

# MEMORANDUM

Salinas Valley Basin Groundwater Sustainability Agency  
Castroville & Eastside Canals and Alternatives Study  
Wallace Group Project No. 1447-0005



**Date:** March 30, 2026

**To:** Salinas Valley Basin Groundwater Sustainability Agency

**From:** Greg Hulburd, P.E., Travis Vazquez, P.E.  
Wallace Group

**Subject:** Castroville and Eastside Canals and Alternatives Preliminary Feasibility Study  
**Appendix G: Surface Storage Locations Considered**

CIVIL AND  
TRANSPORTATION  
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This technical memorandum summarizes the investigation into potential surface storage sites in support of the Castroville and Eastside (C&E) Canals Study.

## Background

The Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA) and Monterey County Water Resources Agency (MCWRA) have initiated a multi-phase study to evaluate potential project concepts to utilize the existing water right Permit 11043 held by MCWRA. Since Permit 11043 was first issued in 1957, numerous project configurations have been proposed and studied.

The existing Permit 11043 currently allows for direct diversion only, which generally means that water must be used immediately after diversion; storage is not allowed for longer than 30 days. According to the current C&E study, the seasonal mismatch between winter diversion flows under Permit 11043 and low irrigation demand necessitates the inclusion of storage to fully realize the permit's potential yield. This will require modification to Permit 11043 to allow storage, as described in the report "Evaluation of Salinas River Water Rights and Alternatives" (MBK Engineers, 2025).

## Storage Need

The storage requirement is driven by the difference in timing and flow rate from the eligible Salinas River diversions compared to end use demand (i.e., irrigation or municipal use). The reservoir is designed to accommodate the seasonality of the diversion flows as well as provide carry-over storage from year to year. To estimate the amount of storage needed, a water balance was conducted based on the projected Salinas River flow from 2023-2072. The flow projections were obtained from modeling using the Salinas Valley Operational Model (SVOM) future baseline climate sequence (Montgomery & Associates, 2026). The water balance calculates the daily accumulation of storage by subtracting the daily treatment/injection volume from the diversion volume. The treatment plant and injection wells are assumed to operate continuously year-round and sized for a capacity of

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approximately 150% of the long-term average annual yield based on the water balance. This sizing was chosen to balance the volume of storage needed with the required capacity of the water treatment plant and injection well facilities. Storage also allows for a steady, year-round reservoir draw, which is necessary because water treatment plants are unable to manage the substantial variations in flow that would otherwise occur. Figure 1 and Figure 2 display graphs of the theoretical cumulative storage requirement based on the water balance.

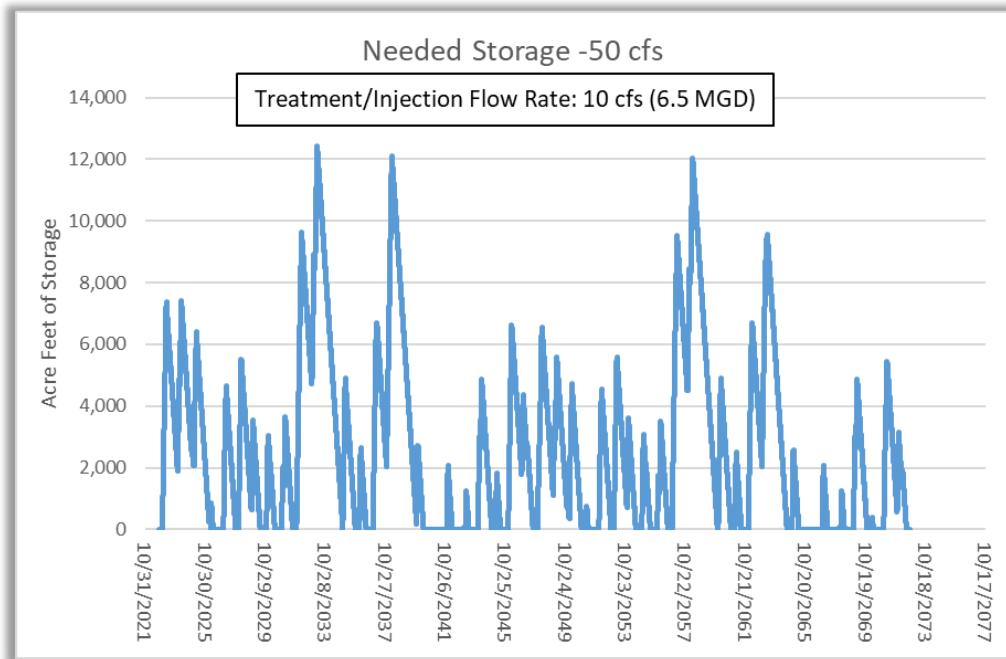


Figure 1. Storage accumulation for a 50 cfs diversion based on the projected water balance.

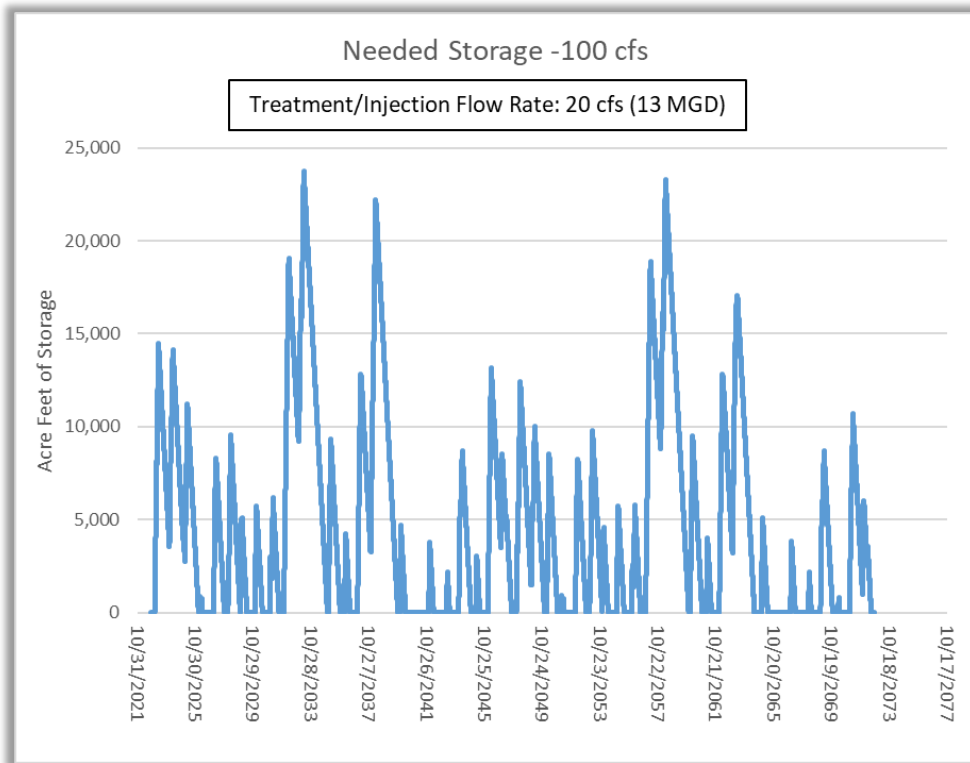


Figure 2. Storage accumulation for a 100 cfs diversion based on the projected water balance.

Table 1 summarizes the maximum storage requirement for the 50 cfs and 100 cfs diversions.

Table 1. Maximum Required Storage

Diversion Size	Treatment/ Injection Flow Rate	Maximum Storage Needed, Acre-Feet
50 cfs	10 cfs	12,500
100 cfs	20 cfs	24,000

### Historically Proposed Reservoir Sites

Phase 1 of the C&E study involved a historical document review to review previously proposed projects related to a Salinas River diversion. Several of the projects included storage components, many of which were designed as in-stream reservoirs to capture and store natural inflow from the watershed. The use of in-stream reservoirs and the watershed sources used to fill them distinguish these previous concepts from the C&E project concepts. Under the C&E project scenarios, Permit 11043 diverted Salinas River water would be used to fill an off-stream reservoir. Different considerations are given to siting an off-stream reservoir for storage of imported waters compared to an in-stream reservoir designed to be filled by the natural watershed. Table 2 provides a summary of historical proposed reservoir concepts and notes whether the primary water source was designed as natural inflow or from diverted/imported water.

*Table 2. Potential reservoir sites studied in historical documents.*

Name	Primary Water Source		Maximum Capacity, Acre-Feet
	Natural Inflow	Diverted water	
<b>1946 Bulletin 52 – Department of Water Resources (DWR)</b>			
Heins Lake - Regulating Reservoir		X	300
<b>1956 Bulletin 19 – State Water Resources Control Board (SWRCB)</b>			
Rinconada	X		Not Listed
Cantera	X		Not Listed
Lower Atascadero	X		Not Listed
Santa Rita	X		Not Listed
Dover	X		Not Listed
Lower Jack	X		25,000
San Miguelito	X		Not Listed
Jarrett Shut-in	X		110,000
Pebblestone Shut-in	X		Not Listed
Winchester Ranch	X		500,000
El Nacimiento	X		500,000
Milpitas 'C'	X		Not Listed
Milpitas 'B'	X		175,000
Pletyo 'B'	X		400,000
Upper Foster	X		Not Listed
Greenfield	X		250,000
San Lucas	X		375,000
<b>1991 Capital Facilities Plan - Boyle Engineering</b>			
Jerrett	X		145,000
Arroyo Seco Pools	X		100,000
Arroyo Seco - Woodtick	X		112,000
Arroyo Seco - Greenfield, High	X		220,000
Arroyo Seco - Greenfield, Low	X		120,000
Gabilan Dam - Sugarloaf	X		6,000
Gabilan Creek - Mud Creek	X		6,000
Los Padres Dam	X		24,600
Canada Reservoir	X		18,000
<b>1998 SVWP Report - Montgomery Watson and Raines, Melton &amp; Carella, Inc.</b>			
Armstrong Ranch		X	9,700/13,000
Barloy Canyon		X	30,000
Espinosa Lake		X	20,000
Merritt lake		X	12,600 (up to 40,000)
Pilarcitos Canyon		X	20,000
<b>Sites that were not advanced to secondary screening:</b>			
Airport		X	Not listed
Bull Canyon		X	Not listed
Carr Lake		X	Not listed
Corral de Tierra Valley		X	Not listed
Dunn Canyon		X	Not listed
Gabilan Creek		X	Not listed
Guidotti		X	Not listed
Los Gatos		X	Not listed
Reliez Canyon		X	Not listed

Although dozens of sites have been proposed in previous studies, only the off-stream reservoir sites designed to store diverted water have the highest potential for meeting the C&E storage needs. Under current regulatory requirements, it is unlikely that any of the previously proposed in-stream dams on the Salinas or Arroyo Seco Rivers or perennial creeks would get through environmental review, permitting, and public acceptance. The 1998 Salinas Valley Water Project (SVWP) Project Plan Report (Montgomery Watson, 1998) is the most relevant of the historical studies as this project also required storage of diverted Salinas River water. For details, refer to the 1998 SVWP Project Plan Report and associated Appendix C, Task 4 – North Valley Storage Technical Memorandum. Key points from this study are summarized below:

- 14 sites were identified for initial screening
- 5 sites advanced to secondary screening, including:
  - Armstrong Ranch
  - Barloy Canyon
  - Espinosa Lake
  - Merritt Lake
  - Pilarcitos Canyon
- From these, 2 sites advanced past secondary screening:
  - Armstrong Ranch
  - Merritt Lake

The Armstrong Ranch Site is not a natural reservoir site; rather, the reservoir would be created by excavating millions of cubic yards of material and constructing a dike or dam around the perimeter of the reservoir. Additionally, the soil at this site is permeable and would require installation of a liner. For the same storage capacities, the budget-level cost estimates showed that the Armstrong Ranch site was approximately 5 times more expensive than the Merritt Lake reservoir. For these reasons, Armstrong Ranch was considered infeasible and was eliminated from consideration in the 1998 study. This left Merritt Lake as the preferred site for the storage reservoir.

### **Merritt Lake**

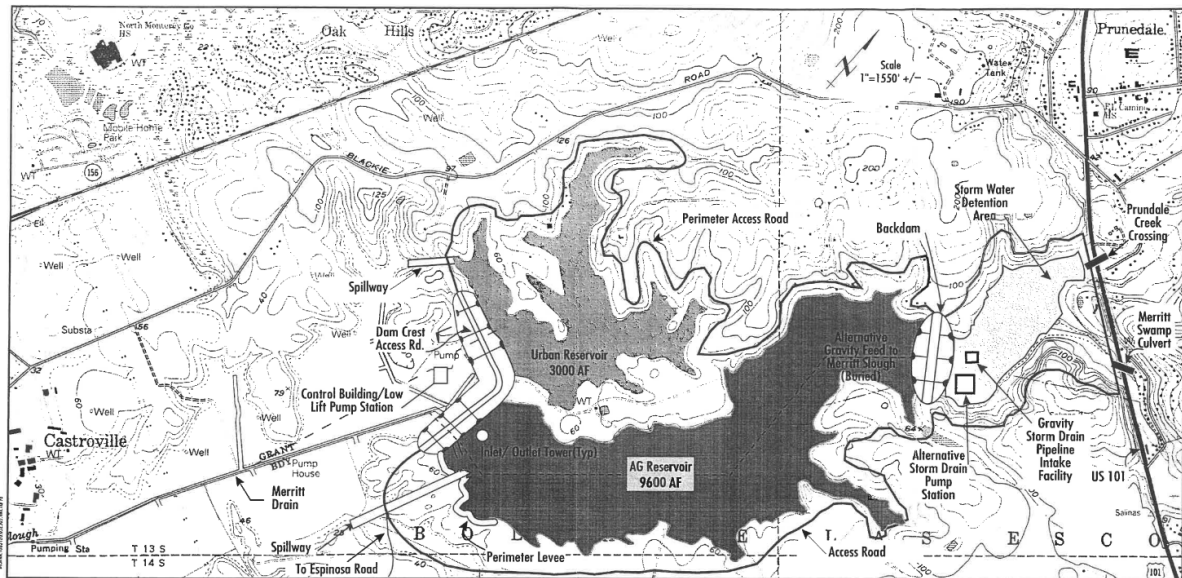
The Merritt Lake site, as identified in the 1998 SVWP Project Plan Report, was retained for inclusion in several of the current C&E project scenarios.

Merritt Lake is a natural low-lying area east of Castroville that is currently active farmland. The area periodically floods during large storm events. Details regarding the conversion of the area into a storage reservoir were obtained from the 1998 SVWP Project Plan Report. The proposed Merritt Lake concept included the following elements:

- Two reservoirs
  - Agricultural Reservoir – 9,600 acre-feet (AF) at water surface elevation (WS EL.) 36'
  - Urban Reservoir – 3,000 AF at WS EL. 33'
- Maximum design water surface at elevation 36' based on the 1998 SVWP storage needs, although elevations of up to 50' are possible based on the topography, which

would provide a maximum combined capacity of 22,000 AF based on the selected dam configuration.

- Main Dam (likely integrated for both reservoirs) on the west side of the reservoir.
- Back dam approximately 3,000 feet west of Highway 101 to prevent inundation further east, including Highway 101.
- Perimeter levee along a section on the southwest perimeter near Espinosa Road.
- Spillway sized to pass the probable maximum flood (PMF).
- Inlet/outlet works.
- Flood control infrastructure including a pumping plant and/or pipeline to route runoff from the upstream watershed around the reservoir to the downstream drainage channel.



MCWRA  
Salinas Valley Water Project  
MERRITT LAKE STORAGE SITE

FIGURE 4-4

*Figure 3. Merritt Lake Storage Site, figure from the 1998 SVWP Project Plan Report (Montgomery Watson, 1998).*

The cost estimate from the 1998 SVWP report was escalated to 2025 costs based on index data from the United States Bureau of Reclamation (USBR) Construction Cost Trends<sup>2</sup> for earth dams:

- 1998 earth dam index: 179
- 2025 earth dam index: 496
- Escalation factor =  $496/179 = 2.77$

Table 3 summarizes the information from the 1998 SVWP report regarding Merritt Lake storage, dam fill quantities, and cost estimates, as well as the estimates escalated to 2025.

*Table 3. Original Merritt Lake cost estimates and escalation to 2025 dollars.*

Reservoir	Storage, AF	Dam Fill, CY	1998 Subtotal	Escalated to 2025
Merritt Ag	9,700	848,600	\$31,800,000	\$88,116,201
Merritt Urban	3,000	252,000	\$10,200,000	\$28,263,687
Combined	12,700	1,100,600	\$42,000,000	<b>\$116,379,888</b>

### **Additional Reservoir Site – Gabilan Range Reservoir**

To investigate other potential reservoir sites, publicly available LIDAR elevation data was analyzed, and one additional potential reservoir site was identified. GIS spatial analyst tools were utilized with the LIDAR data to develop a stage-storage relationship for the potential reservoir. The identified site is located east of Salinas in the Gabilan Range, approximately 1.5 miles southeast of the intersection of Old Stage Road and Williams Road, in the Alisal Creek watershed.

The Gabilan Range Reservoir site was identified strictly based on topography. Further investigation is needed to address site suitability regarding geology (foundation, faults, seepage), suitable soils and borrow areas for the dam fill, hydrology (flood flows, watershed capture), constructability, safety, environmental constraints, and other factors.

The proposed reservoir concept involves a new earthen dam in an unnamed valley in the Alisal Creek watershed. Although further study is needed to determine whether the site is feasible, preliminary characteristics of the proposed dam include the following assumptions:

- Approximate dam crest elevation – 570 feet
- Approximate dam maximum height – 260 feet
- Approximate dam crest length – 2,300 feet
- Approximate volume of dam fill, assuming 2.5:1 embankments – 8,000,000 cubic yards
- Estimated storage at maximum WS EL. 560' – 25,000 AF

<sup>2</sup> USBR construction cost trends available at:  
<https://www.usbr.gov/tsc/techreferences/mands/cct.html>

Figure 4 shows the stage-storage relationship for the conceptual Gabilan Range Reservoir.

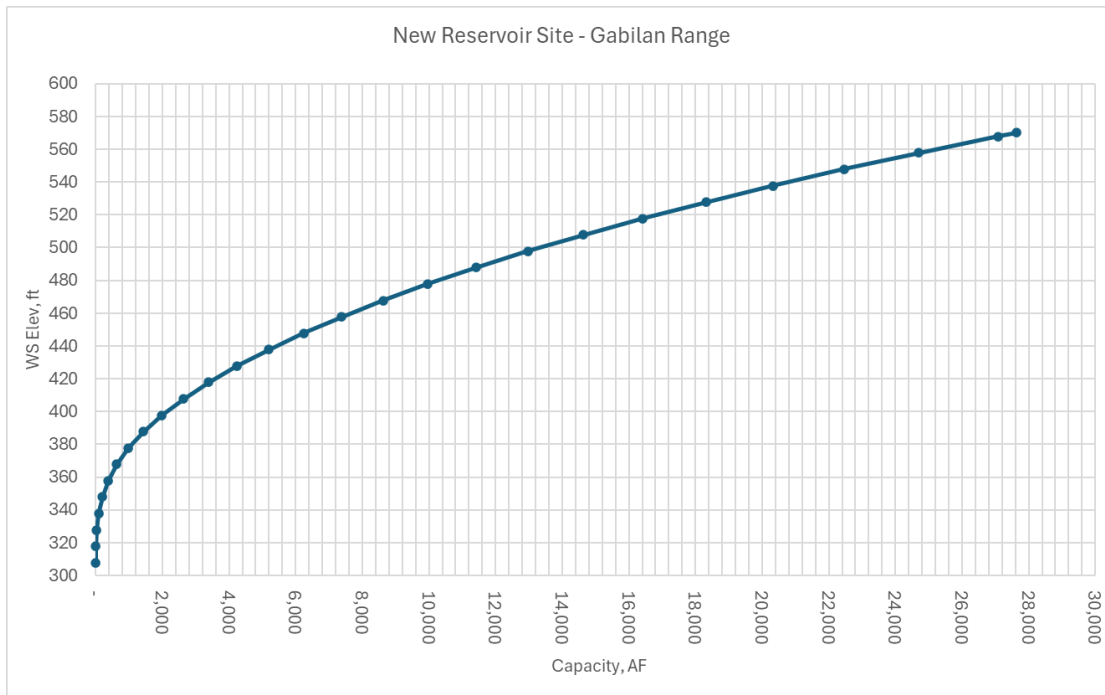


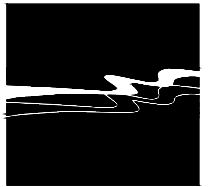
Figure 4. Stage-storage relationship for the conceptual Gabilan Range Reservoir.

The exhibit below shows the conceptual Gabilan Range Reservoir, and the earthen dam configuration used for estimating earthwork quantities.

**Cut/Fill Summary**

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
EG vs Dam 2	1.000	1.000	2144248.88 Sq. Ft.	2906.33 Cu. Yd.	7839613.48 Cu. Yd.	7836707.15 Cu. Yd.<Fill>
Totals			2144248.88 Sq. Ft.	2906.33 Cu. Yd.	7839613.48 Cu. Yd.	7836707.15 Cu. Yd.<Fill>

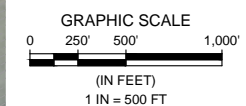
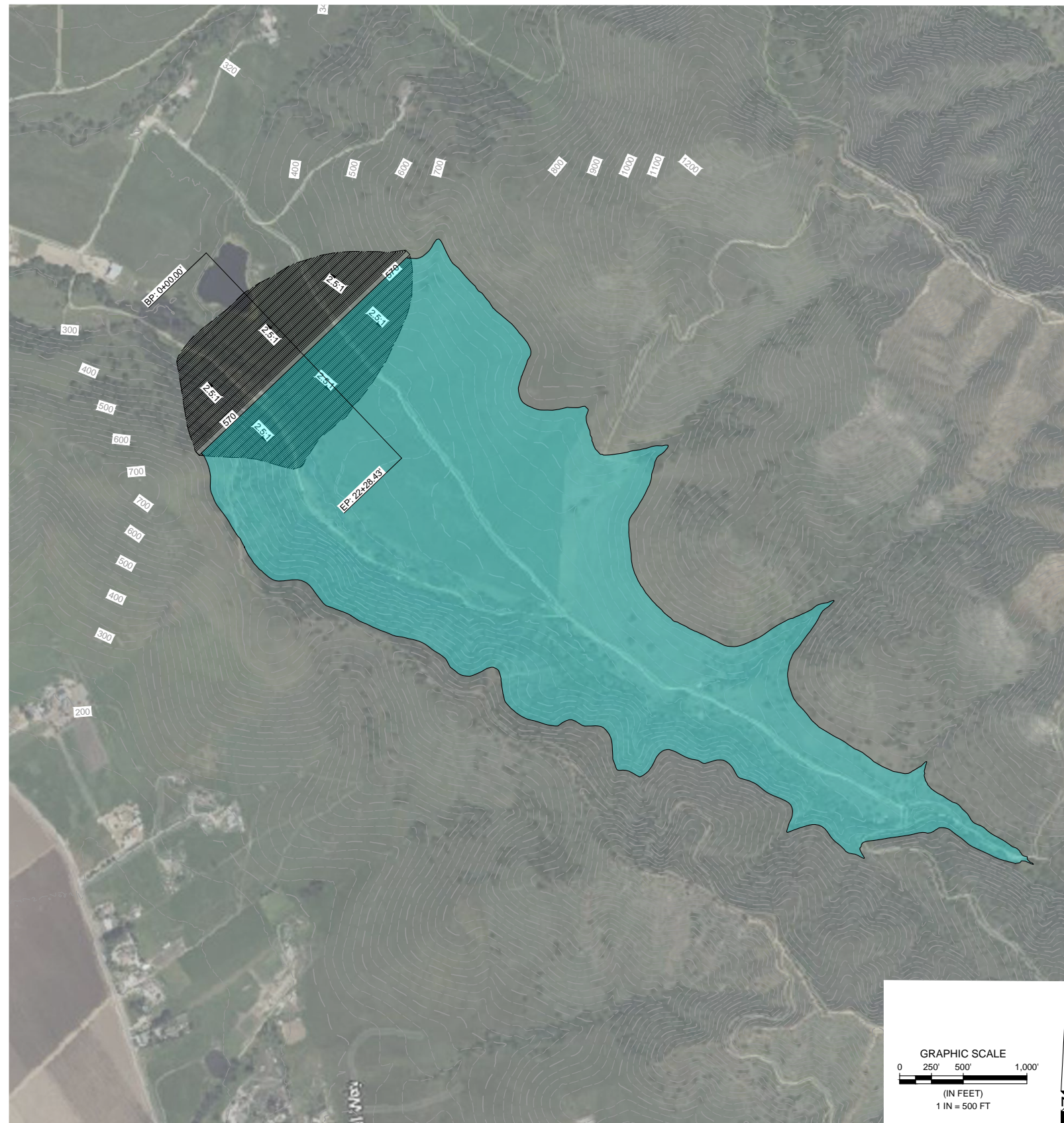
NOTE: DRAWING HAS BEEN PLOTTED AT HALF SCALE.



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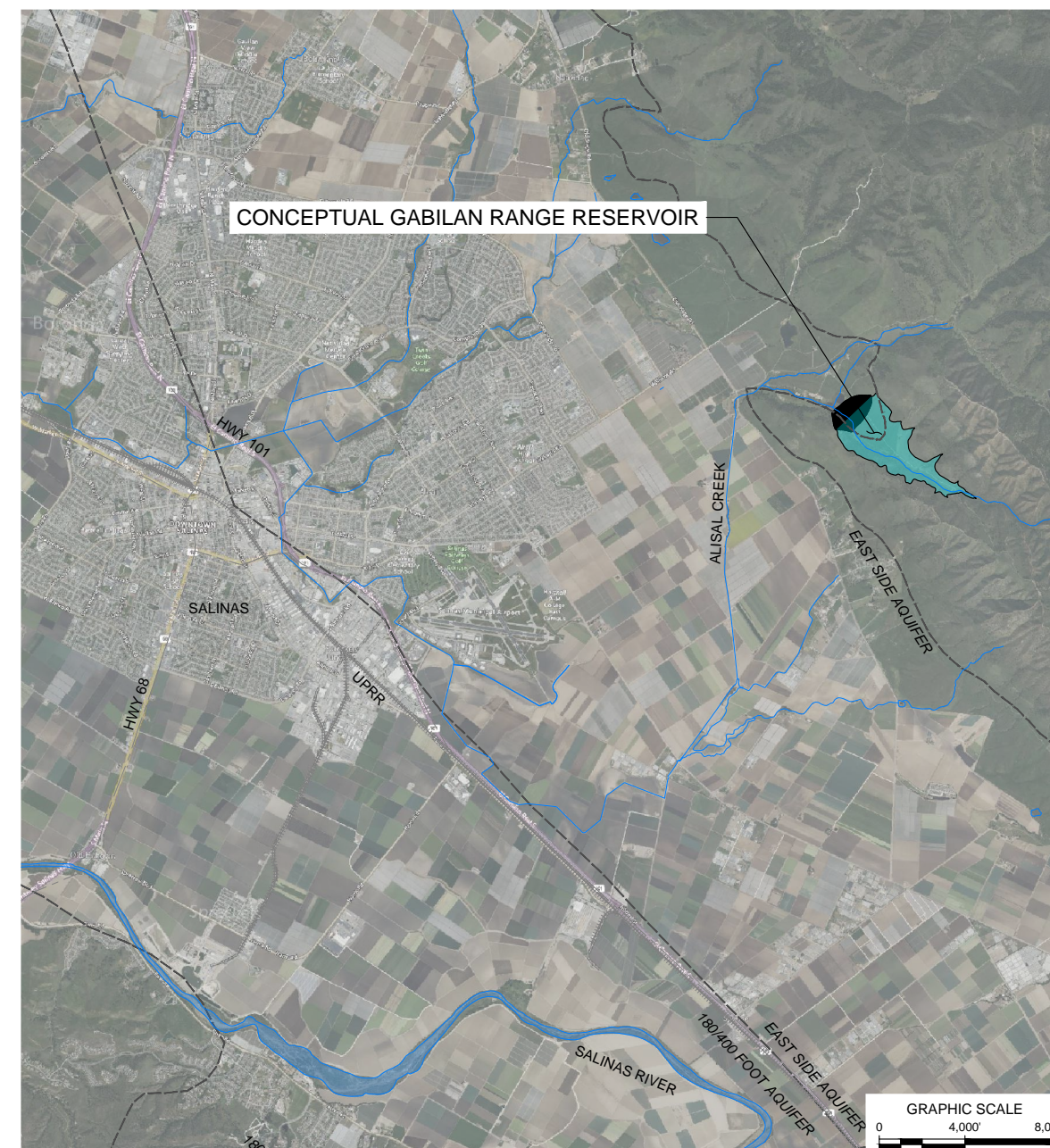
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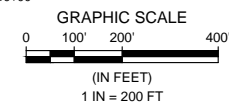
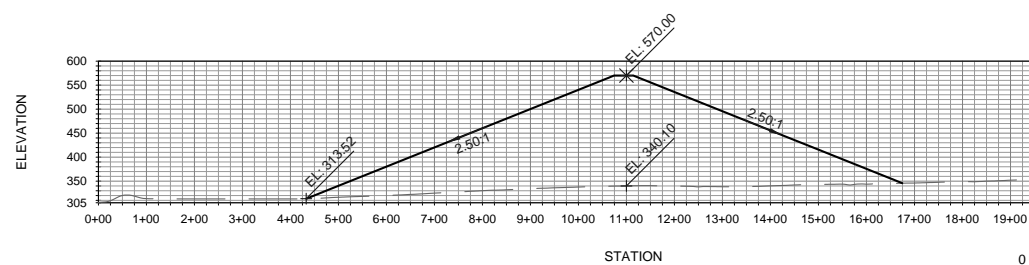
SCALE: 1" = 500'

GABILAN RANGE 25K AF RESERVOIR CONCEPT



VICINITY MAP

SCALE: 1" = 4000'



SCALE: 1" = 200'

CONCEPTUAL DAM SECTION

SIGNATURE \_\_\_\_\_  
DATE SIGNED \_\_\_\_\_  
These plans and specifications, and the ideas and designs incorporated herein, are instruments of service prepared for the construction of work shown hereon and shall not be used in whole or in part for any other project without written authority of Wallace Group, a California Corporation.  
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SALINAS VALLEY BASIN GSA  
C&E STUDY  
CONCEPTUAL GABILAN RANGE RESERVOIR

JOB #: 1447-0005  
DESIGNERS: TBV  
DRAWN BY: ZVC  
DATE: 3/9/2026

DRAWING NO.  
EX-1  
1 OF 1 SHEETS

## Summary

Table 4 summarizes the capacity and capital cost estimates for the two conceptual reservoirs proposed for use in the C&E project concepts.

*Table 4. Storage Reservoirs Assumed for C&E Project Concepts*

<b>Reservoir</b>	<b>Capacity, Acre-Feet</b>	<b>Capital Cost Estimate</b>
Merritt Lake, Combined (Max. WS EL. 36)	13,000	\$117M
Gabilan Range Reservoir (Max. WS EL. 560)	25,000	\$355M

## References

- Boyle Engineering Corporation. 1991. *Water Capital Facilities Plan*. Volumes 1 and 2. July 1991.
- DWR (California Department of Water Resources). 1946. *Salinas Basin Investigation Summary Report*, Bulletin No. 52-B.
- MBK Engineers. 2025. *Evaluation of Salinas River Water Rights and Alternatives*. October 2025.
- Montgomery and Associates. 2026. *Projected Salinas River Flows Analysis*, Technical Memorandum. Prepared for Salinas Valley Basin Groundwater Sustainability Agency. March 2, 2026
- Montgomery Watson. 1998. *Salinas Valley Water Project: Project Plan Report Draft*, Prepared for the Monterey County Water Resources Agency. October 1998
- SWRCB (State Water Resources Control Board). 1956. *Salinas River Basin Investigation, Bulletin No. 19*. February 1956.
- SWRCB (State Water Resources Control Board). 2013. *Right to Divert and Use Water, Application 13225, Permit 11043*. September 2013