

LOS OSOS GROUNDWATER BASIN, BASIN MANAGEMENT COMMITTEE

NOTICE OF MEETING

NOTICE IS HEREBY GIVEN that the Los Osos Groundwater Basin, Basin Management Committee Board of Directors will hold a **Regular Board Meeting at 1:30 P.M. on March 18, 2026** at the **Los Osos Community Services District Boardroom**, located at 2122 9th Street, Suite 106, Los Osos, CA 93402 Members of the public may participate in this meeting in person or via teleconference and/or electronically.

For quick access, go to <https://us04web.zoom.us/j/778762508>

(This link will help connect both your browser and telephone to the call)

If not using a computer, dial 1 (669) 900-6833 or 1 (346) 248-779 and enter **778 762 508**

All persons desiring to speak during any Public Comment can submit a comment by:

- Email at danheimel@ConfluenceES.com by 5:00 PM on the day prior to the Committee meeting.
- Teleconference by phone at 1 (669) 900-6833 and enter **778 762 508**
- Teleconference by phone at 1 (346) 248-7799 and enter **778 762 508**
- Teleconference meeting at <https://us04web.zoom.us/j/778762508>
- Mail by 5:00 PM on the day prior to the Committee meeting to:
Attn: Dan HeimeI (Basin Management Committee)
2122 9th St.
Suite 110
Los Osos, CA 93402

Los Osos Basin Management Committee Website: Go to <https://www.losososbmc.org/> to view agendas, agenda packets, meeting recordings, important documents, and BMC news. Click "join our mailing list" in the lower right-hand corner of the page to receive email updates and meeting notifications.

Directors: Agenda items are numbered for identification purposes only and may not necessarily be considered in numerical order.

NOTE: The Basin Management Committee reserves the right to limit each speaker to three (3) minutes per subject or topic. In compliance with the Americans with Disabilities Act, all possible accommodations will be made for individuals with disabilities, so they may participate in the meeting. Persons who require accommodation for any audio, visual or other disability in order to participate in the meeting of the BMC are encouraged to request such accommodation 48 hours in advance of the meeting from Dan HeimeI at danheimel@ConfluenceES.com.

BASIN MANAGEMENT COMMITTEE BOARD OF DIRECTORS AGENDA

- 1. CALL TO ORDER**
- 2. ROLL CALL**
- 3. PLEDGE OF ALLEGIANCE**
- 4. BOARD MEMBER COMMENTS**

Board members may make brief comments, provide project status updates, or communicate with other directors, staff, or the public regarding non-agenda topics.

5. SPECIAL PRESENTATION

- a. None

6. CONSENT AGENDA

The following routine items listed below are scheduled for consideration as a group. Each item is recommended for approval unless noted and may be approved in their entirety by one motion. Any member of the public who wishes to comment on any Consent Agenda item may do so at this time. Consent items generally require no discussion. However, any Director may request that any item be withdrawn from the Consent Agenda and moved to the "Action Items" portion of the Agenda to permit discussion or to change the recommended course of action. The Board may approve the remainder of the Consent Agenda on one motion.

- a. **Approval of 2026 Financial Reports**
- b. **Approval of Minutes from the Special January 28, 2026 BMC Meeting**

7. PUBLIC COMMENTS ON ITEMS NOT APPEARING ON THE AGENDA

The Basin Management Committee will consider public comments on items not appearing on the agenda and within the subject matter jurisdiction of the Basin Management Committee. The Basin Management Committee cannot enter into a detailed discussion or take any action on any items presented during public comments at this time. Such items may only be referred to the Executive Director or other staff for administrative action or scheduled on a subsequent agenda for discussion. Persons wishing to speak on specific agenda items should do so at the time specified for those items. The presiding Chair shall limit public comments to three minutes.

8. LOS OSOS BASIN UPDATE REPORT

9. ACTION ITEMS

- a. **Los Osos Basin Management Committee Cover Letter to County's Growth Management Ordinance Letter**

Recommendation: Staff recommends the BMC review and consider approval of the draft cover letter for the County's Growth Management Ordinance (GMO) letter and direct Staff to submit to Coastal Commission.

10. ADJOURNMENT

TO: Los Osos Basin Management Committee

FROM: Dan Heibel, Executive Director

DATE: March 18, 2026

SUBJECT: Item 8 – Los Osos Basin Update Report

Recommendations

Staff recommends that the Basin Management Committee (BMC) receive and file the Los Osos Basin Update Report and provide staff with any direction for future discussions. Sections of the Los Osos Basin Update Report that have been updated or significantly changed from the previous meeting's version are underlined and sections of the report that have not had any recent or anticipated updates have been removed.

Discussion

This report was prepared to summarize updates on matters not covered in other agenda items and to provide a general update on Los Osos Basin related activities.

Funding and Financing Programs to Support Basin Plan Implementation

WRFP Grant: On February 11, 2022 the Los Osos Community Services District (LOCSO) submitted an application for a Water Recycled Funding Program (WRFP) grant to develop a transient model and analyze recycled water and supplemental water projects to improve the sustainability of the Los Osos Basin (WRFP Study). Los Osos CSD was notified of the award of the grant in January 2023 and all the required documents were signed and fully executed. On May 17, 2023 the BMC approved Cleath-Harris Geologist (CHG) to complete the WRFP Study and the WRFP Study is underway. A proposed modification to the schedule for completion of the WRFP Study was executed on March 7, 2025 by the State Water Resources Control Board (SWRCB) to allow for additional time to incorporate published data from the Department of Water Resources (DWR) Aerial Electromagnetic (AEM) Survey. The BMC and LOCSO received the agreement amendment from the SWRCB which reflects the updated schedule (see table below). CHG incorporated findings from the AEM data, completed calibration, and held several meetings with the Technical Advisory Committee (TAC) and Peer Review Consultant to discuss the Transient Model calibration and recycled water/supplemental water supply alternatives. The Peer Review Consultant (GSI) has provided feedback to CHG, which is incorporated into the Transient Model Construction/Calibration TM and the groundwater model. In addition to GSI's peer review, the County coordinating an additional review Lynker, and their comments have been incorporated as well. 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, Water Systems Consulting (WSC), provided a presentation on the

current status of the WRF Study Supply Alternatives Analysis. The BMC notified the SWRCB that the Draft Project Submittal Estimated Due Date and subsequent estimated due dates, would be pushed back. The Draft Project Report was submitted on September 9, 2025. In lieu of the Mid-Course Meeting, the SWRCB provided written comments on the WRF Study Report. Since Staff received SWRCB comments later than anticipated, Staff requested and received an extension on the due date of the Final WRF Study from November 15, 2025 until November 30, 2025. The Final Draft WRF report was approved by the Board at the November 12, 2025 Special BMC Meeting. The Final Draft was submitted to the State Board. The State provided the Final Approval Letter on January 21, 2026. BMC Staff are coordinating with the SWRCB on disbursements.

BMC Staff will continue to monitor potential additional grant funding opportunities and bring information on these opportunities to the BMC for consideration as they become available.

Status of BMC Initiatives

Basin Monitoring Program Improvement/Central Coast Community-Based Water Quality Grants

Program Grant: The Central Coast Community-Based Water Quality Grants Program is offered by the Rose Foundation, in collaboration with the Central Coast Water Board and the Bay Foundation of Morro Bay. This program is dedicated to funding water quality improvement projects within the jurisdiction of the Central Coast Regional Water Quality Control Board.

On June 12th, 2024, the BMC authorized the preparation of an application for the Central Coast Community-Based Water Quality Grant Program to request \$150k for the construction of a new, lower aquifer monitoring well. The grant application was submitted on July 12th, 2024 and on September 19th, 2024 BMC Staff received an email indicating that the BMC's application is being recommended to the Rose Foundation's Board of Directors for funding. On September 24th, 2024 the Rose Foundation notified the BMC Executive Director of the grant award selection and sent an agreement for the BMC to execute. To fulfill the requirements of the Rose Foundation Grant the BMC would provide the required 25% (\$50,000) match funding from the Monitoring Network Improvements budget item in the 2025 Calendar Year Budget. The BMC Executive Director executed the grant agreement with the Rose Foundation on October 22nd, 2024. On December 24th, 2024, the grant funds were deposited into the BMC's bank account. On February 18, 2025, LOCSD and the BMC released a Request for Proposals (RFP) for Hydrogeological Consultant Procurement for the Sweet Springs Monitoring Well (Los Osos Basin Lower Aquifer Water Quality Monitoring Well). Proposals were due March 18th, 2025. The Board approved Staff's recommendation of the selection of Cleath-Harris Geologists (CHG) as the hydrogeological consultant for this project at the [May 21, 2025 BMC Meeting](#). Construction has been delayed until mid-2026 due to the need to acquire HCP credits prior to construction. Due to the recent May 2025 designation of Morro Manzanita as a candidate for listing under the California Endangered Species Act, the County is short on available HCP credits for projects. While credits were previously anticipated to be available in March 2026, credits are now anticipated be available in May 2026.

Purveyor Pumping Distribution Optimization: At the October 15, 2025 BMC Meeting, the Board adopted a sustainable yield of 2,000 AFY for CY 2026. This Sustainable Yield is based on an optimized pumping distribution over 50 years. While the Purveyors' current pumping does not follow this optimized pumping distribution, the Purveyors are making efforts to optimize their pumping distribution. This section of the Los Osos Basin Update Report is intended to provide updates and challenges related to the efforts to the pumping distribution optimization. There are operational challenges associated with optimizing the pumping distribution, including nitrate and chrome 6 blending limitations, production limitations, etc. Staff met with CHG on February 24, 2026 to discuss potential infrastructure modifications and/or additions to existing infrastructure necessary to achieve the optimized pumping distribution.

Sustainable Yield: At its October 27th, 2021 Meeting, the BMC unanimously approved an updated Sustainable Yield estimate of 2,380 Acre-Feet per Year (AFY) for Calendar Year 2022 and at its December 6th, 2023 Meeting, the BMC unanimously approved retaining the current Sustainable Yield estimate of 2,380 AFY for CY 2024 for the following reasons: 1) No new infrastructure, not already considered in the 2022 Sustainable Yield Estimate, has been constructed; 2) estimates for the development of the Broderson Mound and long-term average rainfall were updated and incorporated into the CY 2022 Sustainable Yield Estimate and are not anticipated to change significantly on a year-over-year basis; 3) no significant hydrogeologic investigations have been conducted that would warrant an update to the steady-state groundwater model utilized to develop the Sustainable Yield Estimate. For these same reasons, the BMC unanimously approved retaining the current Sustainable Yield Estimate of 2,380 AFY for CY 2025 at its [October 16th, 2024 Meeting](#). Staff brought a presentation on the calculation of the Sustainable Yield estimate for 2026 to the October 2, 2025 Special BMC Meeting. The Board approved the proposed CY 2026 Sustainable Yield of 2,000 AFY at the [October 15, 2025 BMC Meeting](#).

Basin Metric Evaluation: Since 2019, the BMC has made significant improvements to its Groundwater Monitoring Program, including construction of the Sweet Springs/Cuesta-by-the-Sea and Skyline Monitoring Wells and modifications to Lower Aquifer (LA) 13, 14, and 16 wells. These additional/enhanced monitoring locations provide an opportunity to improve the Basin Metrics that the BMC utilizes to assess the health of the Basin. Additionally, the modification of LA 14 and 16 to dedicated Lower Aquifer Zone E monitoring wells changed the depth of the screened intervals so that water level readings collected at these wells now reflect Zone E water level elevations only and not the combined water level elevation of Zone D and E and thus the Water Level Metric Methodology needs to be modified to account for this change. The survey for wellhead elevations of Wells LA 16, LA 42, LA 43, and LA 44 has been completed. The new elevations will be included in the Fall Water Level Data presented to the BMC. See Item 9c in the agenda packet from the [August 20, 2025 BMC Meeting](#) for more details on the scope of the surveying.

CHG is working on an initiative to evaluate the existing metrics and provide recommendations to the BMC for changes that can be made to incorporate the improvements to the Groundwater Monitoring Program and will bring them to the BMC for their consideration at a future date. The Board approved

CHG's proposal for metric review and update services at the [November 12, 2025 BMC Meeting](#). Updated metrics will be brought to the Board at a future meeting.

Transient Groundwater Model: See update under WRFP Grant above.

Lower Aquifer Nitrate Investigation: On October 19th, 2022 the BMC authorized Calendar Year (CY) 2022 funding to perform additional Nitrate Source Investigation to better understand the source of Nitrate impacting lower aquifer production wells. However, due to the inability to obtain well owner permission to sample the desired wells, much of that work was not completed in 2022. Subsequently, the Regional Water Quality Control Board (RWQCB) staff reviewed the investigation information and findings available to date and provided a presentation to the BMC at its March 15th, 2023 Meeting. BMC Party Staff is working with RWQCB Staff to identify potential additional investigations to help better inform the sources of the nitrate in the LA8 Well. On March 8th, 2024 and April 29th, 2024 BMC Staff received updates from RWQCB Staff on the status of their investigation into the source of nitrate impacting water supply wells in the western Los Osos Valley Groundwater Basin.

County Planning's Land Use Planning Process Update

Guide to Planning Information for Development in Los Osos:

This website provides relevant planning information for the community of Los Osos, including the Growth Management Ordinance, the Los Osos Habitat Conservation Plan, and frequently asked questions: <https://www.slocounty.ca.gov/departments/planning-building/grid-items/communities-villages/los-osos>

Los Osos Community Plan:

The Los Osos Community Plan (LOCP) was approved by the County Board of Supervisors on October 29, 2024. 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 [Estero Area Plan](#) are now in effect.

CY 2026 Los Osos Growth Rate

The BMC provided the County of San Luis Obispo's Groundwater Sustainability Director with the [Los Osos Basin Management Committee 2026 Growth Rate Recommendation Letter](#), which outlines the BMC's recommendation for a CY 2026 growth rate of 0%. The County's Groundwater Sustainability Director wrote the County Board of Supervisors a letter recommending a CY 2026 growth rate of 0.4% and included the BMC's letter as an attachment. On December 16, 2025, the County Board of Supervisors adopted a resolution establishing the maximum annual allocation for Calendar Year 2026 for the community of Los Osos of 25 new dwelling units (growth rate of 0.4%). At the January 28, 2026 BMC Meeting, the Board directed Staff to prepare a cover letter to attach to the GMO letters and send to Coastal Commission.

Los Osos Habitat Conservation Plan (HCP):

On December 10th, 2024, the County Board of Supervisors 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 Board in February 2025 where the Board adopted the fee which will allow applicants to pay into the LOHCP to offset disturbance caused by development. Availability of LOHCP credits is anticipated in May 2026.

<https://www.slocounty.ca.gov/departments/planning-building/grid-items/communities-villages/los-osos>

Title 19 Retrofit-to-Build

No Title 19 Retrofit-to-Build certificates were issued between October 1 – December 31, 2025.

The following table summarizes Title 19 Retrofit-to-Build certificates which have been issued through December 31, 2025.

Title 19 Retrofit-to-Build Certificates	
Total Issued (since 2008)	Issued in Oct-Dec 2025
65	0

Please see the Los Osos page on County’s website linked [here](#) for more information on Title 19 certificates and growth in Los Osos.

Land Use Permits

Only land use permits for projects that have seen movement in 2025 are included in the table below. More detailed information on land use in Los Osos is available on the [LOCAC website](#).

Los Osos Land Use Permits			
	Pending	Approved in Nov/Dec	2025 Total Approved
Single-Family Residence	11	1	3
Mixed-Use	2	-	-

County Public Works’ Los Osos Water Recycling Facility Project Update

The following table summarizes flows from the LOWRF based on the available data.

2026 LOWRF Wastewater and Recycled Water Flows (Acre Feet)

Year	Month	Influent	Broderson	Bayridge	Ag Users	Urban Irrigation*	Effluent
2026	Jan	55.44	46.98	1.31	0.002	0.78	51.34
2026	Feb	54.80	35.04	1.21	0.02	1.20	40.55

*Urban Irrigation includes recycled water usage at Sea Pines, Los Osos Middle School, Monarch Grove, Los Osos Valley Road Median, and Los Osos Community Park.

LOWRF Project Updates:

- As of July 2025, the County has connected the Los Osos Community Park, Los Osos Middle School, and Monarch Grove Elementary to the LOWRF recycled water distribution system. The County received funding for these connections through the ARPA grant program.

Los Osos CSD’s Water Resiliency Intertie Project Update

The Los Osos Community Services District (CSD) continues to make progress towards implementation of the Water Resiliency Intertie Project (Intertie Project) since they began investigations into alternative water supply sources in 2021. Efforts to date include the preparation of a preliminary design report, environmental review, and the pursuit of funding sources. The conceptual strategy involves using supplemental water from the State Water Project during wet years as an offset for groundwater pumping, allowing for long-term recovery of the Los Osos Groundwater Basin. During dry years, the CSD would rely more on groundwater. This approach enhances long-term resiliency while avoiding overreliance on outside sources.

At the [September 4, 2025 CSD Board meeting](#), the Board approved a contract with Water Systems Consulting in the amount of \$854,044 to provide design services for the project. The design work is estimated to take about one year to complete.

Sustainable Groundwater Management Act (SGMA)

SGMA Overview: SGMA took effect on January 1, 2015.¹ SGMA provides new authorities to local agencies with water supply, water management or land use responsibilities and requires various actions be taken in order to achieve sustainable groundwater management in high and medium priority groundwater basins. Los Osos Valley Groundwater Basin (Los Osos Basin) was subject to SGMA based on the 2014 Basin

¹ On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package, composed of [AB 1739 \(Dickinson\)](#), [SB 1168 \(Pavley\)](#), and [SB 1319 \(Pavley\)](#), collectively known as SGMA

Prioritization by the California Department of Water Resources (DWR) that listed the Los Osos Basin as high priority and in critical conditions of overdraft.²

Basin Prioritization: On December 18, 2019, DWR released the SGMA 2019 Basin Prioritizations. Basins or subbasins reassess to low or very low priority basins or subbasins are not subject to SGMA regulations. A summary of DWR's Final SGMA Prioritizations for the Los Osos Area Subbasin and Warden Creek Subbasin are listed below:

- Los Osos Area Subbasin is listed as **very low** priority for SGMA³ and in critical conditions of overdraft⁴
- SGMA does not apply to the portions of Los Osos Basin that are adjudicated provided that certain requirements are met (Water Code §10720.8).
- Warden Creek Subbasin is listed as **very low** priority for SGMA³

For more information on DWR's basin boundary modification and prioritization process, please visit: <https://water.ca.gov/Programs/Groundwater-Management/Basin-Prioritization>

² SGMA mandates that all groundwater basins identified by DWR as high- or medium-priority by January 31, 2015, must have groundwater sustainability agencies established by June 30, 2017. The act also requires that all high- and medium-priority basins classified as being subject to critical conditions of overdraft in Bulletin 118, as of January 1, 2017, be covered by groundwater sustainability plans, or their equivalent, by January 31, 2020. Groundwater sustainability plans, or their equivalent, must be established for all other high- and medium-priority basins by January 31, 2022.

³ As noted by DWR, the priority for the subbasin has been set to very low (0 total priority points) as a result of conditions being met under sub-component C of the Draft SGMA 2019 Basin Prioritizations.

⁴ Critical conditions of overdraft have been identified in 21 groundwater basins as described in Bulletin 118 (Water Code Section 12924). Bulletin 118 (updates 2003) defines a groundwater basin subject to condition of critical overdraft as: "A basin is subject to critical conditions of overdraft when continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts."

Additional Attachments:

Updated Status of Basin Plan Infrastructure Projects

Update on Status of Basin Plan Infrastructure Projects

Program Name	Project Name	Parties Involved	BMC Budgeted Amount	Funding Status	Anticipated Planning/Pre-Construction Cost	Anticipated Capital Cost	Status/Notes
Program A – Shift groundwater production from Lower Aquifer to Upper Aquifer	Water Systems Interconnection	LOCS D/ GSWC	NA	NA	NA	NA	Completed
	Upper Aquifer Well (8 th Street)	LOCS D	NA	Fully Funded	NA	\$307,000	Completed
	South Bay Well Nitrate Removal	LOCS D	NA	NA	NA	NA	Completed
	Palisades Well Modifications	LOCS D	NA	NA	NA	NA	Completed
	Blending Project (Skyline Well)	GSWC	NA	NA	NA	NA	Completed
	Water Meters	S&T	NA	NA	NA	NA	Completed
Program B - Shift groundwater production from Lower Aquifer to Upper Aquifer	LOCS D Wells (Upper Aquifer)	LOCS D		Not Funded	TBD	BMP: \$2.7 mil	Project not initiated
	GSWC Wells (Upper Aquifer)	GSWC		Not Funded	TBD	BMP: \$3.2 mil	Project not initiated
	Community Nitrate Removal Facility	LOCS D/GSWC/S&T	TBD	Partial, GSWC portion funded	TBD	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.
Program C - Shift production within the Lower Aquifer from the Western Area to the Central Area of the Basin	Expansion Well No. 1 (Los Olivos)	GSWC	NA	NA	NA	NA	Completed
	Expansion Well No. 2 (Lower Aquifer)	LOCS D		LOCS D	TBD	BMP: \$2.5 mil	<u>The Bay Oaks well is completed and operational as of January 2026.</u>
	Expansion Well 3 (Lower Aquifer) and LOVR Water Main Upgrade	GSWC/LOCS D		Cooperative Funding	TBD	BMP: \$1.6 mil	The deferral from Program C for this project was removed by the BMC on August 16th, 2023.
	LOVR Water Main Upgrade	GSWC		May be deferred	TBD	BMP: \$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	TBD	BMP: \$30,000	Currently on hold pending further evaluation of the project.
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 – Groundwater Monitoring Plan	New Zone D/E lower aquifer monitoring well in Cuesta by the Sea	All Parties	NA	NA	NA	NA	Completed
Program U - Urban Water	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.

Program Name	Project Name	Parties Involved	BMC Budgeted Amount	Funding Status	Anticipated Planning/Pre-Construction Cost	Anticipated Capital Cost	Status/Notes
Reinvestment Program	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.

TO: Los Osos Basin Management Committee

FROM: Dan Heimerl, Executive Director

DATE: March 18, 2026

SUBJECT: Item 9a – Los Osos Basin Management Committee Cover Letter to County’s Growth Management Ordinance Letter

Recommendation

Staff recommends the BMC review and consider approval of the draft cover letter for the County’s Growth Management Ordinance (GMO) letter and direct Staff to submit to Coastal Commission.

Discussion

At the [January 28, 2026 BMC meeting](#), the Board directed Staff to prepare and receive approval of a draft cover letter (Attachment 1) to accompany the County’s GMO letter for submittal to the Coastal Commission. The County’s GMO letter was brought to the County Board of Supervisors (BOS) at the [December 16, 2025 County BOS Meeting](#), and includes the BMC’s recommendation letter for Calendar Year 2026 growth rate.

Attachments

1. Los Osos Basin Management Committee 2026 Growth Rate Recommendation Cover Letter (includes BMC GMO Letter and County GMO Letter)

TO: California Coastal Commission

FROM: Los Osos Basin Management Committee

DATE: March 18, 2026

SUBJECT: Los Osos Basin Management Committee 2026 Growth Rate Recommendation Cover Letter

The Los Osos Basin Management Committee (Los Osos BMC) consist of representatives from the Los Osos Community Services District, Golden State Water Company, S&T Mutual Water Company, and the County of San Luis Obispo. The formation of the Los Osos BMC was part of the court approved Stipulated Judgment in October 2015. The Los Osos BMC oversees the implementation of the Los Osos Basin Plan in the adjudicated area of the locally define groundwater basin in Los Osos Valley - Los Osos Area Subbasin (DWR Basin 3-8.01). The BMC is providing this cover letter and attachments to ensure Coastal Commission receives this input directly from the BMC regarding the permitted Growth Rate in the community of Los Osos.

At the December 15, 2020 County Board of Supervisors (BOS) meeting, the Growth Management Ordinance (GMO) was amended to adopt the updated Los Osos Community Plan 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 Board of Supervisors 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 Board 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 (see Attachment 1).

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% (see Attachment 2). 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%.

Attachments

1. Los Osos Basin Management Committee 2026 Growth Rate Recommendation Letter (October 24, 2025)
2. Groundwater Sustainability Director Recommendation for Maximum Number of New Dwelling Units Allowed Within the Los Osos Urban Reserve Line for Calendar Year 2026 (November 6, 2025)

TO: Blaine Reely, Director of Groundwater Sustainability, County of San Luis Obispo

FROM: Los Osos Basin Management Committee

DATE: October 24, 2025

SUBJECT: Los Osos Basin Management Committee 2026 Growth Rate Recommendation

At [the October 15, 2025 Los Osos Basin Management Committee Board of Directors Meeting](#), the Board voted 3-0, with the County abstaining, to provide the County with the following letter and recommendation.

Executive Summary/Recommendation

The San Luis Obispo County (County) Board of Supervisors (BOS) will vote on a Calendar Year (CY) 2026 Growth Rate for the Los Osos Urban Reserve Line (Los Osos URL) in December 2025. The County's Title 26 Growth Management Ordinance (GMO) (Attachment 1) prescribes a Growth Rate of 0.6% for CY 2026, but this may be adjusted by the BOS as needed. The BMC recommends the County BOS adopt a CY 2026 growth rate of 0% 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.

Notwithstanding the foregoing, this recommendation should not be construed as a recommendation with respect to the appropriateness of issuing permits, in accordance with the provisions of the County's Title 26 (Growth Management Ordinance) and Title 19 (Retrofit to Build) Code of Regulations, to property owners that were provided notice regarding allocations for new development in CY 2025.

Introduction

The Los Osos Basin Management Committee (BMC) prepared the following letter to the County of San Luis Obispo's (County) Groundwater Sustainability Director to provide its recommendations for the County Board of Supervisor's (County BOS) consideration of the Growth Rate for within the Los Osos Urban Reserve Line (Los Osos URL) for Calendar Year (CY) 2026 as outlined in the County's Title 26 Growth Management Ordinance (GMO).

Background

The Los Osos Groundwater Basin (Basin) is the sole drinking water source for the community of Los Osos. Rapid development in the 1970-80's led to rapid increases in water demand and unsustainable levels of groundwater pumping in the Basin. This resulted in seawater intrusion in the lower aquifer,

estimated to have intruded at rates exceeding 500 feet/year. Additionally, decades of high-density septic tank discharges contaminated the upper aquifer with nitrate concentrations above the Maximum Contaminant Level (MCL), making it unsafe to drink.

These conditions prompted several actions including: the California Department of Water Resources declaring the Basin to be in critical conditions of overdraft, a Basin adjudication, formation of the BMC, and development of the 2015 Updated Basin Plan for the Los Osos Groundwater Basin (Basin Plan) (Attachment 2) that outlines the strategy to bring the Basin back into sustainability. Through implementation of the Basin Plan and other measures, the BMC and the community of Los Osos have made significant progress toward halting seawater intrusion, raising groundwater levels, and reducing nitrate contamination.

The Los Osos Community Plan (Community Plan) (Attachment 3) is a planning document adopted by the County and the California Coastal Commission to guide land use, development, infrastructure, and environmental mitigation in the Los Osos area. It is part of the County's General Plan and Land Use Element, and it integrates with other regional plans such as the Estero Area Plan, the Los Osos Habitat Conservation Plan, and the GMO.

The Community Plan focuses on sustainable development within the constraints of limited water resources, sensitive environmental habitats, and infrastructure capacity in Los Osos. The Community Plan includes land use designations, development standards, infrastructure planning, environmental resource management, and community goals and policies. The Plan's development policies are implemented through the GMO's annual dwelling unit allocations and growth rate caps. The GMO was established by the County to regulate residential development in unincorporated areas, ensuring that growth aligns with the capacity of local resources and is tied to the BMC's Sustainable Yield estimate and Basin Yield Metric.

The GMO ordinance sets phased annual growth limits—starting at 0.4% in 2025, increasing to 0.8% by 2027 and adjusting based on a five-year rolling average of the Basin Yield Metric in 2028 and beyond.

The GMO specifies the proposed incremental growth rate for the Los Osos URL for 2025-2027 outlined below:

- 2025: 0.4%
- 2026: 0.6%
- 2027: 0.8%

The Stipulated Judgement prepared as a result of the Los Osos Basin adjudication requires that the BMC adopt a Sustainable Yield estimate on an annual basis. The Sustainable Yield estimate is utilized as part of the equation for calculating the Basin Yield Metric (estimated annual groundwater production/adopted Sustainable Yield estimate) and is used to assess progress toward achieving a production of 80% of the Sustainable Yield estimate and to determine the growth rate set each year under the GMO. As described in the GMO, the BMC annually assesses Basin conditions and provides the

County Groundwater Sustainability Director with a recommendation letter each year for their consideration prior to the adoption of the growth rate for the upcoming year.

For 2028 and onward, the GMO identifies that the growth rate for the Los Osos URL is tied to the 5-year rolling average of the Basin Yield Metric, see framework below.

5-Year Rolling Average of Annual Basin Yield Metric	Annual Growth Rate
≤80%	1.0%
>80% to 81%	0.8%
>81% to 82%	0.6%
>82% to 83%	0.4%
>83% to 84%	0.2%
>84%	0.0%

Overview of Basin Conditions

The following section provides an overview of modeled predictions and observed conditions for the Los Osos Basin. The BMC utilizes this combination of groundwater modeling to predict potential future Basin conditions and groundwater monitoring to observe current conditions in its assessment of overall groundwater sustainability for the Basin.

CY 2026 Sustainable Yield Estimate

In the Stipulated Judgement (SJ) and the Basin Plan, the BMC Parties agreed on a framework and methodology for estimating and updating the Sustainable Yield for the Los Osos Basin (Basin), referred to as Sustainable Yield_x, where “X” represents the Sustainable Yield estimate for that year. The SJ and Basin Plan require the BMC to annually evaluate, confirm and set the Sustainable Yield_x based on the best available data and evidence.

Section 6.3.2 (A) of the Basin Plan defines Sustainable Yield_x as:

Sustainable Yield_x equals the maximum amount of groundwater that may be extracted from the Basin in Year X without causing seawater to advance further inland and with no active well producing water with chloride concentrations above 250 mg/l...

The Sustainable Yield_x is determined for a given set of infrastructure in place by using the Model to determine the maximum amount of groundwater extractions that may occur with a stable seawater intrusion front, and no active well producing water with chloride concentrations above 250 mg/l.

The amount of water that can be extracted under these criteria has historically been determined using the Steady State Groundwater Model (Steady State Model) created for the Basin. In 2025, the BMC developed a new Transient Groundwater Model (Transient Model) for the Basin. The Transient Model is a tool that provides a calibrated, dynamic simulation of groundwater levels and seawater intrusion in

the Basin and will be utilized by the BMC to assist in its management of this critical resource for the community of Los Osos. The Transient Model is an improvement upon the Steady State Model that the BMC utilized previously for developing Sustainable Yield estimates and predicting potential future conditions in the Basin. The Transient Model allows for prediction of impacts from variable hydrology (i.e. extended droughts, above average rainfall periods, etc.) and incorporates new information on the structure (i.e. depth, layering, etc.) of the Basin that was not previously available.

The Transient Model was utilized to develop a Sustainable Yield estimate for Calendar Year 2026. The results of the Sustainable Yield 2026 Baseline Scenario indicate that a production scenario, which includes the assumption that the Current Condition pumping distribution (i.e. average distribution of pumping from 2019 – 2023) continues for 5 years before the purveyors (i.e. Los Osos Community Services District, Golden State Water Company, and S & T Mutual Water Company) transition to an optimized distribution of pumping, would allow for an average of 2,000 AFY of groundwater to be extracted from the Basin without exceeding the criteria established in the Adaptive Method for seawater intrusion over a 50-yr period (see Attachment 4 for more details on the 2026 SY Baseline Scenario). At the October 15, 2025 BMC meeting (see Attachment 5), the Board approved the Sustainable Yield estimate of 2,000 AFY for Calendar Year 2026.

2024 Annual Monitoring Report

The data for the Basin provided below is from the 2024 Los Osos Basin Annual Monitoring Report (AMR) and covers the reporting period from January 1, 2024 - December 31, 2024. 2024 AMR data is provided for use in guiding the BMC's recommendations regarding the 2026 GMO growth rate because the 2026 growth rate will be adopted prior to the completion of the 2025 reporting year. See the report in Attachment 6.

The BMC's hydrogeologist prepares an AMR for each calendar year which describes activities related to the Los Osos Basin Plan (LOBP) Groundwater Monitoring Program and provides results and interpretation of these activities for Calendar Year 2024. The LOBP Groundwater Monitoring Program is necessary to accomplish the following continuing goals set forth in Section 2.4 of the LOBP:

- 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.*

Key data and findings from the 2024 AMR are summarized below.

Groundwater Production. Groundwater production for the Basin totaled an estimated 1,690 acre-feet in the 2024 calendar year, which is an increase of 40 acre-feet from 2023. Purveyor groundwater production increased by approximately 40 acre-feet, while production for community facilities decreased by an estimated 10 acre-feet in 2024, compared to 2023. Production for agricultural irrigation increased by an

estimated 10 acre-feet, and private domestic production, which was recalculated based on a new study completed in 2023, remained constant at 110 acre-feet in 2024.

Groundwater Production		
Description	2023 Production (AF)	2024 Production (AF)
Los Osos Community Services District	487	491
Golden State Water Company	470	505
S&T Mutual Water Company	27	26
Purveyor Subtotal (metered)	984	1,022
Domestic Wells ¹	110	110
Community Facilities ¹	60	50
Agricultural Wells ¹	500	510
Total Estimated Production	1,650	1,690

¹Rounded to the nearest 10 acre-feet. Production from non-metered wells (Domestic, Community, Agricultural) estimated, see 2024 AMR.

Basin Metrics The Basin Plan established several Basin metrics to evaluate nitrate impacts to the Upper Aquifer, seawater intrusion into the Lower Aquifer, and the effect of BMC management efforts. 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 Basin Plan programs in the Basin through objective, numerical criteria that can be tracked over time. The status of key Basin metrics in Calendar Year 2024 is summarized below.

2024 LOBP Metric Summary			
Metric	LOBP Goal	Calculated Value from 2024 Data	Change in Condition from 2023
Basin Yield Metric	80 or less	71	Increase from 69 (deterioration)
Water Level Metric	8 feet above mean sea level or higher	4.1 feet above mean sea level	Decrease from 4.3 feet (deterioration)
Chloride Metric	100 mg/L or lower	249 mg/L	Increase from 199 mg/L (deterioration)
Nitrate Metric	10 mg/L or lower	15.7 mg/L (NO3-N)	Increase from 14.2 mg/L (deterioration)

Basin Yield Metric The Basin Yield Metric (estimated annual groundwater production/adopted Sustainable Yield estimate) compares the estimated amount of groundwater extracted (1,690 AFY) with the adopted Sustainable Yield (2,380 AFY for 2024). The Basin Plan goal for the Basin Yield Metric is 80 or less. The Basin Yield Metric for 2024 was 71, however, if a lower Sustainable Yield estimate utilizing

- Urban Reuse: Conversion of existing schools, park, and cemetery irrigation systems to be served by the existing non-potable recycled water distribution system and offset potable water deliveries.
 - Agriculture Reuse: Distribution of recycled water to agriculture users to offset groundwater pumping.
2. Indirect Potable Reuse (IPR), Groundwater Replenishment
 - IPR, Creek Discharge: Discharge to Los Osos Creek to enhance groundwater recharge.
 - IPR, Injection for Seawater Barrier: Injection of advanced purified water into the lower aquifer of the Los Osos Basin to increase recharge and create a seawater intrusion barrier.
 3. New Potable Supplies
 - Direct Potable Reuse (DPR): Delivery of advanced purified water to the drinking water distribution system to offset groundwater pumping.
 - Upper Aquifer Nitrate Treatment: Regional Nitrate Treatment Facility to allow for enhanced use of nitrate contaminated upper aquifer supplies.
 - Surface Water Intertie Pipeline: Interconnection with regional surface water conveyance system to provide access to State Water or other supplies to enable conjunctive use.

The WRF Study will help inform the BMC and Purveyors on which projects are most effective for improving the sustainability of the Basin and will guide implementation of future projects.

Los Osos Community Services District Resiliency Intertie Project

The Los Osos Community Services District continues to make progress towards implementation of the Water Resiliency Intertie Project (Intertie Project) since they began investigations into alternative water supply sources in 2021. Efforts to date include the preparation of a preliminary design report, environmental review, and the pursuit of funding sources. At the September 4, 2025 CSD Board meeting, the Board approved a contract in the amount of \$854,044 design of the intertie pipeline. The design project is anticipated to take approximately one year to complete.

Basin Metric Updates

The BMC has provided direction to BMC Staff to update the Basin Metrics utilized 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). The updated metrics will allow the BMC to consider inclusion of new (e.g. Cuesta by the Sea, Skyline, Sweet Springs) or modified (LA13 LA14, LA16) monitoring wells and other modification to improve the effectiveness of the metrics for informing the BMC on the status of Basin sustainability.

Transient Model Updates

The County intends to utilize the Transient Model to evaluate growth scenarios associated with the GMO. The County has contracted with an independent hydrogeologic consultant to run additional scenarios and propose refinements to the model. Any refinements made to the model will be in

coordination and agreement with the WRF Study Technical Advisory Committee and model developer (Cleath-Harris Geologists).

2026 Los Osos BMC Line Growth Rate Recommendations

With the development of the Transient Model and adoption of a Sustainable Yield estimate of 2,000 AFY for Calendar Year 2026, the BMC has determined that the Sustainable Yield for the Basin has been significantly reduced from previous estimates. Comparing the updated Sustainable Yield estimate (2,000 AFY) for the Basin to historic production estimates for the last 5 years (1,830 AFY), incorporating updated estimates for Domestic pumpers, it could be estimated that a Basin Yield Metric of 91.5 (i.e. 1,830 AFY/2000 AFY) would be a more appropriate estimate than the value included in the 2024 AMR (71).

Due to the reduced Sustainable Yield estimate for Calendar Year 2026, observed conditions in the 2024 AMR and uncertainty regarding transient model results, the BMC strongly recommends that the County BOS not increase the growth rate for the Los Osos URL in 2026 to 0.6% rate as outlined in the GMO. **The BMC recommends the County BOS adopt a CY 2026 growth rate of 0%** 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.

Notwithstanding the foregoing, this recommendation should not be construed as a recommendation with respect to the appropriateness of issuing permits, in accordance with the provisions of the County's Title 26 (Growth Management Ordinance) and Title 19 (Retrofit to Build) Code of Regulations, to property owners that were provided notice regarding allocations for new development in CY 2025.

Sincerely,



Digitally signed by Mark Zimmer
Date: 2025.10.24 08:39:40 -07'00'

Mark Zimmer, Chair of the Los Osos Basin Management Committee

Attachments

1. [Title 26 - GROWTH MANAGEMENT | County Code | San Luis Obispo County, CA | Municode Library](#)
2. [Updated Basin Plan for the Los Osos Groundwater Basin](#)
3. [Los Osos Community Plan \(December 2024\)](#)
4. [Sustainable Yield 2026 Baseline Scenario Results for the Los Osos Basin - Los Osos Groundwater Basin](#)
5. [October 15, 2025 Regular BMC Meeting](#)
6. [2024 LOBMC Annual Report - Los Osos Groundwater Basin](#)



Trevor Keith, Director
Department of Planning & Building
County of San Luis Obispo
976 Osos Street
San Luis Obispo, CA 93901
tkeith@co.slo.ca.us
SENT VIA EMAIL ONLY

November 6, 2025

Re: Groundwater Sustainability Director Recommendation for Maximum Number of New Dwelling Units Allowed within the Los Osos Urban Reserve Line for Calendar Year 2026

Dear Trevor:

Per the requirements set forth in Section 26.01.070(11) of the County's Growth Management Ordinance, Title 26 of the San Luis Obispo County Code (Ordinance), the Department of Planning and Building (Planning Department) shall conduct a review of the best available groundwater data and provide a recommendation on the maximum annual growth rate within the Los Osos Urban Reserve Line to the Board of Supervisors. The Planning Department's review "shall include consideration of recommendations from the Los Osos Basin Management Committee and the groundwater sustainability director's review of such recommendations.". Per the referenced section of the Ordinance, the maximum annual growth rate within the Los Osos Urban Reserve Line shall be as follows:

1. Calendar Year 2025: Annual growth rate of 0.4%.
2. Calendar Year 2026: Annual growth rate of 0.6%.
3. Calendar Year 2027: Annual growth rate of 0.8%.
4. Calendar Year 2028 and beyond: Annual growth rate shall be established based on a five-year rolling average of the most recent annual basin yield metric, as reported by the Los Osos Basin Management Committee's annual reports.

At the October 15, 2025 meeting of the Los Osos Basin Management Committee (LOBMC) Board of Directors (Board), the Board voted 3-0, with the County Director abstaining, to provide the County with a letter containing the LOBMC's growth rate recommendation and a summary of the basis for that recommendation. A copy of the signed letter is included as Attachment 1. By way of summary, the LOBMC recommends that "the County BOS adopt a CY 2026 growth rate of 0% 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 LOBMC further states that “[n]otwithstanding the foregoing, this recommendation should not be construed as a recommendation with respect to the appropriateness of issuing permits, in accordance with the provisions of the County’s Title 26 (Growth Management Ordinance) and Title 19 (Retrofit to Build) Code of Regulations, to property owners that were provided notice regarding allocations for new development in CY 2025.”

The Groundwater Sustainability Director has reviewed the referenced LOBMC letter and supporting documentation, and has consulted with independent professional hydrogeologists to assess the appropriateness of the Transient Model, which was used as the basis for the LOBMC recommendation. Below is a summary of key relevant findings and recommendations of work performed by Jim McCord (IRP Water, LLC) and Randall Hanson (One Water Hydrogeologic, LLC) as reported in their September 19, 2025 Memorandum No. US-CA-SLO-TM-001-0 (Rev 0), included as Attachment 2:

- *The overarching opinions are: (i) The model, in its current configuration, is a valuable tool that can be applied to evaluate and compare the relative basin-wide benefits and impacts to the Los Osos Groundwater Basin of various proposed Management Actions, and (ii) Due to inherent and unquantified levels of uncertainty in the model, its usefulness in accurately simulating and predicting the specific location or rate of movement of the leading edge of a seawater intrusion front is quite limited.*
- *Due to inherent and unquantified levels of uncertainty in the model, its usefulness in accurately simulating and predicting the specific location or rate of movement of the leading edge of a seawater intrusion front is extremely limited. This is important because the determination of a sustainable yield in this Basin is based on a comparison of the location of the 250 mg/L Chloride concentration contour with a specific, spatially defined threshold line. In its current configuration, the model does not have the capability of accurately and reliably simulating and predicting whether or not the seawater intrusion front will ever reach the previously defined threshold line, nor under which conditions such an event will occur.*

The Department of Groundwater Sustainability also retained the services of the hydrogeology consulting firm, Todd Groundwater, to review the referenced LOBMC letter, peer review memoranda, and other supporting documentation, and to provide an opinion regarding the LOBMC recommended CY 2026 0% growth rate, including consideration of the potential impacts from alternative growth rate recommendations. Below is a brief summary of key relevant findings and recommendations of work performed by Todd Groundwater, with support from IRP Water, LLC and One Water Hydrologic, LLC, as reported in their November 5, 2025 Memorandum re: Los Osos Basin: Recommended Urban Growth Rate for 2026, included as Attachment 3:

- *Despite the allowed 0.4 percent growth rate in 2025, there were no building permits for new dwelling units issued within the Los Osos Urban Reserve Line.*
- *The effects of the additional increment of pumping are within the uncertainty range of the present transient model. For example, when the Current Conditions Baseline scenario proved to result in one small location affected by one well where the 250 mg/L isochlor extended inland across the adopted limit line after 45 years of operation, Cleath-Harris Geologists were able to eliminate the localized incursion by assuming a slightly different distribution of pumping among municipal wells (Cleath-Harris Geologists, 2025a).*
- *The October 10, 2025, Sustainable Yield memorandum by CHG found that by redistributing purveyor pumping, Basin sustainable yield could be increased by 170 AFY (from 1,830 to 2,000 AFY) (Cleath-Harris Geologists, 2025b). By comparison, 25 new single-family homes would increase demand by only 3.6 AFY. There is flexibility to absorb the anticipated increased demand through planned adaptive management, which is contemplated by the Basin Management Plan.*
- *The total volume of groundwater pumped from the Basin in 2023 and 2024 was 1,650 AF and 1,690 AF, respectively. These volumes are significantly below the BMC approved sustainable yield of 2,000 AFY for calendar year 2026.*
- *The Basin Management Plan includes an adaptive management program that can correct for undesirable trends that emerge over time. If a single year of 0.4 percent growth is subsequently found to contribute to a larger problematic trend, there would be many years of opportunity to redistribute pumping and/or implement infrastructure projects from the Basin Management Plan that are currently under active consideration.*
- *In summary, one additional year of 0.4 percent growth will result in negligible impact to the Basin, and it allows time to continue to decrease model uncertainties, enhance model calibrations of seawater movement, allow for the refinement in applying the transient groundwater model to evaluate selected infrastructure, and implement adaptive groundwater management actions.*

Recommendation

Based on my review of the available information, and input from independent professionals, it is my recommendation that the County Board of Supervisors consider the adoption of a 0.4% growth rate for the maximum number of new dwelling units to be allowed within the Los Osos Urban Reserve Line for CY 2026. This recommendation is more conservative than the 0.6% growth rate which is included in the Ordinance, and slightly less conservative than that being recommended by the LOBMC. If the 0.4% growth rate is adopted, then the maximum number of new dwelling units that could be permitted in CY 2026 would be approximately 25. It is also important to note that although the adopted growth rate for CY 2025 was 0.4%, there were no new building permits issued during that time.

Finally, it is also important to note that if the water purveyor members of the LOBMC do in fact feel that any additional new growth in new dwelling units presents an unacceptable risk to the Basin, they have the authority to curtail the issuance of any new water service will serve letters, and thereby achieve their recommended 0% growth rate.

If there are any questions, please don't hesitate to contact me at 805-781-4206 (Office) or 805-280-1051 (Cell). My email is breely@co.slo.ca.us.

COUNTY OF SAN LUIS OBISPO

Blaine T. Reely

Blaine T. Reely, PhD, PE
Director – Groundwater Sustainability

Attachments

1. LOBMC 2026 Growth Rate Recommendation Letter
2. IRP Water, LLC / One Water Hydrogeologic, LLC Memorandum No. US-CA-SLO-TM-001-0 (Rev 0)
3. Todd Groundwater Memorandum re: Los Osos Basin: Recommended Urban Growth Rate for 2026

TO: Blaine Reely, Director of Groundwater Sustainability, County of San Luis Obispo

FROM: Los Osos Basin Management Committee

DATE: October 24, 2025

SUBJECT: Los Osos Basin Management Committee 2026 Growth Rate Recommendation

At [the October 15, 2025 Los Osos Basin Management Committee Board of Directors Meeting](#), the Board voted 3-0, with the County abstaining, to provide the County with the following letter and recommendation.

Executive Summary/Recommendation

The San Luis Obispo County (County) Board of Supervisors (BOS) will vote on a Calendar Year (CY) 2026 Growth Rate for the Los Osos Urban Reserve Line (Los Osos URL) in December 2025. The County's Title 26 Growth Management Ordinance (GMO) (Attachment 1) prescribes a Growth Rate of 0.6% for CY 2026, but this may be adjusted by the BOS as needed. The BMC recommends the County BOS adopt a CY 2026 growth rate of 0% 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.

Notwithstanding the foregoing, this recommendation should not be construed as a recommendation with respect to the appropriateness of issuing permits, in accordance with the provisions of the County's Title 26 (Growth Management Ordinance) and Title 19 (Retrofit to Build) Code of Regulations, to property owners that were provided notice regarding allocations for new development in CY 2025.

Introduction

The Los Osos Basin Management Committee (BMC) prepared the following letter to the County of San Luis Obispo's (County) Groundwater Sustainability Director to provide its recommendations for the County Board of Supervisor's (County BOS) consideration of the Growth Rate for within the Los Osos Urban Reserve Line (Los Osos URL) for Calendar Year (CY) 2026 as outlined in the County's Title 26 Growth Management Ordinance (GMO).

Background

The Los Osos Groundwater Basin (Basin) is the sole drinking water source for the community of Los Osos. Rapid development in the 1970-80's led to rapid increases in water demand and unsustainable levels of groundwater pumping in the Basin. This resulted in seawater intrusion in the lower aquifer,

estimated to have intruded at rates exceeding 500 feet/year. Additionally, decades of high-density septic tank discharges contaminated the upper aquifer with nitrate concentrations above the Maximum Contaminant Level (MCL), making it unsafe to drink.

These conditions prompted several actions including: the California Department of Water Resources declaring the Basin to be in critical conditions of overdraft, a Basin adjudication, formation of the BMC, and development of the 2015 Updated Basin Plan for the Los Osos Groundwater Basin (Basin Plan) (Attachment 2) that outlines the strategy to bring the Basin back into sustainability. Through implementation of the Basin Plan and other measures, the BMC and the community of Los Osos have made significant progress toward halting seawater intrusion, raising groundwater levels, and reducing nitrate contamination.

The Los Osos Community Plan (Community Plan) (Attachment 3) is a planning document adopted by the County and the California Coastal Commission to guide land use, development, infrastructure, and environmental mitigation in the Los Osos area. It is part of the County's General Plan and Land Use Element, and it integrates with other regional plans such as the Estero Area Plan, the Los Osos Habitat Conservation Plan, and the GMO.

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The GMO specifies the proposed incremental growth rate for the Los Osos URL for 2025-2027 outlined below:

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County Groundwater Sustainability Director with a recommendation letter each year for their consideration prior to the adoption of the growth rate for the upcoming year.

For 2028 and onward, the GMO identifies that the growth rate for the Los Osos URL is tied to the 5-year rolling average of the Basin Yield Metric, see framework below.

5-Year Rolling Average of Annual Basin Yield Metric	Annual Growth Rate
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The following section provides an overview of modeled predictions and observed conditions for the Los Osos Basin. The BMC utilizes this combination of groundwater modeling to predict potential future Basin conditions and groundwater monitoring to observe current conditions in its assessment of overall groundwater sustainability for the Basin.

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Section 6.3.2 (A) of the Basin Plan defines Sustainable Yield_x as:

Sustainable Yield_x equals the maximum amount of groundwater that may be extracted from the Basin in Year X without causing seawater to advance further inland and with no active well producing water with chloride concentrations above 250 mg/l...

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The amount of water that can be extracted under these criteria has historically been determined using the Steady State Groundwater Model (Steady State Model) created for the Basin. In 2025, the BMC developed a new Transient Groundwater Model (Transient Model) for the Basin. The Transient Model is a tool that provides a calibrated, dynamic simulation of groundwater levels and seawater intrusion in

the Basin and will be utilized by the BMC to assist in its management of this critical resource for the community of Los Osos. The Transient Model is an improvement upon the Steady State Model that the BMC utilized previously for developing Sustainable Yield estimates and predicting potential future conditions in the Basin. The Transient Model allows for prediction of impacts from variable hydrology (i.e. extended droughts, above average rainfall periods, etc.) and incorporates new information on the structure (i.e. depth, layering, etc.) of the Basin that was not previously available.

The Transient Model was utilized to develop a Sustainable Yield estimate for Calendar Year 2026. The results of the Sustainable Yield 2026 Baseline Scenario indicate that a production scenario, which includes the assumption that the Current Condition pumping distribution (i.e. average distribution of pumping from 2019 – 2023) continues for 5 years before the purveyors (i.e. Los Osos Community Services District, Golden State Water Company, and S & T Mutual Water Company) transition to an optimized distribution of pumping, would allow for an average of 2,000 AFY of groundwater to be extracted from the Basin without exceeding the criteria established in the Adaptive Method for seawater intrusion over a 50-yr period (see Attachment 4 for more details on the 2026 SY Baseline Scenario). At the October 15, 2025 BMC meeting (see Attachment 5), the Board approved the Sustainable Yield estimate of 2,000 AFY for Calendar Year 2026.

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The BMC's hydrogeologist prepares an AMR for each calendar year which describes activities related to the Los Osos Basin Plan (LOBP) Groundwater Monitoring Program and provides results and interpretation of these activities for Calendar Year 2024. The LOBP Groundwater Monitoring Program is necessary to accomplish the following continuing goals set forth in Section 2.4 of the LOBP:

- 1. Provide for a continuously updated hydrologic assessment of the Los Osos Groundwater Basin (Basin), its water resources and Sustainable Yield.*
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Total Estimated Production	1,650	1,690

¹Rounded to the nearest 10 acre-feet. Production from non-metered wells (Domestic, Community, Agricultural) estimated, see 2024 AMR.

Basin Metrics The Basin Plan established several Basin metrics to evaluate nitrate impacts to the Upper Aquifer, seawater intrusion into the Lower Aquifer, and the effect of BMC management efforts. 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 Basin Plan programs in the Basin through objective, numerical criteria that can be tracked over time. The status of key Basin metrics in Calendar Year 2024 is summarized below.

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Metric	LOBP Goal	Calculated Value from 2024 Data	Change in Condition from 2023
Basin Yield Metric	80 or less	71	Increase from 69 (deterioration)
Water Level Metric	8 feet above mean sea level or higher	4.1 feet above mean sea level	Decrease from 4.3 feet (deterioration)
Chloride Metric	100 mg/L or lower	249 mg/L	Increase from 199 mg/L (deterioration)
Nitrate Metric	10 mg/L or lower	15.7 mg/L (NO3-N)	Increase from 14.2 mg/L (deterioration)

Basin Yield Metric The Basin Yield Metric (estimated annual groundwater production/adopted Sustainable Yield estimate) compares the estimated amount of groundwater extracted (1,690 AFY) with the adopted Sustainable Yield (2,380 AFY for 2024). The Basin Plan goal for the Basin Yield Metric is 80 or less. The Basin Yield Metric for 2024 was 71, however, if a lower Sustainable Yield estimate utilizing

findings from the Transient Model was utilized in the 2024 Basin Yield Metric calculation, the value would be higher.

Water Level Metric The Water Level Metric addresses changes in the Lower Aquifer related to seawater intrusion mitigation. The Water Level Metric is defined as the average Spring groundwater elevation, measured in feet above mean sea level, in five Lower Aquifer wells. The Water Level Metric decreased between 2023 and 2024 from 4.3 to 4.1 feet, which is a deterioration in conditions, and remains several feet below the target value of 8 feet.

Chloride Metric The Chloride Metrics address changes in the Lower Aquifer related to seawater intrusion mitigation. The Chloride Metric is defined as the weighted average concentration of chlorides in four key Lower Aquifer wells. The Chloride Metric increased relative to the 100 mg/L target value between Fall 2023 (199 mg/L) and Fall 2024 (249 mg/L), indicating a deterioration of conditions in 2024.

Seawater Intrusion Front Seawater intrusion in Zone D has increased between 2023 and 2024, with the intrusion front moving east of LA10 (similar to the position shown for 2020 and 2021) in response to increased pumping at LA10. LA10 is screened in Zone D and the top of Zone E, so the increased salinity may be caused in part by an upconing effect from Zone E. Zone E seawater intrusion is pervasive in the Western Area. In the Central Area, Zone E seawater intrusion has advanced inland of LA11, where it appears to have stalled in 2024, but LA15 (Zone D) on Palisades Avenue near the boundary between the Western and Central Areas has reported a 30 percent increase in chloride concentrations over the last five years.

Upper Aquifer Water Level Profile Upper Aquifer water levels were above the Protective Elevation along the bay, except for near UA5. Chloride concentrations at UA5 have increase over time, but remain low and are being closely monitored.

Overview of Los Osos Basin Initiatives

To support the sustainability of the Basin, the BMC and the BMC Parties (Los Osos Community Services District, Golden State Water Company, S & T Mutual Water Company, and the County of San Luis Obispo) are working on multiple initiatives to modify or construct new infrastructure, improve the groundwater monitoring program, and develop or improve tools utilized to assess Basin conditions. A summary of the most relevant initiatives is provided below.

Water Recycling Funding Study

The Los Osos Water Recycling Funding Program (WRFPP) Study included development of the Transient Model and performance of a Supply Alternatives Analysis. The supply alternatives analysis utilizes the Transient Model to evaluate different potential recycled water and other water supply alternatives to help identify projects or actions that will benefit the sustainability of the Basin. In evaluating each of the alternatives, the supply analysis looks to quantify the benefit to the Basin and assess potential costs and other feasibility considerations. The supply alternatives considered in the analysis are listed below:

1. Non-Potable Reuse, Irrigation

- Urban Reuse: Conversion of existing schools, park, and cemetery irrigation systems to be served by the existing non-potable recycled water distribution system and offset potable water deliveries.
 - Agriculture Reuse: Distribution of recycled water to agriculture users to offset groundwater pumping.
2. Indirect Potable Reuse (IPR), Groundwater Replenishment
 - IPR, Creek Discharge: Discharge to Los Osos Creek to enhance groundwater recharge.
 - IPR, Injection for Seawater Barrier: Injection of advanced purified water into the lower aquifer of the Los Osos Basin to increase recharge and create a seawater intrusion barrier.
 3. New Potable Supplies
 - Direct Potable Reuse (DPR): Delivery of advanced purified water to the drinking water distribution system to offset groundwater pumping.
 - Upper Aquifer Nitrate Treatment: Regional Nitrate Treatment Facility to allow for enhanced use of nitrate contaminated upper aquifer supplies.
 - Surface Water Intertie Pipeline: Interconnection with regional surface water conveyance system to provide access to State Water or other supplies to enable conjunctive use.

The WRF Study will help inform the BMC and Purveyors on which projects are most effective for improving the sustainability of the Basin and will guide implementation of future projects.

Los Osos Community Services District Resiliency Intertie Project

The Los Osos Community Services District continues to make progress towards implementation of the Water Resiliency Intertie Project (Intertie Project) since they began investigations into alternative water supply sources in 2021. Efforts to date include the preparation of a preliminary design report, environmental review, and the pursuit of funding sources. At the September 4, 2025 CSD Board meeting, the Board approved a contract in the amount of \$854,044 design of the intertie pipeline. The design project is anticipated to take approximately one year to complete.

Basin Metric Updates

The BMC has provided direction to BMC Staff to update the Basin Metrics utilized 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). The updated metrics will allow the BMC to consider inclusion of new (e.g. Cuesta by the Sea, Skyline, Sweet Springs) or modified (LA13 LA14, LA16) monitoring wells and other modification to improve the effectiveness of the metrics for informing the BMC on the status of Basin sustainability.

Transient Model Updates

The County intends to utilize the Transient Model to evaluate growth scenarios associated with the GMO. The County has contracted with an independent hydrogeologic consultant to run additional scenarios and propose refinements to the model. Any refinements made to the model will be in

coordination and agreement with the WRF Study Technical Advisory Committee and model developer (Cleath-Harris Geologists).

2026 Los Osos BMC Line Growth Rate Recommendations

With the development of the Transient Model and adoption of a Sustainable Yield estimate of 2,000 AFY for Calendar Year 2026, the BMC has determined that the Sustainable Yield for the Basin has been significantly reduced from previous estimates. Comparing the updated Sustainable Yield estimate (2,000 AFY) for the Basin to historic production estimates for the last 5 years (1,830 AFY), incorporating updated estimates for Domestic pumpers, it could be estimated that a Basin Yield Metric of 91.5 (i.e. 1,830 AFY/2000 AFY) would be a more appropriate estimate than the value included in the 2024 AMR (71).

Due to the reduced Sustainable Yield estimate for Calendar Year 2026, observed conditions in the 2024 AMR and uncertainty regarding transient model results, the BMC strongly recommends that the County BOS not increase the growth rate for the Los Osos URL in 2026 to 0.6% rate as outlined in the GMO. **The BMC recommends the County BOS adopt a CY 2026 growth rate of 0%** 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.

Notwithstanding the foregoing, this recommendation should not be construed as a recommendation with respect to the appropriateness of issuing permits, in accordance with the provisions of the County's Title 26 (Growth Management Ordinance) and Title 19 (Retrofit to Build) Code of Regulations, to property owners that were provided notice regarding allocations for new development in CY 2025.

Sincerely,



Digitally signed by Mark Zimmer
Date: 2025.10.24 08:39:40 -07'00'

Mark Zimmer, Chair of the Los Osos Basin Management Committee

Attachments

1. [Title 26 - GROWTH MANAGEMENT | County Code | San Luis Obispo County, CA | Municode Library](#)
2. [Updated Basin Plan for the Los Osos Groundwater Basin](#)
3. [Los Osos Community Plan \(December 2024\)](#)
4. [Sustainable Yield 2026 Baseline Scenario Results for the Los Osos Basin - Los Osos Groundwater Basin](#)
5. [October 15, 2025 Regular BMC Meeting](#)
6. [2024 LOBMC Annual Report - Los Osos Groundwater Basin](#)



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MEMORANDUM No. US-CA-SLO-TM-001-0 Rev. 0

To: Dr. Blaine Reely
Company, San Luis Obispo County, Groundwater Sustainability Director
Position:
Subject: Los Osos Basin Groundwater Flow and Seawater Intrusion Model
CC: NA
From: Jim McCord, PhD, PE, IRP Water LLC
Randall T. Hanson, One-Water Hydrologic LLC
Date: 19 September 2025

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EXECUTIVE SUMMARY

This technical memo presents a summary of key findings, conclusions, and recommendations developed by Dr. Jim McCord and Mr. Randy Hanson in a high-level review (McCord and Hanson, 2025a) of the groundwater modeling tool being developed for groundwater sustainability planning in the Los Osos groundwater basin (CHG, 2025a). Based on our review of the groundwater modeling tool, we offer the following primary conclusions:

- The model, in its current configuration, is a valuable tool that can be effectively used in evaluating the relative basin-wide benefits and impacts to the Los Osos Groundwater Basin for comparing various proposed Management Actions and Projects, such as those described in the Water Recycling Funding Program Facilities Planning Study (WSC, 2025).
- Due to inherent and unquantified levels of uncertainty in the model, its usefulness in accurately simulating and predicting the specific location or rate of movement of the leading edge of a seawater intrusion front is extremely limited. This is important because the determination of a sustainable yield in this Basin is based on a comparison of the location of the 250 mg/L Chloride concentration contour with a specific, spatially defined threshold line. In its current configuration, the model does not have the capability of accurately and reliably simulating and predicting whether or not the seawater intrusion front will ever reach the previously defined threshold line, nor under which conditions such an event will occur.

1 INTRODUCTION

This technical memo presents a summary of key findings, conclusions, and recommendations developed by Dr. Jim McCord and Mr. Randy Hanson in a high-level review (McCord and Hanson, 2025a) of the groundwater modeling tool being developed for groundwater sustainability planning in the Los Osos groundwater basin (CHG, 2025a). While that technical memo covers a broad area of the model, this memo is intended to address key specific questions that have been raised by Los Osos basin stakeholders since the original memo was issued. Those specific questions are:

1. Is the current model predicting, that based on the model calibration to the existing baseline conditions that “seawater intrusion” will continue if no management actions are taken?
2. Is the current model accurately predicting the location of the 250 mg/l weight chloride (CL) contour?
3. In our opinion, is the model capable of accurately predicting the exact location of that CL contour 45-years in the future? If not, is there enough data to predict how much variability / uncertainty is associated with that prediction?
4. Can the model, as it exists today, accurately predict the future rate of intrusion, should baseline pumping conditions continue unchanged?
5. What are the most likely reasons that the simulated Cl concentrations for current conditions do not match very well the actual measured concentrations?
6. Can the current model be employed for assessing impacts of groundwater management changes?
7. And finally, are there any key “low-hanging fruit” investigations and/or enhancements be made with the model to reduce its uncertainty / increase the model’s reliability?

1.1 Review Process

At the request of the San Luis Obispo County Groundwater Sustainability Department (SLO GSD), Dr. McCord and Mr. Hanson conducted a high-level review of the groundwater model being developed for the Los Osos groundwater basin. Their review included both the draft report and the numerical model,



along with its input and output files. The technical memo detailing their findings was submitted to the county on May 16, 2025 (McCord and Hanson, 2025a). Following this, the report authors from CHG met with the reviewers to clarify and resolve the issues raised. While CHG was able to address most of the comments by adding clarifying details to the report, several issues could not be resolved within the existing scope of their model development and application project.

1.2 Model Refinement Options

A subsequent technical memo listing enhancements that could be made to better quantify model uncertainties and improve its predictive reliability was submitted to the SLO GSD on 18 June 2025 (McCord and Hanson, 2025b). Based on their review, complemented by the GSI review and published literature, they identified several issues with the existing model that could be readily addressed with relatively little effort. While some require more effort, most would involve minor parameter and/or boundary condition adjustments.

A table was developed that provided a quick comparison between the model refinement alternatives. The table included a numeric ID for each task, a brief description of the activity, and a qualitative estimate of the effort and relative effort / cost: "Small" (under \$10K), "Medium" (\$10K to \$25K), or "Medium-High" (over \$25K). Every refinement was considered to have a high value, as each would lead to a more robust model with improved calibration, better predictions of expected conditions, and reduced uncertainty. The table also concisely describes the objective of each refinement and its value for evaluating mitigation strategies. Some of the suggested modifications may also allow the model to be used for additional mitigation and adaptation strategies beyond those already being considered.

2 RESPONSES TO KEY QUESTIONS

Based on our review and findings, our initial responses to the key seven questions are as follows:

2.1 Will “Seawater Intrusion” Continue if No Management Actions Taken?

To evaluate seawater intrusion, CHG (2025) compiled historical chloride data for the Lower Aquifer, focusing on the Dunes and Bay Area, Western Area, and a part of the Central Area. These are areas where historical monitoring and reporting indicate seawater intrusion is occurring (DWR, 1979, Morro Bay Sandspit Investigation; USGS, 1988. Hydrogeology and Water Resources of the Los Osos Valley Ground-Water Basin; Cleath & Associates, 2005. Sea Water Intrusion Assessment; CHG, 2014, 2016, & 2017). Technical memorandums and reports on seawater intrusion monitoring and basin analysis; Los Osos BMC Groundwater Monitoring Program, Annual Reports from 2015 to present; and State Water Resources Control Board online GAMA database). The transient model's calibration process utilized this historical chloride data, including monitoring results from the BMC program.

Even though some recent management actions that have led to a slow increase in groundwater levels in some locations in recent years, salinity increases have continued. The observed slow increase in salinity of groundwater would likely continue if groundwater pumping demand exceeds recharge supply within the adjudicated basin. This in turn is contingent on climate variability, as well as deviations of the supply and demand components compared to the historical values on which the calibrated model is based. Water demand within the study area may increase beyond historical if the potential evapotranspiration (ET) trends upward as climate models indicate.

In short, yes, the “Seawater Intrusion” trend will likely continue if the management actions currently in place do not arrest continued increases in salinity and no new actions are taken.

2.2 Does the Model Accurately Predict Location of 250 mg/l CL Contour?

Even with the rather detailed data available for the Los Osos basin, it is difficult to accurately define current location of the 250 mg/L contour. This is illustrated by Figure 23 from CHG (2025), reproduced here as **Fig. 1**. In this figure, it is impossible to accurately draw the 250 mg/l contour. This is because

the 250 mg/l “Observed” contour shown in the figure represents some kind of interpolation based on sparse data, and it should be considered to have a wide band of uncertainty about it. This uncertainty in the observational data results in difficulty in assessing the model skill at simulating its current location and rate of movement in each of the aquifer layers. Plotting an uncertainty envelope about the simulated 250 mg/l from model sensitivity analysis combined with plotting the observed contour uncertainty envelope would help convey the current knowledge conveyed by the available data.

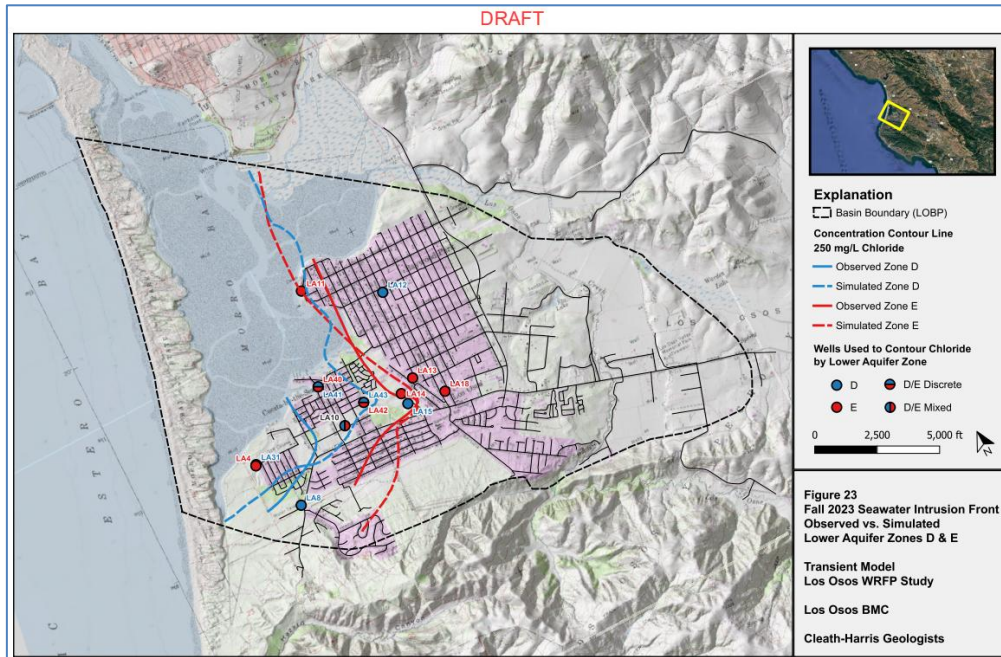


Figure 1. Presentation of Observed and Simulated 250 mg/L contour

CHG (2025a) did perform a limited sensitivity analysis with the model, but not with flow and transport parameters linked. A graphical presentation of the predicted 250 mg/l contour from a sensitivity analysis could help visually convey the uncertainty in the modeled location compared to the uncertain observed 250 mg/l envelope, and that would provide a more objective way of assessing model skill (or how accurately the model is reproducing observations).

Some additional estimates or measurements that are independent of the model could help constrain its probable location and help answer this question. This could include investigating the use of selected resistivity or passive seismic surveys lines as well as seeing if there are any residual effects of seawater intrusion from the Aerial EM (AEM) / SkyTEM data that may help infer some kind of threshold location. The additional proposed geophysical surveys by CHG (CHG, 2025c) would also provide a baseline for periodic repeat surveys to estimate location and rate of movement. In addition, the estimate of the distribution of “salinity influence” from the AEM surveys (CHG, 2025b) could also be used to help refine the existing and predicted location of the 250 mg/l contour and its uncertainty. Any additional use of these surveys or any potential repeat surveys may want to consider comparison with the Induction/Bulk-Gamma logs performed before at selected monitoring well sites if near any flight lines, and the possibility of a denser set of flight lines for better delineation of salinity and texture and any possible channels of preferential lateral flow. Also, the projection of the model layers and related facies within model layers onto these profiles may give them additional context as to the distribution and resolution of the AEM estimates and their utility for this kind of seawater intrusion analysis.

Relations between EM values from wellbore logging and water chemistry samples were used for previous USGS studies of the Oxnard Plain in the Santa Clara - Calleguas Basin (Hanson et al, 2003a) and for the Marina Coast coastal monitoring well (Hanson et al, 2002). These types of well logs could



be run periodically as has been done in the Oxnard Plain (Ventura, Hanson et al., 2009), and Marina Coast (Salinas Valley, Hanson et al., 2002) monitoring wells to track and monitor changes in Salinity related to seawater intrusion. A similar relation may be able to be developed and applied to some kind of residuals of the AEM data or modeled estimates of conductivity. Also estimates of rate of change in salinity may also help delineate selected hydraulic properties such as effective porosity and may help with estimates of uncertainty of salinity. These could be compared with previous CHG (2005) estimates that indicated a rate of movement of 60 ft/year in Zone D and 54 ft/year on Zone E aquifers for the period 1977-2005.

Also estimates of uncertainty in the texture distributions used to develop aquifer properties and facies within model layers that could represent possible preferential flow (channels or basal layers) could also be investigated through application of the USGS methods of the resistivity log variations within each model layer or the drillers log texture program to provide a collection of point estimates through the model layers of standard deviation as a surrogate for uncertainty in texture. It may be possible to utilize this borehole data in conjunction of outcrop mapping to allow the application of a T-Progs model to evaluate the impacts of structured heterogeneity in the aquifers. This could even be explored at a later date where the median of the cell-by-cell texture could provide a more enhanced version of the texture and the variance of the distribution of realizations could provide a measure of uncertainty of texture and related hydraulic properties.

In short, the current model prediction of the 250 mg/l cannot be considered objectively accurate without further analysis of the existing data and model sensitivity results, and only the collection of additional data can help constrain the predictive uncertainty of the model. Some of this uncertainty analysis and related data collection can be part of future or proposed work and will be part of future analysis and refinements of the model and interpretation of model results.

2.3 Can Model Accurately Predict the Location of that CL contour 45-years in the future? If not, is there enough data to predict how much variability / uncertainty is associated with that prediction?

Based on the same reasons cited above related to accurately predicting the current location of the 250 mg/L CL contour, one cannot expect the current model to accurately predict conditions 45 years from now. There are two components that control the uncertainty of the location of the 250 mg/L 45 years into the future. These include model parameters that have controlled the rate and distribution of movement and future estimates of supply and demand representing variable pumpage and recharge. While sensitivity analysis was performed by CHG for the flow model, no combination of transport and flow modeling were presented that could contribute to a range of uncertainty based on variation in selected model parameters. In addition, there are several model parameters that were not completely evaluated or simulated by CHG that could help evaluate the potential uncertainty driven by model parameters. These include porosity, dispersion, vertical hydraulic conductivities, and landward general-head boundary attributes as well as investigation of potential pathways related to wellbore flow, preferential flow through possible channels or basal coarse-grained facies that may be be strongly connected with pumping wells but not represented in the aquifer properties in the model, or the Broderson mound with the perched aquifer. The uncertainty or variability of historical and future climate could also be assessed and varied to see if the climate variability could also influence intrusion rates or related increases in recharge or any reduction in pumpage.

In short, given all these uncertainties in historical data as well as in the inputs that will drive future stresses in the basin, the best the model can do is predict a range of locations for the 250 mg/L contour. The predicted uncertainty range can only be reduced through collection of additional data that could help reduce the uncertainty in the model input parameters.



2.4 Can the model, as it exists today, accurately predict the future rate of intrusion, should baseline pumping conditions continue unchanged?

The current model can be employed as an “impact model” to predict the relative change from current conditions given the set of input parameters in the calibrated model. But again, this represents only one “realization” with an acknowledgement that there exists an uncertainty band (currently unquantified) about the predicted contour.

To better constrain the actual rate of intrusion would require additional independent estimates. This has been done in other studies by using repeated EM/Bulk Gamma wellbore logging at PVC monitoring wells (Hanson et al., 2003a, EKI and Martin Feeney, personal Commn.). If no PVC monitoring wells are available for repeat surveys and associated chemistry sampling, then repeat resistivity and temperature logs may also help infer the rate of change in salinity and related rate of intrusion movement. Also changes in general chemistry or specific anions or anion ratios or stable isotopes could also help identify the rate of movement (Hanson et al., 2003b; Hanson et al., 2009). The Aerial EM (AEM) mentioned in Section 2.2 could help spatially constrain the configuration of the salinity pattern between the monitoring well observation locations but may also be useful in estimating some aspect of uncertainty related to the texture distributions and related estimates of hydraulic properties used in the model. The simulated rate of intrusion with sustained pumpage is also subject to the spatial distribution of the aquifer and transport properties, including the dispersivity and the effective porosity.

2.5 What are the most likely reasons that the simulated Cl concentrations for current conditions do not match very well the actual measured concentrations?

The differences between measured and simulated Chloride concentrations may be due to a combination of measurement / sampling issues, and potentially the groundwater flow and transport model framework as well. The discrepancies between measured and simulated chloride concentrations are likely due to a combination of factors related to data quality and the model's design. On one hand, measurement and sampling issues can introduce errors. This might include inconsistent sampling techniques, inadequate well purging before sampling, or poor sample preservation, all of which can lead to unrepresentative or contaminated samples. Additionally, the spatial and temporal frequency of sampling may not be sufficient to capture the true variability of chloride concentrations, particularly in a dynamic system affected by seawater intrusion. The sampling and analysis done by CHG (CHG, 2005) is a great set of sampling and analysis and perhaps some of this needs to be done periodically to further assess changes in chemical and geophysical profiles.

On the other hand, the groundwater flow and transport model framework itself could be a source of error. The model might not accurately represent the hydrogeological conditions of the basin. For example, while the flow model head calibration metrics can be considered good by standard statistical measures, there may exist flow structures that are important to transport that were not captured by the flow model calibration methodology. Furthermore, the model's parameters for flow and transport, like effective porosity and dispersivity, might be poorly calibrated, leading to inaccurate predictions of how quickly and in what direction the chloride plume moves. The model's conceptualization of the climbing salinities, could also be flawed (e.g., is the observed salinity increase purely from lateral flow of seawater inland, or can salinity release from aquitards during pumping also be a contributor?). Without detecting such a framework error in the model set up could lead to a calibrated model that matches well current conditions, but future simulations can deviate from the true future. Additional sources of comparison such as rates of movement or rates in change of salinity and vertical head differences between aquifers across the major perched layer may also help constrain the model and improve its simulation skill.



2.6 Can the current model be employed for assessing impacts of groundwater management changes?

Yes, the model can address some management changes as an impact model (see Section 2.4 above). That said, some potential management options such as cessation of pumpage or sealing of screened intervals in the lowest aquifers, development of an ASR system in the Mound and/or slough region, or changes in land use related to any new development or retirement of land, would require modifications to the existing model structure or added features. In most cases, only very minor modifications would be required; for example, changing from the standard MODFLOW WEL package to a package that can handle multi-level wells (i.e., the CLN package in MF-USG) would take only minutes yet would allow a more robust assessment of how changes in pumping may impact the simulated seawater intrusion. In addition, it is important to consider changes in the spatial distribution of some model parameters and potentially changes in model framework as discussion above in Section 2.5. The potential model enhancements are discussed in Hanson and McCord (2025), and the summary table reproduced here as **Table 1**.

2.7 Are there any key "low-hanging fruit" investigations and/or enhancements to the model that reduce its uncertainty / increase its reliability?

Again, **Table 1** provides a list of model refinement / enhancement opportunities, and those listed as small effort would represent so call "low hanging fruit." Additional sensitivity analysis of selected model parameters, changes in the representation of wells to facilitate wellbore flow, and possible reanalysis of any existing chemistry, wellbore flow logs for selected multi-aquifer production wells or AEM data, may be worth pursuing. Initiating geophysical surveys that could be periodically repeated for comparison of differences may also be worth considering in wells located on either side of the intrusion front as geophysical and temperature/EC logging at monitoring wells and in unpumped production wells, as well as surficial geophysical survey lines that cross the estimated intrusion front location as planned by CHG (CHB, 2025c). Depth-dependent sampling for water chemistry and isotopes under pumped conditions combined with wellbore flow profiling of several multi-aquifer wells¹ could also better refine the distribution of inflow and water chemistry in multi-aquifer wells. This could also better delineate the potential aquifers that are the most problematic for selected chemical attributes including seawater.

Table 1. Suggested Los Osos basin model refinements / enhancements

ID	Task Description	Effort / \$	Value	Model Refinement Objective	Mitigation Value
1	Implement Multi-Node Wells (MNW in MF-OWHM, CLN in MF-USG)	Small / low \$	High	Test multi-aq wells, cross-aquifer flows	Test closing off deep zone (E), more targeted pumping
2	Paleo Brine CSM, develop 2D "strip" model w highly refined grid	Medium	High	Test concept of paleo brine in aquitards	Better understanding / reduced uncertainty for starting condition
3	Perched Zone Separated	Medium - High	High	Test assumption of no need for integrated simulation of perched zone	Model more flexible for exploring ASR / MAR
4	Soil water budget / Net Recharge Model	Medium	High	Understand replacing explicit treatment of perched zone (closely related to preceding task)	" " "
5	Rigorous granular water budget analysis by zones and layers	Small (starting with GSI results)	High	Evaluate simulation of Broderson mound to last decade of observations, cross-aquifer flows, ...	Identify zones potentially amenable to MAR and/or ASR
6	Parameter sensitivity analysis (begin w Kv, eff porosity)	Small / low \$	High	Better simulation of mitigation front, improve model calibration	More robust simulation of mitigation alternatives
7	Rigorous uncertainty analysis	Medium - High	High	Better understanding of range of uncertain outcomes and parameters driving the uncertainty	More robust simulation of mitigation alternatives
8	Warden Lake, GHB H for rech	Small / low \$	High	Assess recharge enhancement	Enhanced recharge to Zone E
9	Faults	Medium - High	???	Improve HCM, and improve understanding of faults importance	Understand impact of faults on well productions landward drawdowns or cross formation flow, impact seawater intrusion
10	Monthly Stress Periods	Medium	High	Evaluate FloodMAR and ASR alternatives	More robust simulation of MAR

¹ Noah Heller, BESST Inc.



3 SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

This technical memo summarizes a high-level review of the groundwater model for the Los Osos basin, specifically addressing key questions from stakeholders. The review, conducted by Dr. McCord and Mr. Hanson, evaluated the model's ability to predict seawater intrusion and chloride concentrations in the basin, and its utility for use in future management planning.

The overarching opinions are: (i) The model, in its current configuration, is a valuable tool that can be applied to evaluate and compare the relative basin-wide benefits and impacts to the Los Osos Groundwater Basin of various proposed Management Actions, and (ii) Due to inherent and unquantified levels of uncertainty in the model, its usefulness in accurately simulating and predicting the specific location or rate of movement of the leading edge of a seawater intrusion front is quite limited.

Under these overarching conclusions, the report addresses a number of key questions raised by stakeholders in the basin. Among the findings are that if current pumping and recharge conditions continue, seawater intrusion will likely persist. However, the model's prediction of the exact location of the 250 mg/l chloride contour is considered uncertain due to the sparsity of observational data and the model's limited sensitivity analysis. For the same reasons, the model cannot be considered capable of accurately predicting the contour's location 45 years into the future without a more rigorous evaluation of parameter uncertainty.

The discrepancies between simulated and measured chloride concentrations are attributed to both measurement issues, like inconsistent sampling, and model framework issues, such as an initial concentration in aquitards and/or poorly calibrated parameters like dispersivity and effective porosity. While the model can be used for some management assessments, its structure may need modification to evaluate certain mitigation strategies like ASR systems or changes in pumping in multi-level wells. The memo identifies "low-hanging fruit" enhancements (listed in an accompanying table) that could improve the model's reliability, including additional sensitivity analysis, re-evaluation of existing data, and incorporating new geophysical surveys.

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November 5, 2025

MEMORANDUM

To: Blaine Reely, San Luis Obispo County

From: Gus Yates, PG, CHG, Senior Hydrologist, Todd Groundwater
Chad Taylor, PG, CHG, Principal Hydrogeologist, Todd Groundwater
Jim McCord, PhD, PE, President, IRP Water, LLC
Randall Hanson, President, One-Water Hydrologic, LLC

Re: Los Osos Basin: Recommended Urban Growth Rate for 2026

We understand that the County Planning and Building Department is considering annual urban growth rates for Los Osos of 0 percent, 0.4 percent and 1 percent, until buildout is reached. These annual growth rates are not compounding and relate to conditions in 2025, equivalent to 0, 25, and 63 new units for the 0, 0.4, and 1 percent annual growth respectively. You asked us to recommend one of those growth rates to be implemented just in the year 2026. We have reviewed modeling results for historical and “sustainable yield” conditions as well as County estimates of potential future urban growth in Los Osos. Our recommendation is to continue the 0.4 percent rate that was in place for 2025, for the following reasons:

1. Despite the allowed 0.4 percent growth rate in 2025, there were no building permits issued in Los Osos.
2. The effects of the additional increment of pumping are within the uncertainty range of the present transient model. For example, when the Current Conditions Baseline scenario proved to result in one small location affected by one well where the 250 mg/L isochlor extended inland across the adopted limit line after 45 years of operation, Cleath-Harris Geologists were able to assume a slightly different distribution of pumping among municipal wells and eliminate the localized incursion (Cleath-Harris Geologists, 2025a).
3. The October 10, 2025 Sustainable Yield memorandum by CHG found that by redistributing purveyor pumping, Basin sustainable yield could be increased by 170 AFY (from 1,830 to 2,000 AFY)(Cleath-Harris Geologists, 2025b). By comparison, 25 new single-family homes would increase demand by only 3.6 AFY. There is flexibility to absorb the anticipated increased demand through planned adaptive management.

4. The total volume of groundwater pumped from the Basin in 2023 and 2024 was 1,650 AF and 1,690 AF, respectively. These volumes are significantly below the BMC approved sustainable yield of 2,000 AFY for calendar year 2026.
5. The Basin Management Plan includes an adaptive management program that can correct for undesirable trends that emerge over time. If a single year of 0.4 percent growth is subsequently found to contribute to a larger problematic trend, there would be many years of opportunity to redistribute pumping and/or implement infrastructure projects from the Basin Management Plan that are currently under active consideration.

In summary, one additional year of 0.4 percent growth will result in negligible impact to the Basin, and it allows time to continue to decrease model uncertainties, enhance model calibrations of seawater movement, allow for the refinement in applying the transient groundwater model to evaluate selected infrastructure, and implement adaptive groundwater management actions.

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