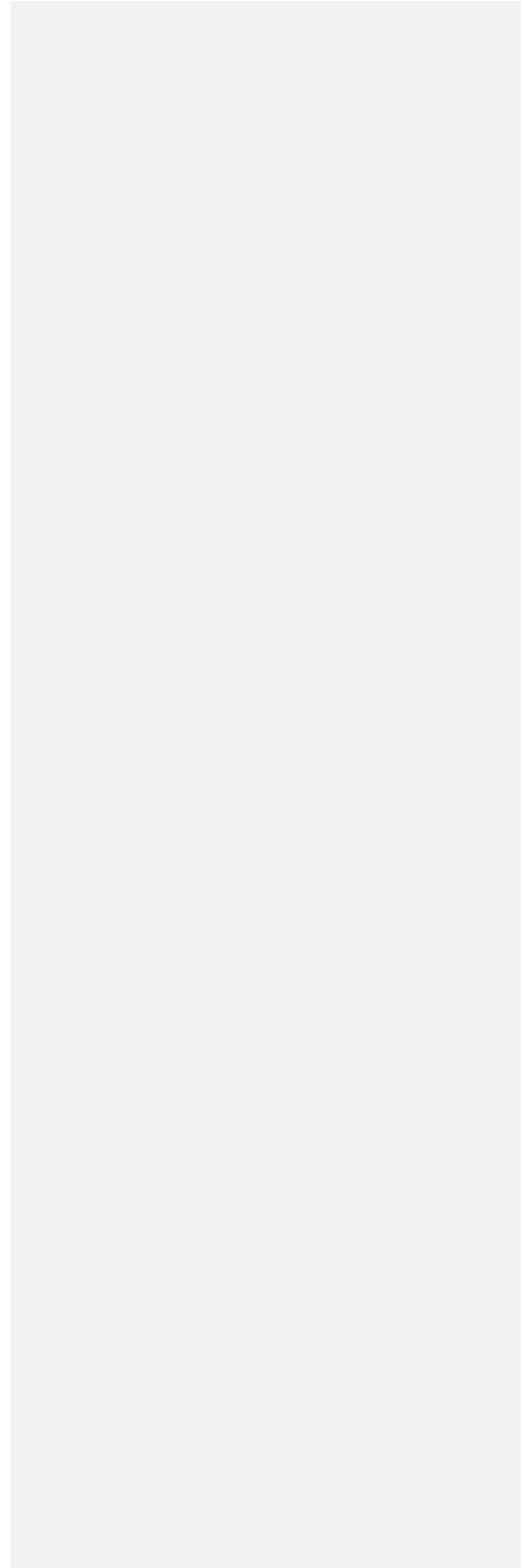
Field Methods



APPENDIX E
Chromium-6 and PFAS Concentrations

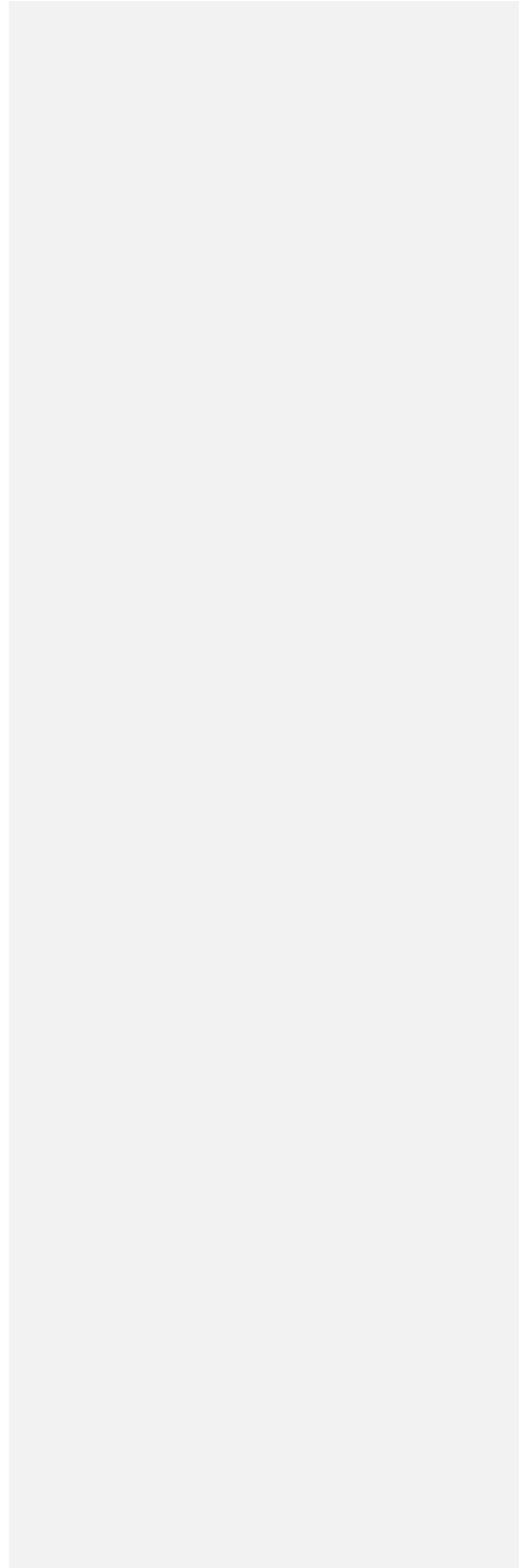


APPENDIX F
Land Use and Water Use Areas
(from LOBP)



APPENDIX G

2025 Agricultural and Community Turf Water Use Estimates

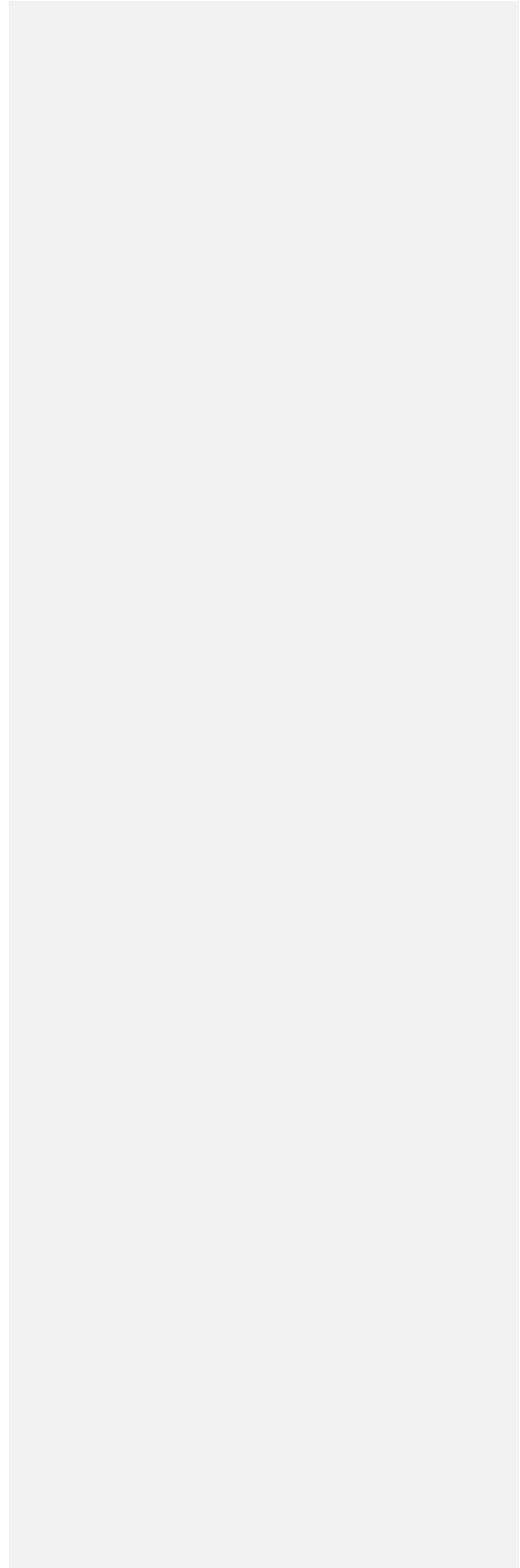


APPENDIX H

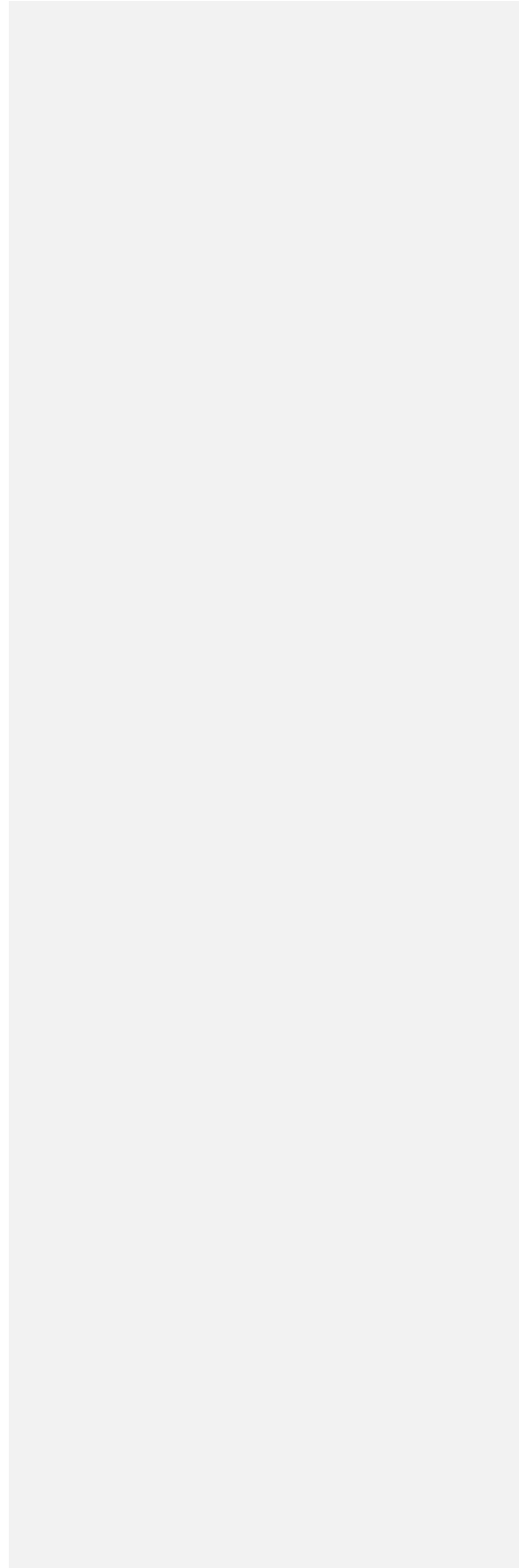
Precipitation and Streamflow Data

Note: Rainfall data for the last six months of 2025 were downloaded from the Station # 727 County Gage Site for report use; summary tables have not yet been published as of this report.

APPENDIX I
Transducer Hydrographs



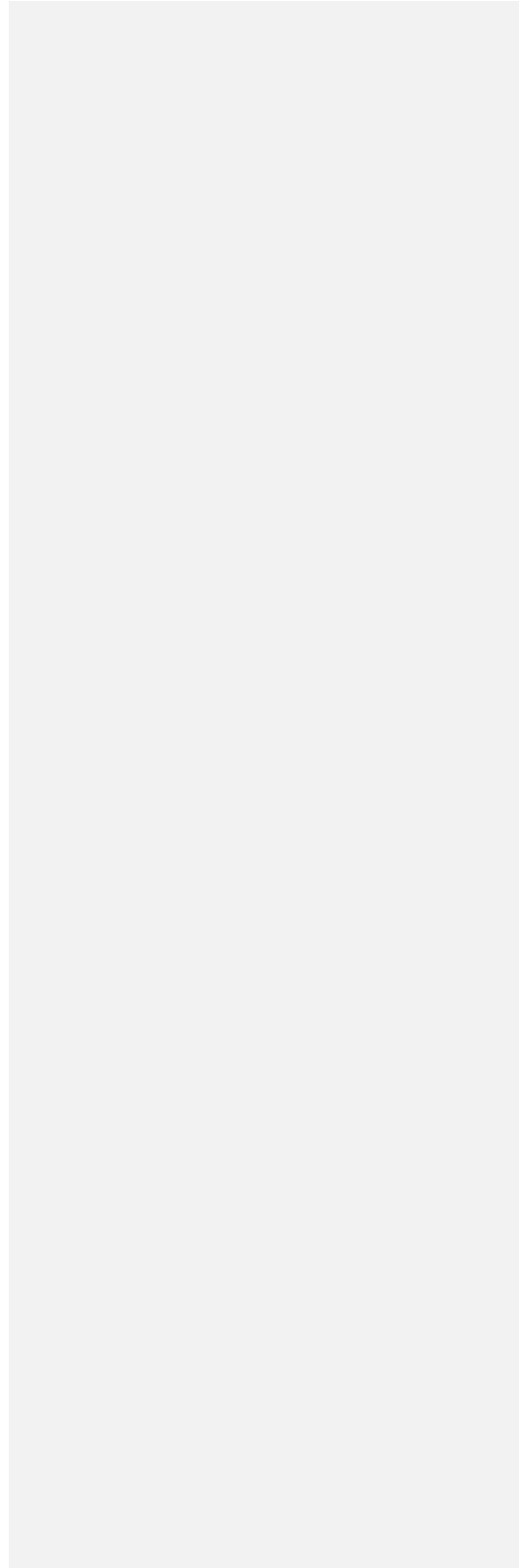
APPENDIX J
Historical Water Quality for Lower Aquifer Wells



APPENDIX K
Modification of LA14 and LA16

APPENDIX L

Groundwater Storage Calculation Example



APPENDIX M

Response to Comments on Public Draft

