

**Alamitos
Barrier
Project**

ALAMITOS BARRIER PROJECT

Member Agencies:

Orange County Water District
Water Replenishment District of Southern California
Long Beach Utilities
Golden State Water Company
Los Angeles County Flood Control District

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Joint Management Committee

**Annual report on the control of seawater intrusion
2024 - 2025**

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INTRODUCTION

The Alamitos Barrier Project (ABP) was designed and constructed to protect the groundwater supplies of the Central/Orange County Basin within the Coastal Plain from seawater intrusion through the Alamitos Gap area. The project facilities are located near the Los Angeles-Orange County border, approximately two miles inland from the terminus of the San Gabriel River. The original facilities included injection wells to form a freshwater pressure ridge and extraction wells to form a saltwater trough. The freshwater pressure ridge has proven to be historically effective, whereas the saltwater trough has not. As a result, the extraction wells are currently not in operation. A map showing the supply pipeline, injection wells, extraction wells, and observation wells is provided in *Appendix A-12*.

Los Angeles County Public Works (Public Works) operates and maintains the ABP and its associated facilities under the direction and approval of the Joint Management Committee (JMC), which acts on behalf of the Los Angeles County Flood Control District (LACFCD) and the Orange County Water District (OCWD).

This report summarizes design and construction issues, operation and maintenance activities, hydrogeologic effects, chloride concentrations, and project costs for Fiscal Year (FY) 2024-25 (July 1, 2024, through June 30, 2025).

SUMMARY

During FY 2024-25, a total of 5,349 acre-feet (AF) of water was injected into the ABP (an average rate of 7.4 cubic feet per second (cfs)). Of this total, OCWD purchased 2,168 AF (40.5 percent) and the Water Replenishment District of Southern California (WRD) purchased 3,181 AF (59.5 percent). This total injected amount was 691 AF less than FY 2023-24 and was 961 AF less than the average injection of 6,310 AF for the previous five fiscal years. The ABP experienced one major shutdown in April 2025 due to leaks in the main water supply pipeline, along with six partial shutdowns required to support water quality sampling and maintenance activities. These shutdowns are detailed in the Injection Operations section of this report and *Table 2* (Page 7).

The total costs associated with the ABP in FY 2024-25 are summarized below:

Total Cost in FY 2024-25: \$11,003,216

1. Injection Water costs: **\$7,934,855** (OCWD: **\$3,218,818**; WRD: **\$4,716,037**)
2. Operations and Maintenance costs (excluding insurance): **\$2,973,233**
 - Injection-related costs: \$2,921,748 (OCWD: **\$1,183,308**; LACFCD: **\$1,738,440**).
 - Equivalent cost per AF of water injected: \$546.20
 - Extraction-related costs: \$3,459 (LACFCD).
 - Projects and Studies costs: \$48,026 (LACFCD Unit 15 Project).
3. Liability Insurance cost: **\$95,128** (OCWD: **\$47,564**; LACFCD **\$47,564**).

During this reporting period, groundwater levels along the ABP alignment were generally at or slightly below protective elevations across the C and B Zone aquifers. However, portions of both the A and I Zones experienced groundwater levels significantly below protective elevations. In these areas, several injection wells are screened across four zones, making it difficult to control injection into a specific zone. Compared to the previous reporting period, groundwater levels decreased across all zones, largely due to the April 2025 main water supply pipeline leaks.

West of the San Gabriel River, chloride concentrations in FY 2024-25 remained generally stable in the B, A, and I Zones, while decreases were observed in the R and C Zones. East of the San Gabriel River, chloride concentrations decreased in the B and I Zones but increased in the R Zone. Chloride levels in the C and A Zones remained largely unchanged.

Detailed analyses of the reporting period's groundwater elevations and chloride concentrations are provided in the "Hydrogeologic Effects" and "Chlorides" sections of this report.

It is imperative that the ABP operate consistently and continuously to prevent seawater intrusion. The JMC will continue to ensure that the ABP is operated and maintained efficiently, economically, and continuously protects the region's groundwater supplies.

PROJECTS AND STUDIES

Capital improvement projects and studies during this reporting period are briefly summarized below. The general location of each project is identified on the map in *Appendix A-12*.

Observation Well Modifications

Observation wells along portions of the ABP alignment commonly experience artesian conditions due to continuous injection of freshwater via injection wells. As a result, it can be difficult to perform routine operational activities at the observation wells such as measuring groundwater levels and collecting chloride samples. In addition, flooding of the observation well vaults can occur if the well cap cannot sufficiently withstand the well casing pressure, or if the well cap is improperly installed. Currently, to perform chloride sampling at artesian observation wells, LACPW must coordinate a shutdown of nearby injection wells to allow water levels to subside. This creates an unfavorable condition where saltwater intrusion could occur due to the reduction in groundwater levels and exhausts manpower and resources.

To remedy this issue, LACPW prepared a plan to retrofit artesian observation wells to allow chloride sampling activities to be performed without the need to remove the well caps or shutdown nearby injection wells. The design replaced the traditional observation well cap with a PVC blind flange with stainless steel Swagelok tube connectors to collect water samples. The design included attaching poly-flo tubing to each Swagelok tube connector which had a length that corresponded to the desired sampling depth inside the well casing. This design utilizes the artesian conditions within the well to produce a water sample through the poly-flo tubing by connecting to the Swagelok fitting. Wells modified during this reporting period are listed in Table 1 below:

Table 1. Observation Well Modifications

#	Project #	Aquifer(s)
1	34DG	C, B, A, I
2	34HJ	A, I
3	34LS	C, B

Updated Title-22 Engineering Report and Added Tracer Study

To address the new ABP Unit 15 injection wells and the new inland injection well at the Leo Vander Lans Advanced Water Treatment Facility (LVL AWTF), the Water Replenishment District was tasked with submitting an updated Title 22 Engineering Report to the State Water Resources Control Board Division of Drinking Water and the Los Angeles Regional Water Quality Control Board. In November 2022, WRD submitted the updated Title 22 Engineering Report, which included a workplan for an added tracer study for the ABP and the inland injection well at the LVL AWTF.

In January 2024, WRD and LACPW worked together to perform the tracer study. This involved adding fluorescein dye into three ABP injection wells [34E(I), 34F(I), and 34F2 (A)], and sampling for tracer arrival at four down gradient observation wells [34F5(A), 34F5(I), 34FG(A), and 34FG(I)]. A successful added tracer study will result in detecting the fluorescein dye at the selected observation wells to determine the travel velocities of recycled water within the groundwater basin. Field activities are expected to conclude by the end of 2025, with results anticipated in 2026.

INJECTION OPERATIONS

The total amount of water injected into the ABP during FY 2024-25 was 5,349.2 AF. Of this total, approximately 2,935.6 AF (55 percent) was recycled water, and 2,413.6 AF (45 percent) was imported water. The maximum monthly injection during this reporting period was 575 AF (80 percent recycled and 20 percent imported) which occurred in December 2024. The minimum monthly injection of 133 AF (62 percent recycled and 38 percent imported) occurred in April 2025 and was directly related to a shutdown of the ABP that occurred in this month.

The ABP was shutdown in April 2025 for seven weeks due to two leaks in the main water supply pipeline. The first leak, discovered on April 9 along the San Gabriel River access road near Stevely Street in the City of Long Beach, and was repaired on April 16. The second leak was discovered on April 14 inside the isolation valve vault along the westerly access road of the San Gabriel River, north of the 405 Freeway. This repair required replacement and custom fabricated parts with long lead times. Public Works utilized an as-needed contractor to perform a temporary repair until the replacement parts arrived. The ABP resumed operation on May 21 at a reduced rate, with flow rate adjustments limited due to the temporary nature of the repairs. In August 2025, the replacement parts were received, and a permanent repair was completed.

There were six other partial shutdowns during the reporting period. Two of these occurred in August and September 2024 to conduct chloride sampling at artesian observation wells and to retrofit select observation well casings. The August 2024 shutdown affected seven injection wells for one week, while the September 2024 shutdown affected 14 injection wells for 2 weeks. The remaining four partial shutdowns were necessary to support chloride sampling at artesian observation wells or to perform telemetry maintenance. These shutdowns had minor impacts on injection operations, with only four injection wells turned off for each shutdown event.

Overall, there were seven shutdowns on the ABP during FY 2024-25, with only one being a full shutdown. A summary of all ABP shutdowns is provided in *Table 2 – Summary of ABP Shutdowns*.

Table 2. Summary of ABP Shutdowns

Shutdown	Startup	Duration (days)	Impacted Portion of ABP	# of Wells	Reason
8/1/2024	8/7/2024	6	34H2 (A), 34H2 (I), 34J2 (C/B), 34K (C/B), 34N (C/B), 34Q (C/B), 34S (C/B)	7	WRD sampling event at 34L10 & 34JL
9/12/2024	9/26/2024	14	34S (C/B), 34S (A), 34S (I), 34T (C/B), 34T (A), 34T (I), 34V(A), 34X(B), 34X(A), 34Z2(A), 34Z2(I), 34Z(I), 35E(I), 35F(A,I)	14	OB Well Modifications at 34S0.1, 34VZ, and 34Y0.1
12/16/2024	1/6/2025	21	34H2 (A) - 34J (I)	4	WRD sampling event at 34HJ & 34L10
2/6/2025	2/13/2025	7	34H2 (A) - 34J (I)	4	WRD sampling event at 34L'1, 34LS, 34HJ & 34L10
3/10/2025	3/20/2025	10	34S (A) - 34T (C/B)	4	Sensor replacement at 34S0.1; Artesian conditions
4/9/2025	5/21/2025	42	Full barrier shutdown	61	Leak in ABP water supply pipeline
6/23/2025	7/15/2025	22	34H2 (A) - 34J (I)	4	WRD sampling event at 34L10

Since completion of the LVL AWTF expansion in 2014, the LVL AWTF has operated intermittently between 2.5 and 6.0 million gallons per day (MGD). Further details regarding LVL AWTF operations can be found in the *Recycled Water Operations* section of this report.

The injection volumes and costs for FY 2023-24 and FY 2024-25 are shown in *Table 3*. The representative unit costs included in *Table 3* for imported and recycled water were calculated by WRD. *Table 3* shows that the volume of water injected into the ABP during FY 2024-25 decreased by 691 AF (11.4 percent) compared to the previous year. This decrease was primarily due to the ABP shutdown caused by two leaks in the main water supply pipeline. Additionally, several injection wells were taken offline to accommodate ongoing projects and chloride sampling activities during the reporting period.

TABLE 3. INJECTION OPERATIONS

Imported Water Injections			Recycled Water Injections			Total Injections		
FY23-24	FY24-25	% Δ	FY23-24	FY24-25	% Δ	FY23-24	FY24-25	% Δ

VOLUME OF WATER INJECTED IN ACRE-FEET

OCWD ¹	625.7	1,016.8	62.5%	1,488.4	1,151.2	-22.7%	2,114.1	2,168.0	2.5%
WRD ²	1,193.4	1,396.8	17.0%	2,733.0	1,784.4	-34.7%	3,926.4	3,181.2	-19.0%
TOTAL	1,819.1	2,413.6	32.7%	4,221.4	2,935.6	-30.5%	6,040.5	5,349.2	-11.4%

AVERAGE INJECTION RATE IN CFS

OCWD ¹	0.86	1.40	62.5%	2.06	1.59	-22.7%	2.92	2.99	2.5%
WRD ²	1.65	1.93	17.0%	3.78	2.46	-34.7%	5.43	4.39	-19.0%
TOTAL	2.51	3.33	32.7%	5.84	4.05	-30.5%	8.35	7.38	-11.4%

COST OF WATER PURCHASED

OCWD ¹	\$866,398	\$1,557,922	79.8%	\$2,060,115	\$1,660,896	-19.4%	\$2,926,513	\$3,218,818	10.0%
WRD ²	\$1,651,829	\$2,132,417	29.1%	\$3,778,858	\$2,583,620	-31.6%	\$5,430,687	\$4,716,037	-13.2%
TOTAL	\$2,518,227	\$3,690,339	46.5%	\$5,838,973	\$4,244,516	-27.3%	\$8,357,200	\$7,934,855	-5.1%

UNIT COST OF WATER PER ACRE-FOOT³

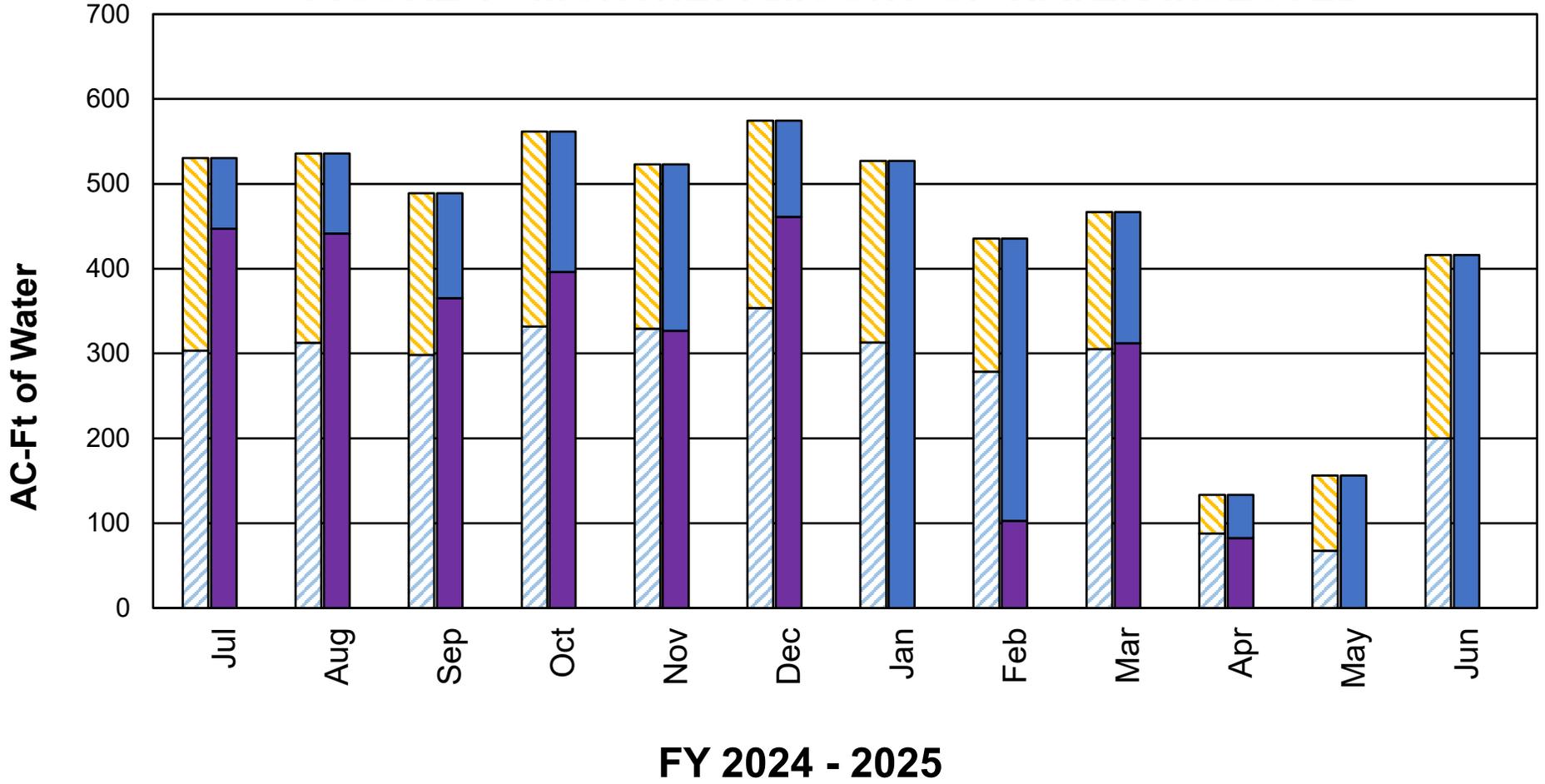
JULY - DEC	\$1,360.84	\$1,418.20	4.2%	\$1,360.84	\$1,418.20	4.2%			
JAN - JUN	\$1,407.80	\$1,581.48	12.3%	\$1,407.80	\$1,581.48	12.3%			

¹ Orange County Water District (OCWD)

² Water Replenishment District of Southern California (WRD)

³ The Unit Cost of **Imported Water** Per Acre-Foot is the sum of the Metropolitan Water District's wholesale rate at LB-07A (managed by Long Beach Water Department), the \$5 Administrative Surcharge, Readiness-To-Serve (RTS) costs, and Capacity costs (using total volume plus penalties). This amount is greater than what is shown on monthly invoices because Capacity costs are not typically known or accounted for at the time of those invoices. Based on the agreement between the OCWD and the WRD, the representative Unit Cost of **Recycled Water** Per Acre-Foot is equal to that of the imported water and is shown in the calculations by the WRD.

FIGURE 1 - MONTHLY AMOUNT OF WATER INJECTED



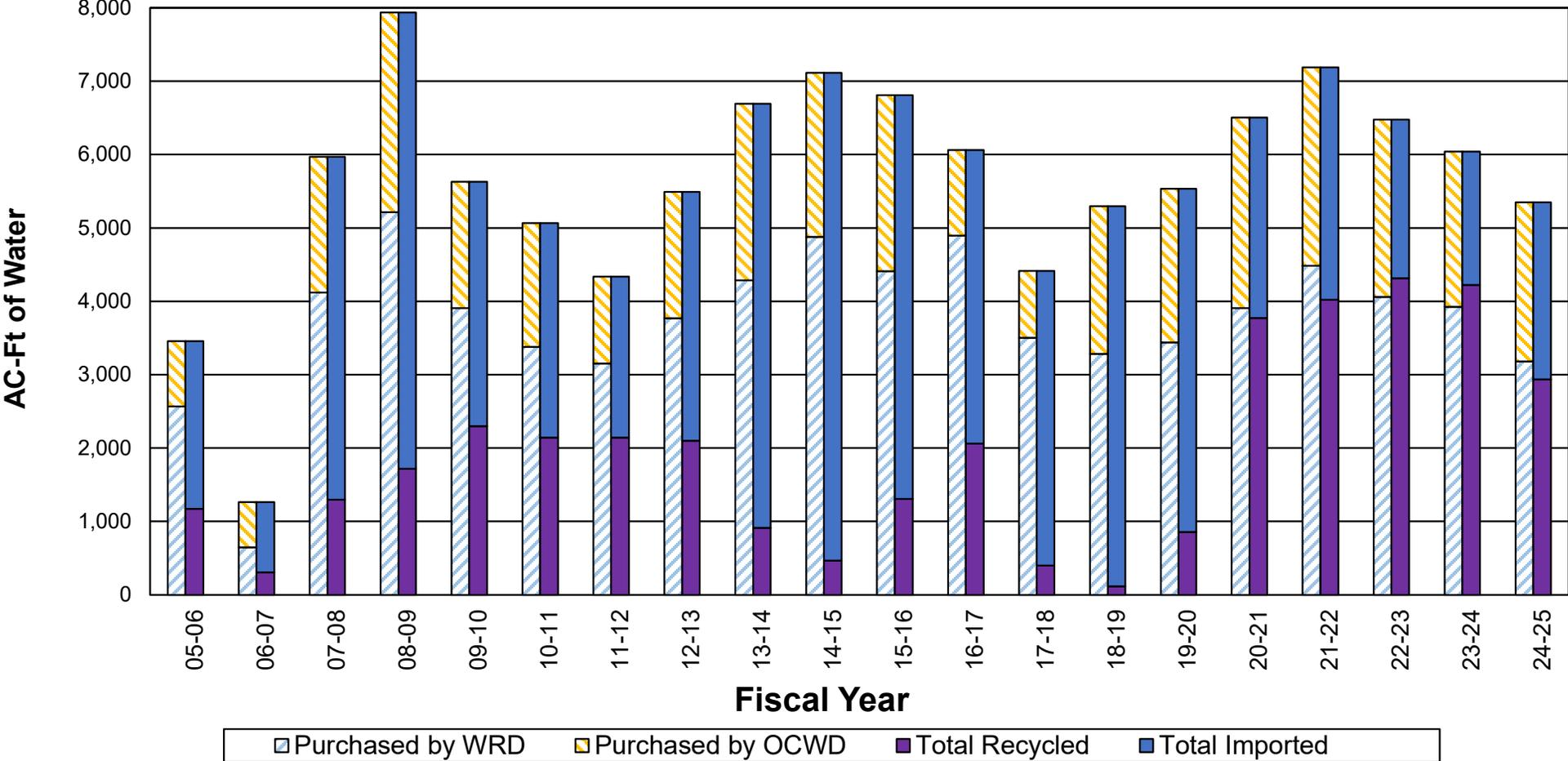
Purchased by WRD

 Purchased by OCWD

 Total Recycled

 Total Imported

FIGURE 2 - ANNUAL AMOUNT OF WATER INJECTED



RECYCLED WATER OPERATIONS

The LVL AWTF was constructed in 2005 to provide up to 3 million gallons per day (MGD) of advanced treated recycled water to inject at the ABP. The LVL AWTF treatment train consists of Micro-Filtration (MF), Reverse Osmosis (RO), and an Ultra-Violet light / Advanced Oxidation Process (UV/AOP) using hydrogen peroxide. An expansion project completed in 2014 increased the plant capacity to 8 MGD by adding a recovery MF system and a third stage RO system. The Long Beach Water Reclamation Plant (LBWRP) owned by the Los Angeles County Sanitation Districts (LACSAN) provides recycled water to Long Beach Water Department (LBWD), who in turn provides recycled water to the LVL for advanced treatment.

The LVL AWTF was authorized to deliver up to 3 MGD for injection at the ABP under Regional Water Quality Control Board (RWQCB) Order No. R4-2005-0061 with the condition that the 10-year running average of recycled water contribution does not exceed 50 percent. In conjunction with completion of the plant expansion project, the LVL AWTF was authorized under RWQCB Order No. R4-2014-0111 to inject up to 8 MGD of advanced treated recycled water with no limitation on the percent recycled water contribution running average.

During the reporting period, the LVL AWTF provided a total of 2,935.6 AF of advanced treated recycled water to the ABP at rates between 2.5 MGD and 6.0 MGD. This represents a 30.5 percent decrease in production compared to the previous fiscal year. The reduction occurred because the LVL AWTF was offline in January 2025 for a supervisory control and data acquisition (SCADA) system upgrade and subsequently remained offline from April 9, 2025, to September 2, 2025, while the ABP main water supply pipeline was being repaired following the April 2025 shutdown. The advanced treated recycled water accounted for 55 percent of the total volume injected into the ABP, compared to an average of 61 percent over the past five years.

WRD continues to make significant improvements at the LVL AWTF, including upgrades to the SCADA system and the replacement of reverse osmosis membranes. As a result,

the supply of advanced treated recycled water has increased substantially over the past five years. A total of 28 plant shutdowns occurred during the reporting period, most of which were of short duration (13 were due to Southern California Edison power outages or planned shutdowns).

MAINTENANCE

Typical well maintenance at the ABP includes injection well redevelopment and observation well cleanouts. The purpose of injection well redevelopment is to remove accumulated sediments and microbiological buildup within the well casings to restore each well’s ability to operate at maximum injection capacity. Each of the 61 injection well casings are routinely redeveloped once every two years. During FY 2024-25, Public Works completed redevelopment activities at 30 well casings, as listed in *Table 4* below:

Table 4. Injection Well Redevelopment Program

33Y (C,B,A,I)	34G2 (C,B)	34G2 (I)	34J (A,I)	34J2 (C,B)	34K (C/B)
34L (C,B,A,I)	34N (C,B)	34N (A)	34N (I)	34Q (C,B)	34Q (A)
34Q (I)	34S (B,C)	34S (A)	34S (I)	34T (C,B)	34T (A)
34T (I)	34X (B)	34X (A)	34X (I)	34Z2 (A)	34Z2 (I)
34Z (I)	35E (I)	35F (I)	35H1 (A)	35H1 (I)	35H2 (A)

Observation well cleanouts are performed on an as-needed basis to remove accumulated sediments within the well casings. Public Works staff performing observation well cleanouts rotate between the Alamitos Barrier Project, Dominguez Gap Barrier Project, and West Coast Basin Barrier Project. During FY 2024-25, Public Works completed cleanout activities at 12 well casings, as listed in *Table 5* below:

Table 5. Observation Well Clean-out Program

33NQ (A,I)	33S 20 (I)	33T 9 (B)	33T 9 (I)	33T 12.5 (I)	33T 13 (B)
33UV (A)	33WX (A)	33WX (I)	33XY (I)	33XY (A)	33YZ (I)

The operating status of each injection and extraction well during FY 2024-25 is shown in *Figure 3* (p. 14). The ABP was shutdown in April 2025 for seven weeks due to two leaks

in the main water supply pipeline. Additionally, there were six partial shutdowns during the reporting period to support chloride sampling at artesian observation wells or to perform telemetry maintenance.

Wells West of the San Gabriel River

- Injection Well 33S1 is currently functioning at a reduced flow rate due to concerns regarding potential surface leakage.

Wells East of the San Gabriel River

- Injection Well 34G (A) has historically experienced surface leakage issues. The area around the well was grouted in 2000 and 2004 to prevent surface leakage, which seemed to resolve the issue until 2016. In July 2016, a packer was installed to direct water below the poor casing welds, which were suspected to be the source of the surface leakage. Despite this, the well was turned off in 2019 due to recurring surface leaks. Injection resumed in December 2021 at a reduced rate. In December 2024, Public Works modified the well by installing a 6-inch PVC casing inside the existing 12-inch stainless steel casing.
- To perform redevelopment at injection Well 34V, Public Works staff typically turns off approximately 23 nearby injection wells to reduce groundwater levels. Public Works plans to modify this well with permanent equipment at the wellhead and inside the well, to allow it to be redeveloped without disassembly. Work activities are anticipated for late 2025. A similar modification was successfully completed at Injection Well 34S in May 2023.
- Injection Well 35G (A) was constructed in 1991 and injected into both the A and I Zone until 2013, when a redevelopment swab became lodged at a depth of 100-feet in the blank section between the perforations. The well continued

injection into the A Zone until February 25, 2020, when it was shut off due to flooding in the vault. A 2023 seawater barriers condition assessment found that this well is plugged with sediment which covers most of the perforations. This well is currently inoperable.

Figure 3 - ABP INJECTION AND EXTRACTION WELL STATUS

- N - Well in Operation
- R - Not Needed
- R - Redevelopment
- D - Disassembled
- H - Well Header Repair
- C - Casing Repair
- L - Surface Leakage (Operating at a Reduced Rate)
- X - Barrier Shutdown

Well No.	2024						2025									
	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN				
1 33G (A,I)										X	X	X	X	X		
2 33J (A,I)										X	X	X	X	X		
3 33L (A,I)										X	X	X	X	X		
4 33N (A,I)										X	X	X	X	X		
5 33Q (A,I)										X	X	X	X	X		
6 33Q1 (C,B)										X	X	X	X	X		
7 33S (A,I)										X	X	X	X	X		
8 33S1 (C,B)	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
9 33T (A,I)										X	X	X	X	X		
10 33U (A,I)										X	X	X	X	X		
11 33U3 (C,B)										X	X	X	X	X		
12 33V (A,I)										X	X	X	X	X		
13 33W2 (C,B)										X	X	X	X	X		
14 33W2 (A,I)										X	X	X	X	X		
15 33X (C,B,A,I)										X	X	X	X	X		
16 33Y (C,B,A,I)									D	R	D	D	D	D	D	D
17 33Z (C,B,A,I)									X	X	X	X	X	X		
18 33Z2 (A)										X	X	X	X	X		
19 33Z2 (I)										X	X	X	X	X		
20 34D (C,B,A,I)										H	X	X	X	X	H	D
21 34E (C,B)										X	X	X	X	X		R
22 34E (I)										X	X	X	X	X		R
23 34F (I)										X	X	X	X	X		R
24 34F2 (A)										X	X	X	X	X		
25 34G (A)	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	D
26 34G2 (C,B)										D	R	R				D
27 34G2 (I)										D	R	R				D
28 34H2 (A)			X						X	X						X
29 34H2 (I)			X						X	X						X
30 34J (A)	R	R	R	D					X	X	X	X	X	X		X
31 34J (I)	R	R	R	D					X	X	X	X	X	X		X
32 34J2 (C/B)			X			R			X	X	X	X	X	X		X
33 34K (C/B)			X			R			X	X	X	X	X	X		X
34 34L (C,B,A,I)		D	R	R	R	D	H	H	H							
35 34N (C/B)			X				R			X	X	X	X	X		
36 34N (A)							R			X	X	X	X	X		
37 34N (I)							R			X	X	X	X	X		
38 34Q (C/B)			X				R			X	X	X	X	X		
39 34Q (A)							R			X	X	X	X	X		
40 34Q (I)							R			X	X	X	X	X		
41 34S (A)				X	X		R			X	X	X	X	X		
42 34S (I)				X	X		R			X	X	X	X	X		
43 34S (C,B)			X				R			X	X	X	X	X		
44 34T (C/B)				X	X		R	R		X	X	X	X	X		
45 34T (A)				X	X		R	R		X	X	X	X	X		
46 34T (I)				X	X		R	R		X	X	X	X	X		
47 34V (A)				X	X					X	X	X	X	X		
48 34V (I)										X	X	X	X	X		
49 34V (C,B)										X	X	X	X	X		
50 34X (B)				X	X		R			X	X	X	X	X		
51 34X (A)				X	X		R			X	X	X	X	X		
52 34X (I)							R			X	X	X	X	X		
53 34Z2 (A)				X	X		R			X	X	X	X	X		
54 34Z2 (I)				X	X		R			X	X	X	X	X		
55 34Z (I)			D	D	D	R	D	D		X	X	X	X	X		
56 35E (I)				X	X		D	R	R	D						
57 35F (I)				D	R	D				X	X	X	X	X		
58 35G (A,I)	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
59 35H1 (A)										D	R	R	R	D		
60 35H1 (I)										D	R	R	R	D		
61 35H2 (A)										D	R	R	D	D	D	D
62 33V'15P*	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
63 34H'17P*	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
64 34H'18P*	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
65 34S'22P*	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

*Extraction Well

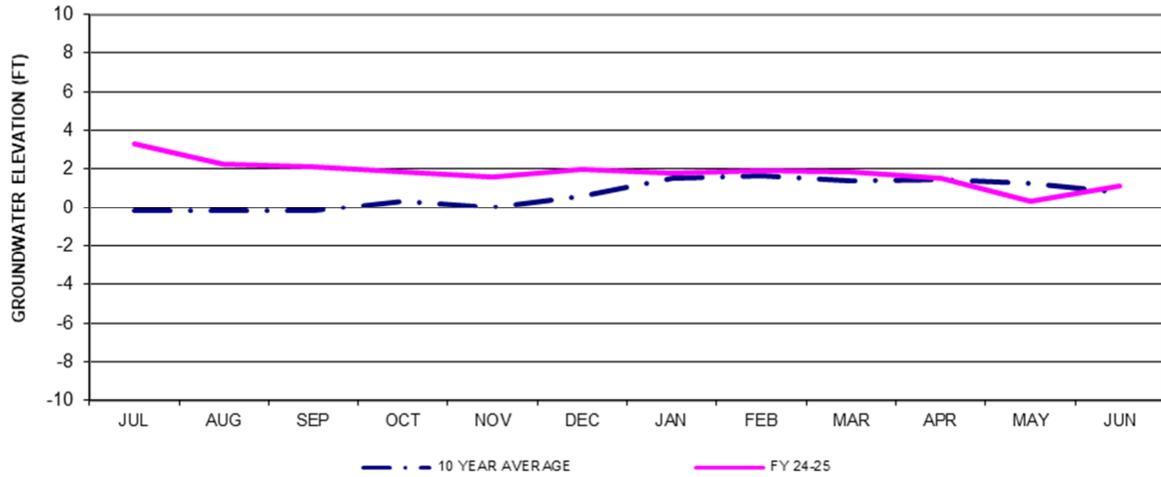
HYDROGEOLOGIC EFFECTS

Figures 4a through 8b (pp. 16-20) show the average monthly groundwater elevation during FY 2024-25 relative to the average groundwater elevation of the preceding 10 years (FY 2014-15 through FY 2023-24) in the vicinity of the ABP alignment for the R, C, B, A, and I Zones, respectively. Two graphs were created for each aquifer to account for changes in groundwater elevation trends along two portions of the ABP alignment: wells west of the San Gabriel River and wells east of the San Gabriel River.

It is important to note that the 10-year average does not represent a groundwater elevation goal, nor does it specifically reflect the performance of the ABP, but is simply included for comparison purposes. Each graph incorporates all available semi-monthly, monthly, semi-annual, and annual data from wells within the ABP alignment and extending approximately 2,000 feet landward. As a result, semi-monthly values are "weighted" more heavily than the annual values in the calculation of monthly averages. Also, the months of September 2024 and March 2025 consistently have lower values than preceding and succeeding months since semi-annual and annual water levels are measured during these months.

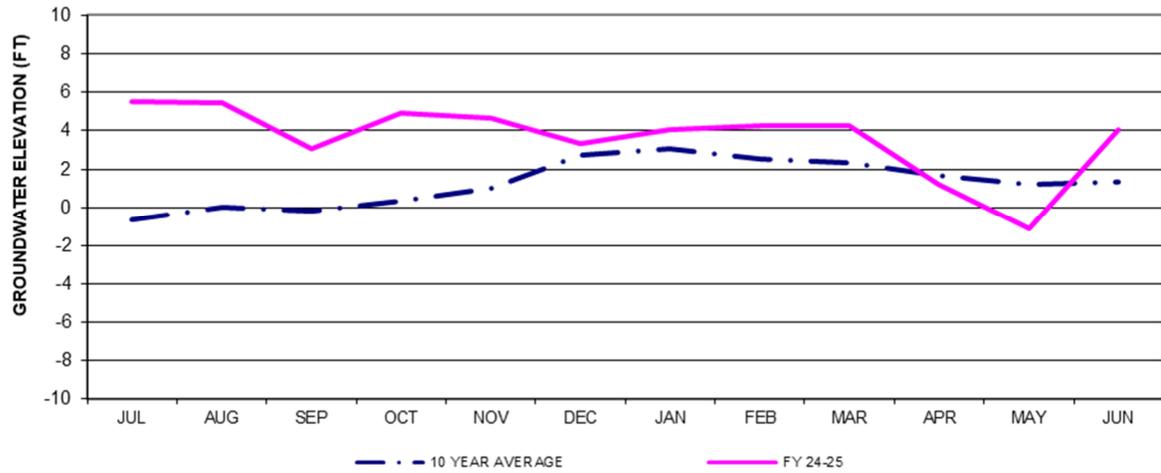
As shown in the graphs, groundwater elevations along the ABP were generally at or above the 10-year average. The exception occurred in April and May 2025, where notable decreases in groundwater levels were observed across all zones due to the leaks in the main water supply pipeline. Another exception was in the C Zone, where groundwater elevations west of the San Gabriel River fell below the 10-year average during the months of October and November 2024 and January 2025.

FIGURE 4a RECENT ZONE WEST OF THE SAN GABRIEL RIVER

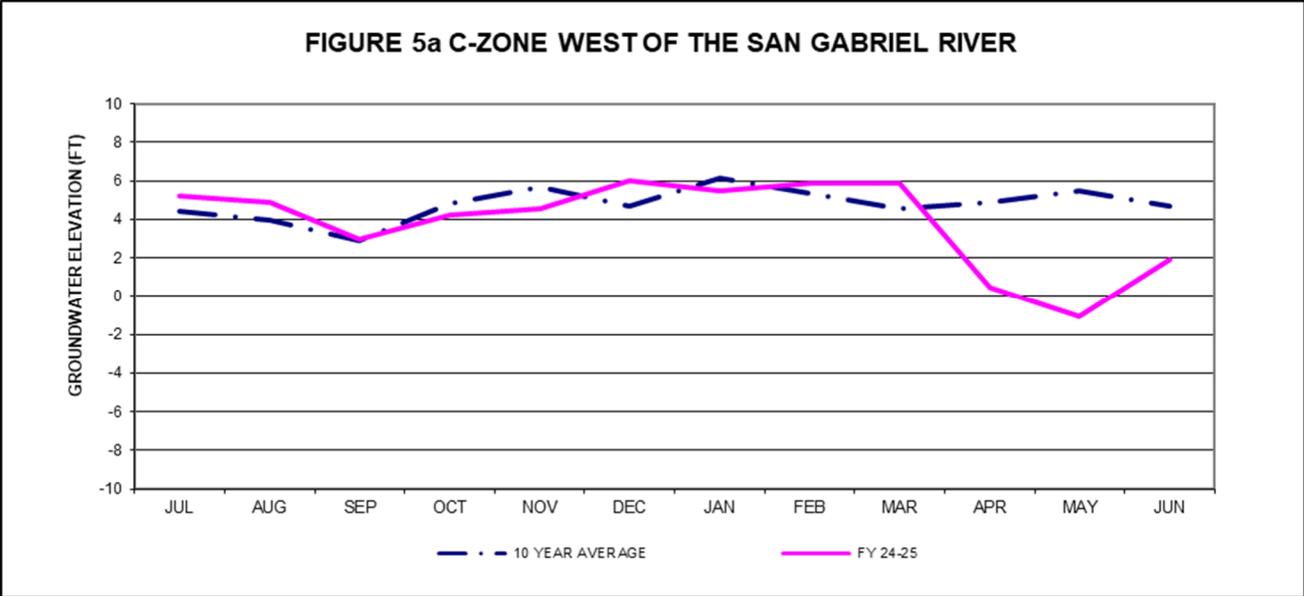


Note: The graph includes all available semi-monthly, monthly, semi-annual, and annual data for wells within the ABP alignment and landward for approximately 2,000 feet from the ABP

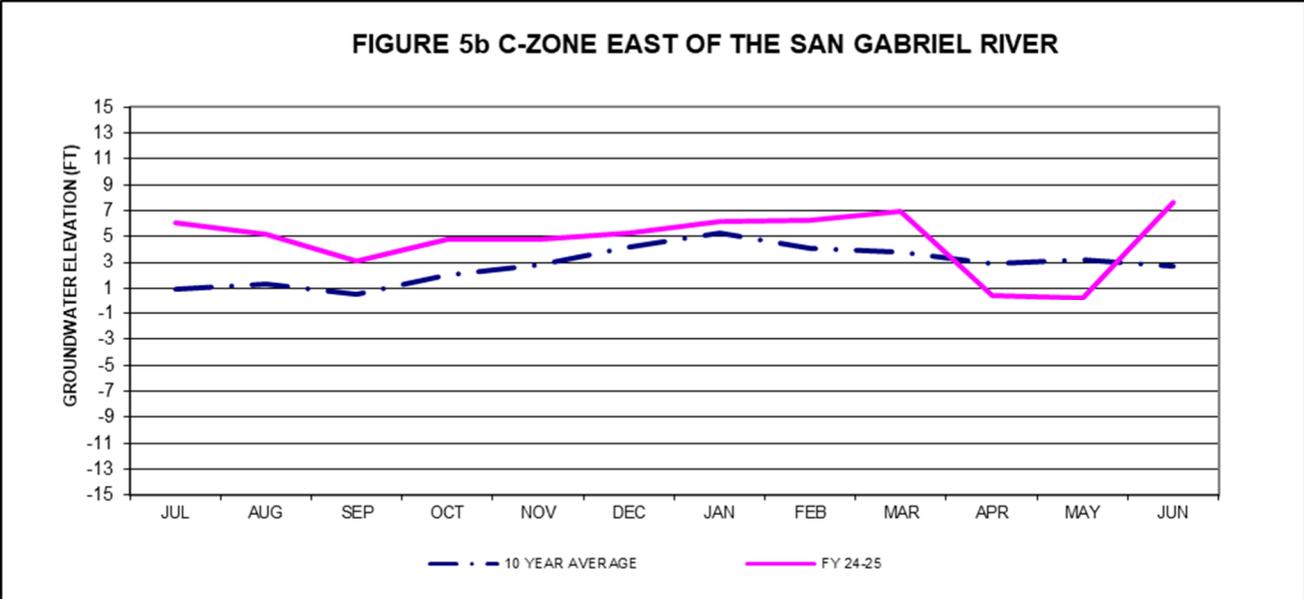
FIGURE 4b RECENT ZONE EAST OF THE SAN GABRIEL RIVER



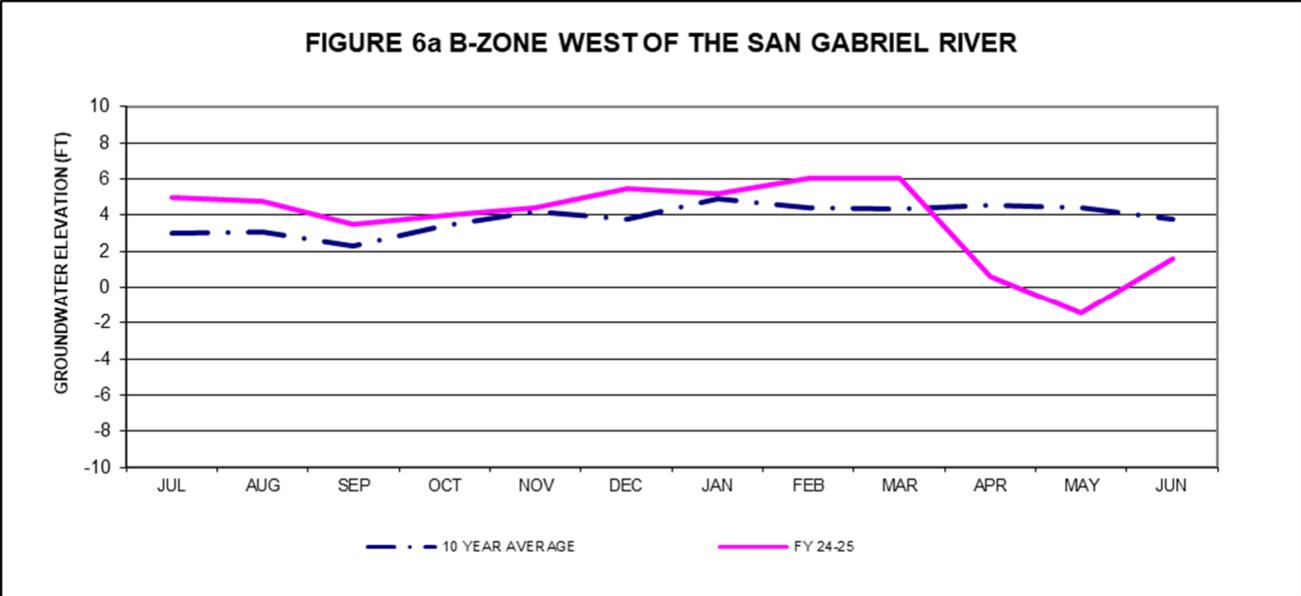
Note: The graph includes all available semi-monthly, monthly, semi-annual, and annual data for wells within the ABP alignment and landward for approximately 2,000 feet from the ABP



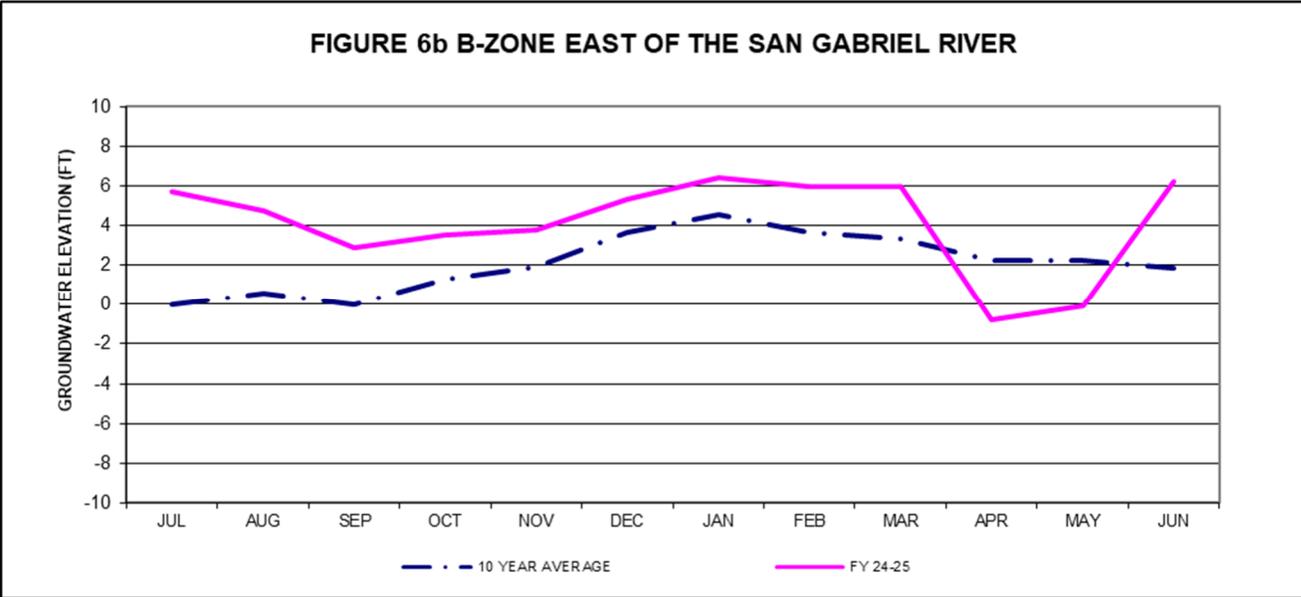
Note: The graph includes all available semi-monthly, monthly, semi-annual, and annual data for wells within the ABP alignment and landward for approximately 2,000 feet from the ABP



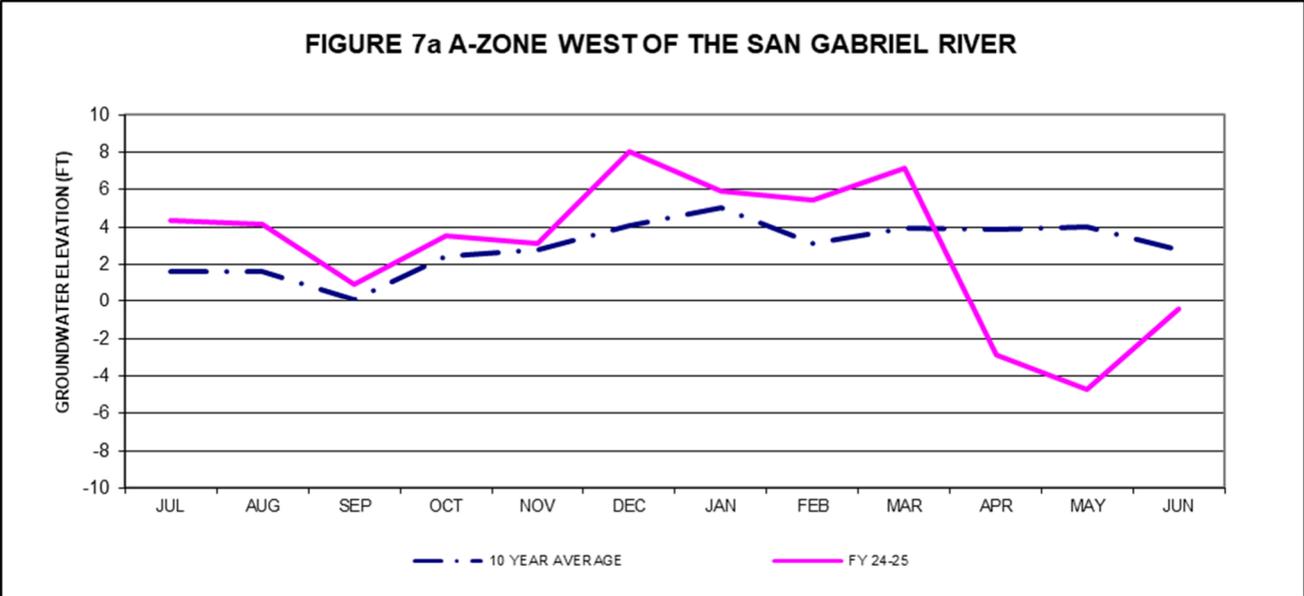
Note: The graph includes all available semi-monthly, monthly, semi-annual, and annual data for wells within the ABP alignment and landward for approximately 2,000 feet from the ABP



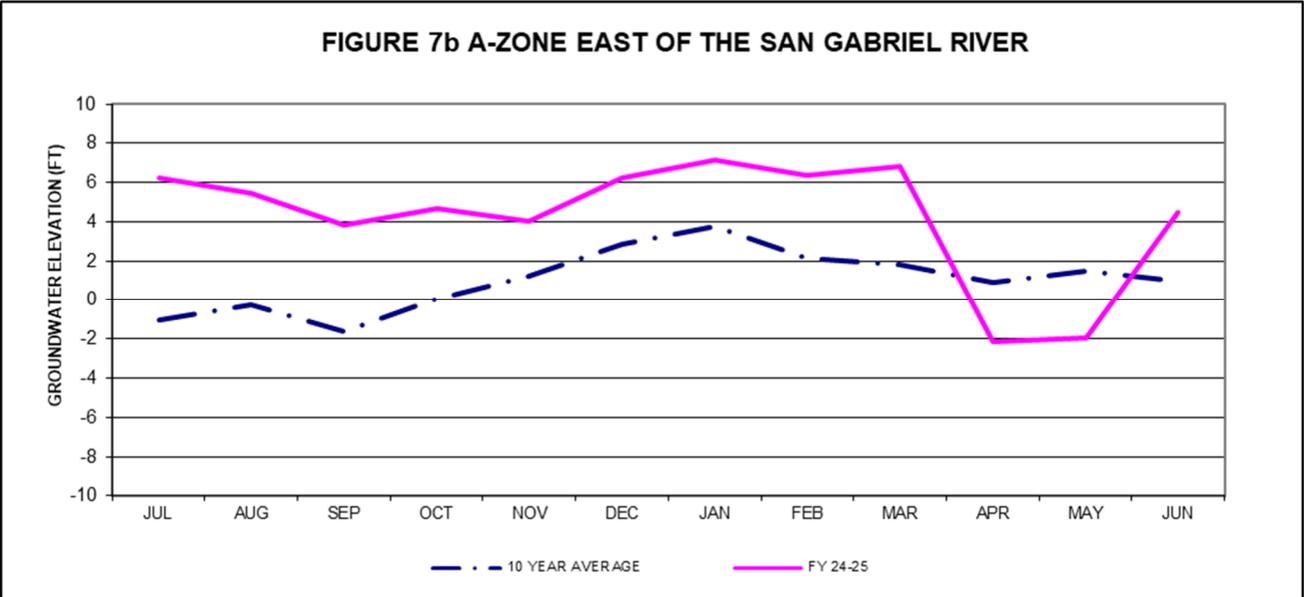
Note: The graph includes all available semi-monthly, monthly, semi-annual, and annual data for wells within the ABP alignment and landward for approximately 2,000 feet from the ABP



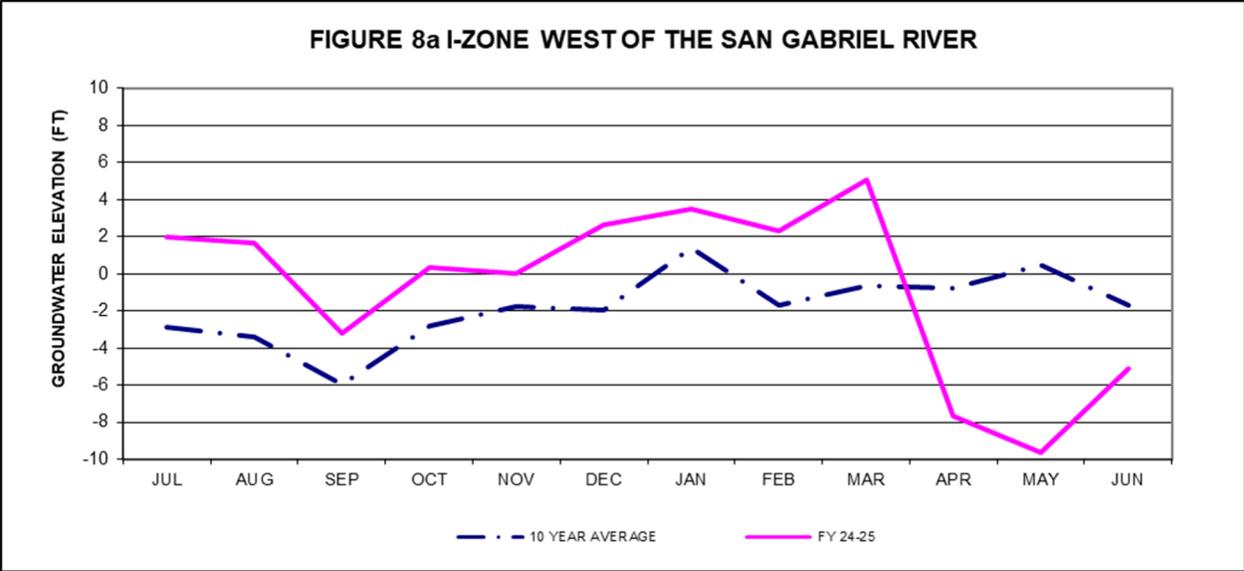
Note: The graph includes all available semi-monthly, monthly, semi-annual, and annual data for wells within the ABP alignment and landward for approximately 2,000 feet from the ABP



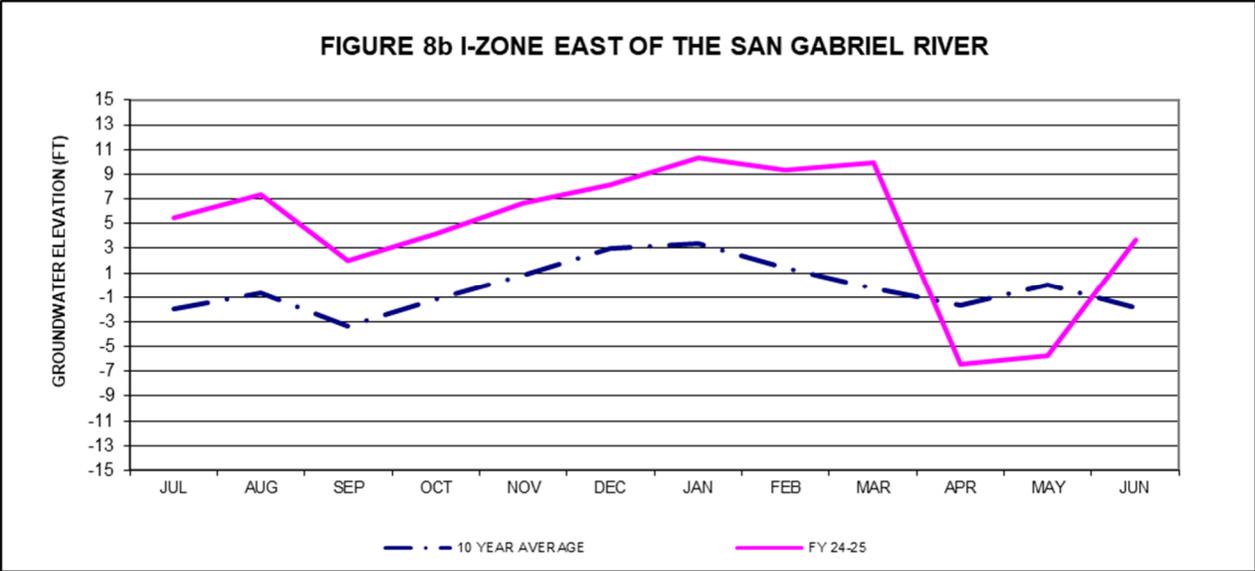
Note: The graph includes all available semi-monthly, monthly, semi-annual, and annual data for wells within the ABP alignment and landward for approximately 2,000 feet from the ABP



Note: The graph includes all available semi-monthly, monthly, semi-annual, and annual data for wells within the ABP alignment and landward for approximately 2,000 feet from the ABP



Note: The graph includes all available semi-monthly, monthly, semi-annual, and annual data for wells within the ABP alignment and landward for approximately 2,000 feet from the ABP



Note: The graph includes all available semi-monthly, monthly, semi-annual, and annual data for wells within the ABP alignment and landward for approximately 2,000 feet from the ABP

Groundwater elevation contours for the R, C, B, A, and I Zones have been prepared from data collected in Spring 2025 and are included in *Appendices A-1.1, 2.1, 3.1, 4.1, and 5.1*. In general, the contours indicate that groundwater levels were highest near the ABP alignment, and typically decrease moving landward. The general shapes of each contour are similar to the previous year and some similar groundwater mounds are seen around certain injection wells. Groundwater elevations near injection wells that are screened across all four zones (i.e., 33X, 33Y, and 33Z), tend to over inject into the shallower C and B Zones, while under injecting into the deeper A and I Zones. This can be observed near observation wells 33XY and 33YZ where groundwater elevations are above protective elevations in the C, B, and A Zones, but below protective elevations in the I Zone.

Contours showing **changes** in groundwater elevations for the R, C, B, A, and I Zones between Spring 2024 and Spring 2025 are included in *Appendices A-1.2, 2.2, 3.2, 4.2, and 5.2*. The dataset was developed by subtracting Spring 2024 groundwater levels from the corresponding Spring 2025 levels, as presented in *Appendices A-1.3, 2.3, 3.3, 4.3, and 5.3*. These contours clearly show the increases and decreases in groundwater elevations between the two reporting periods.

The following section provides a summary and discussion of groundwater levels within each aquifer zone along the ABP alignment.

- R Zone:
 - Groundwater elevations west of the San Gabriel River ranged from 1.6 to 2.5 feet. East of the San Gabriel River groundwater elevations ranged from 3.1 to 7.2 feet.
 - Compared to last year, groundwater elevations west of the San Gabriel River declined by at least 1 foot, with the largest decrease seen at observation well 33WX, which dropped by 3.7 feet. East of the San Gabriel River, groundwater elevations generally declined by about 2 feet, except at

observation well 34S0.1, which increased by 0.7 feet.

- C Zone:

- Groundwater elevations west of the San Gabriel River ranged from 1 to 10 feet. East of the San Gabriel River, groundwater elevations ranged between 4.6 to 13.5 feet. Groundwater levels were above protective elevations by an average of 3 feet.
- Compared to last year, groundwater elevations west of the San Gabriel River generally decreased by as much as 2 feet. East of the San Gabriel River, groundwater elevations also declined, with the largest drop of 7.6 feet measured at observation well 34S0.1. The exception was observation well 34HJ2, which showed a 2.7 feet increase in groundwater levels.

- B Zone:

- Groundwater elevations west of the San Gabriel River ranged from 3 to 10 feet, with the highest level measured at observation well 33XY. East of the San Gabriel River, groundwater elevations ranged from 1.2 to 10.2 feet. Groundwater levels were generally at least 1 foot above the protective elevations, except at observation wells 34HJ2, 34LS, and 35J1, which were below their respective protective elevations.
- Compared to last year, groundwater elevations west of the San Gabriel River generally decreased by 1 to 3 feet. East of the San Gabriel River, groundwater elevations declined by an average of 3 feet, with the largest reduction of 5.6 feet measured at observation well 34LS.

- A Zone:

- Groundwater elevations west of the San Gabriel River were observed to be between 5 to 10 feet and were above the protective elevations throughout. East of the San Gabriel River, groundwater elevations ranged from 1 to 10

feet. Groundwater levels were above protective elevations except at observation wells 34DG, 34G2H2, and 34HJ, which were slightly below their protective elevations, and at wells 35H11, 35H12, and 35J1, which were below protective elevations by an average of 3 feet.

- Compared to last year, groundwater elevations west of the San Gabriel River decreased by 1 to 3 feet. East of San Gabriel River, groundwater elevations generally declined by 2 to 4.5 feet, with the largest reduction seen at observation well 35H11.
- I Zone:
 - Groundwater elevations west of the San Gabriel River ranged from 3.8 to 9.3 feet with levels above protective elevations except at observation wells 33WX, 33XY, and 33YZ. East of the San Gabriel River, groundwater elevations were between 3.9 and 15.4 feet. Groundwater levels were generally above protective elevations, except between observation wells 34DG and 34JL, where levels were slightly below protective elevations, and at observation well 35J1, which was 5 feet below its protective elevation.
 - Compared to last year, groundwater elevations west of the San Gabriel River generally declined by 1 to 6 feet. East of the San Gabriel River, groundwater elevations increased by 2 to 5 feet between observation wells 34S0.1 and 34Y0.1. However, groundwater elevations decreased by an average of 3 feet between observation wells 34DG and 34LS, and between wells 35E0.1 and 35J1.

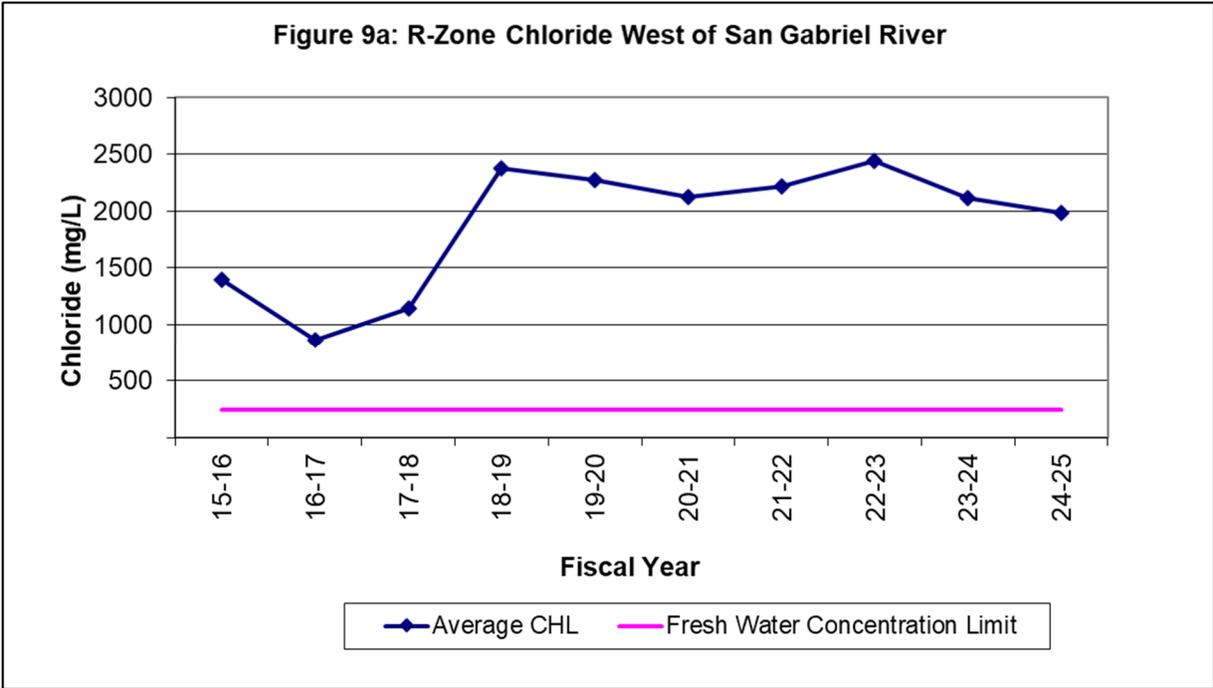
Graphs showing the average, maximum and minimum groundwater elevations at each internodal observation well throughout FY 2024-25 are included in *Appendices A-13 through A-16*. As shown in the graphs for the C and B Zones, the average groundwater elevations along the ABP alignment were at or slightly below protective elevation at all wells along the ABP alignment. However, portions of both the A and I Zones experienced

groundwater levels significantly below protective elevations. In these areas, several injection wells are screened across four zones, making it difficult to control injection into a specific zone. Compared to the previous reporting period, groundwater levels decreased across all zones, largely due to the April 2025 ABP shutdown caused by leaks in the main water supply pipeline.

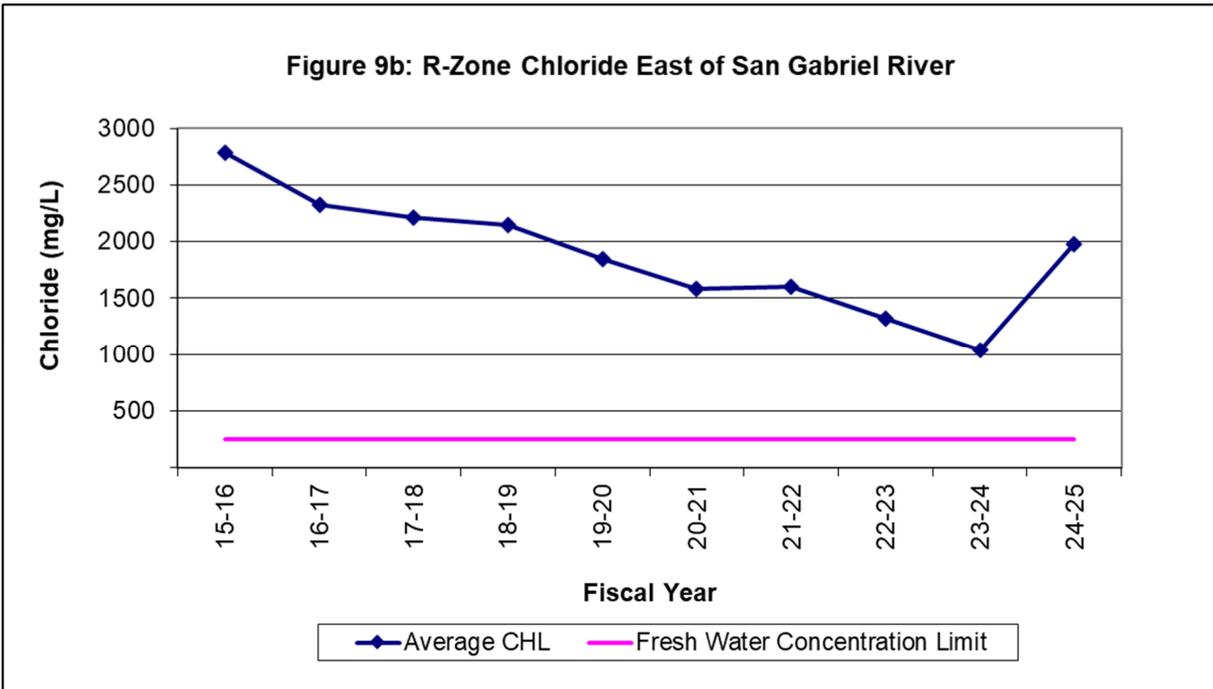
CHLORIDES

Figures 9a through 13b (pp. 25-29) show the last 10 years of chloride concentrations in each individual aquifer zone. The graphs plot the average of every maximum value measured at each observation well during each sampling event within the target area throughout FY 2024-25. The data includes all available results from the annual and semi-annual chloride sampling events for wells along the ABP alignment and extending approximately 2,000 feet landward from the ABP. As a result, the semi-annual values are “weighted” more heavily than the annual values in the calculation of the annual average.

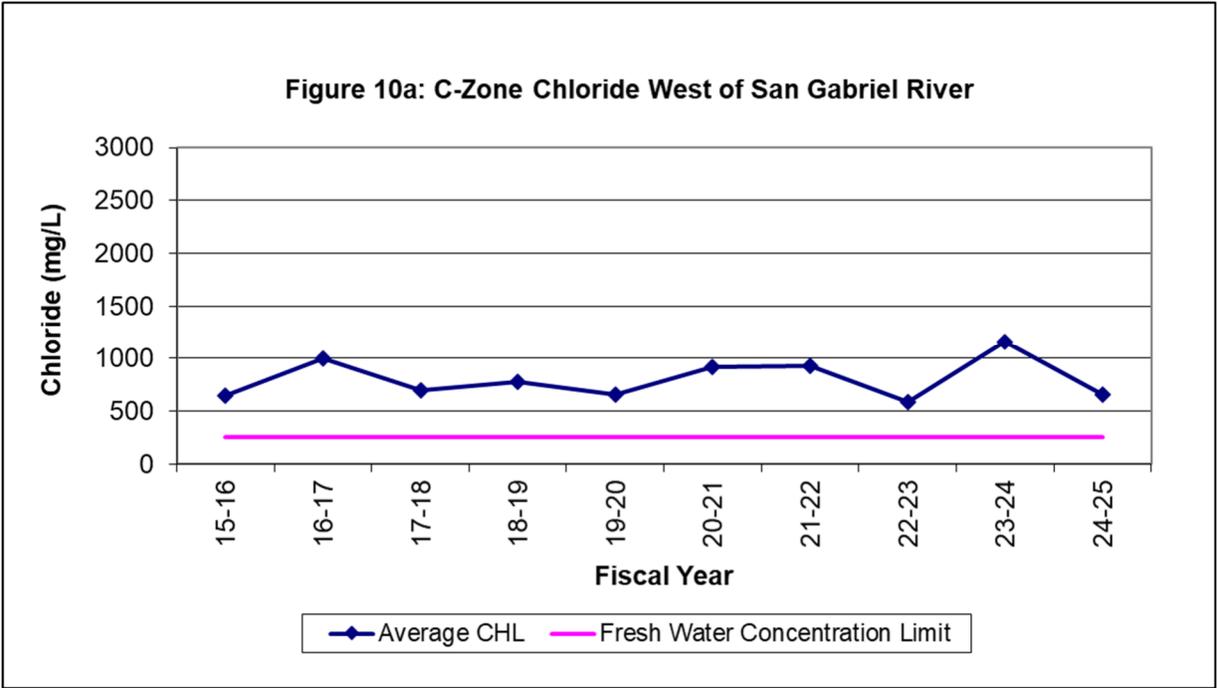
Two sets of graphs were created for each aquifer to account for changes in chloride concentration trends in the areas to the west and east of the San Gabriel River, respectively. In each figure, the average of the maximum chloride concentrations per well per event over the last 10 fiscal years (including FY 2024-25) is shown with respect to the freshwater threshold of 250 milligrams per liter (mg/L).



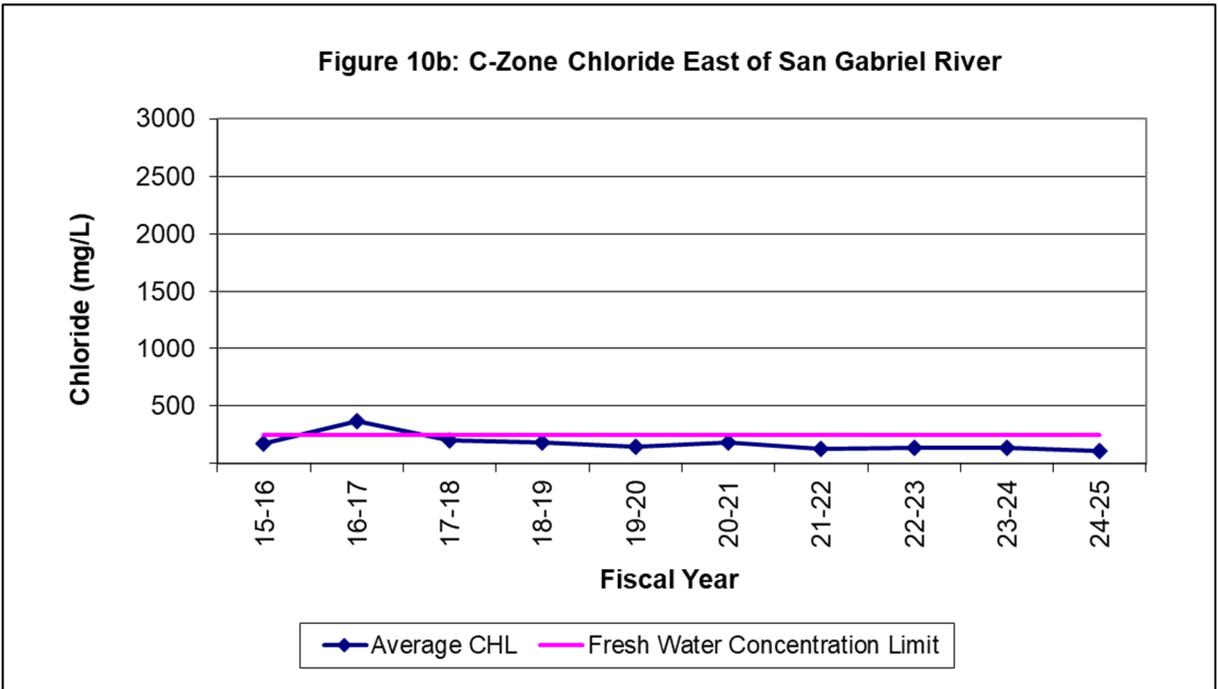
Note: The data includes all available information from the annual and semi-annual chloride sampling events for wells within the ABP alignment and landward for approximately 2,000 feet from the ABP.



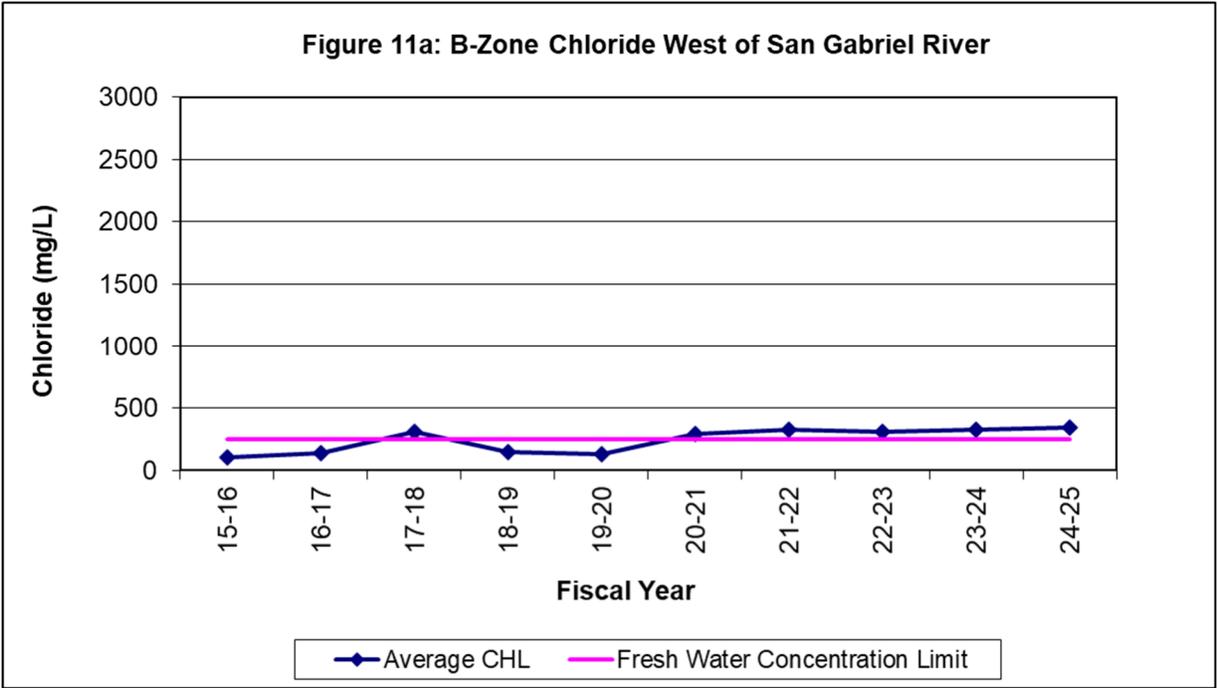
Note: The data includes all available information from the annual and semi-annual chloride sampling events for wells within the ABP alignment and landward for approximately 2,000 feet from the ABP.



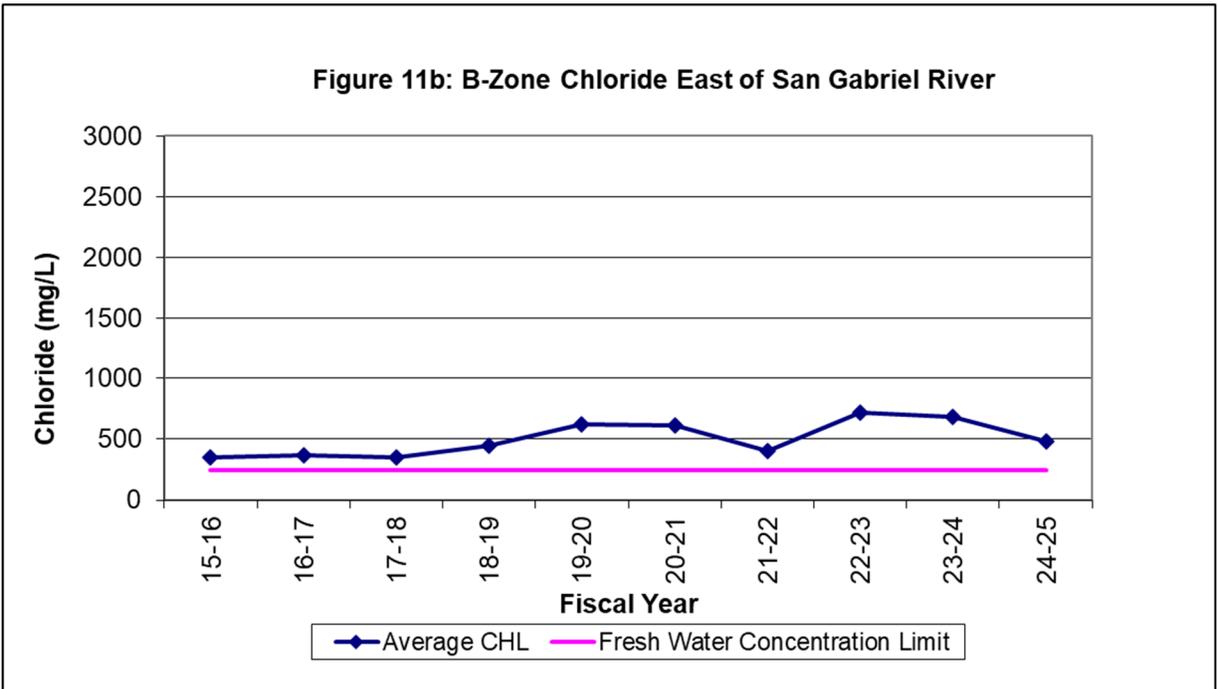
Note: The data includes all available information from the annual and semi-annual chloride sampling events for wells within the ABP alignment and landward for approximately 2,000 feet from the ABP.



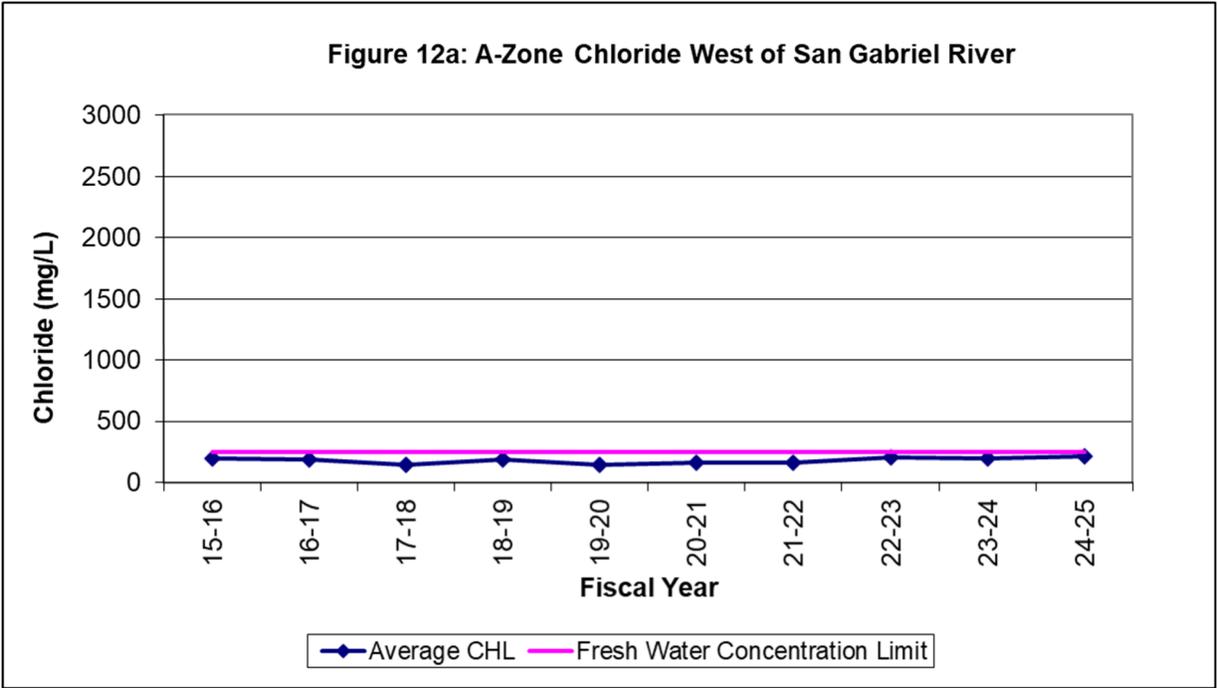
Note: The data includes all available information from the annual and semi-annual chloride sampling events for wells within the ABP alignment and landward for approximately 2,000 feet from the ABP.



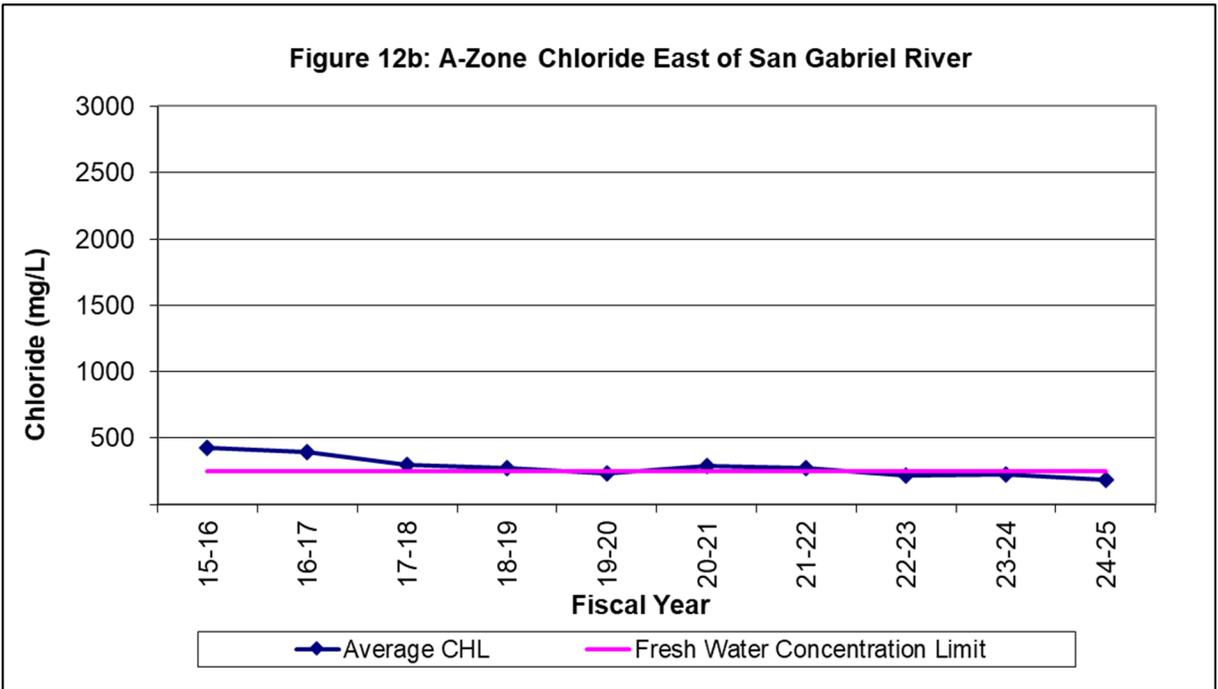
Note: The data includes all available information from the annual and semi-annual chloride sampling events for wells within the ABP alignment and landward for approximately 2,000 feet from the ABP.



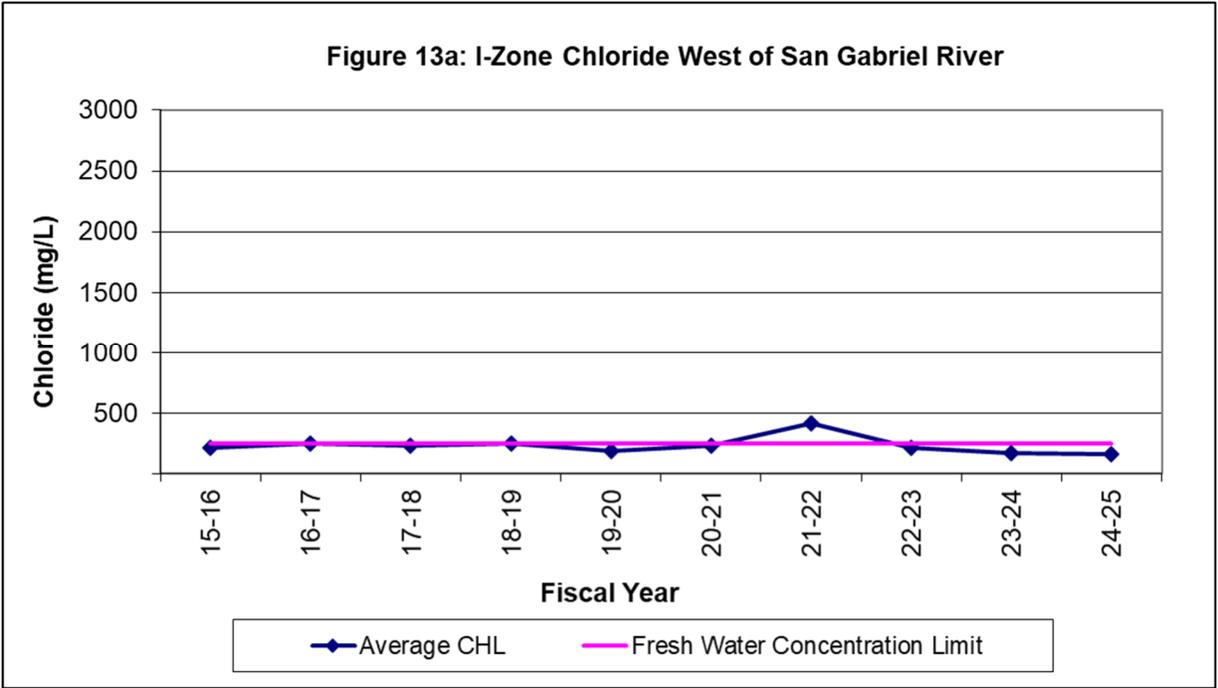
Note: The data includes all available information from the annual and semi-annual chloride sampling events for wells within the ABP alignment and landward for approximately 2,000 feet from the ABP.



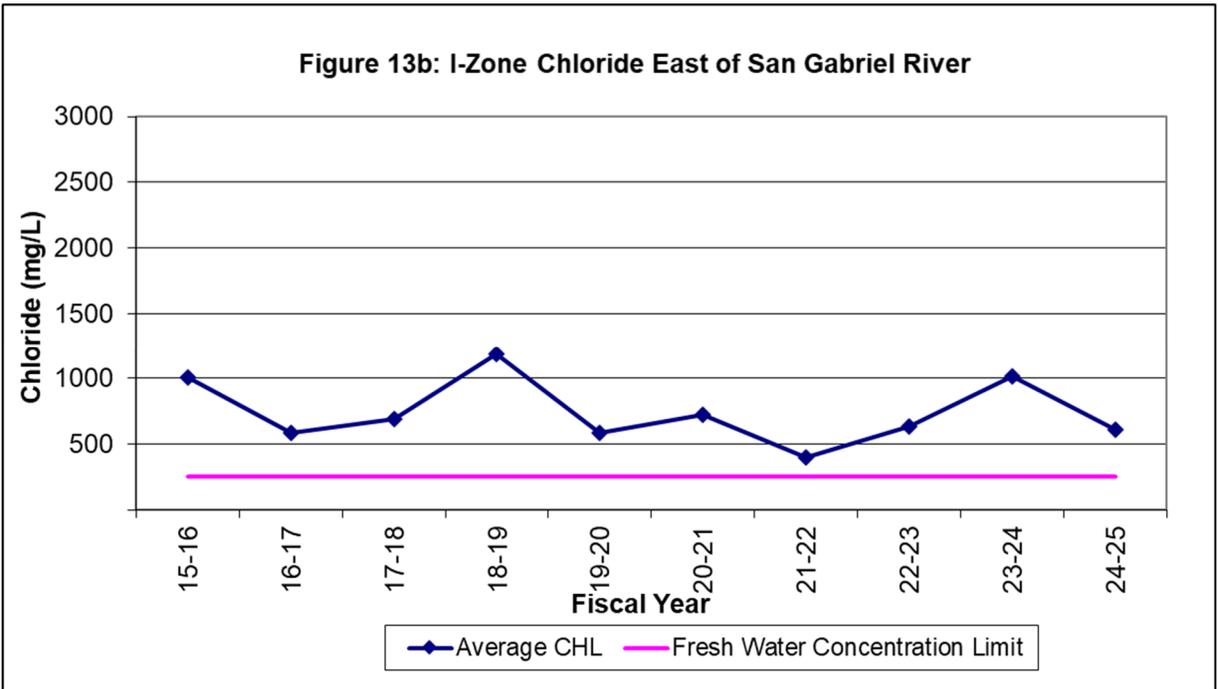
Note: The data includes all available information from the annual and semi-annual chloride sampling events for wells within the ABP alignment and landward for approximately 2,000 feet from the ABP.



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Note: The data includes all available information from the annual and semi-annual chloride sampling events for wells within the ABP alignment and landward for approximately 2,000 feet from the ABP.

West of the San Gabriel River, average maximum chloride concentrations in FY 2024-25 decreased in the R, C, and I Zones by 136 mg/L, 499 mg/L, and 15 mg/L, respectively. The average maximum chloride concentrations increased slightly in the B and A Zones.

East of the San Gabriel River, average maximum chloride concentrations in FY 2024-25 decreased in all zones, except the R Zone. The most pronounced decrease in chlorides was exhibited in the I Zone in the amount of 398 mg/L. The average maximum chloride concentrations increased in the R Zone by 935 mg/L.

Chloride concentration contour maps for the R, C, B, A, and I Zones were prepared from data collected in Spring 2025 and are included in *Appendices A-6.1, A-7.1, A-8.1, A-9.1, and A-10.1*, respectively. The I Zone chloride concentration map (*Appendix A-10.1*) was further analyzed and interpreted by OCWD Hydrogeologists as it pertains to chlorides east of the San Gabriel River. The chloride contour maps are based on the maximum chloride concentration measured at each observation well. Chloride data was gathered from observation wells located within the immediate vicinity of the ABP and does not represent conditions for the entire groundwater basin. Wells with chloride concentrations of 250 mg/L or less were classified as fresh. The chloride measurements used in this report were taken during the semi-annual sampling event in March and April 2025, and the annual sampling event in February and March 2025.

Contours of **changes** in chloride concentration for the R, C, B, A, and I Zones between Spring 2024 and Spring 2025 are included in *Appendices A-6.2, A-7.2, A-8.2, A-9.2, and A-10.2*. The data set is based on available data for Spring 2024, which was then subtracted from the corresponding data for Spring 2025. These contours very clearly show areas where chloride concentrations increased and/or decreased between reporting periods.

Overall, chloride concentration contours for FY 2024-25 were similar in shape and pattern to those of the previous year. The current contours and the corresponding chloride concentration cross-section (*Appendix A-11*) for this reporting period indicate that saltwater intrusion across the ABP continued to be effectively controlled west of the San Gabriel River. In contrast, several areas east of the San Gabriel River recorded elevated chloride concentrations, suggesting possible saltwater intrusion.

- R Zone:
 - Chloride concentrations remained elevated landward and seaward of the ABP.
 - Chloride concentrations along the ABP alignment remained relatively unchanged, except for observation wells 33Z'1 and 34S0.1. Observation well 33Z'1 showed an increase in chloride concentration of 800 mg/L, whereas well 34S0.1 experienced a decrease of 700 mg/L.

- C Zone:
 - Chloride concentrations along the ABP alignment remained below 250 mg/L. West of the San Gabriel River, persistent high chloride concentrations remained north of the ABP alignment near observation wells 33T4, 33T13, and 33U11.
 - Compared to the previous reporting period, chloride concentrations remained relatively unchanged along the ABP alignment. A significant decrease was measured at observation well 33T13, located north of the ABP alignment, where chloride concentrations decreased by 10,400 mg/L.

- B Zone:
 - West of San Gabriel River, chloride concentrations along the ABP alignment were below 250 mg/L. However, elevated concentrations were observed north of the ABP alignment near observation wells 33Q15 and 33T9. East of the San Gabriel River, chloride concentrations along the ABP alignment remained below 250 mg/L, except at observation wells 34JL and 35J1,

which recorded 570 mg/L and 680 mg/L, respectively.

- Chloride concentrations remained consistent along the ABP alignment, except for observation well 34JL which increased by 300 mg/L. Notable decreases in chloride concentration were measured east of the ABP alignment at observation wells 34U8 and 34V3, where chloride concentrations decreased by 2,510 mg/L and 7,510 mg/L, respectively.
- A Zone:
 - West of the San Gabriel River, chloride concentrations along the ABP alignment were below 250 mg/L. East of the San Gabriel River, chloride concentrations along the ABP alignment also remained below 250 mg/L, with the exception of observation wells 34DG and 35H11, which had chloride concentrations of 1,500 mg/L and 870 mg/L, respectively.
 - West of the San Gabriel River, chloride concentrations along the ABP alignment remained largely unchanged, except for observation well 33ST, which decreased by 567 mg/L. East of the San Gabriel River, chloride concentrations along the ABP alignment increased significantly at observation wells 34DG and 35H11, rising by 1,070 mg/L and 782 mg/L, respectively, while well 34HJ exhibited a notable decrease of 1,150 mg/L.
- I Zone:
 - West of the San Gabriel River, chloride concentrations along the ABP alignment remained below 250 mg/L. East of the San Gabriel River, elevated chloride concentrations were observed along the ABP alignment at observation wells 34JL and 35E0.1, which had chloride concentrations of 3,200 mg/L and 2,500 mg/L, respectively.
 - West of the San Gabriel River, chloride concentrations along the ABP alignment remained consistent. East of the San Gabriel River, significant

decreases in chloride concentration were seen at observation wells 34JL, 34S0.1, 34Y0.1, and 35H11, which declined by 8,800 mg/L, 3,000 mg/L, 650 mg/L, and 150 mg/L, respectively. Conversely, observation well 35E0.1 exhibited a 1,400 mg/L increase in chloride concentration.

West of the San Gabriel River, chloride concentrations along the ABP alignment were below 250 mg/L across all aquifer zones. However, elevated chloride concentrations persisted north of the ABP alignment in the R, C, and B Zones. These elevated chloride levels may be attributed to residual saltwater from previous intrusions.

East of the San Gabriel River, significant reductions in chloride concentrations were observed in the B Zone at observation wells 34U8 and 34V3; in the A Zone at well 34HJ; and in the I Zone at wells 34JL, 34S0.1, 34Y0.1, and 35H11. These improvements may be attributed to more consistent injection operations and a reduced impact of partial shutdowns on the number of injection wells that must be turned off. Recent modifications made to injection well 34S and several observation wells have minimized or even eliminated the need to shut off adjacent injection wells to accommodate routine activities such as redevelopment or chloride sampling.

In contrast, elevated chloride concentrations were observed East of the San Gabriel River in the B Zone at observation wells 34JL and 35J1; in the A Zone at wells 34DG and 35H11; and in the I Zone at wells 34JL and 35E0.1. These high chloride concentrations may reflect residual chlorides that persisted following the partial ABP shutdown associated with drilling operations for the ABP Unit 15 project, which lasted eight months from fall 2022 to spring 2023. The ABP Unit 15 project replaced existing injection wells that were beyond their useful life, and its continued operation will help raise groundwater levels to protective elevations, reinforcing the integrity of the ABP to prevent saltwater intrusion.

BARRIER PROJECT COSTS

This section of the report is divided into four parts: Water Costs, Services and Supplies Costs (operation and maintenance), Fixed Assets Costs (capital outlay), and Budget. Under the terms of the 1964 Cooperative Agreement between LACFCD and OCWD, fixed assets are typically divided into facilities paid for by the LACFCD, facilities paid for by the OCWD, and joint facilities paid for by both agencies, depending on their location. Under the same agreement, water costs are divided between the LACFCD (whose portion is paid by the WRD per a separate agreement) and the OCWD. The total cost of the ABP in FY 2024-25 was \$11,003,216 which can be broken down as follows: water costs of \$7,934,855, Operation and Maintenance costs of \$2,973,233, and joint liability insurance cost of \$95,128.

WATER COSTS

During FY 2024-25, 5,349 AF of water was injected at an estimated total cost of \$7,934,855, as shown in *Table 6*. The monthly unit water cost (dollars per AF) in FY 2024-25 varied periodically as shown above in *Table 3*. The monthly quantity of water injected, and total water costs paid by each agency are shown below in *Table 6*.

TABLE 6. QUANTITY OF WATER INJECTED AND COSTS

MONTH	VOLUME BY WRD (AF)	VOLUME BY OCWD (AF)	TOTAL VOLUME (AF)
Jul-24	303.3	227.0	530.3
Aug-24	312.8	222.8	535.6
Sep-24	298.3	190.8	489.1
Oct-24	331.7	229.8	561.5
Nov-24	329.4	193.5	522.9
Dec-24	353.5	221.2	574.7
Jan-25	313.0	214.0	527.0
Feb-25	278.8	156.6	435.4
Mar-25	305.2	161.5	466.7
Apr-25	87.9	45.3	133.2
May-25	67.5	89.0	156.5
Jun-25	199.8	216.5	416.3
TOTAL INJECTED (AF)	3,181.2	2,168	5,349.2
TOTAL COST (\$) [From Tbl. 3]	\$4,716,037	\$3,218,818	\$7,934,855

OPERATIONS AND MAINTENANCE COSTS

A total of \$2,973,233 was spent on Operations and Maintenance during FY 2024-25. Pursuant to the 1964 Cooperative Agreement, the OCWD pays a percentage of the applicable services and supplies costs for injection operations proportional to the percentage of the total amount of injection water paid for by the OCWD. The distribution of FY 2024-25 services and supplies costs is summarized in *Table 7*.

**TABLE 7. DISTRIBUTION OF SERVICES AND SUPPLIES COSTS FOR
INJECTION AND EXTRACTION ACTIVITIES**

ITEM	LACFCD	OCWD	TOTAL
Service & Supplies of Injection Facilities (including Observation Wells)	\$1,738,440	\$1,183,308	\$2,921,748 ¹
Service & Supplies of Extraction Facilities	\$3,459	\$0	\$3,459 ²
Projects & Studies	\$48,026	\$0	\$48,026 ³
SUBTOTAL	\$1,789,925	\$1,183,308	\$2,973,233
Liability Insurance	\$47,564	\$47,564	\$95,128
TOTAL	\$1,837,489	\$1,230,872	\$3,068,361

The values in Table 7 come from the ABP FY 2024-25 Costs (see *Appendix A-17*):

¹ The sum of Items 1, 2, 3, 7, 8, 9, 10, 11, 12, and 13. OCWD is responsible for 40.5% of all costs for these items per the agreement.

² The sum of Items 4, 5, and 6; OCWD is not responsible for any portion of the cost for these items.

³ The sum of Item 14. LACFCD is responsible for 100% of costs associated with Alamosa Barrier Project Unit 15 Well Replacement Project.

The yearly cost of the services and supplies (including special programs but excluding water and extraction costs) for the last 10 years of ABP operations are shown in *Table 8*.

TABLE 8. COSTS OF SERVICES AND SUPPLIES FOR INJECTION

Fiscal Year	Volume of Water Injected (AF)	Total Cost	Cost Per AF Injected
2015-16	6,807.7	\$2,237,637	\$328.69
2016-17	6,060.0	\$1,650,686	\$272.39
2017-18	4,414.1	\$2,138,420	\$484.45
2018-19	5,295.2	\$2,293,529	\$433.13
2019-20	5,536.9	\$2,467,543	\$445.65
2020-21	6,500.9	\$2,649,077	\$407.49
2021-22	7,187.8	\$2,482,543	\$345.38
2022-23	6,475.1	\$2,841,291	\$438.80
2023-24	6,040.5	\$2,910,620	\$481.85
2024-25	5,349.2	\$2,921,748	\$546.20

The costs of the services and supplies for extraction operations for the last 10 years, including electrical costs, are shown in *Table 9*.

TABLE 9. COSTS OF SERVICES AND SUPPLIES FOR EXTRACTION

Fiscal Year	Volume of Water Extracted (AF)	Total Cost	Cost Per AF Extracted
2015-16	0.0	\$6,961	N/A
2016-17	0.0	\$1,510	N/A
2017-18	0.0	\$1,538	N/A
2018-19	0.0	\$1,556	N/A
2019-20	0.0	\$1,512	N/A
2020-21	0.0	\$1,132	N/A
2021-22	0.0	\$2,847	N/A
2022-23	0.0	\$912	N/A
2023-24	0.0	\$2,386	N/A
2024-25	0.0	\$3,459	N/A

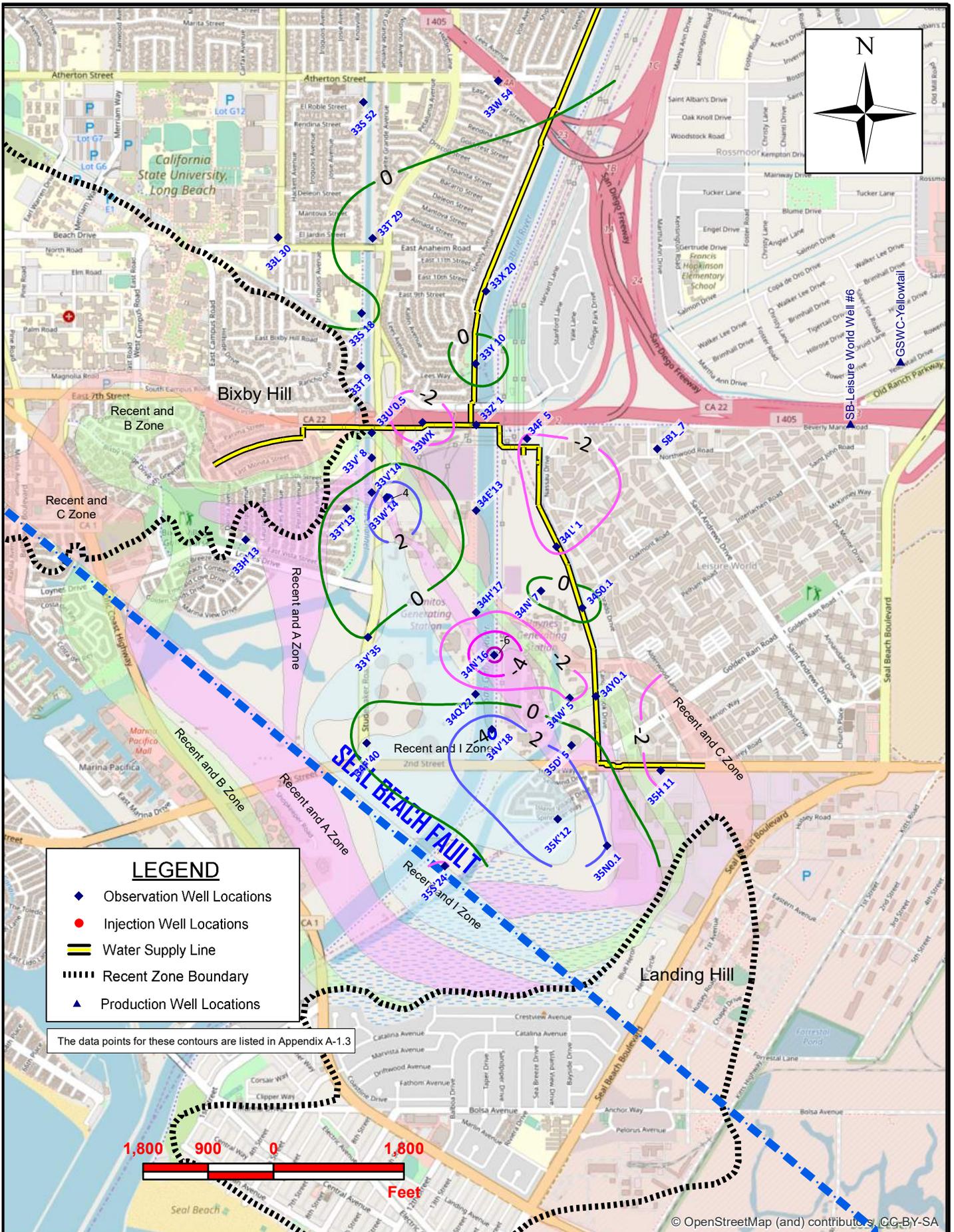
FIXED ASSETS

During Fiscal Year 2024-25, there were no new LACFCD facilities, OCWD facilities, or joint facilities added to the ABP.

BUDGET

The FY 2026-27 budget for the cost of ABP Supplies and Services, excluding insurance, is \$3,180,000. A breakdown of this amount, along with past expenditures per category, is shown in *Appendix A-18*.

APPENDIX



Alamitos Barrier Project
R Zone Change in Elevation (ft), Spring 2024 to Spring 2025

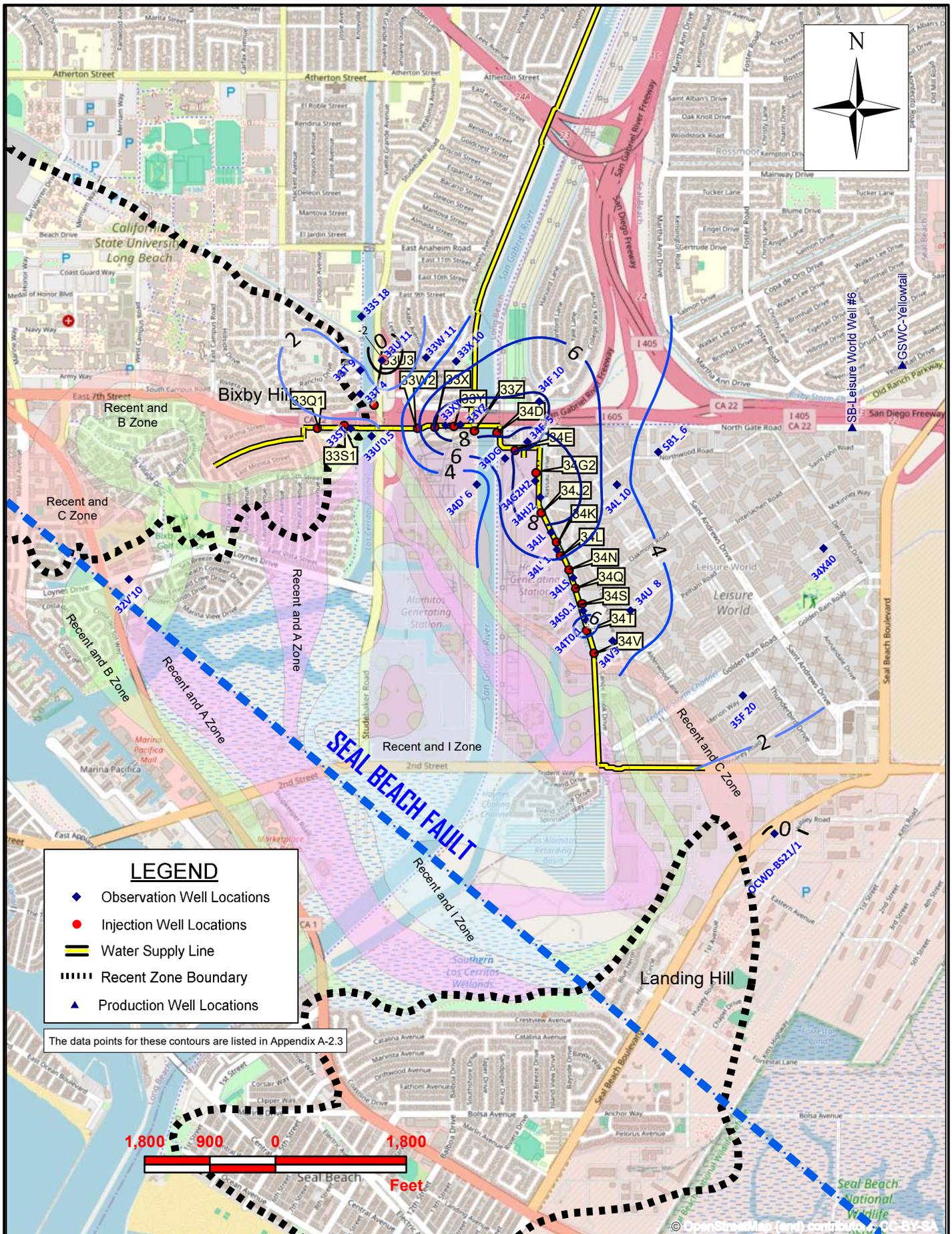
ALAMITOS BARRIER PROJECT
R-Zone
Groundwater Elevation Data for Contours and Tables

POINT	PROJ	FCD	AQUIFER	DATE	FY 24-25 ELEV	P.E. ¹	Δ^2	FY 23-24 ELEV2	CHANGE IN ELEV
1	33H'13	493YY	RA	20250225	2.7			4.6	-1.9
2	33L 30	491G	R	20250225	2.5			1.7	0.8
3	33S 18	492AH	R	20250311	3.2			2.8	0.4
4	33S 52	491J	R	20250304	1.5			0.2	1.3
5	33T 9	492CV	R	20250408	1.6			2.6	-1.0
6	33T'13	492AU	R	20250304	3.5			2.9	0.6
7	33T 29	491D	R	20250304	2.3			3.2	-0.9
8	33U'0.5	492CB	R	20250416	1.6			2.7	-1.1
9	33V' 8	492BY	RA	20250224	1.3			2.3	-1.0
10	33V'14	492HH	R	20250508	0.2			-0.7	0.9
11	33W 54	501C	R	20250225	2.6			1.9	0.7
12	33W'14	492AT	R	20250226	9.2			4.7	4.5
13	33WX	502AZ	R	20250324	2.3			6.0	-3.7
14	33X 20	502L	R	20250408	1.7			3.5	-1.8
15	33Y 10	502BA	R	20250303	2.4			1.1	1.3
16	33Y'35	493AB	R	20250227	1.1			1.1	0.0
17	33Z' 1	502AU	R	20250401	2.5			3.9	-1.4
18	34E'13	503AU	R	20250305	5.5			6.3	-0.8
19	34F 5	502BT	R	20250320	6.5			8.6	-2.1
20	34F'40	483J	R	20250305	1.0			0.8	0.2
21	34H'17	503Y	R	20250312	4.3			5.8	-1.5
22	34L' 1	503P	R	20250324	3.1			5.7	-2.6
23	34N' 7	503AE	R	20250227	4.4			3.5	0.9
24	34N'16	503W	R	20250508	-2.0			5.0	-7.0
25	34Q'22	503T	R	20250312	2.8			4.0	-1.2
26	34S0.1	503BT	R	20250326	3.5			2.8	0.7
27	34V'18	503V	R	20250312	3.5			-0.7	4.2
28	34W' 5	503AH	R	20250303	5.8			8.0	-2.2
29	34Y0.1	503CK	R	20250324	7.2			9.0	-1.8
30	35D' 5	503AL	R	20250303	5.7			4.2	1.5
31	35H 11	514F	R	20250324	2.8			5.7	-2.9
32	35K'12	504R	R	20250311	0.6			-3.1	3.7
33	35N0.1	504M	R	20250311	0.7			-1.3	2.0
34	35S'24	504K	R	20250312	1.9			4.1	-2.2
35	SB1 7		R	20250318	5.4			7.2	-1.8
AVG=					3.0			AVG=	3.4

¹ P.E. represents the protective elevations calculated for internodal wells.

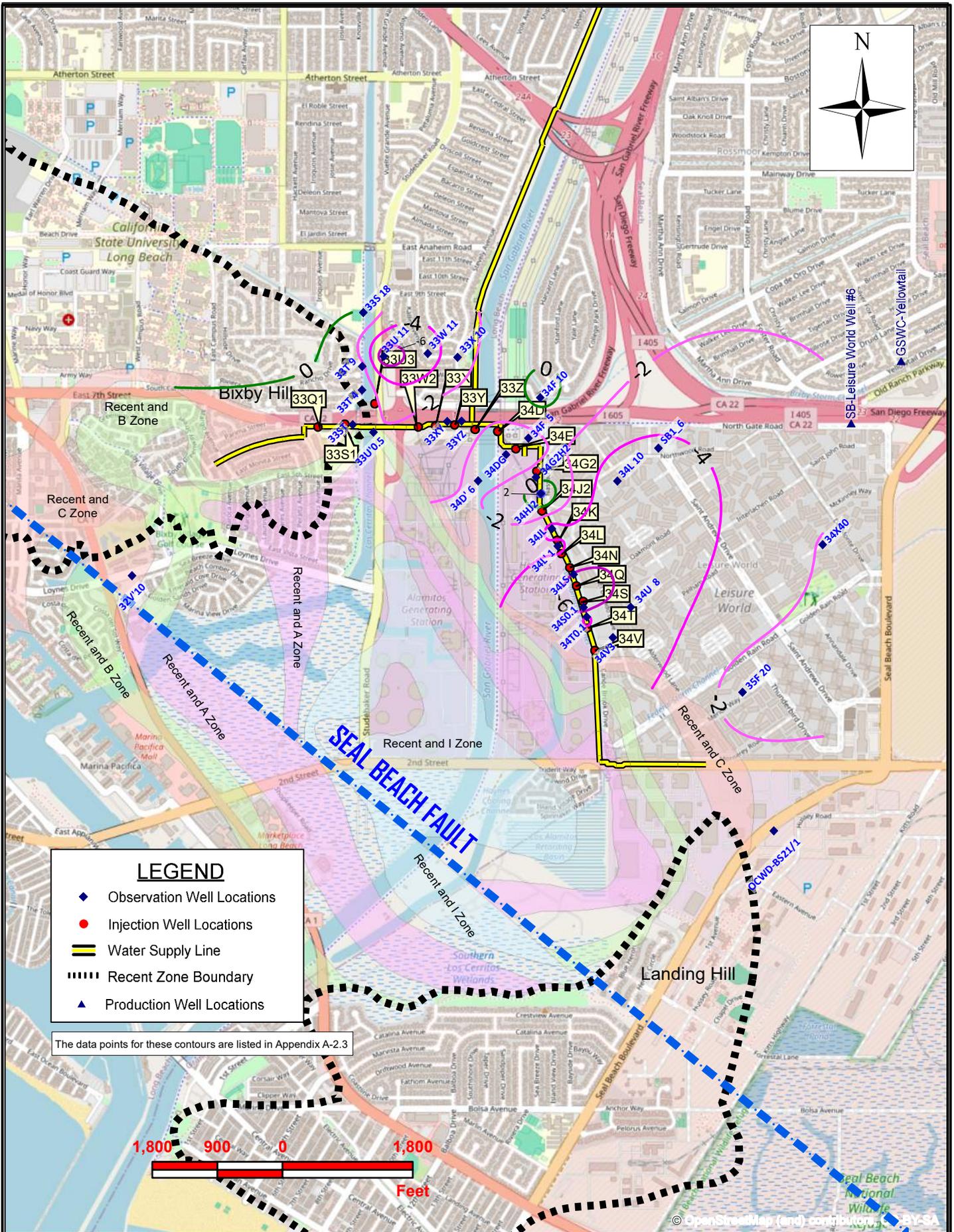
² Δ (+/-) represents how much groundwater level is above/below respective P.E.

* Data was collected from these wells during a barrier shutdown; to maintain consistency, the data was excluded from contour plotting.



Alamitos Barrier Project
C Zone Groundwater Elevation (ft) Contours, Spring 2025





Alamitos Barrier Project
C Zone Change in Elevation (ft), Spring 2024 to Spring 2025



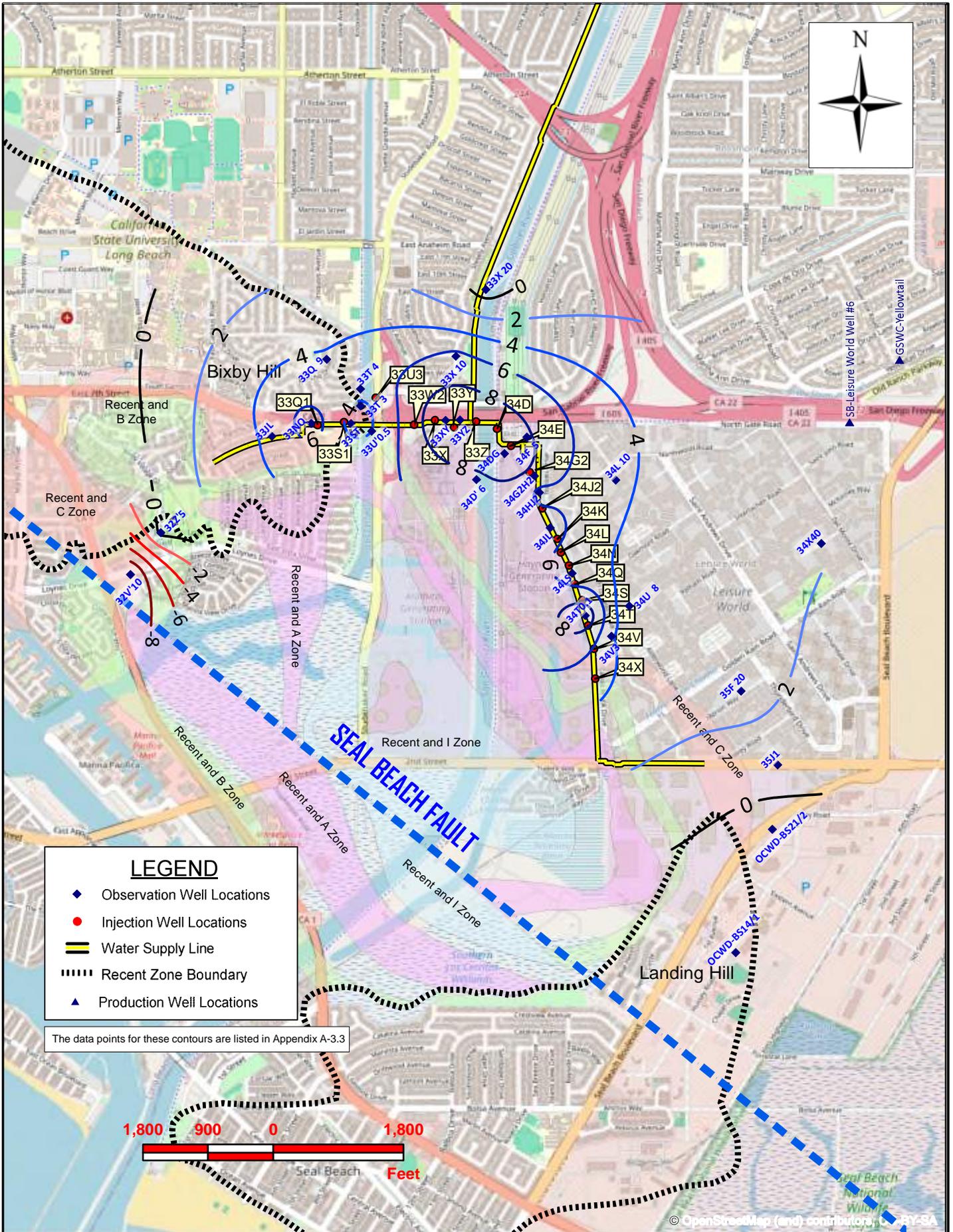
ALAMITOS BARRIER PROJECT
C-Zone
Groundwater Elevation Data for Contours and Tables

POINT	PROJ	FCD	AQUIFER	DATE	FY 24-25 ELEV	P.E. ¹	Δ^2	FY 23-24 ELEV2	CHANGE IN ELEV
1	32V'10	483H	C	20250224	0.5			2.0	-1.5
2	33S 18	492AG	C	20250311	1.5			1.6	-0.1
3	33ST	492BK	CB	20250304	1.5	0.9	0.6	3.3	-1.8
4	33T 13*	492AC	C	20250605	-2.6			2.8	-5.4
5	33T 4	492CT	C	20250203	3.4			4.0	-0.6
6	33T 9	492CU	C	20250401	3.0			4.4	-1.4
7	33U 11	492AL	C	20250414	-2.6			4.8	-7.4
8	33U'0.5	492CA	C	20250305	1.1	1.1	0.0	3.1	-2.0
9	33W 11	502R	C	20250401	2.9			7.9	-5.0
10	33X 10	502BB	C	20250312	4.9			7.7	-2.8
11	33XY	502BL	C	20250324	9.9	5.4	4.5	10.1	-0.2
12	33YZ	502AB	C	20250324	9.3	5.4	3.9	10.2	-0.9
13	34D' 6	502BF	C	20250312	1.9			4.1	-2.2
14	34DG	502X	C	20250319	7.8	5.4	2.4	12.0	-4.2
15	34F 5	502BU	C	20250320	7.7			10.5	-2.8
16	34F 10	502AP	C	20250408	8.3			7.5	0.8
17	34G2H2	502CQ	C	20250319	9.9	3.8	6.1	11.0	-1.1
18	34HJ2	502CH	C	20250326	13.5	4.2	9.3	10.8	2.7
19	34JL	503AR	C	20250324	6.6	4.2	2.4	11.5	-4.9
20	34L' 1	503N	C	20250324	6.6			10.0	-3.4
21	34L 10	502AK	C	20250312	4.5			10.2	-5.7
22	34LS	503BF	C	20250401	4.7	4.5	0.2	10.8	-6.1
23	34S0.1	503BU	C	20250326	4.6	3.7	0.9	12.2	-7.6
24	34T0.1	503AB	C	20250327	7.2	3.6	3.6	10.7	-3.5
25	34U 8	513D	C	20250327	4.7			10.0	-5.3
26	34V3	503CB	C	20250327	4.3			10.2	-5.9
27	34X40	513R	C	20250327	2.9			4.8	-1.9
28	35F 20	513L	C	20250320	3.2			4.3	-1.1
29	OCWD-BS21/1		C	20250626	-0.2			3.5	-3.7
30	SB1_6		C	20250213	2.8			7.2	-4.4
				AVG=	4.5		AVG=	7.4	

¹ P.E. represents the protective elevations calculated for internodal wells.

² Δ (+/-) represents how much groundwater level is above/below respective P.E.

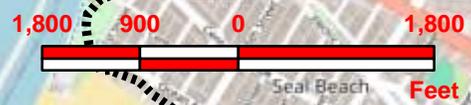
* Data was collected from these wells during a barrier shutdown; to maintain consistency, the data was excluded from contour plotting.



LEGEND

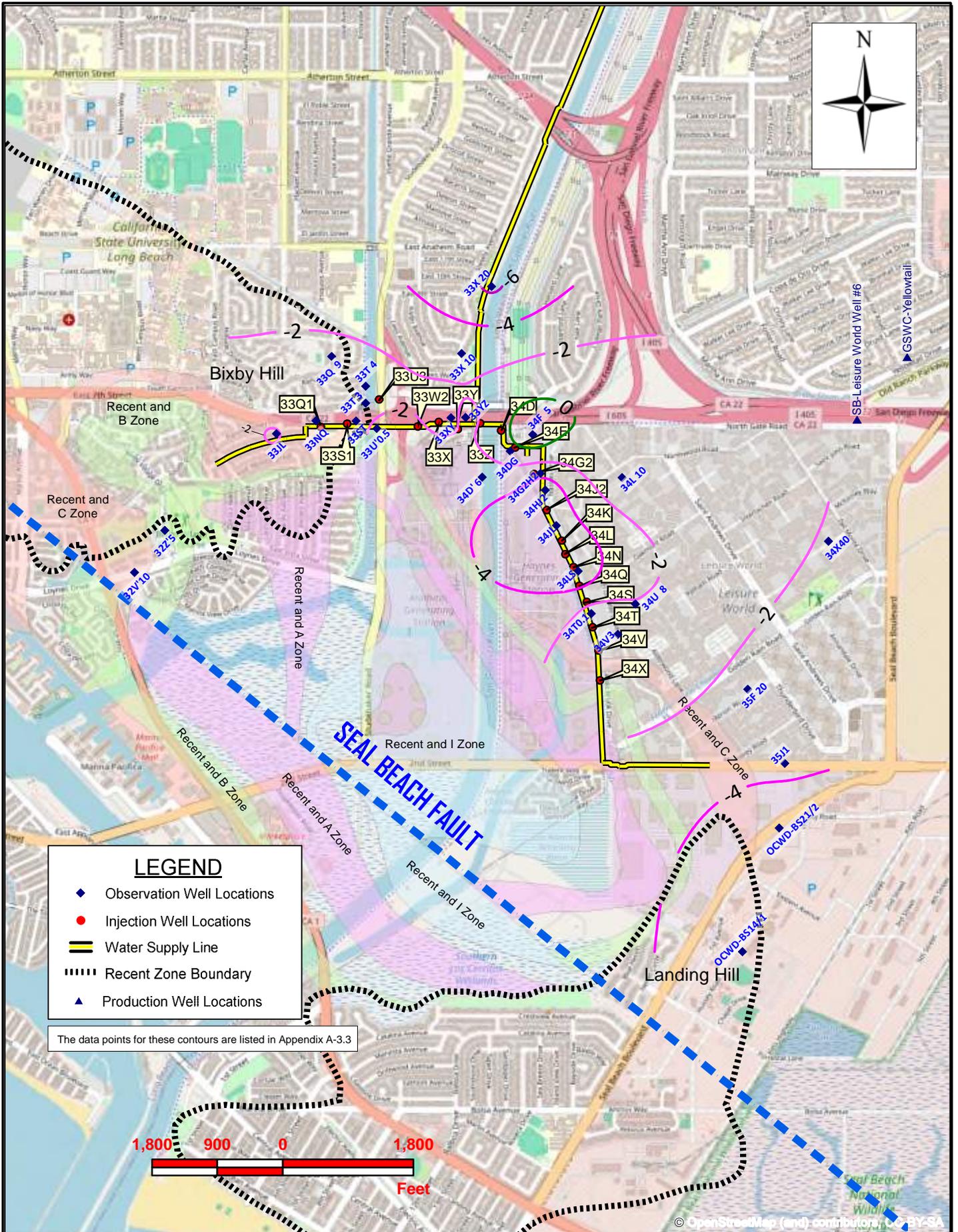
- ◆ Observation Well Locations
- Injection Well Locations
- ▬ Water Supply Line
- ⋯ Recent Zone Boundary
- ▲ Production Well Locations

The data points for these contours are listed in Appendix A-3.3



Alamitos Barrier Project
 B Zone Groundwater Elevation (ft) Contours: Spring 2025

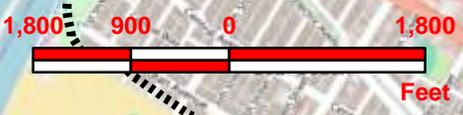




LEGEND

- ◆ Observation Well Locations
- Injection Well Locations
- Water Supply Line
- Recent Zone Boundary
- ▲ Production Well Locations

The data points for these contours are listed in Appendix A-3.3



Alamitos Barrier Project
 B Zone Change in Elevation (ft), Spring 2024 to Spring 2025

ALAMITOS BARRIER PROJECT
B-Zone
Groundwater Elevation Data for Contours and Tables

POINT	PROJ	FCD	AQUIFER	DATE	FY 24-25 ELEV	P.E. ¹	Δ ²	FY 23-24 ELEV2	CHANGE IN ELEV
1	32V'10	483G	B	20250224	-10.3			-9.0	-1.3
2	32Z'5	482W	BA	20250224	0.4			0.9	-0.5
3	33H 57*	481	B	20250508	-13.3			-10.1	-3.2
4	33JL	492BQ	B	20250324	4.4	0.8	3.6	6.5	-2.1
5	33NQ	492BN	B	20250324	7.1	0.7	6.5	7.9	-0.8
6	33Q 9	492CM	B	20250408	4.2			5.7	-1.5
7	33Q 15*	492AN	B	20250605	6.0				
8	33ST	492BK	CB	20250319	3.4	0.9	2.5	3.7	-0.3
9	33T 3	492CL	B	20250203	3.3			4.1	-0.8
10	33T 4	492CS	B	20250203	5.5			6.5	-1.0
11	33T 9*	492YY	B	20250604	2.7			8.6	-5.9
12	33T 13*	492AB	B	20250605	-3.7			4.6	-8.3
13	33U 11*	492AK	B	20250414	-1.7			8.9	-10.6
14	33U'0.5	492BZ	B	20250319	4.0			6.9	-2.9
15	33W 11*	502S	B	20250410	-1.5			7.7	-9.2
16	33X 10	502BC	B	20250408	6.5			9.0	-2.5
17	33X 20	502K	B	20250408	-0.9			5.5	-6.4
18	33XY	502BM	B	20250324	9.9	6.3	3.7	11.2	-1.3
19	33YZ	502AC	B	20250324	9.2	7.1	2.1	11.9	-2.7
20	34D' 6	502BG	B	20250312	7.3			10.5	-3.2
21	34DG	502Y	B	20250319	10.2	6.6	3.7	10.8	-0.6
22	34F 5	502BS	B	20250320	8.3			6.7	1.6
23	34G2H2	502CR	B	20250319	7.4	5.8	1.6	11.0	-3.6
24	34HJ2	502CJ	B	20250326	5.5	5.9	-0.4	10.7	-5.2
25	34JL	503AQ	B	20250402	6.9	5.3	1.6	11.5	-4.6
26	34L 10	502AL	B	20250409	4.5			4.7	-0.2
27	34LS	503BE	B	20250401	4.7	5.4	-0.7	10.3	-5.6
28	34T0.1	503AC	B	20250327	9.6	6.1	3.6	10.7	-1.1
29	34U 8	513E	B	20250327	2.3			4.2	-1.9
30	34V3	503CC	B	20250327	4.2			4.5	-0.3
31	34X40	513Q	B	20250327	2.1			4.2	-2.1
32	35F 20	513K	B	20250320	2.5			4.9	-2.4
33	35J1	514M	B	20250324	1.2	5.8	-4.6	4.5	-3.3
34	OCWD-BS14/1		B	20250507	-1.5			3.0	-4.5
35	OCWD-BS21/2		B	20250626	-1.2			4.7	-5.9

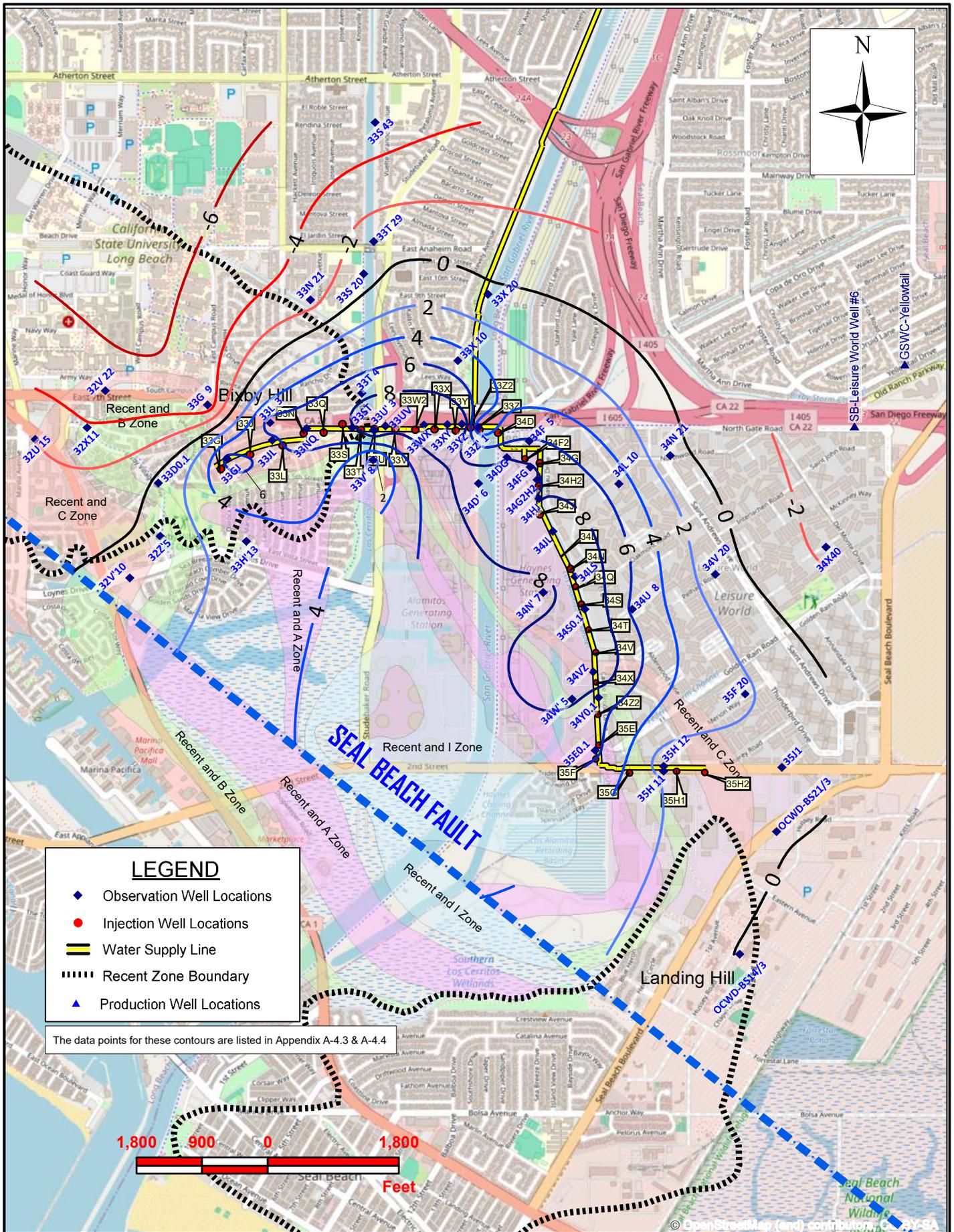
AVG= 3.1

AVG= 6.1

¹ P.E. represents the protective elevations calculated for internodal wells.

² Δ (+/-) represents how much groundwater level is above/below respective P.E.

* Data was collected from these wells during a barrier shutdown; to maintain consistency, the data was excluded from contour plotting.



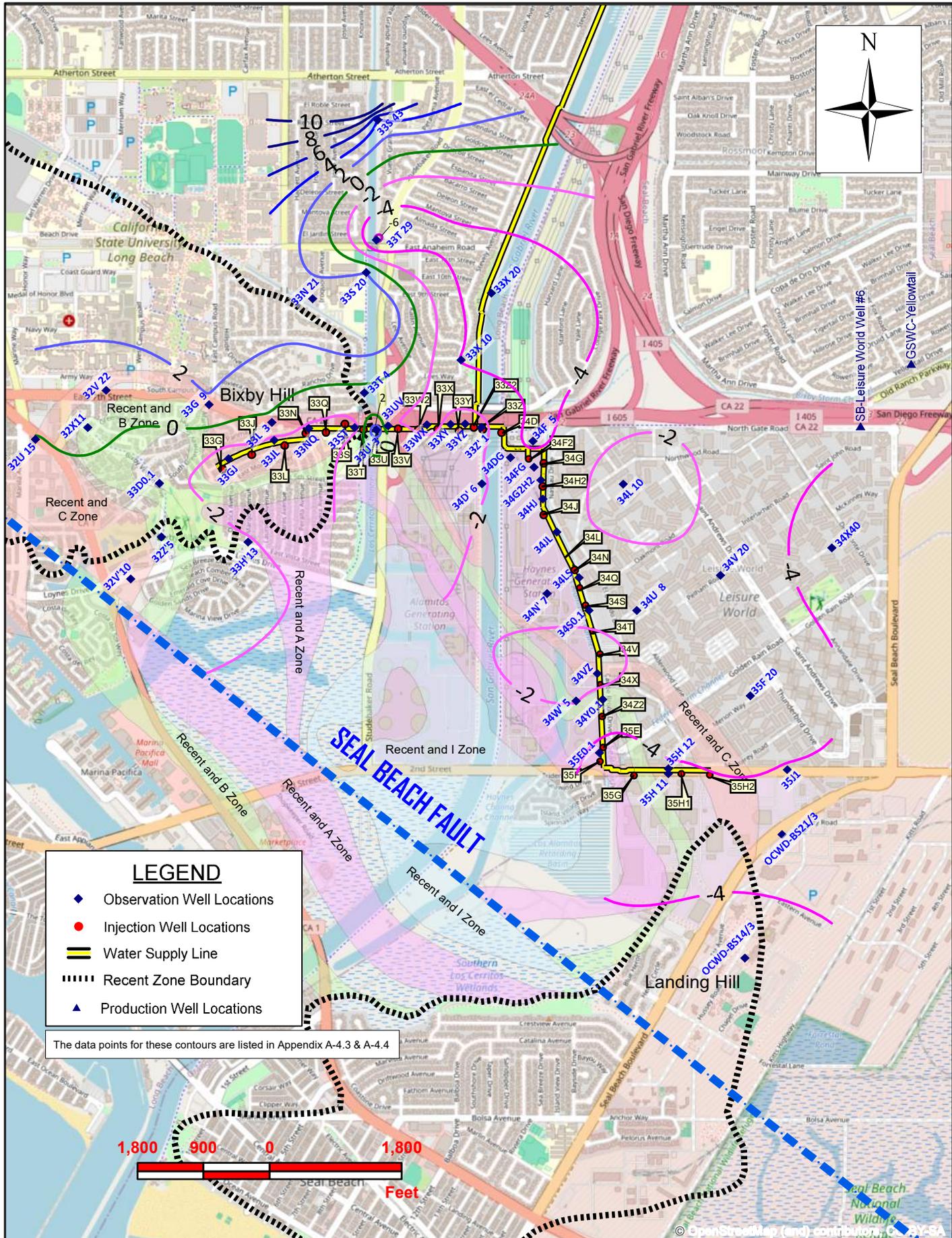
LEGEND

- ◆ Observation Well Locations
- Injection Well Locations
- Water Supply Line
- Recent Zone Boundary
- ▲ Production Well Locations

The data points for these contours are listed in Appendix A-4.3 & A-4.4



A zone GW.srf



LEGEND

- ◆ Observation Well Locations
- Injection Well Locations
- Water Supply Line
- Recent Zone Boundary
- ▲ Production Well Locations

The data points for these contours are listed in Appendix A-4.3 & A-4.4



Alamitos Barrier Project
A Zone Change in Elevation (ft), Spring 2024 to Spring 2025

ALAMITOS BARRIER PROJECT
A-Zone
Groundwater Elevation Data for Contours and Tables

POINT	PROJ	FCD	AQUIFER	DATE	FY 24-25 ELEV	P.E. ¹	Δ^2	FY 23-24 ELEV2	CHANGE IN ELEV
1	32U 15	482M	A	20250224	-2.0			-1.9	-0.1
2	32V 22	482P	A	20250225	-5.2			-5.5	0.3
3	32V'10	483F	A	20250224	0.8			2.4	-1.6
4	32X11	482S	A	20250312	-3.8			-4.6	0.8
5	32Z'5	482W	BA	20250224	0.4			0.3	0.1
6	33D0.1	482U	AI	20250312	0.4			2.4	-2.0
7	33G 9	482F	A	20250224	-5.3			-7.2	1.9
8	33GJ	482X	A	20250303	6.5	1.4	5.1	9.5	-3.0
9	33H'13	493YY	RA	20250225	2.7			4.6	-1.9
10	33JL	492BW	AI	20250324	5.6	3.1	2.5	8.0	-2.4
11	33L 3	492	A	20250313	6.8			7.2	-0.4
12	33N 21	492BU	A	20250225	-2.8			-5.1	2.3
13	33NQ	492BP	AI	20250303	6.8	3.6	3.2	9.1	-2.3
14	33Q 15*	492AM	A	20250605	-4.9			-1.5	-3.4
15	33S 20	492BR	A	20250303	-0.9			-2.9	2.0
16	33S 43	491E	A	20250304	-5.1			-8.9	3.8
17	33ST	492BL	A	20250319	7.8	2.8	5.0	10.5	-2.7
18	33T 13*	492ZZ	A	20250605	-3.4			7.6	-11.0
19	33T 29	491C	A	20250304	-0.6			5.8	-6.4
20	33T 4	492CR	A	20250203	7.5			8.0	-0.5
21	33T 9*	492TT	A	20250604	-1.9			9.4	-11.3
22	33U 11*	492AJ	A	20250414	-5.1			10.2	-15.3
23	33U' 3	492WWW	A	20250305	9.6			5.9	3.7
24	33UV	492BH	A	20250220	8.8	4.0	4.8	10.7	-1.9
25	33V' 8	492BY	RA	20250224	1.3				
26	33W 11	502T	A	20250410	-3.5			8.8	-12.3
27	33WX	502AF	A	20250220	9.2	7.6	1.6	11.6	-2.4
28	33X 10	502BD	A	20250312	4.9			9.0	-4.1
29	33X 20	502J	A	20250203	0.4			5.8	-5.4
30	33X 54*	501	AI	20250508	-8.0			-2.8	-5.2
31	33XY	502BN	A	20250324	10.1	8.0	2.1	11.8	-1.8
32	33YZ	502AD	A	20250324	10.1	8.7	1.4	11.3	-1.2
33	33Z' 1	502G	A	20250305	2.5			4.0	-1.5
34	34D' 6	502BH	A	20250305	9.0			10.8	-1.8
35	34DG	502Z	A	20250319	8.0	8.5	-0.6	11.2	-3.2
36	34F 5	502BR	A	20250320	6.2			10.8	-4.6
37	34FG	502CN	A	20250319	8.2	8.3	-0.1	10.6	-2.4
38	34G2H2	502CS	A	20250303	8.2	8.1	0.1	11.7	-3.6
39	34H5*	512E	A	20250415	-10.7			4.7	-15.4
40	34HJ	502BX	A	20250319	7.9	8.6	-0.7	11.8	-3.9
41	34JL	503AP	A	20250324	10.2	7.8	2.4	12.2	-2.1
42	34L 10	502AM	A	20250205	4.9			5.2	-0.3
43	34LS	503BD	A	20250401	9.5	7.7	1.8	12.9	-3.4
44	34N 21	512B	A	20250227	0.6				
45	34N' 7	503AF	A	20250312	6.9			9.5	-2.6
46	34S0.1	503BV	A	20250326	9.4	6.7	2.7	12.0	-2.6
47	34U 8	513F	A	20250205	5.6			8.8	-3.2
48	34V 20	513B	A	20250409	0.9			3.3	-2.4
49	34V3*	503CD	A	20250609	7.0			9.2	-2.2
50	34VZ	503BH	A	20250327	10.4	4.4	6.0	10.8	-0.4

¹ P.E. represents the protective elevations calculated for internodal wells.

² Δ (+/-) represents how much groundwater level is above/below respective P.E.

* Data was collected from these wells during a barrier shutdown; to maintain consistency, the data was excluded from contour plotting.

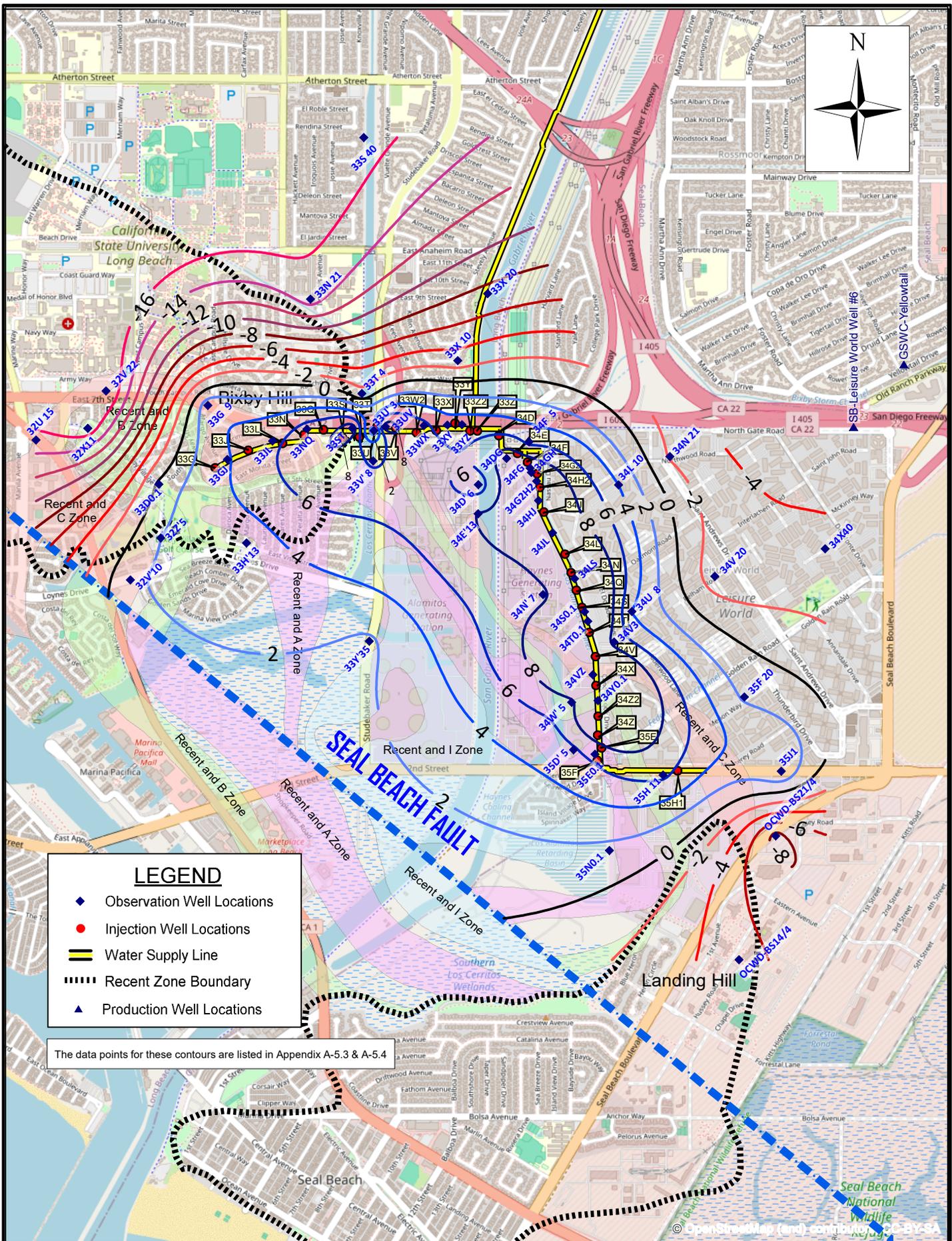
ALAMITOS BARRIER PROJECT
A-Zone
Groundwater Elevation Data for Contours and Tables

POINT	PROJ	FCD	AQUIFER	DATE	FY 24-25 ELEV	P.E. ¹	Δ^2	FY 23-24 ELEV2	CHANGE IN ELEV
51	34W' 5	503AJ	A	20250303	8.3			10.2	-1.9
52	34X40	513P	A	20250327	-2.4			2.8	-5.2
53	34Y0.1	503CL	A	20250327	6.7	2.8	3.9	10.2	-3.5
54	35E0.1	503BK	A	20250403	6.4	2.4	4.1	10.7	-4.3
55	35F 20	513J	A	20250320	2.3			4.8	-2.5
56	35H 11	514G	A	20250324	1.8	3.8	-2.0	6.3	-4.5
57	35H 12	514D	A	20250324	0.8	3.8	-3.0	4.9	-4.1
58	35J1	514L	A	20250324	1.3	6.2	-4.9	5.4	-4.1
59	OCWD-BS14/3		A	20250317	-0.1			3.3	-3.4
60	OCWD-BS21/3		A	20250306	0.2			4.6	-4.4
AVG=					3.0			AVG=	5.9

¹ P.E. represents the protective elevations calculated for internodal wells.

² Δ (+/-) represents how much groundwater level is above/below respective P.E.

* Data was collected from these wells during a barrier shutdown; to maintain consistency, the data was excluded from contour plotting.



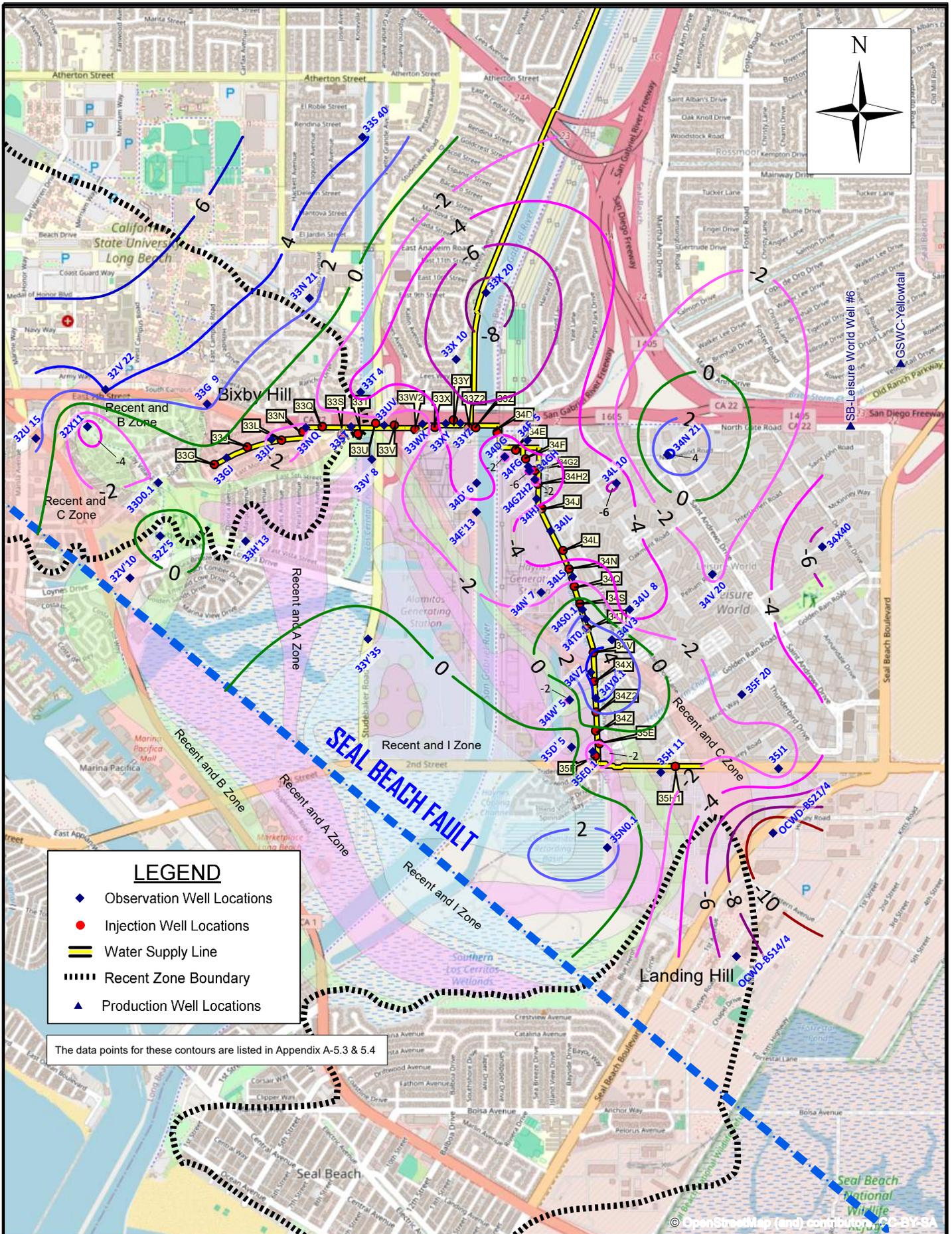
LEGEND

- ◆ Observation Well Locations
- Injection Well Locations
- Water Supply Line
- - - - Recent Zone Boundary
- ▲ Production Well Locations

The data points for these contours are listed in Appendix A-5.3 & A-5.4

Alamitos Barrier Project
I Zone Groundwater Elevation (ft) Contours, Spring 2025





LEGEND

- ◆ Observation Well Locations
- Injection Well Locations
- Water Supply Line
- ⋯ Recent Zone Boundary
- ▲ Production Well Locations

The data points for these contours are listed in Appendix A-5.3 & 5.4

ALAMITOS BARRIER PROJECT
I-Zone
Groundwater Elevation Data for Contours and Tables

POINT	PROJ	FCD	AQUIFER	DATE	FY 24-25 ELEV	P.E. ¹	Δ^2	FY 23-24 ELEV2	CHANGE IN ELEV
1	32U 15	482L	I	20250224	-15.0			-18.0	3.0
2	32V 22	482N	I	20250225	-18.4			-22.6	4.2
3	32V'10	483E	I	20250224	1.6			3.5	-1.9
4	32X11	482R	I	20250408	-17.3			-11.7	-5.6
5	32Z'5	482V	I	20250224	2.0			0.0	2.0
6	33D0.1	482U	AI	20250312	0.4			2.4	-2.0
7	33G 9	482G	I	20250224	3.3			1.0	2.3
8	33GJ	482Y	I	20250319	3.8	2.6	1.2	4.3	-0.5
9	33H'13	493XX	I	20250225	2.7			4.0	-1.3
10	33JL	492BW	AI	20250312	5.5	3.1	2.4	7.8	-2.3
11	33N 21	492BV	I	20250225	-14.9			-17.6	2.7
12	33NQ	492BP	AI	20250303	6.8	3.6	3.2	8.9	-2.0
13	33S 40	491F	I	20250304	-16.7			-21.0	4.3
14	33ST	492BM	I	20250303	9.3	4.2	5.1	9.8	-0.4
15	33T 12.5*	492BT	I	20250604	-12.7			-6.6	-6.1
16	33T 4	492CQ	I	20250203	-1.5			3.4	-4.9
17	33T 9*	492XX	I	20250604	-9.3			5.2	-14.5
18	33U' 3	492QQ	I	20250305	0.3				
19	33UV	492BJ	I	20250319	9.3	6.1	3.2	10.7	-1.4
20	33V' 8	492BX	I	20250224	5.7			7.2	-1.5
21	33W 11*	502U	I	20250410	-10.3			3.7	-14.0
22	33WX	502AG	I	20250324	6.5	10.4	-3.9	7.0	-0.5
23	33X 10	502BE	I	20250408	-3.0			4.3	-7.3
24	33X 20	502H	I	20250408	-7.4			1.6	-9.0
25	33X 54*	501	AI	20250508	-8.0			-2.8	-5.2
26	33XY	502BP	I	20250319	4.7	11.0	-6.4	10.2	-5.5
27	33Y'35	493ZZ	I	20250227	1.7			0.9	0.8
28	33YZ	502AE	I	20250319	5.1	9.8	-4.7	10.6	-5.5
29	34D' 6	502BI	I	20250312	4.8			10.4	-5.6
30	34DG	502AA	I	20250319	9.4	11.1	-1.6	11.0	-1.6
31	34E'13	503AT	I	20250305	8.1			11.0	-2.9
32	34F 5	502BQ	I	20250320	5.5			10.4	-4.9
33	34FG	502CP	I	20250408	9.4	11.3	-1.9	12.6	-3.3
34	34G2H2	502CT	I	20250319	10.8	11.0	-0.2	12.0	-1.3
35	34GH	502BV	I	20250403	8.9	10.5	-1.6	14.0	-5.1
36	34H5*	512D	I	20250415	-20.3			-1.6	-18.7
37	34HJ	502BW	I	20250319	10.3	11.0	-0.7	13.8	-3.5
38	34JL	503AN	I	20250327	8.5	10.5	-2.0	14.6	-6.0
39	34L 10	502AN	I	20250312	4.0			10.2	-6.2
40	34LS	503BC	I	20250324	13.0	9.9	3.1	15.4	-2.4
41	34N 21	512C	I	20250227	-2.2			-6.6	4.4
42	34N' 7	503AG	I	20250205	7.1			10.1	-3.0
43	34S0.1	503BW	I	20250324	13.6	8.1	5.5	11.7	1.8
44	34T0.1	503AD	I	20250324	13.3	8.4	4.9	11.2	2.1
45	34U 8	513G	I	20250327	3.9			10.0	-6.1
46	34V 20	513C	I	20250409	-3.1			-1.4	-1.7
47	34V3	503CE	I	20250312	7.1			3.6	3.5
48	34VZ	503BG	I	20250324	15.4	6.7	8.7	10.8	4.6
49	34W' 5	503AK	I	20250303	7.3			9.6	-2.3
50	34X40	513N	I	20250327	-3.1			3.8	-6.9

¹ P.E. represents the protective elevations calculated for internodal wells.

² Δ (+/-) represents how much groundwater level is above/below respective P.E.

* Data was collected from these wells during a barrier shutdown; to maintain consistency, the data was excluded from contour plotting.

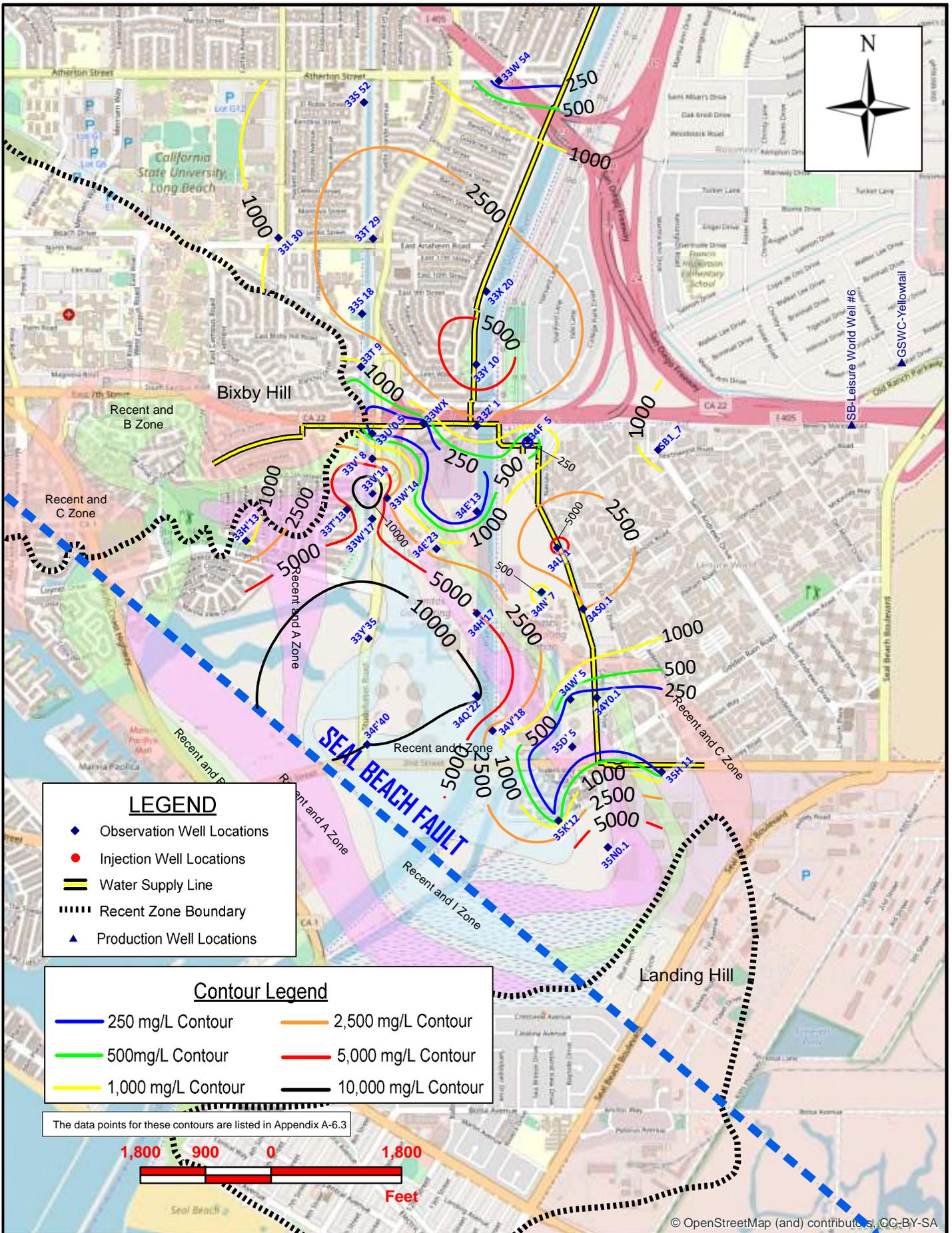
ALAMITOS BARRIER PROJECT
I-Zone
Groundwater Elevation Data for Contours and Tables

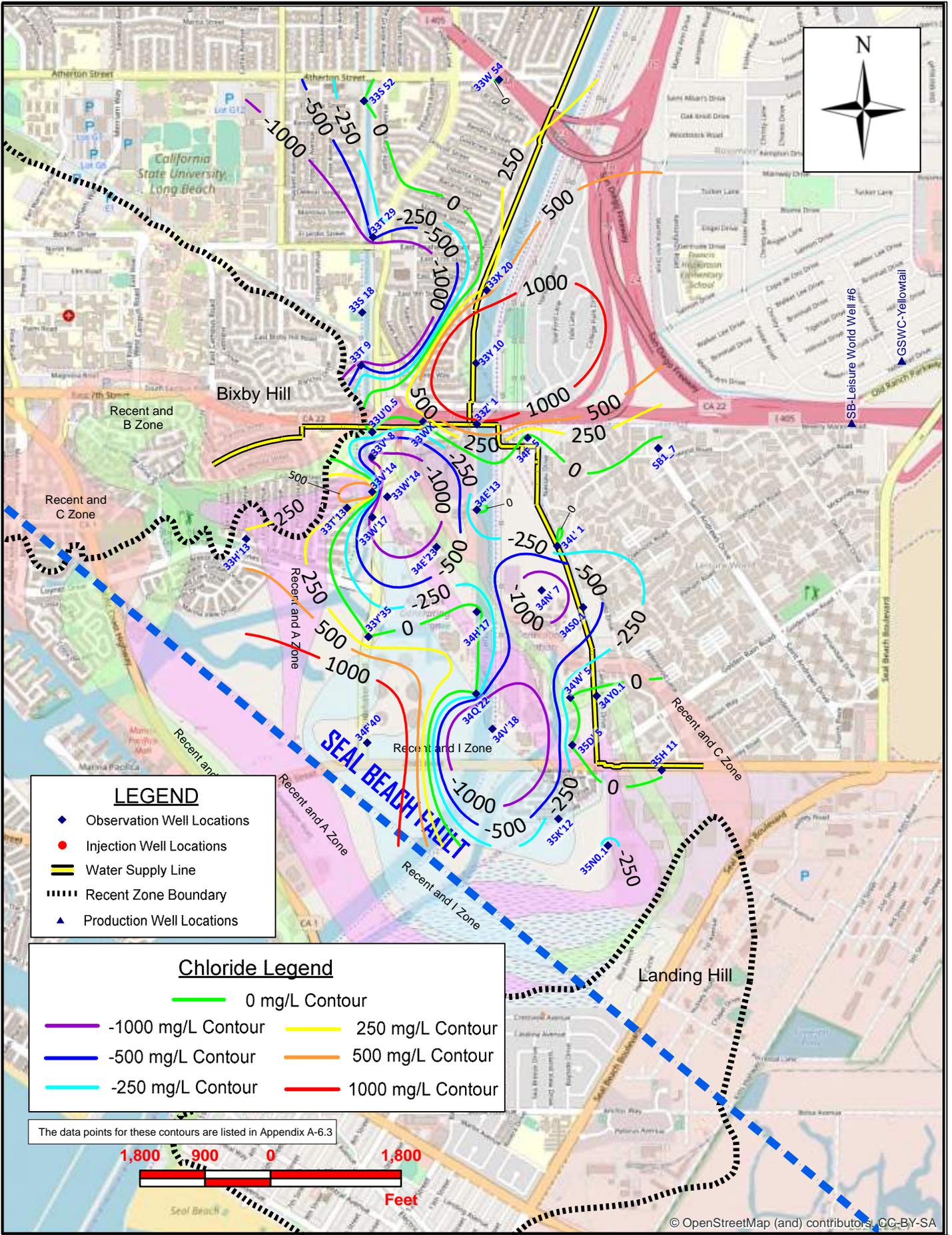
POINT	PROJ	FCD	AQUIFER	DATE	FY 24-25 ELEV	P.E. ¹	Δ^2	FY 23-24 ELEV2	CHANGE IN ELEV
51	34Y0.1	503CM	I	20250324	15.3	4.9	10.4	10.7	4.6
52	35D' 5	503AM	I	20250303	5.7			4.3	1.4
53	35E0.1	503BJ	I	20250403	6.6	3.1	3.5	10.1	-3.5
54	35F 20	513H	I	20250320	1.7			4.8	-3.1
55	35H 11	514H	I	20250319	6.4	5.5	0.9	7.5	-1.1
56	35J1	513M	I	20250324	3.9	7.4	-3.5	4.2	-0.3
57	35N0.1	504N	I	20250311	1.5			-1.5	3.0
58	OCWD-BS14/4		I	20250306	-5.1			1.7	-6.7
59	OCWD-BS21/4		I	20250626	-8.7			4.6	-13.3
AVG=					1.6	AVG=		4.3	

¹ P.E. represents the protective elevations calculated for internodal wells.

² Δ (+/-) represents how much groundwater level is above/below respective P.E.

* Data was collected from these wells during a barrier shutdown; to maintain consistency, the data was excluded from contour plotting.

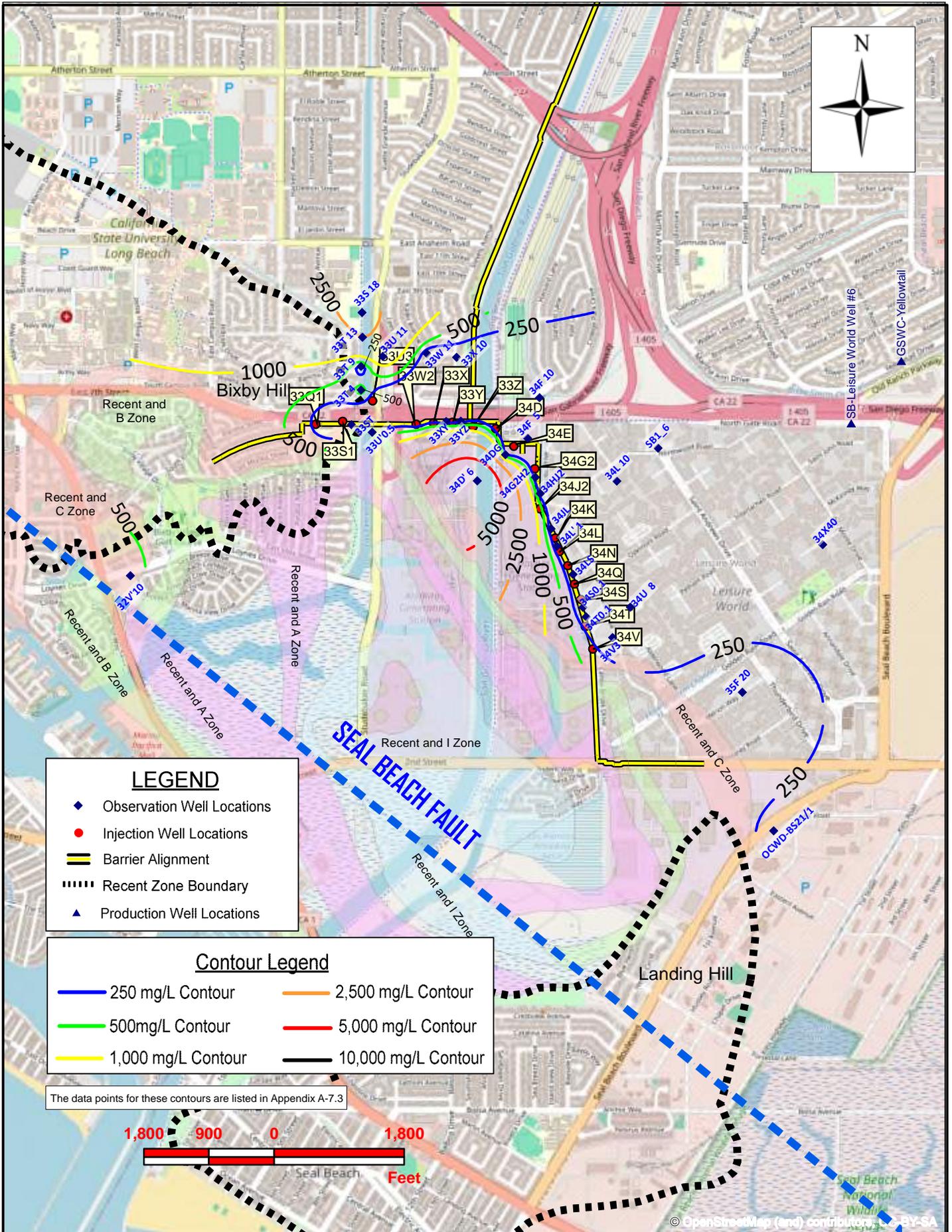




ALAMITOS BARRIER PROJECT
R-ZONE CHLORIDE CONCENTRATIONS
Chloride Data Used for Contours and Cross-Section

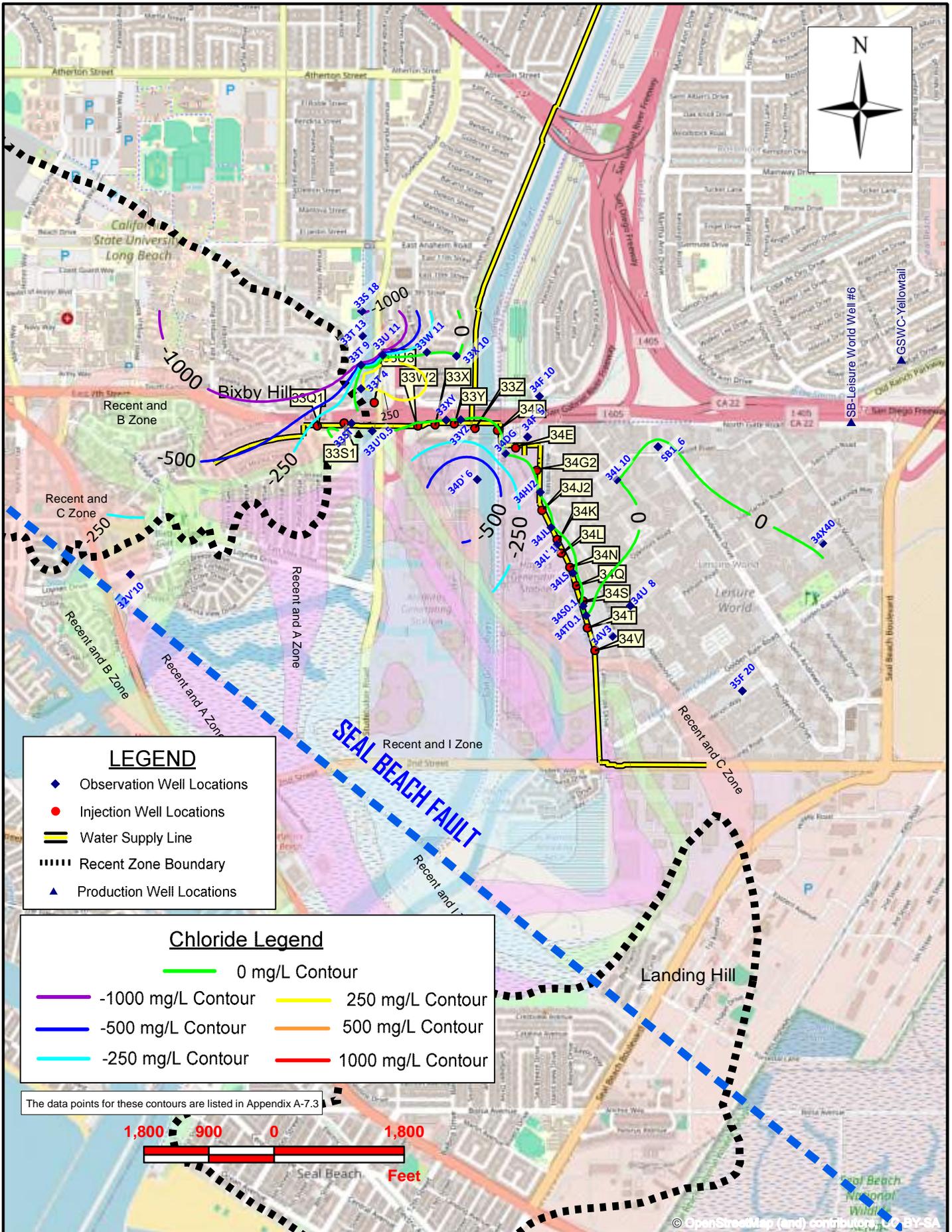
No.	PROJ	FCD	AQUIFER	DATE	Sampling Depths and Chloride Data					For Contours	MAX CHLORIDE FY23-24	Change in Chloride (FY24-25 - FY23-24)	
					ELEV 1 (ft)	CHL 1 (mg/L)	ELEV 2 (ft)	CHL 2 (mg/L)	ELEV 3 (ft)	CHL 3 (mg/L)			MAX CHL. 24-25
1	33H13	493YY	R,A	20250225	-18	330	-38	370	-58	600	600	280	320
2	33L 30	491G	R	20250225	-50	1,100					1,100		
3	33S 18	492AH	R	20250311	-67	3,400					3,400	13,000	-9,600
4	33S 52	491J	R	20250304	-54	1,800					1,800	1,800	0
5	33T 29	491D	R	20250304	-56	4,800					4,800	5,200	-400
6	33T 9	492CV	R	20250401	-21	670					670	1,100	-430
7	33T13	492AU	R	20250304	-41	2,900	-51	3,200			3,200	2,800	400
8	33U*0.5	492CB	R	20250319	-15	170					170	160	10
9	33V 8	492BY	RA	20250224	-24	2,200	-48	2,200			2,200	3,400	-1,200
10	33V14	492JJ	R	20250226	-67	20,000					20,000	19,000	1,000
11	33W 54	501C	R	20250225	-33	130	-53	130			130	140	-10
12	33W14	492AT	R	20250226	-46	2,000	-66	1,500			2,000	5,000	-3,000
13	33W17	493PP	R	20250226	-41	6,100	-51	6,200			6,200	7,400	-1,200
14	33WX	502AZ	R	20250324	-45	66					66	25	41
15	33X 20	502L	R	20250319	-68	3,300					3,300	3,000	300
16	33Y 10	502BA	R	20250303	-58	3,600	-83	7,900			7,900	3,700	4,200
17	33Y35	493AB	R	20250227	-36	20,000					20,000	20,000	0
18	33Z' 1	502AU	R	20250401	-46	1,900	-56	1,700			1,900	1,100	800
19	34E13	503AU	R	20250226	-19	81	-52	85			85	63	22
20	34E23	503X	R	20250226	-43	1,400					1,400	2,200	-800
21	34F 5	502BT	R	20250320	-136	94	-146	100	-156	96	100	220	-120
22	34F40	483J	R	20250305	-40	10,000					10,000	7,200	2,800
23	34H17	503Y	R	20250305	-46	5,000					5,000	4,900	100
24	34L' 1	503P	R	20250407	-57	5,700					5,700	5,700	0
25	34N' 7	503AE	R	20250227	-51	230	-61	260	-70	290	290	2,000	-1,710
26	34Q22	503T	R	20250305	-42	7,700	-57	11,000			11,000	11,000	0
27	34S0.1	503BT	Recent	20250326	-59	2,500	-69	2,500			2,500	3,200	-700
28	34V18	503V	R	20250312	-48	1,300					1,300	5,600	-4,300
29	34W' 5	503AH	R	20250303	-51	82					82	73	9
30	34Y0.1	503CK	Recent	20250327	-60	130	-70	72			130	81	49
31	35D' 5	503AL	R	20250303	-57	100					100	68	32
32	35H 11	514F	R	20250319	-42	130	-65	140			140	130	10
33	35K12	504R	R	20250311	-44	210	-54	270			270	290	-20
34	35N0.1	504M	R	20250311	-38	9,300	-62	9,200			9,300	9,600	-300
35	SB1_7	SB1_7	R	20250501		660					660	750	-90

Internodal Wells in **BOLD** and used for A-11 Barrier Cross Section.



Alamitos Barrier Project
C Zone Chloride Concentration (mg/L) Contours, Spring 2025





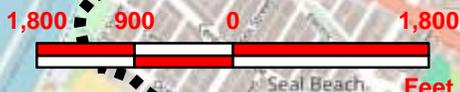
LEGEND

- ◆ Observation Well Locations
- Injection Well Locations
- Water Supply Line
- Recent Zone Boundary
- ▲ Production Well Locations

Chloride Legend

- 0 mg/L Contour
- -1000 mg/L Contour
- -500 mg/L Contour
- -250 mg/L Contour
- 250 mg/L Contour
- 500 mg/L Contour
- 1000 mg/L Contour

The data points for these contours are listed in Appendix A-7.3

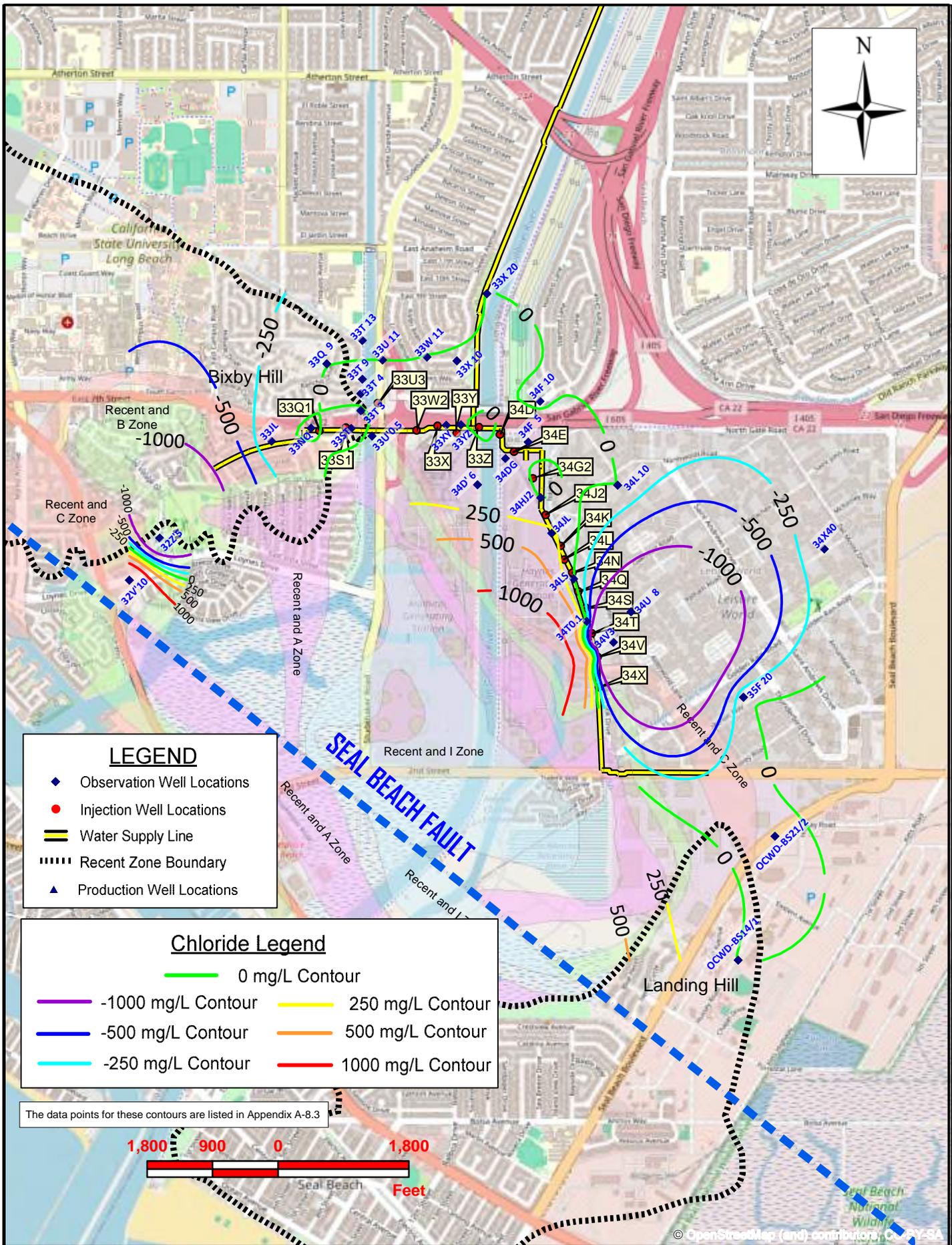


ALAMITOS BARRIER PROJECT
C-ZONE CHLORIDE CONCENTRATIONS
Chloride Data Used for Contours and Cross-Section

No.	PROJ	FCD	AQUIFER	DATE	Sampling Depths and Chloride Data				For Contours MAX CHL. 24-25	MAX CHLORIDE FY23-24	Change in Chloride (FY24-25 - FY23-24)		
					ELEV 1 (ft)	CHL 1 (mg/L)	ELEV 2 (ft)	CHL 2 (mg/L)				ELEV 3 (ft)	CHL 3 (mg/L)
1	32V'10	483H	C	20250224	-37	400				400	450	-50	
2	33S 18	492AG	C	20250311	-225	2,900				2,900	3,100	-200	
3	33ST	492BK	CB	20250313	-25	12				12	65	-53	
4	33T 4	492CT	C	20250604	-56	640				640	430	210	
5	33T 9	492CU	C	20250401	-129	44	-144	46		46	160	-114	
6	33T 13	492AC	C	20250605	-199	2,600				2,600	13,000	-10,400	
7	33U'0.5	492CA	C	20250319	-39	92				92	74	18	
8	33U 11	492AL	C	20250414	-188	1,600				1,600	1,600	0	
9	33W 11	502R	C	20250401	-183	74	-216	73		74	98	-24	
10	33X 10	502BB	C	20250226	-190	81	-215	82		82	87	-5	
11	33XY	502BL	C	20250324	-194	71	-209	71		71	69	2	
12	33YZ	502AB	C	20250324	-195	71	-210	71		71	64	7	
13	34D' 6	502BF	C	20250226	-125	10,000				10,000	11,000	-1,000	
14	34DG	502X	C	20250402	-190	86	-205	95		95	61	34	
15	34F 5	502BU	C	20250320	-191	81	-201	75	-211	73	81	62	19
16	34F 10	502AP	C	20250408	-211	78				78	76	2	
17	34G2H2	502CQ	C	20240404	-190	81	-205	77	-220	77	81		
18	34HJ2	502CH	C	20250326	-148	78	-158	93		93	76	17	
19	34JL	503AR	C	20250402	-162	78				78	83	-5	
20	34L' 1	503N	C	20250407	-162	78				78	110	-32	
21	34L 10	502AK	C	20250227	-166	120				120	120	0	
22	34LS	503BF	C	20250401	-133	72	-151	71	-163	71	72	75	-3
23	34S0.1	503BU	C	20250326	-129	64	-139	68		68	65	3	
24	34T0.1	503AB	C	20250327	-134	120				120	120	0	
25	34U 8	513D	C	20250327	-150	85	-165	86		86	130	-44	
26	34V3	503CB	C	20250327	-168	68				68	110	-42	
27	34X40	513R	C	20250327	-85	67	-101	84		84	79	5	
28	35F 20	513L	C	20250320	-70	400	-78	430	-85	400	430	500	-70
29	SB1_6		C	20250501		82				82	92	-10	
30	OCWD-BS21/1		C	20250219		206				206	225	-19	
31	33Q1					DP1				50	50		
32	33U3					DP2				50	50		
33	33W2					DP3				50	50		
34	34D					DP4				50	50		

DP = Dummy Point with an assumed chloride concentration of 50 mg/L placed at wells that were injecting into this zone during this reporting period.

Internodal Wells in **BOLD** and used for A-11 Barrier Cross Section.



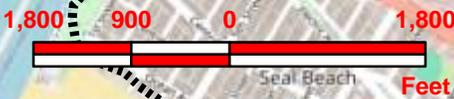
LEGEND

- ◆ Observation Well Locations
- Injection Well Locations
- Water Supply Line
- Recent Zone Boundary
- ▲ Production Well Locations

Chloride Legend

- 0 mg/L Contour
- -1000 mg/L Contour
- -500 mg/L Contour
- -250 mg/L Contour
- 250 mg/L Contour
- 500 mg/L Contour
- 1000 mg/L Contour

The data points for these contours are listed in Appendix A-8.3



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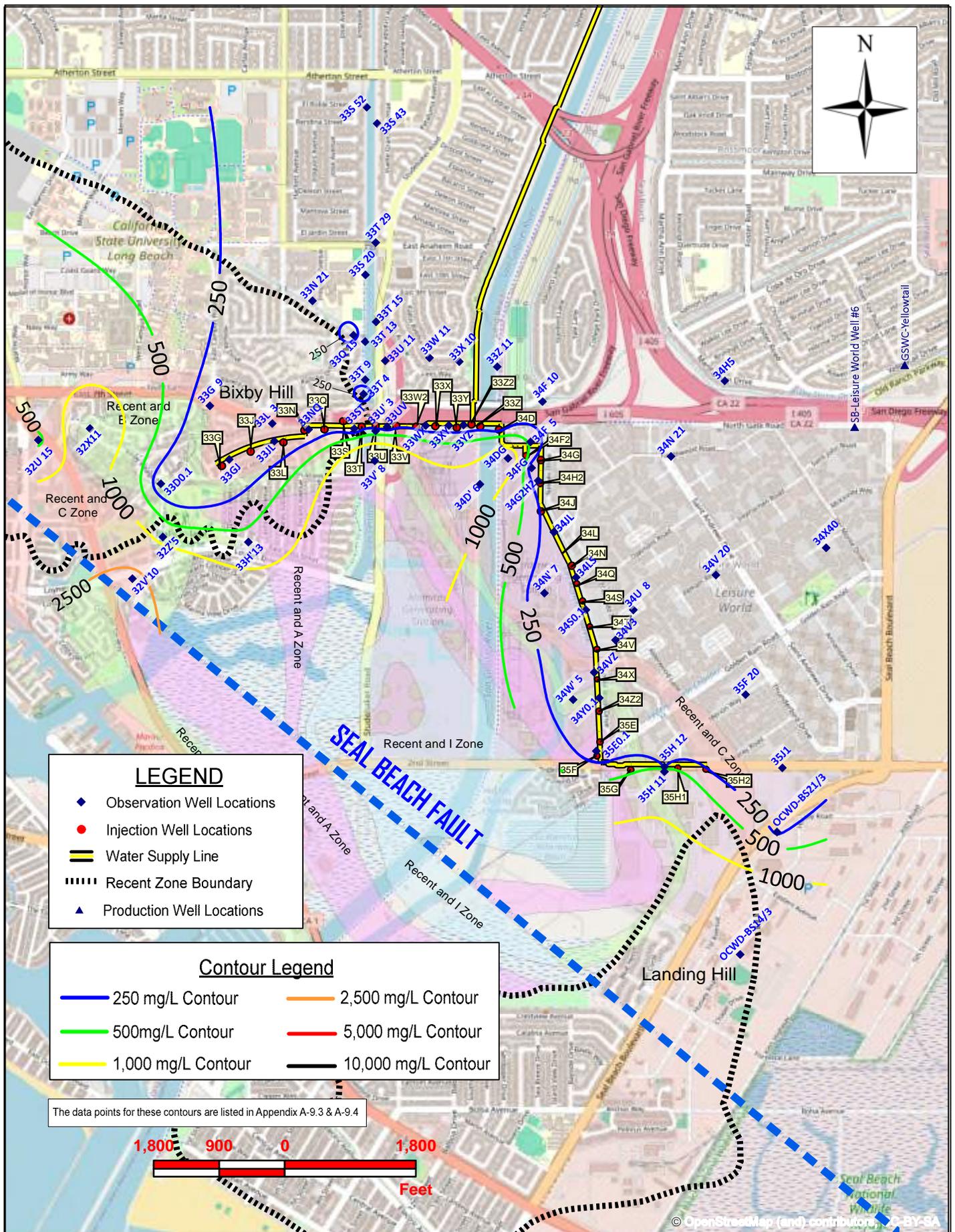


ALAMITOS BARRIER PROJECT
B-ZONE CHLORIDE CONCENTRATIONS
Chloride Data Used for Contours and Cross-Section

No.	PROJ	FCD	AQUIFER	DATE	Sampling Depths and Chloride Data				For Contours MAX CHL. 24-25	MAX CHLORIDE FY23-24	Change in Chloride (FY24-25 - FY23-24)		
					ELEV 1 (ft)	CHL 1 (mg/L)	ELEV 2 (ft)	CHL 2 (mg/L)				ELEV 3 (ft)	CHL 3 (mg/L)
1	32V'10	483G	B	20250224	-72	3,700				3,700	1,400	2,300	
2	32Z'5	482W	AB	20250224	-20	720	-30	660	-40	660	720	3,000	-2,280
3	33JL	492BQ	B	20250312	3	88	-7	85		88	110	88	-22
4	33NQ	492BN	B	20250313	-3	80	-14	73		80	71	80	9
5	33Q 9	492CM	B	20250225	-85	80	-95	80	-105	80	80	85	-5
6	33Q 15	492AN	B	20250605	-263	7,000					7,000		
7	33ST	492BK	CB	20250313	-25	12				12	65	12	-53
8	33T 3	492CL	B	20250604	-40	74	-57	72	-75	76	76	86	-10
9	33T 4	492CS	B	20250604	-91	88					88	58	30
10	33T 9	492YY	B	20250604	-163	360					360	190	170
11	33T 13	492AB	B	20250605	-254	200					200	390	-190
12	33U 11	492AK	B	20250414	-260	72					72	70	2
13	33U'0.5	492BZ	B	20250319	-57	88				88	64	88	24
14	33W 11	502S	B	20250410	-241	92	-269	91			92	88	4
15	33X 10	502BC	B	20250226	-275	84					84	75	9
16	33X 20	502K	B	20250319	-266	80					80	78	2
17	33XY	502BM	B	20250324	-244	110				110	77	110	33
18	33YZ	502AC	B	20250324	-214	70	-263	72		72	71	72	1
19	34D' 6	502BG	B	20250226	-180	90	-194	92			92	67	25
20	34DG	502Y	B	20250403	-232	80	-257	78		80	70	80	10
21	34F 5	502BS	B	20250320	-231	81	-260	75			81	65	16
22	34F 10	502AQ	B	20250418	-269	74					74	77	-3
23	34G2H2	502CR	B	20240404	-190	66				66			
24	34HJ2	502CJ	B	20250326	-208	80	-223	82		82	94	82	-12
25	34JL	503AQ	B	20250402	-195	520	-205	570		570	270	570	300
26	34L 10	502AL	B	20250227	-224	77	-249	95			95	98	-3
27	34LS	503BE	B	20250401	-188	72				72	66	72	6
28	34T0.1	503AC	B	20250327	-174	79	-239	89		89	88	89	1
29	34U 8	513E	B	20250327	-225	90					90	2,600	-2,510
30	34V3	503CC	B	20250327	-208	990					990	8,500	-7,510
31	34X40	513Q	B	20250327	-137	25					25	74	-49
32	35F 20	513K	B	20250320	-115	87					87	130	-43
33	35J1	514M	B	20240430	-128	480	-143	650	-148	490	650		
34	OCWD-BS14/1			20250219		250					250	257	-7
35	OCWD-BS21/2			20250219		238					238	293	-55
36	34D					DP1					50	50	
37	34V					DP2					50	50	
38	34X					DP3					50	50	

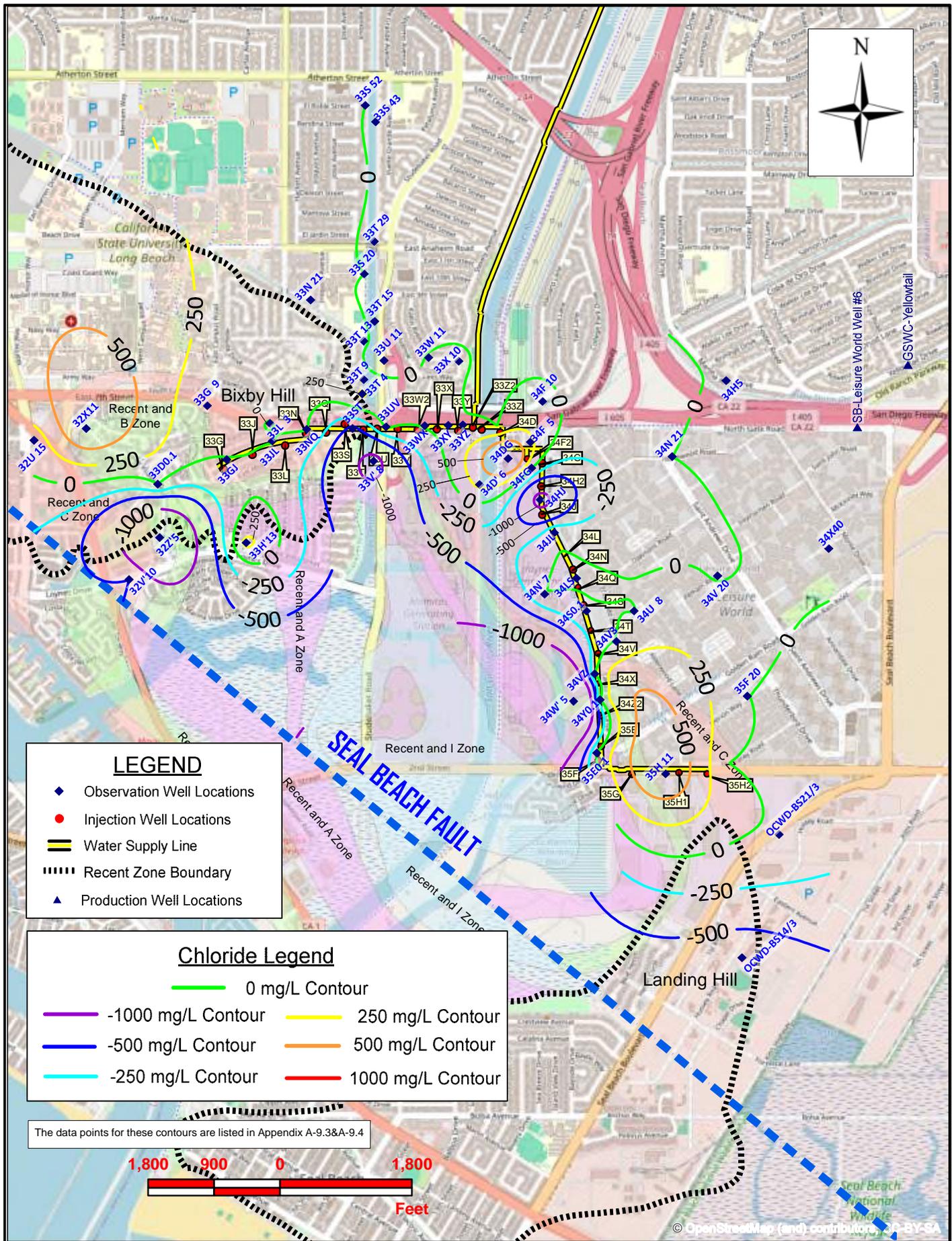
DP = Dummy Point with an assumed chloride concentration of 50 mg/L placed at wells that were injecting into this zone during this reporting period.

Internodal Wells in **BOLD** and used for A-11 Barrier Cross Section.



Alamitos Barrier Project
A Zone Chloride Concentration (mg/L) Contours, Spring 2025





ALAMITOS BARRIER PROJECT
A-ZONE CHLORIDE CONCENTRATIONS
Chloride Data Used for Contours and Cross-Section

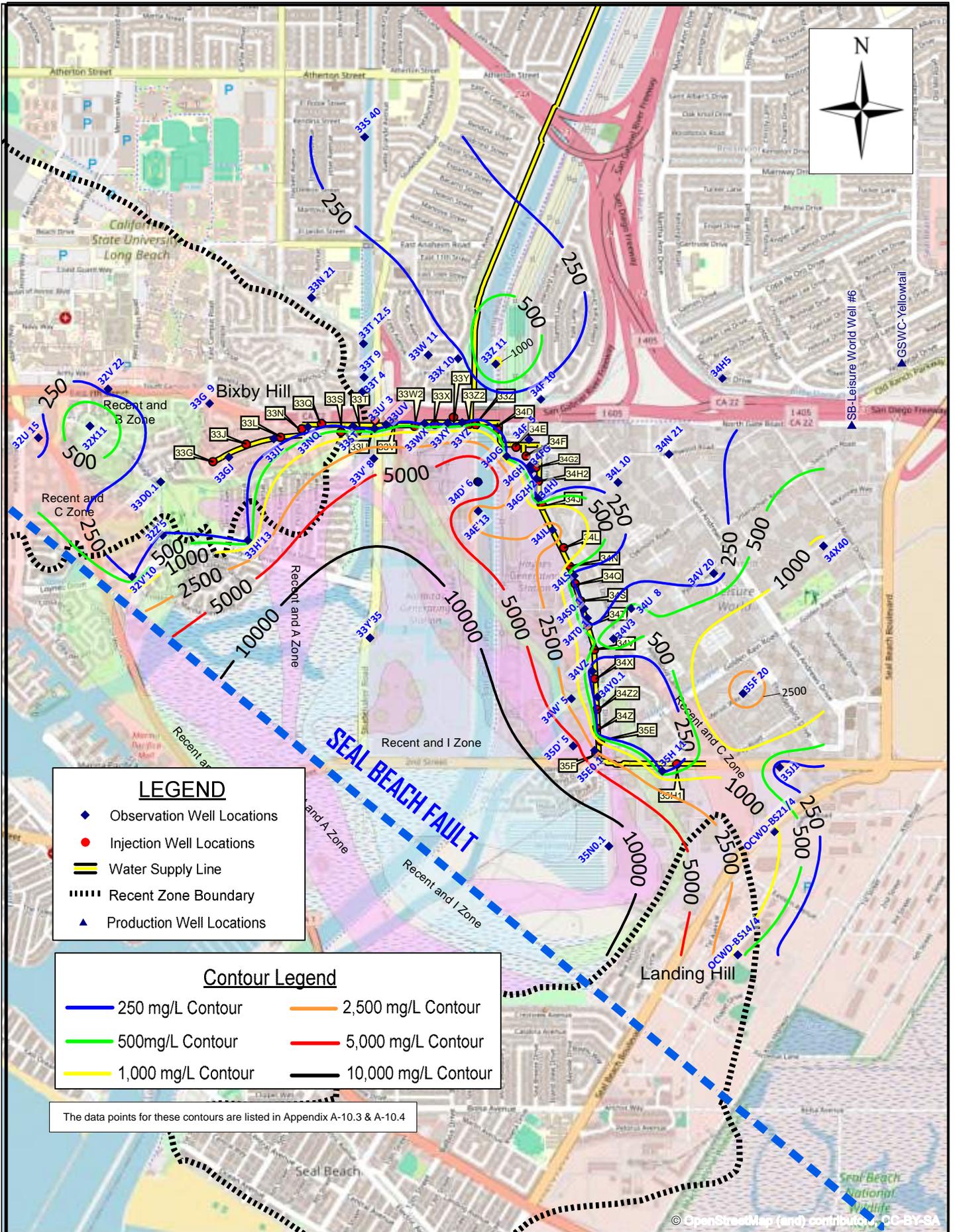
No.	PROJ	FCD	AQUIFER	DATE	Sampling Depths and Chloride Data						For Contours MAX CHL. 24-25	MAX CHLORIDE FY23-24	Change in Chloride (FY24-25 - FY23-24)
					ELEV 1 (ft)	CHL 1 (mg/L)	ELEV 2 (ft)	CHL 2 (mg/L)	ELEV 3 (ft)	CHL 3 (mg/L)			
1	32U 15	482M	A	20250224	-17	400					400	290	110
2	32V 10	483F	A	20250224	-90	2,900	-105	2,800			2,900	3,400	-500
3	32X11	482S	A	20250312	-9	260	-24	1,600			1,600	780	820
4	32Z 5	482W	BA	20250224	-20	720	-30	660	-40	660	720	3,000	-2,280
5	33D0.1	482U	AI	20250312	-24	82	-49	82	-74	82	82	82	0
6	33G 9	482F	A	20250224	-3		-23	120			120	100	20
7	33GJ	482X	A	20250312	-35	62					62	67	-5
8	33H 13	493YY	RA	20250225	-18	330	-38	370	-58	600	600	280	320
9	33JL	492BW	AI	20250312	-41	62	-79	62	-116	61	62	58	4
10	33L 3	492	A	20250313	-60	69					69	76	-7
11	33N 21	492BU	A	20250225	-305	140	-330	140	-346	150	150	150	0
12	33NQ	492BP	AI	20250313	-48	68	-92	68	-136	69	69	60	9
13	33Q 15	492AM	A	20250605	-337	300					300		
14	33S 20	492BR	A	20250303	-317	120	-336	170	-355	210	210	210	0
15	33S 43	491E	A	20250304	-333	110	-344	110			110	120	-10
16	33S 52	491H	A	20250304	-284	180	-289	190			190	190	0
17	33ST	492BL	A	20250313	-65	73	-86	71	-100	64	73	640	-567
18	33T 13	492ZZ	A	20250605	-128	130					130	100	30
19	33T 15	492SS	A	20250225	-334	140					140	160	-20
20	33T 29	491C	A	20250304	-350	89					89	100	-11
21	33T 4	492CR	A	20250604	-146	250	-166	180	-186	360	360	63	297
22	33T 9	492TT	A	20250604	-262	170					170	89	81
23	33U 11	492AJ	A	20250414	-348	83					83	250	-167
24	33U 3	492WW	A	20250305	-89	320					320		
25	33UV	492BH	A	20250319	-106	82	-131	100	-155	110	110	78	32
26	33V 8	492BY	RA	20250224	-24	2,200	-48	2,200			2,200	3,400	-1,200
27	33W 11	502T	A	20250410	-321	73	-349	110	-376	120	120	110	10
28	33WX	502AF	A	20250324	-258	100	-281	100	-297	100	100	84	16
29	33X 10	502BD	A	20250226	-320	73	-340	69	-356	69	73	64	9
30	33XY	502BN	A	20250324	-278	70	-295	110	-310	100	110	60	50
31	33YZ	502AD	A	20250324	-296	88	-327	97			97	82	15
32	33Z 11	502V	A	20241202	-321	65	-346	80			80		
33	34D 6	502BH	A	20250226	-270	210	-303	1,100	-335	1,200	1,200	890	310
34	34DG	502Z	A	20250402	-292	290	-324	1,500			1,500	430	1,070
35	34F 5	502BR	A	20250320	-297	120	-322	450	-347	440	450	140	310
36	34F 10	502AR	A	20250418	-311	88	-326	87			88	61	27
37	34FG	502CN	A	20250408	-291	77	-306	78	-321	78	78	76	2
38	34G2H2	502CS	A	20240404	-283	93	-298	95	-313	98	98		
39	34H 5	512E	A	20250415	-298	97	-313	98	-328	98	98	96	2
40	34HJ	502BX	A	20250410	-310	130	-321	130	-331		130	1,400	-1,270
41	34JL	503AP	A	20250402	-262	100	-300	120			120	160	-40
42	34LS	503BD	A	20250401	-238	71	-283	70			71	63	8
43	34N 21	512B	A	20250227	-328	130	-354	170			170	170	0
44	34N 7	503AF	A	20250227	-106	81	-144	81	-176	83	83	93	-10
45	34S0.1	503BV	A	20250326	-239	68	-256	68			68	110	-42
46	34U 8	513F	A	20250415	-280	70	-310	97			97	100	-3
47	34V 20	513B	A	20250409	-234	140	-265	140	-292	140	140	150	-10
48	34V3	503CD	A	20250415	-263	84					84	75	9
49	34VZ	503BH	A	20250327	-146	79	-156	80			80	70	10
50	34W 5	503AJ	A	20250303	-81	65	-101	68	-119	96	96	3,400	-3,304

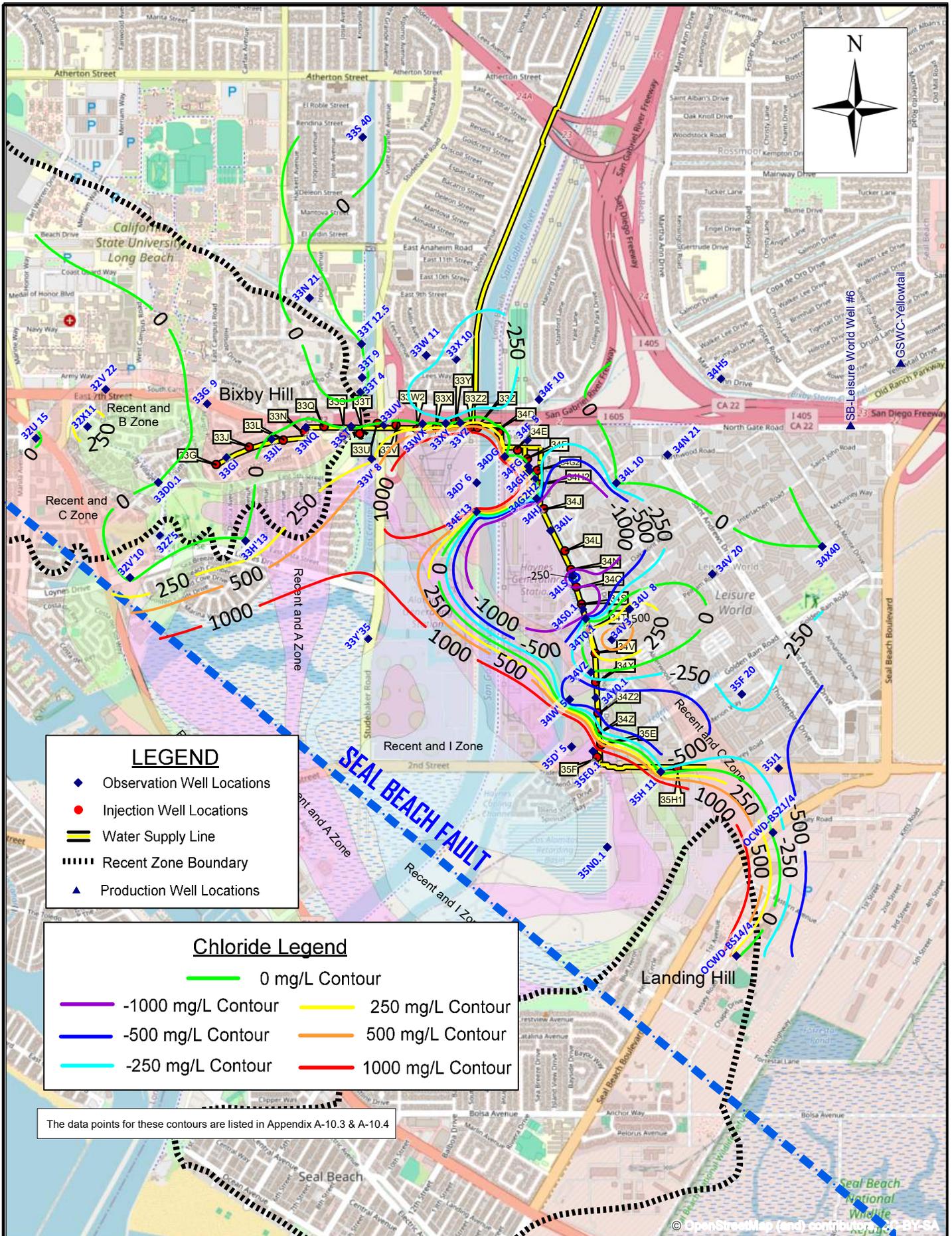
ALAMITOS BARRIER PROJECT
A-ZONE CHLORIDE CONCENTRATIONS
Chloride Data Used for Contours and Cross-Section

No.	PROJ	FCD	AQUIFER	DATE	For Cross-Section (Internodal Wells in Bold)						For Contours	MAX CHLORIDE FY23-24	Change in Chloride (FY24-25 - FY23-24)
					ELEV 1 (ft)	CHL 1 (mg/L)	ELEV 2 (ft)	CHL 2 (mg/L)	ELEV 3 (ft)	CHL 3 (mg/L)	MAX CHL. 24-25		
51	34X40	513P	A	20250327	-202	40	-232	190			190	160	30
52	34Y0.1	503CL	A	20250327	-107	100					100	95	5
53	35E0.1	503BK	A	20250403	-74	95					95	61	34
54	35F 20	513J	A	20250320	-129	95	-158	94			95	90	5
55	35H 11	514G	A	20250319	-123	490	-146	870			870	88	782
56	35H 12	514D	A	20240430	-137	220					220		
57	35J1	514L	A	20240430	-193	64	-208	65	-228	73	73		
58	OCWD-BS14/3		A	20250219		2,420					2,420	3,100	-680
59	OCWD-BS21/3		A	20250219		214					214	245	-31
60	34D						DP1				50	50	
61	35H2						DP2				50	50	

DP = Dummy Point with an assumed chloride concentration of 50 mg/L placed at wells that were injecting into this zone during this reporting period.

Internodal Wells in **BOLD** and used for A-11 Barrier Cross Section.





LEGEND

- ◆ Observation Well Locations
- Injection Well Locations
- == Water Supply Line
- Recent Zone Boundary
- ▲ Production Well Locations

Chloride Legend

— 0 mg/L Contour	— 250 mg/L Contour
— -1000 mg/L Contour	— 500 mg/L Contour
— -500 mg/L Contour	— 1000 mg/L Contour
— -250 mg/L Contour	

The data points for these contours are listed in Appendix A-10.3 & A-10.4

ALAMITOS BARRIER PROJECT
I-ZONE CHLORIDE CONCENTRATIONS
Chloride Data Used for Contours and Cross-Section

No.	PROJ	FCD	AQUIFER	DATE	Sampling Depths and Chloride Data						For Contours MAX CHL. 24-25	MAX CHLORIDE FY23-24	Change in Chloride (FY24-25 - FY23-24)
					ELEV 1 (ft)	CHL 1 (mg/L)	ELEV 2 (ft)	CHL 2 (mg/L)	ELEV 3 (ft)	CHL 3 (mg/L)			
1	32U 15	482L	I	20250224	-74	125					125	160	-35
2	32V 22	482N	I	20250225	-51	170					170	51	119
3	32V'10	483E	I	20250224	-140	230	-152	220	-165	220	230	270	-40
4	32X11	482R	I	20250312	-51	980	-61	880			980	610	370
5	32Z'5	482V	I	20250224	-68	280	-83	270	-98	280	280	370	-90
6	33D0.1	482U	AI	20250312	-24	82	-49	82	-74	82	82	82	0
7	33G 9	482G	I	20250224	-34	66	-68	68	-78	68	68	95	-27
8	33GJ	482Y	I	20250312	-75	66	-95	66			66	64	2
9	33H'13	493XX	I	20250225	-89	160					160	150	10
10	33JL	492BW	AI	20250312	-41	62	-79	62	-116	61	62	58	4
11	33N 21	492BV	I	20250225	-457	73	-468	76			76	65	11
12	33NQ	492BP	AI	20250313	-48	68	-92	68	-136	69	69	60	9
13	33S 40	491F	I	20250304	-470	480					480	440	40
14	33ST	492BM	I	20250313	-130	60	-148	59	-163	60	60	62	-2
15	33T 4	492CQ	I	20250604	-277	74	-292	69			74	62	12
16	33T 9	492XX	I	20250604	-364	100					100	71	29
17	33T 12.5	492BT	I	20250604	-423	92	-438	88	-443	90	92	91	1
18	33U' 3	492QQ	I	20250305	-147	110					110		
19	33UV	492BJ	I	20250319	-209	100	-228	100	-246	100	100	78	22
20	33V' 8	492BX	I	20250224	-109	4,000	-130	4,200			4,200	4,000	200
21	33W 11	502U	I	20250410	-423	81	-446	87	-468	78	87	200	-113
22	33WX	502AG	I	20250324	-374	100	-391	100	-405	100	100	120	-20
23	33X 10	502BE	I	20250226	-420	120	-440	73	-460	72	120	490	-370
24	33XY	502BP	I	20250324	-403	74	-416	83	-430	69	83	200	-117
25	33Y'35	493ZZ	I	20250227	-67	23,000					23,000	21,000	2,000
26	33YZ	502AE	I	20250324	-402	130	-433	86			130	70	60
27	33Z 11	502W	I	20241202	-417	230	-437	240	-457	1,100	1,100		
28	34D' 6	502BI	I	20250226	-400	9,500	-410	10,000	-418	11,000	11,000	1,400	9,600
29	34DG	502AA	I	20250403	-402	110	-432	110			110	70	40
30	34E'13	503AT	I	20250226	-289	750	-308	860			860	940	-80
31	34F 5	502BQ	I	20250320	-411	100	-426	99	-441	98	100	71	29
32	34F 10	502AS	I	20250418	-416	69	-442	69			69	76	-7
33	34FG	502CP	I	20250408	-412	98	-427	99	-442	100	100	82	18
34	34GH	502BV	I	20250403	-411	79	-426	80	-436	81	81	68	13
35	34G2H2	502CT	I	20240404	-408	97	-428	93			97		
36	34H5	512D	I	20250415	-408	200	-423	180	-443	170	200	190	10
37	34HJ	502BW	I	20250410	-407	100	-417	100	-427	100	100	130	-30
38	34JL	503AN	I	20250402	-382	3,200	-397	110			3,200	12,000	-8,800
39	34L 10	502AN	I	20250227	-404	110	-426	110			110	96	14
40	34LS	503BC	I	20250401	-338	80	-358	82			82	100	-18
41	34N 21	512C	I	20250227	-423	120	-448	210			210	94	116
42	34S0.1	503BW	I	20250326	-306	130	-310	200			200	3,200	-3,000
43	34T0.1	503AD	I	20250327	-289	73	-334	77			77	84	-7
44	34U 8	513G	I	20250327	-360	350	-375	570			570	160	410
45	34V 20	513C	I	20250409	-386	80					80	150	-70
46	34V3	503CE	I	20250415	-328	790					790	79	711
47	34VZ	503BG	I	20250327	-214	72	-224	71			72	80	-8
48	34W' 5	503AK	I	20250303	-156	1,700					1,700	2,700	-1,000
49	34X40	513N	I	20250327	-331	880	-346	1,100			1,100	1,100	0
50	34Y0.1	503CM	I	20250327	-175	79	-185	80			80	730	-650

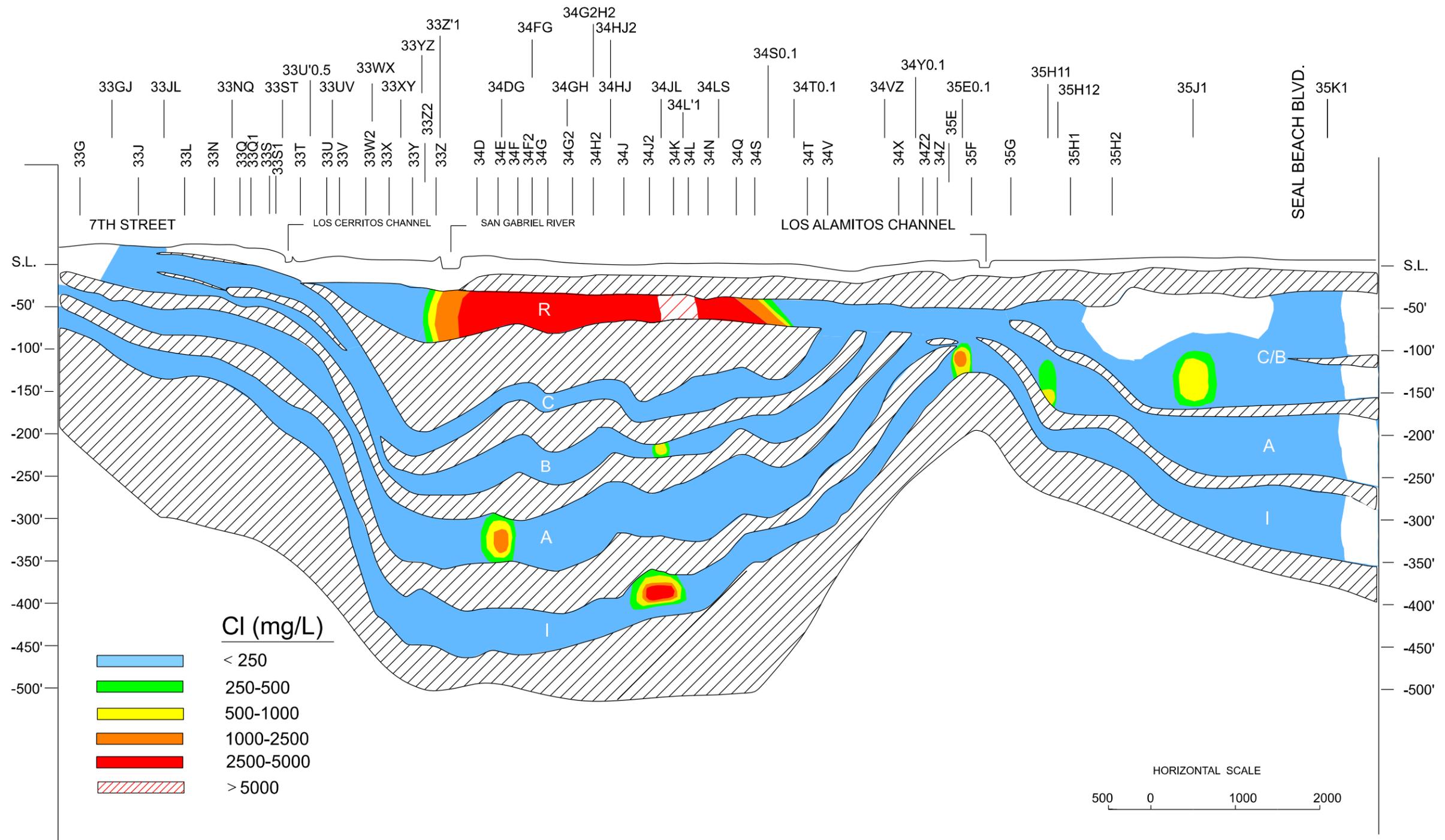
ALAMITOS BARRIER PROJECT
I-ZONE CHLORIDE CONCENTRATIONS
Chloride Data Used for Contours and Cross-Section

No.	PROJ	FCD	AQUIFER	DATE	For Cross-Section (Internodal Wells in Bold)						For Contours	MAX CHLORIDE FY23-24	Change in Chloride (FY24-25 - FY23-24)
					ELEV 1 (ft)	CHL 1 (mg/L)	ELEV 2 (ft)	CHL 2 (mg/L)	ELEV 3 (ft)	CHL 3 (mg/L)	MAX CHL_24-25		
51	35D' 5	503AM	I	20250303	-89	6,200					6,200	560	5,640
52	35E0.1	503BJ	I	20250403	-114	2,500					2,500	1,100	1,400
53	35F 20	513H	I	20250320	-235	3,100	-245	3,200	-255	3,200	3,200	3,300	-100
54	35H 11	514H	I	20250319	-203	140					140	290	-150
55	35J1	513M	I	20241126	-261	95	-271	95	-281	99	99		
56	35N0.1	504N	I	20250311	-71	14,000					14,000	330	13,670
57	OCWD-BS14/4		I	20250219		559					559	516	43
58	OCWD-BS21/4		I	20250219		1,110					1,110	1,160	-50
59	34D						DP1				50	50	
60	34Z						DP2				50	50	

DP = Dummy Point with an assumed chloride concentration of 50 mg/L placed at wells that were injecting into this zone during this reporting period.

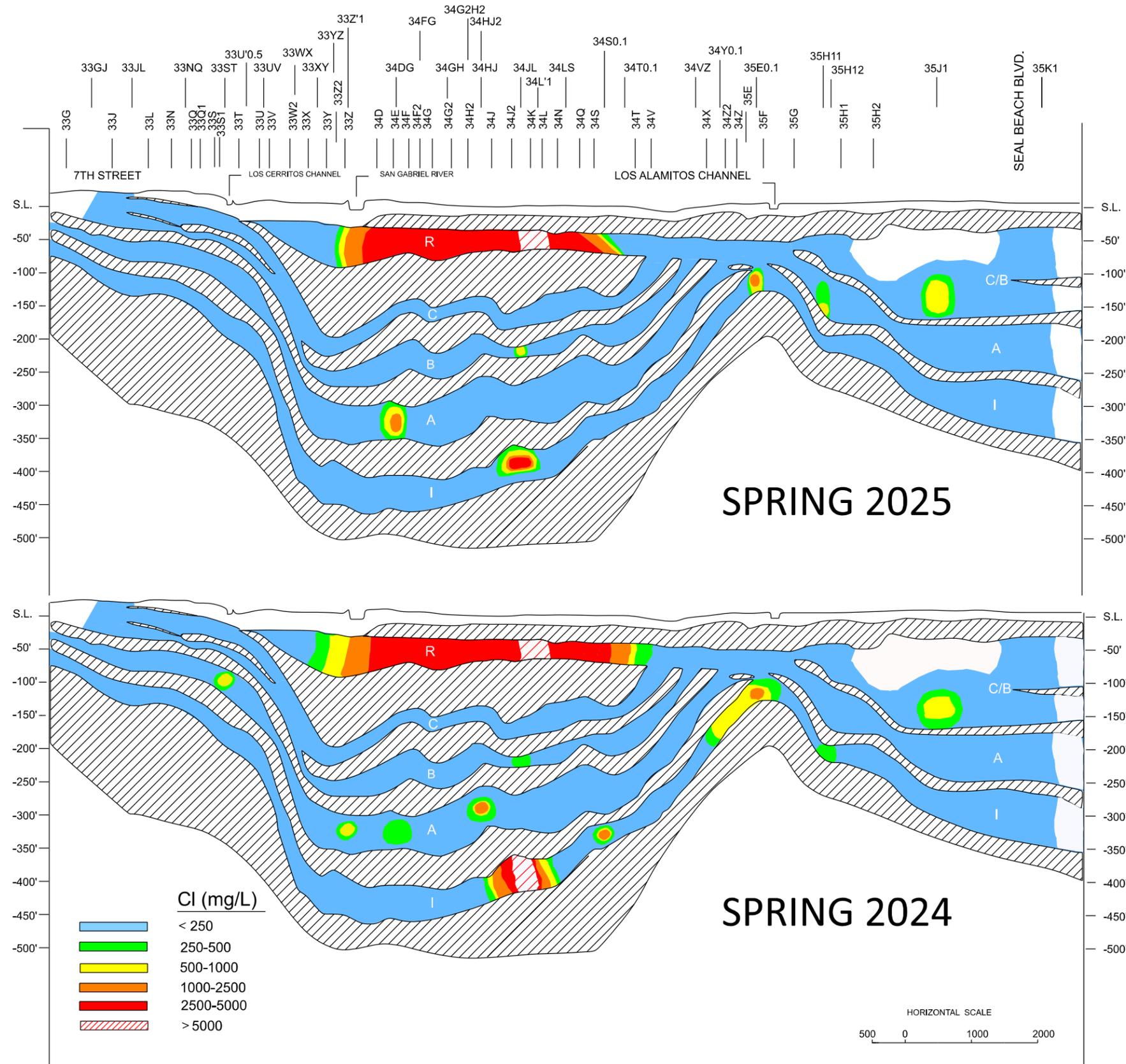
Internodal Wells in **BOLD** and used for A-11 Barrier Cross Section.

ALAMITOS BARRIER PROJECT CHLORIDE CROSS-SECTION SPRING 2025

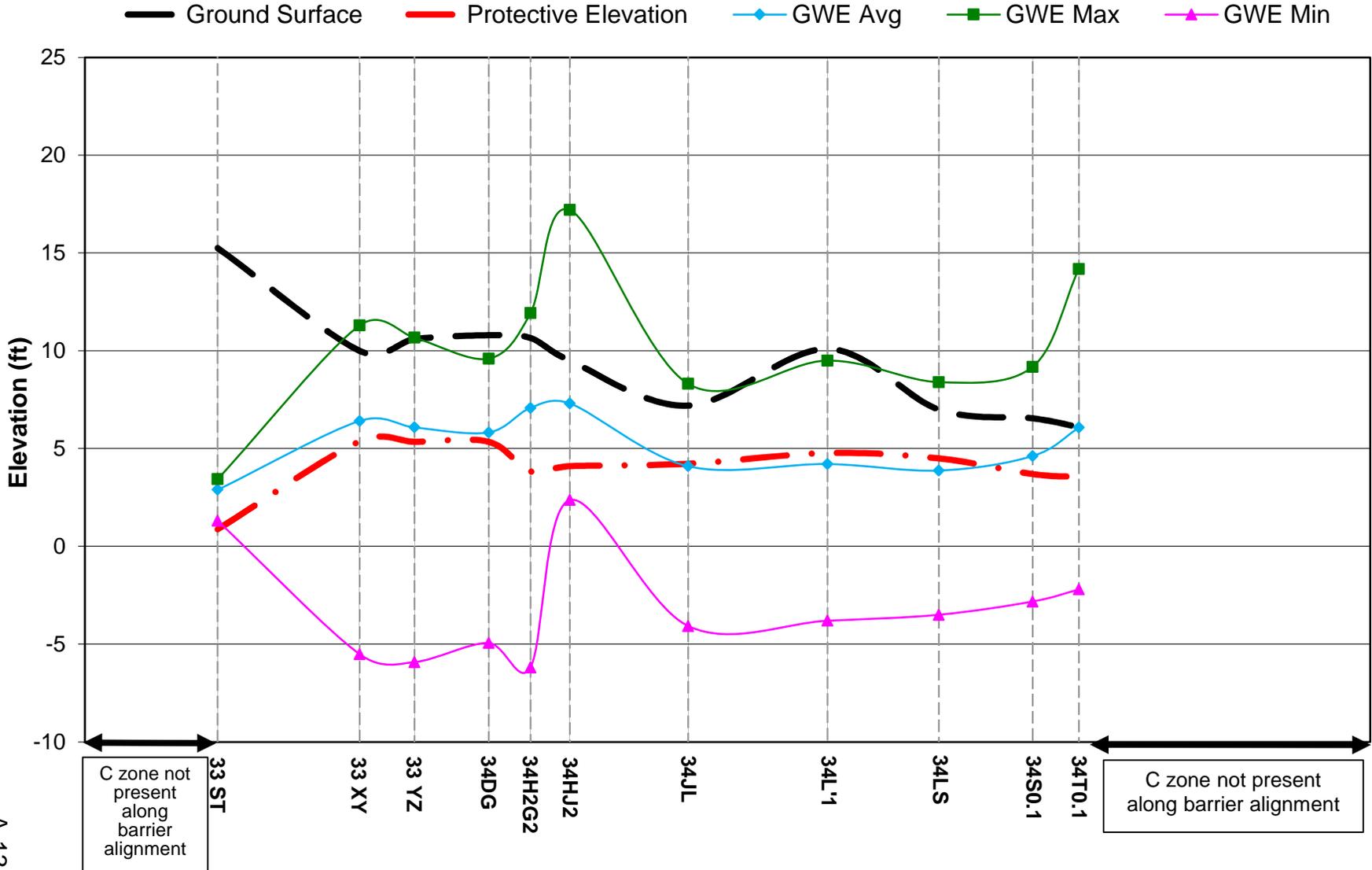


Note: The data points used to create this cross section are listed in the Appendix; A-6.3, 7.3, 8.3, 9.3, 9.4, 10.3, & 10.4

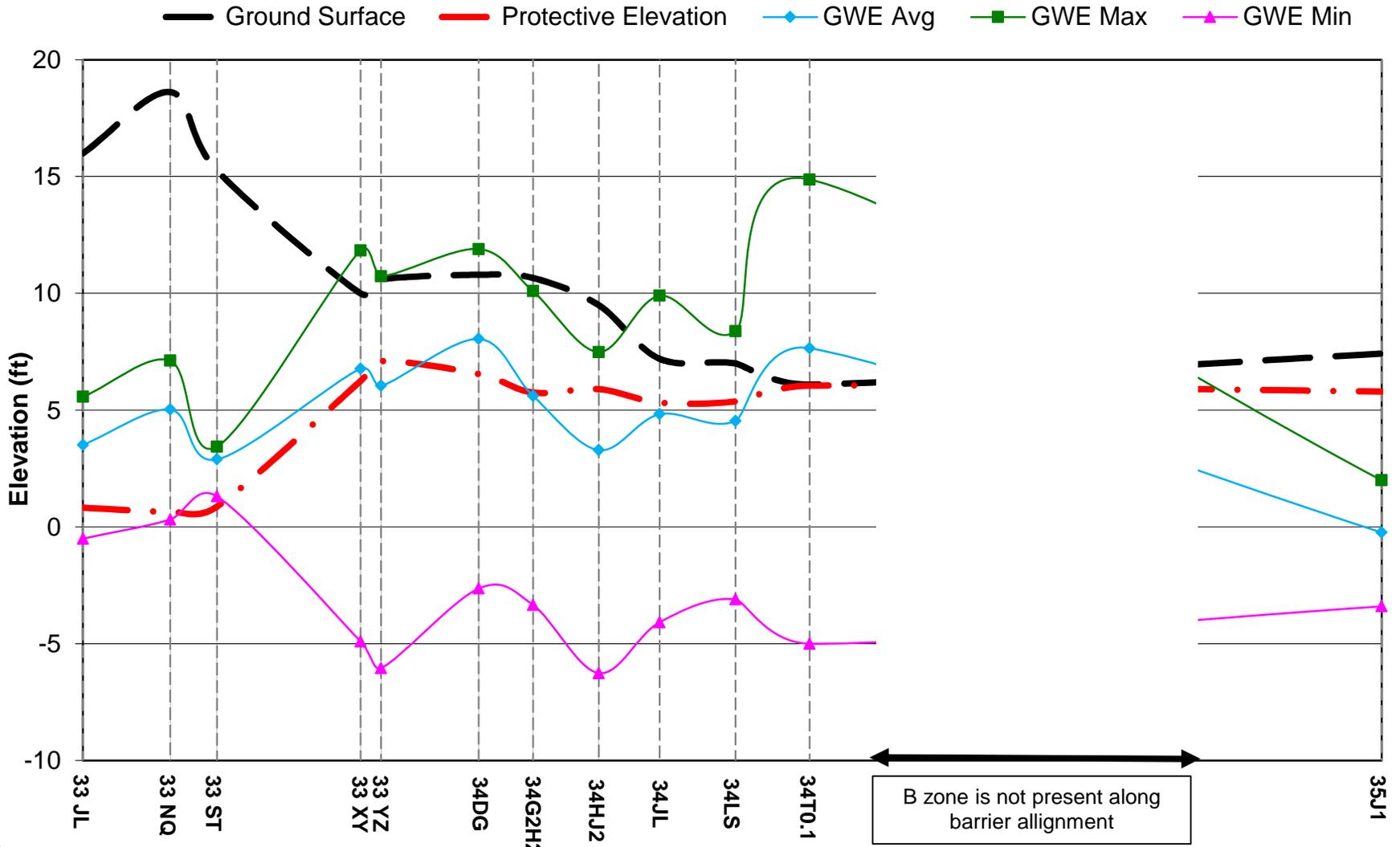
ALAMITOS BARRIER PROJECT CHLORIDE CROSS-SECTION



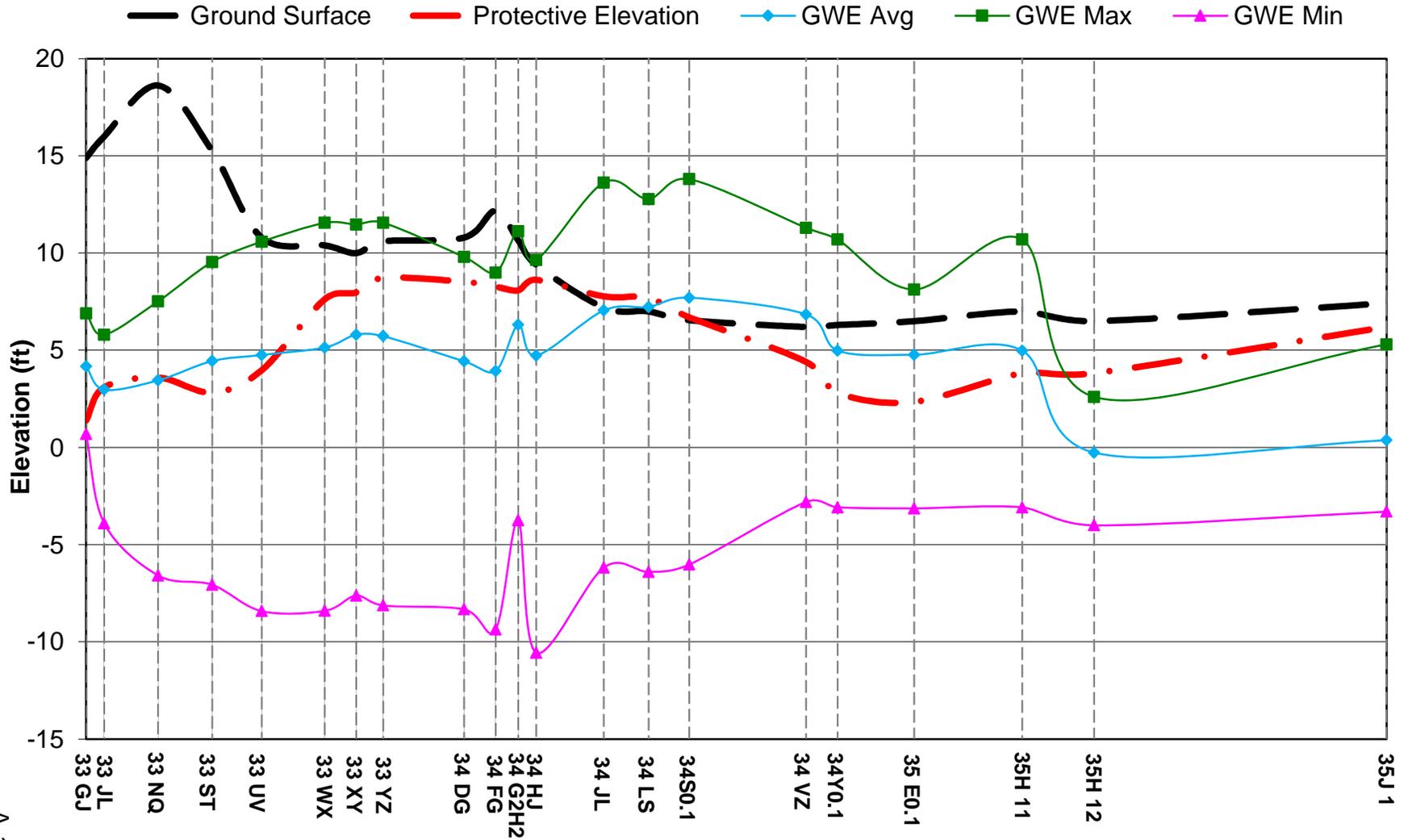
C Zone - Groundwater Elevation (GWE) Along the ABP FY24-25



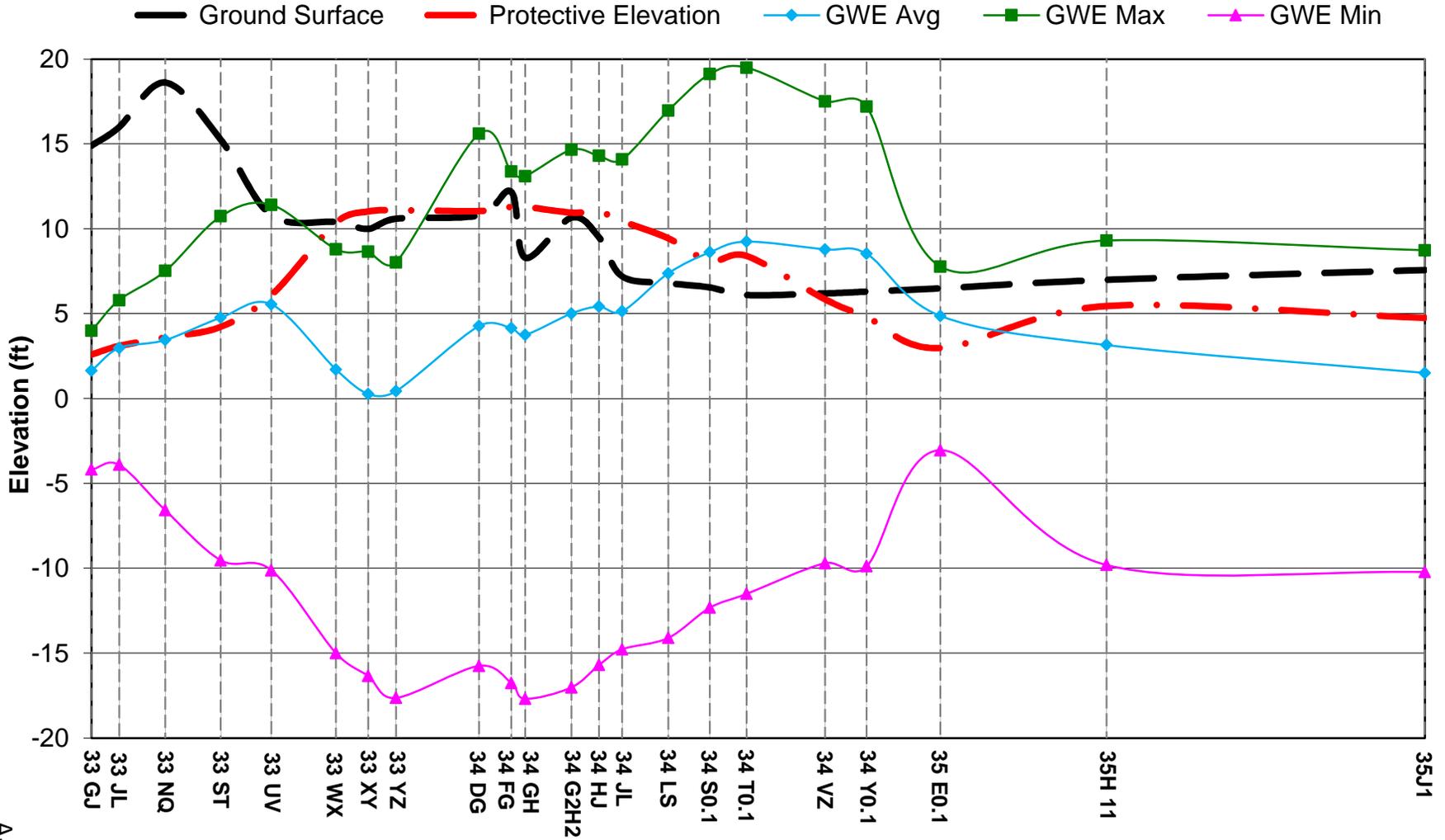
B Zone - Groundwater Elevation (GWE) Along the ABP FY24-25



A Zone - Groundwater Elevation (GWE) Along the ABP FY24-25



I Zone - Groundwater Elevation (GWE) Along the ABP FY24-25



ABP EXPENDITURES FY 2024-25

ITEM NO.	DESCRIPTION	PROJECT NO.	DESCRIPTION	SERVICES AND SUPPLIES (\$)	FY 24-25		LACPW FY 24-25			OCWD FY 24-25		
					BUDGET (\$)	(%)	SHARE (\$)	BUDGET (\$)	(%)	40.5% SHARE (\$)	BUDGET (\$)	(%)
1.	Analysis and direction of injection operations	H0321550	BARRIER PROJECT OPERATION GENERAL PCA (ABP PORTION)	138,847.82								
		H0321551	ANALYSIS & DIRECTION OF INJECTION OPERATIONS (ABP)	41,196.18								
			Subtotal #1	180,044.00	250,000	72.0%	107,126.18	150,000	71.4%	72,917.82	100,000	72.9%
2.	Maintenance and repair of injection wells	F5064011	INJECTION WELL MAINTENANCE DRILLERS (ABP)	41,806.20								
		F6004011	INJECTION WELLS MAINTENANCE SWMD (ABP)	228,394.66								
		F6980080F	MAINT ENGR - BARRIER PROJ SWMD-MANAGEMENT (ABP Portion)	26,355.98								
		H0321911	ALAMITOS BARRIER PROJECT TELEMTRY MAINTENANCE	92,493.83								
		HF01511000	LEED TELEMTRY MAINTENANCE CONTRACT (ABP Portion)	19,405.64								
		HF01524002	ABP 34G WELL MODIFICATION	82,377.30								
		H0321569	ALAMITOS BARRIER PROJECT (INJECTION WELLS)	151,249.16								
			Subtotal #2	642,082.76	525,000	122.3%	382,039.24	315,000	121.3%	260,043.52	210,000	123.8%
3.	Operations of injection wells	F6004000	RECHARGE OPER U/S - ABP	65,829.97								
			Subtotal #3	65,829.97	75,000	87.8%	39,168.83	45,000	87.0%	26,661.14	30,000	88.9%
4.	Analysis and direction of extraction operations (No cost to OCWD)			0.00	0	0%	0.00	0.0	0.0%	0.00	0.0	0%
5.	Maintenance, and repair of extraction wells (No cost to OCWD)			0.00	5,000	0%	0.00	5,000	0.0%	0.00	0.0	0%
6.	Operation of extraction wells (No cost to OCWD)	F6000090	NON-LABOR EXP BARRIER (ALMT)	3,458.83								
			Subtotal #6	3,458.83	0	0%	3,458.83	0.0	#DIV/0!	0.00	0.0	0%
7.	Maintenance and repair of distribution system	F6004012	MAINT PRS - ABP	74,145.25								
		F6004014F	ABP Locate & Mark Barrier Proj. U/grd. Lines	66,013.71								
		H0321016	Seawater Barriers Administrative Support	41,940.06								
		H0321569	ALAMITOS BARRIER PROJECT (DISTRIBUTION SYSTEM)	90,749.50								
		F6004010	MAINT AIR/VAC-BLWOFF U/S - ABP	16,518.82								
		F6001907	INSPECT CRANE PRES REDUCE - ABP	1,504.64								
			Subtotal #7	290,871.98	475,000	61.2%	173,068.83	285,000	60.7%	117,803.15	190,000	62.0%
8.	Observation Well Maintenance	F5064044	OBSERV. WELLS-CLEANOUT(ALAMITO)	167,653.35								
		HF01511000	LEED Telemetry Maintenance Contract (ABP Portion)	41,990.53								
		H0321569	ALAMITOS BARRIER PROJECT (OBSERVATION WELL)	60,499.66								
			Subtotal #8	270,143.54	200,000	135.1%	160,735.41	120,000	133.9%	109,408.13	80,000	136.8%
9.	Collection of Groundwater Data	H0321552	ABP COLL OF GR WTR DATA FOR	226,286.96								
		N/A	OCPW Permit No. FE24-0148	535.00								
		N/A	Seal Beach Permit No. ENCR-24-0052	864.00								
			Subtotal #9	227,685.96	180,000	126.5%	135,473.15	108,000	125.4%	92,212.81	72,000	128.1%
10	Yard Maintenance	FFM34107	Facility Maintenance Alamitos Yd F107	9,021.83								
		F6003123	BUILDING MAINTENANCE NONRESI	20,900.58								
			Subtotal #10	29,922.41	80,000	37.4%	17,803.84	57,500	31.0%	12,118.58	22,500	53.9%
11	Well Redevelopment	F4047024	Redevelop injection well 34G2 CB-Zone - ABP	24,095.39								
		F4047025	Redevelop injection well 34G2 I-Zone - ABP	26,602.14								
		F4047124	Redevelop injection well 34V (I) - ABP	40.45								
		F4047157	Redevelop injection well 34J (A,I) - ABP	62,776.10								
		F4047158	Redevelop injection well 34I (C,B,A,I) - ABP	63,449.77								
		F4047167	Redevelop injection well 34J2 (C/B) - ABP	11,187.62								
		F4047168	Redevelop injection well 34K (C/B) - ABP	6,932.13								
		F4047171	Redevelop injection well 34N (C/B) - ABP	3,791.29								
		F4047172	Redevelop injection well 34N (A) - ABP	7,338.46								
		F4047173	Redevelop injection well 34N (I) - ABP	6,622.10								
		F4047174	Redevelop injection well 34Q (C/B) - ABP	3,919.75								
		F4047175	Redevelop injection well 34Q (A) - ABP	4,949.12								
		F4047176	Redevelop injection well 34Q (I) - ABP	6,925.35								
		F4047179	Redevelop injection well 34T (C/B Zone) - ABP	6,034.48								
		F4047180	Redevelop injection well 34T (A Zone) - ABP	6,436.76								
		F4047181	Redevelop injection well 34T (I Zone) - ABP	11,960.00								
		F4047182	Redevelop injection well 34X (B Zone) - ABP	4,259.71								
		F4047183	Redevelop injection well 34X (A Zone) - ABP	5,076.92								
		F4047184	Redevelop injection well 34X (I Zone) - ABP	7,439.80								
		F4047187	Redevelop injection well 34Z2 (A) - ABP	4,230.99								
		F4047188	Redevelop injection well 34Z2 (I) - ABP	8,106.47								
		F4047189	Redevelop injection well 35E (I) - ABP	15,182.00								
		F4047193	Redevelop injection well 34Z (I) - ABP	36,506.92								

ABP EXPENDITURES FY 2024-25

ITEM NO.	DESCRIPTION	PROJECT NO.	DESCRIPTION	SERVICES AND SUPPLIES (\$)	FY 24-25		LACPW FY 24-25			OCWD FY 24-25		
					BUDGET (\$)	(%)	SHARE (\$)	BUDGET (\$)	(%)	40.5% SHARE (\$)	BUDGET (\$)	(%)
11.		F4047194	Redevelop injection well 35F (I) - ABP	21,108.41								
		F4047306	Redevelop injection well 34S (C/B) - ABP	3,524.54								
		F4047307	Redevelop injection well 34S (A) - ABP	8,690.49								
		F4047308	Redevelop injection well 34S (I) - ABP	1,699.87								
		F4047312	Redevelop injection well 33S1(C/B) - ABP	4,425.20								
		F4047357	Redevelop injection well 35H1(A)ZONE - ABP	30,106.82								
		F4047358	Redevelop injection well 35H1(I)ZONE - ABP	17,803.53								
		F4047359	Redevelop injection well 35H2(A)ZONE - ABP	41,830.36								
		F4047361	Redevelop injection well 34D CBAI - ABP	82,723.31								
		F4047362	Rdevelop injection well 33Y CBAI - ABP	103,045.67								
		H0321850	Layne Redevelopment Services (Video Survey)	4,845.00								
		H0321554	ABP WELL REDEVELOPMENT PROGRAM	192,167.12								
		H0321565	ABP NPDES MONITORING & REPORT INJECTION WELL REDEVELOPMENT	52,515.68								
		F5064022	Redevelop injections wells - ABP	108,314.28								
		F5009760F	DRILL EQPT-MAINT&TEST - Eaton Yard	113,338.11								
		F6001904	CONDUCT QUARTERLY INSPECTION	989.34								
		F6001920	CONDUCT QUARTERLY INSPECTION	763.25								
		F7001907	QUARTERLY INSPECTION OF 2	1,406.67								
		N/A	Long Beach Permit No. PWP50350	2,125.92								
		N/A	Seal Beach Permit No. ENCR-25-0093	1,940.25								
		N/A	OCPW Permit No. FE24-0147	635.00								
			Subtotal #11	1,127,862.54	1,200,000	94.0%	671,078.21	720,000	93.2%	456,784.33	480,000	95.2%
12.	Processing of data and preparation of reports	H0321553	ABP DATA PRO & PRE OF REPORT	61,968.64								
			Subtotal #12	61,968.64	60,000	103.3%	36,871.34	36,000	102.4%	25,097.30	24,000	104.6%
13.	Recycled Water Program	H0321556 F6060749	ABP RECLAIMED WATER SUPPLY ABP RECYCLED WATER REPAIR & MAINTENANCE DUE TO LVL SHUTDOWNS	25,336.21								
			Subtotal #13	25,336.21	30,000	84.5%	15,075.04	18,000	83.8%	10,261.17	12,000	85.5%
14	Projects & Studies	EFO2620001	Alamitos Barrier Project Unit 15 Replacement Injection	48,026.51								
			Subtotal #14	48,026.51	-	0.0%	48,026.51	-	0.0%	0.00	-	0.0%
15.	ABP Liability Insurance paid separately by OCWD	N/A N/A	ABP General Liability Coverage FY 24-25 ABP Excess Liability Coverage FY 24-25	69,332.90 25,795.00								
			Subtotal #15	95,127.90	80,000	118.9%	47,563.95	40,000	118.9%	47,563.95	40,000	118.9%
TOTAL				3,068,361.25	3,160,000.00	97.1%	1,837,489.36	1,899,500.00	96.7%	1,230,871.89	1,260,500.00	97.6%

NOTES:

1. OCWD share represents 41.3 % of the total costs in all Items except for 4, 5, and 6. The percentage is based on amount of overall barrier injection water provided to the Orange County portion of the ABP during this fiscal year.
2. Per Agreement No. 8458 between the LACFCD and the OCWD, all costs included in Items 4, 5, and 6 are not reimburseable with respect to OCWD.
3. OCWD will not be responsible for Item 14, Alamitos Barrier Project Unit 15 Replacement Injection project.
4. Per Agreement No. 8458 between the LACFCD and the OCWD, the cost of liability insurance (item 15) shall be split equally among the Parties.
5. OCWD FY24-25 Budget totals \$1,220,500 (\$610,250).

Total Operation and Maintenance Cost (not including insurance premium)	\$ 2,973,233.35
Orange County Share of Operation and Maintenance Cost (not including insurance premium)	\$ 1,183,307.94
Less: Los Angeles County's Share of the FY24-25 Liability Insurance	\$ 47,563.95
Less: Permit fees paid by OCWD	\$ 3,974.25
Less: Advance Deposit Paid by OCWD*	\$ 610,250.00
BALANCE DUE FROM ORANGE COUNTY WATER DISTRICT	\$ 521,519.74

ABP FY 2026-27 Operation and Maintenance Budget

JMC Item No.	Budget Item Description	Fiscal Year	TOTAL (LACFCD & OCWD)		LACFCD		OCWD	
			Budget	Actual	Budget	Actual	Budget	Actual
01	Injection Operations (Analysis and Direction)	2022-23	\$ 250,000	\$ 187,786	\$ 150,000	\$ 117,780	\$ 100,000	\$ 70,006
		2023-24	\$ 250,000	\$ 218,309	\$ 150,000	\$ 141,901	\$ 100,000	\$ 76,408
		2024-25	\$ 250,000	\$ 180,044	\$ 150,000	\$ 107,126	\$ 100,000	\$ 72,918
		2025-26	\$ 250,000		\$ 150,000		\$ 100,000	
		2026-27	\$ 250,000		\$ 150,000		\$ 100,000	
02	Injection Well Maintenance and Repair	2022-23	\$ 450,000	\$ 495,523	\$ 270,000	\$ 310,793	\$ 180,000	\$ 184,729
		2023-24	\$ 500,000	\$ 486,434	\$ 300,000	\$ 316,182	\$ 200,000	\$ 170,252
		2024-25	\$ 525,000	\$ 642,083	\$ 315,000	\$ 382,039	\$ 210,000	\$ 260,044
		2025-26	\$ 525,000		\$ 315,000		\$ 210,000	
		2026-27	\$ 550,000		\$ 330,000		\$ 220,000	
03	Operations of Injection Wells	2022-23	\$ 75,000	\$ 64,234	\$ 45,000	\$ 40,288	\$ 30,000	\$ 23,946
		2023-24	\$ 75,000	\$ 104,164	\$ 45,000	\$ 67,707	\$ 30,000	\$ 36,457
		2024-25	\$ 75,000	\$ 65,830	\$ 45,000	\$ 39,169	\$ 30,000	\$ 26,661
		2025-26	\$ 75,000		\$ 45,000		\$ 30,000	
		2026-27	\$ 75,000		\$ 45,000		\$ 30,000	
04	Extraction Operations (Analysis and Direction)	2022-23	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
		2023-24	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
		2024-25	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
		2025-26	\$ -		\$ -		\$ -	
		2026-27	\$ -		\$ -		\$ -	
05	Extraction Well Maintenance, Repair, and Redevelopment	2022-23	\$ 10,000	\$ -	\$ 10,000	\$ -	\$ -	\$ -
		2023-24	\$ 5,000	\$ -	\$ 5,000	\$ -	\$ -	\$ -
		2024-25	\$ 5,000	\$ -	\$ 5,000	\$ -	\$ -	\$ -
		2025-26	\$ 5,000		\$ 5,000		\$ -	
		2026-27	\$ 5,000		\$ 5,000		\$ -	
06	Extraction Well Operations	2022-23	\$ 5,000	\$ 912	\$ 5,000	\$ 912	\$ -	\$ -
		2023-24	\$ 5,000	\$ 2,386	\$ 5,000	\$ 2,386	\$ -	\$ -
		2024-25	\$ 5,000	\$ 3,459	\$ 5,000	\$ 3,459	\$ -	\$ -
		2025-26	\$ -		\$ -		\$ -	
		2026-27	\$ -		\$ -		\$ -	
07	ABP Supply line and Vaults (Maintenance and Repair)	2022-23	\$ 400,000	\$ 433,476	\$ 240,000	\$ 271,877	\$ 160,000	\$ 161,599
		2023-24	\$ 450,000	\$ 335,176	\$ 270,000	\$ 217,864	\$ 180,000	\$ 117,312
		2024-25	\$ 475,000	\$ 290,872	\$ 285,000	\$ 173,069	\$ 190,000	\$ 117,803
		2025-26	\$ 475,000		\$ 285,000		\$ 190,000	
		2026-27	\$ 450,000		\$ 270,000		\$ 180,000	
08	Observation Well Maintenance	2022-23	\$ 200,000	\$ 96,691	\$ 120,000	\$ 60,645	\$ 80,000	\$ 36,046
		2023-24	\$ 200,000	\$ 128,120	\$ 120,000	\$ 83,278	\$ 80,000	\$ 44,842
		2024-25	\$ 200,000	\$ 270,144	\$ 120,000	\$ 160,735	\$ 80,000	\$ 109,408
		2025-26	\$ 185,000		\$ 111,000		\$ 74,000	
		2026-27	\$ 200,000		\$ 120,000		\$ 80,000	
09	Groundwater Data Collection	2022-23	\$ 200,000	\$ 179,600	\$ 120,000	\$ 112,646	\$ 80,000	\$ 66,955
		2023-24	\$ 180,000	\$ 146,416	\$ 108,000	\$ 95,170	\$ 72,000	\$ 51,245
		2024-25	\$ 180,000	\$ 227,686	\$ 108,000	\$ 135,473	\$ 72,000	\$ 92,213
		2025-26	\$ 180,000		\$ 108,000		\$ 72,000	
		2026-27	\$ 180,000		\$ 108,000		\$ 72,000	
10	Yard Maintenance	2022-23	\$ 50,000	\$ 71,863	\$ 30,000	\$ 45,073	\$ 20,000	\$ 26,790
		2023-24	\$ 75,000	\$ 48,829	\$ 55,000	\$ 31,739	\$ 20,000	\$ 17,090
		2024-25	\$ 80,000	\$ 29,922	\$ 57,500	\$ 17,804	\$ 22,500	\$ 12,119
		2025-26	\$ 80,000		\$ 57,500		\$ 22,500	
		2026-27	\$ 70,000		\$ 51,000		\$ 19,000	
11	Injection Well Redevelopment	2022-23	\$ 1,000,000	\$ 1,249,732	\$ 600,000	\$ 783,835	\$ 400,000	\$ 465,897
		2023-24	\$ 1,000,000	\$ 1,357,602	\$ 600,000	\$ 882,441	\$ 400,000	\$ 475,161
		2024-25	\$ 1,200,000	\$ 1,127,863	\$ 720,000	\$ 671,078	\$ 480,000	\$ 456,784
		2025-26	\$ 1,300,000		\$ 780,000		\$ 520,000	
		2026-27	\$ 1,300,000		\$ 780,000		\$ 520,000	
12	Processing Data and Report Preparation	2022-23	\$ 70,000	\$ 46,450	\$ 42,000	\$ 29,134	\$ 28,000	\$ 17,317
		2023-24	\$ 60,000	\$ 55,292	\$ 36,000	\$ 35,939	\$ 24,000	\$ 19,352
		2024-25	\$ 60,000	\$ 61,969	\$ 36,000	\$ 36,871	\$ 24,000	\$ 25,097
		2025-26	\$ 60,000		\$ 36,000		\$ 24,000	
		2026-27	\$ 70,000		\$ 42,000		\$ 28,000	
13	Recycled Water Program Oversight	2022-23	\$ 30,000	\$ 10,106	\$ 18,000	\$ 6,339	\$ 12,000	\$ 3,768
		2023-24	\$ 30,000	\$ 30,279	\$ 18,000	\$ 19,681	\$ 12,000	\$ 10,598
		2024-25	\$ 30,000	\$ 25,336	\$ 18,000	\$ 15,075	\$ 12,000	\$ 10,261
		2025-26	\$ 30,000		\$ 18,000		\$ 12,000	
		2026-27	\$ 30,000		\$ 18,000		\$ 12,000	
14	Projects and Studies	2022-23	\$ 65,000	\$ 1,389,643	\$ 39,000	\$ 1,364,537	\$ 26,000	\$ 25,105
		2023-24	\$ 65,000	\$ 651,587	\$ 39,000	\$ 651,587	\$ 26,000	\$ 475,161
		2024-25	\$ -	\$ 48,027	\$ -	\$ 48,027	\$ -	\$ -
		2025-26	\$ -		\$ -		\$ -	
		2026-27	\$ -		\$ -		\$ -	
15	ABP Liability Insurance	2022-23	\$ 80,000	\$ 76,352	\$ 40,000	\$ 38,176	\$ 40,000	\$ 38,176
		2023-24	\$ 85,000	\$ 80,530	\$ 42,500	\$ 40,265	\$ 42,500	\$ 40,265
		2024-25	\$ 85,000	\$ 95,128	\$ 42,500	\$ 47,564	\$ 42,500	\$ 47,564
		2025-26	\$ 100,000		\$ 50,000		\$ 50,000	
		2026-27	\$ 140,000		\$ 70,000		\$ 70,000	
Total ABP Expenditure		2022-23	\$ 2,885,000	\$ 4,302,370	\$ 1,729,000	\$ 3,182,035	\$ 1,156,000	\$ 1,120,334
		2023-24	\$ 2,980,000	\$ 3,645,124	\$ 1,793,500	\$ 2,586,140	\$ 1,186,500	\$ 1,058,982
		2024-25	\$ 3,170,000	\$ 3,068,361	\$ 1,907,000	\$ 1,837,489	\$ 1,263,000	\$ 1,230,872
		2025-26	\$ 3,265,000		\$ 1,960,500		\$ 1,304,500	
		2026-27	\$ 3,320,000		\$ 1,983,000		\$ 1,331,000	
ABP Operations and Maintenance [Item 16-Item 15]		2022-23	\$ 2,805,000	\$ 4,226,018	\$ 1,689,000	\$ 3,143,859	\$ 1,116,000	\$ 1,082,158
		2023-24	\$ 2,895,000	\$ 3,564,594	\$ 1,751,000	\$ 2,545,875	\$ 1,144,000	\$ 1,018,717
		2024-25	\$ 3,085,000	\$ 2,973,233	\$ 1,864,500	\$ 1,789,925	\$ 1,220,500	\$ 1,183,308
		2025-26	\$ 3,165,000		\$ 1,910,500		\$ 1,254,500	
		2026-27	\$ 3,180,000		\$ 1,919,000		\$ 1,261,000	

Volume of Water (AC-FEET)	Fiscal Year	TOTAL		WRD (LACFCD PORTION)		OCWD	
		Budget	Actual	Budget	Actual	Budget	Actual
	2022-23	7,500	6,475	4,500	2,414	3,000	4,061
	2023-24	8,000	6,041	4,800	3,926	3,200	2,114
	2024-25	8,000	5,349	4,800	3,181	3,200	2,168
	2025-26	8,000		4,800		3,200	
	2026-27	8,000		4,800		3,200	

Color Legend
 Blue Text = No change to budget
 Green Text = Budget increase
 Red Text = Budget reduction