USLRGMA

Location: Yuima MWD Board Room
34928 Valley Center Rd.
Pauma Valley, CA 92061
Date: March 19, 2024
Time: 3:00 p.m.

Upper San Luis Rey Groundwater Management Authority

Greg Kamin – Chairman
Roland Simpson – Treasurer
Steve Wehr - Director
Tim Lyall – Vice Chairman
Rich Stehly – Director
Bill Pankey – Director
Michael Perricone- Secretary
Chuck Bandy – Director
Eric Steinlicht - Director

I. Call to order

II. Pledge of Allegiance

III. Roll Call

IV. Approval of the Agenda

V. Public Comment

VI. Consent Calendar

a) Approval of Minutes from February 20, 2024

b) Approval of Accounts Paid and Payables

c) Acceptance of Monthly Financial Reports – February 2024

VII. Action Discussion

a) Acceptance of the Annual Water Report for Water Year 2023 for Submission to the Department of Water Resources

Background: The Authority engage Geoscience Support Services to prepare the Annual Water Report for Water Year 2023 to be submitted to DWR aby April 1, 2024. Geoscience provided the Board with a draft report for review and comment. Geoscience has finalized the report for the Board's approval and submission to DWR.

Recommendation: That should the Board agree, the accept the Annual Report as prepared and direct Geoscience to submit the report to DWR.

Posted: March 14, 2024 – 3:30 p.m.

b) Proposed Resolution of The Board of Directors of the Upper San Luis Rey Groundwater Management Authority Successor to the Pauma Valley Groundwater Sustainability Agency Providing for the Calling and Holding Of Regular Meetings, Determining The Time And Place Of Such Meetings, Determining How Its Records Shall Be Kept, Establishing Rules And Regulations Governing Procedure Of Said Board And Adopting Administration And Staffing For The Authority.

Background: The Authority has been requested by the Department of Water Resources to change the time of the regular board meetings to begin at 3:30 so that DWR staff can attend the meetings. The proposed resolution makes that change.

Recommendation: That should the Board agree, they adopt the resolution as presented.

c) Presentation / Discussion – Preliminary Cost of Service Study.

Background: SCI Consulting has been completing a rate study in an effort to determine a per acre foot pumping rate that can be assessed to cover the basin management costs of the Authority. SCI will present the results of the information provided to SCI from the Ad-Hoc Committee that was established at the February Board meeting.

VIII. Closed Session

a) Conference with Legal Counsel – Pending Litigation – 1 case, San Luis Rey Indian Water Authority v. Pauma Groundwater Sustainability Agency – Pursuant to Government Code Section 54956.9.

IX. Other Business

Information and Reports: Since the February Board Meeting there have been two reports published in relation to SGMA and Well Permitting. A copy of both of those reports have been included for convenience.

Next Regular Meeting, Tuesday, April 16, 2024

Posted: March 14, 2024 – 3:30 p.m.

X. Adjournment

The JPA provides remote attendance options solely as a matter of convenience to the public. The JPA will not stop or suspend its in-person public meeting should a technological interruption occur with respect to the zoom or call-in line listed on the agenda. We encourage members of the public to attend JPA meetings in-person at 34928 Valley Center Road, Pauma Valley, CA, or remotely utilizing the options below:

For Online Participation:

Join Zoom Meeting
https://us02web.zoom.us/j/89461517536?pwd=MlRJZi9nNHdIR3lSWitMejBDU1pYUT09
or

Go to: www.zoom.us/join
Meeting ID: 894 6151 7536
Passcode: 009452

Posted: March 14, 2024 – 3:30 p.m.

CONSENT CALENDAR

MINUTES OF THE REGULAR MEETING
OF THE BOARD OF DIRECTORS OF
UPPER SAN LUIS REY GROUNDWATER MANAGEMENT AUTHORITY

Date: February 20, 2024
Time: 3:07 p.m.

Call to Order

The Regular Meeting of the Board of Directors of the Upper San Luis Rey Groundwater Management Authority was held at the offices of the Yuima Municipal Water District at 34928 Valley Center Rd., Valley Center, California on Tuesday, the 20th day of February, 2024. The meeting was called to order at 3:07 p.m. and the Pledge of Allegiance was performed.

Roll Call – Determination of Quorum

Administrator Hudson conducted the roll-call and a quorum of the Board was established.

Directors In Attendance

Greg Kamin	Tim Lyall	Michael Perricone
Roland Simpson	Rich Stehly	Chuck Bandy
Steve Wehr	Bill Pankey	Eric Steinlicht

Directors Absent

None

Others In Attendance

Amy Reeh – Administrator
Justine Hudson – Administrative Clerk
Lauren Wicks – Geoscience Support Services
Ryan Aston – SCI Consulting, Rate Study Consultant

Approval of the Agenda

Director Wehr motioned to approve the agenda; the motion was seconded by Director Perricone. The motion was passed by the following roll-call vote, to wit:

AYES: Kamin, Lyall, Perricone, Simpson, Stehly, Bandy, Wehr, Pankey, Steinlicht
NOES: None
ABSTAIN: None
ABSENT: None

Public Comment

There were no public comments.

Consent Calendar

With motion being offered by Director Bandy and seconded by Director Stehly, the Consent Calendar items including the Minutes of the January 16, 2024 Board meeting, Accounts Paid and Payable for January 2024 and Monthly Financials for January 2024 were approved by the following roll-call vote, to wit:

AYES: Kamin, Lyall, Perricone, Simpson, Stehly, Bandy, Wehr, Pankey, Steinlicht
NOES: None
ABSTAIN: None
ABSENT: None

Action Discussion

Presentation/Discussion – Preliminary Draft Annual Water Report

Lauren Wicks of Geoscience Support Services presented a Draft of the Annual Water Report. She discussed streamlining monitoring, digging into well trends, possibly adding a monitoring location at Wilderness Gardens, and discussed six recommended corrective actions. Lauren gave progress updates and discussed possible next steps.

Presentation/Discussion – Preliminary Cost of Service Study

Ryan Aston of SCI Consulting presented an update on the Preliminary Cost of Service Study based on the previous meetings feedback. Per the discussion, Director Kamin appointed an ADHOC Committee to include Director Kamin, Director Bandy, and Director Wehr. This committee was created to discuss the budget and ways to keep costs low.

Mid-Year Budget Review and Possible Revision Adoption

The Board tabled the Review until the next meeting on Tuesday March 19, 2024

Other Business

Next Regular Meeting – March 19, 2024 at 3:00 p.m.

Adjournment

The meeting of the Board of Directors of the Upper San Luis Rey Groundwater Management Authority was adjourned at 4:45 p.m. until the next meeting on March 19, 2024 at 3:00 p.m.

_____
Michael Perricone, Secretary

_____
Greg Kamin, Chairman

2:28 PM
03/14/24

Upper San Luis Rey Groundwater Management Authority
Check Detail
February 2024

Num	Date	Name	Item	Paid Amount
	02/29/2024			
				-13.00
TOTAL				-13.00

Upper San Luis Rey Groundwater Management Authority
Balance Sheet
As of February 29, 2024

	Feb 29, 24
ASSETS	
Current Assets	
Checking/Savings	
10000 · General Checking	2,403.79
Total Checking/Savings	2,403.79
Accounts Receivable	
11400 · Accounts Receivable - Members	44,444.79
Total Accounts Receivable	44,444.79
Total Current Assets	46,848.58
TOTAL ASSETS	**46,848.58**
LIABILITIES & EQUITY	
Liabilities	
Current Liabilities	
Accounts Payable	
20000 · Accounts Payable	50,601.57
Total Accounts Payable	50,601.57
Total Current Liabilities	50,601.57
Total Liabilities	50,601.57
Equity	
32000 · Retained Earnings	-4,055.70
Net Income	302.71
Total Equity	-3,752.99
TOTAL LIABILITIES & EQUITY	**46,848.58**

Upper San Luis Rey Groundwater Management Authority
Profit & Loss
July 2023 through February 2024

	Jul '23 - Feb 24
Income	
40000 · Member Agency Contributions	114,537.78
40800 · Miscellaneous Income	52.80
Total Income	114,590.58
Gross Profit	114,590.58
Expense	
60000 · Yuima Management Fee	9,200.00
60001 · Yuima Non-Contract Expense	10,933.64
60100 · Bank Service Charges	129.00
60200 · Insurance Expense	1,473.00
60300 · Legal Expense	48,620.96
60400 · Audit Expense	1,150.00
60600 · Membership Fees	307.50
60900 · Professional Services	14,570.00
60901 · Prof. Services - GSPConsultant	27,903.77
Total Expense	114,287.87
Net Income	**302.71**

Upper San Luis Rey Groundwater Management Authority
Profit & Loss Budget vs. Actual
July 2023 through February 2024

	Jul '23 - Feb 24	Budget
Income		
40000 · Member Agency Contributions	114,537.78	94,695.00
40100 · Grant Funds	0.00	19,400.00
40500 · Assessments - Groundwater	0.00	0.00
40800 · Miscellaneous Income	52.80	500.00
Total Income	114,590.58	114,595.00
Gross Profit	114,590.58	114,595.00
Expense		
60000 · Yuima Management Fee	9,200.00	9,200.00
60001 · Yuima Non-Contract Expense	10,933.64	10,800.00
60100 · Bank Service Charges	129.00	128.00
60200 · Insurance Expense	1,473.00	1,500.00
60300 · Legal Expense	48,620.96	66,668.00
60400 · Audit Expense	1,150.00	3,500.00
60501 · Website & Email Expense	0.00	1,624.00
60600 · Membership Fees	307.50	1,275.00
60700 · Permits & Licenses Expense	0.00	0.00
60900 · Professional Services	0.00	0.00
60901 · Prof. Services - GSPConsultant		
60901.1 · GSP Annual Report	0.00	0.00
60901.2 · GSP - Response to Comments	0.00	83,333.34
60901 · Prof. Services - GSPConsultant - Other	27,903.77	0.00
Total 60901 · Prof. Services - GSPConsultant	27,903.77	83,333.34
60902 · Prof. Services - Rate Study	14,570.00	23,700.00
60903 · Prof. Services - Engineering	0.00	500.00
60904 · Prof. Services Grant Consultant	0.00	6,000.00
Total Expense	114,287.87	208,228.34
Net Income	**302.71**	**-93,633.34**

Upper San Luis Rey Groundwater Management Authority
A/P Aging Summary
As of February 29, 2024

	Current	1 - 30	31 - 60	61 - 90	> 90	TOTAL
Best, Best & Krieger	0.00	2,652.50	0.00	0.00	0.00	2,652.50
Geoscience Support Services	0.00	0.00	23,885.00	0.00	0.00	23,885.00
Rutan & Tucker, LLP	0.00	2,777.41	0.00	0.00	0.00	2,777.41
SCI Consulting Group	0.00	0.00	14,570.00	0.00	0.00	14,570.00
Yuima Municipal Water District	0.00	2,477.42	1,762.29	2,476.95	0.00	6,716.66
TOTAL	**0.00**	**7,907.33**	**40,217.29**	**2,476.95**	**0.00**	**50,601.57**

Upper San Luis Rey Groundwater Management Authority
A/R Aging Summary
As of February 29, 2024

	Current	1 - 30	31 - 60	61 - 90	91 - 120	> 120	TOTAL
Pauma Municipal Water District	0.00	14,814.93	0.00	0.00	0.00	0.00	14,814.93
Pauma Valley Community Services District	0.00	14,814.93	0.00	0.00	0.00	0.00	14,814.93
Yuima MWD	0.00	14,814.93	0.00	0.00	0.00	0.00	14,814.93
TOTAL	**0.00**	**44,444.79**	**0.00**	**0.00**	**0.00**	**0.00**	**44,444.79**

Upper San Luis Rey Groundwater Management Authority
General Ledger
As of February 29, 2024

Type	Date	Num	Name	Memo	Split	Amount	Balance
10000 · General Checking							3.00
Check	07/31/2023			Service Charge	60100 · Bank Servi...	-3.00	0.00
Deposit	08/09/2023			Deposit	-SPLIT-	26,060.60	26,060.60
Bill Pmt -Check	08/09/2023	1012	Geoscience Support Serv...		20000 · Accounts ...	-24,718.25	1,342.35
Bill Pmt -Check	08/09/2023	1014	Best, Best & Krieger		20000 · Accounts ...	-7,476.00	-6,133.65
Bill Pmt -Check	08/09/2023	1015	Rutan & Tucker, LLP		20000 · Accounts ...	-645.00	-6,778.65
Bill Pmt -Check	08/09/2023	1016	Yuima Municipal Water Di...		20000 · Accounts ...	-3,965.35	-10,744.00
Bill Pmt -Check	08/09/2023	1017	Rutan & Tucker, LLP		20000 · Accounts ...	-777.44	-11,521.44
Deposit	08/10/2023			Deposit	12000 · Undeposit...	13,030.30	1,508.86
Check	08/31/2023			Service Charge	60100 · Bank Servi...	-16.00	1,492.86
Deposit	09/19/2023			Deposit	12000 · Undeposit...	7,919.76	9,412.62
Deposit	09/25/2023			Deposit	12000 · Undeposit...	7,919.76	17,332.38
Check	09/29/2023			Service Charge	60100 · Bank Servi...	-16.00	17,316.38
Bill Pmt -Check	10/11/2023	1018	Yuima Municipal Water Di...	June Contract an...	20000 · Accounts ...	-1,508.80	15,807.58
Bill Pmt -Check	10/11/2023	1020	Geoscience Support Serv...	2022 Annual Rep...	20000 · Accounts ...	-2,814.27	12,993.31
Bill Pmt -Check	10/11/2023	1021	Best, Best & Krieger		20000 · Accounts ...	-6,483.50	6,509.81
Bill Pmt -Check	10/11/2023	1023	Rutan & Tucker, LLP		20000 · Accounts ...	-6,038.77	471.04
Check	10/11/2023	1019	VOID		60100 · Bank Servi...	0.00	471.04
Check	10/11/2023	1022	VOID		60100 · Bank Servi...	0.00	471.04
Check	10/29/2023			Service Charge	60100 · Bank Servi...	-13.00	458.04
Deposit	11/02/2023			Deposit	12000 · Undeposit...	4,872.75	5,330.79
Deposit	11/02/2023			Deposit	12000 · Undeposit...	7,919.76	13,250.55
Deposit	11/02/2023			Deposit	12000 · Undeposit...	4,925.55	18,176.10
Bill Pmt -Check	11/02/2023	1027	Yuima Municipal Water Di...		20000 · Accounts ...	-2,933.01	15,243.09
Bill Pmt -Check	11/02/2023	1026	Rutan & Tucker, LLP		20000 · Accounts ...	-6,812.26	8,430.83
Bill Pmt -Check	11/02/2023	1025	Geoscience Support Serv...	2022 Annual Rep...	20000 · Accounts ...	-1,204.50	7,226.33
Bill Pmt -Check	11/02/2023	1024	Best, Best & Krieger		20000 · Accounts ...	-7,023.23	203.10
Bill Pmt -Check	11/02/2023	1029	ACWA / JPIA	Member # U006	20000 · Accounts ...	-1,473.00	-1,269.90
Check	11/02/2023	1028	VOID		60100 · Bank Servi...	0.00	-1,269.90
Deposit	11/08/2023			Deposit	12000 · Undeposit...	4,872.75	3,602.85
Check	11/29/2023			Service Charge	60100 · Bank Servi...	-13.00	3,589.85
Check	12/12/2023		NSF		60100 · Bank Servi...	-29.00	3,560.85
Check	12/29/2023			Service Charge	60100 · Bank Servi...	-13.00	3,547.85
Deposit	01/17/2024			Deposit	12000 · Undeposit...	10,571.82	14,119.67
Deposit	01/18/2024			Deposit	12000 · Undeposit...	10,571.82	24,691.49
Deposit	01/22/2024			Deposit	12000 · Undeposit...	10,571.82	35,263.31
Bill Pmt -Check	01/22/2024	1051	Association of California ...	2024 Affiliate Sup...	20000 · Accounts ...	-307.50	34,955.81
Bill Pmt -Check	01/22/2024	1052	Best, Best & Krieger		20000 · Accounts ...	-2,791.00	32,164.81
Bill Pmt -Check	01/22/2024	1053	Nigro & Nigro		20000 · Accounts ...	-1,150.00	31,014.81
Bill Pmt -Check	01/22/2024	1054	Rutan & Tucker, LLP		20000 · Accounts ...	-16,717.02	14,297.79
Bill Pmt -Check	01/22/2024	1055	Yuima Municipal Water Di...		20000 · Accounts ...	-11,868.00	2,429.79
Check	01/29/2024			Service Charge	60100 · Bank Servi...	-13.00	2,416.79
Check	02/29/2024			Service Charge	60100 · Bank Servi...	-13.00	2,403.79
Total 10000 · General Checking						2,400.79	2,403.79
11000 · Accounts Receivable - Grants							0.00
Total 11000 · Accounts Receivable - Grants							0.00
11400 · Accounts Receivable - Members							39,090.90
Payment	07/31/2023	1085	Pauma Municipal Water ...		12000 · Undeposit...	-13,030.30	26,060.60
Payment	08/09/2023	71768	Yuima MWD		12000 · Undeposit...	-13,030.30	13,030.30
Invoice	08/09/2023	121	Yuima MWD		40000 · Member A...	7,919.76	20,950.06
Invoice	08/09/2023	120	Pauma Municipal Water ...		40000 · Member A...	7,919.76	28,869.82
Invoice	08/09/2023	119	Pauma Valley Community...		40000 · Member A...	7,919.76	36,789.58
Payment	08/10/2023	40116	Pauma Valley Community...		12000 · Undeposit...	-13,030.30	23,759.28
Payment	08/17/2023	71823	Yuima MWD		12000 · Undeposit...	-7,919.76	15,839.52
Payment	08/29/2023	1086	Pauma Municipal Water ...		12000 · Undeposit...	-7,919.76	7,919.76
Invoice	10/10/2023	122	Pauma Valley Community...		-SPLIT-	4,925.55	12,845.31
Invoice	10/10/2023	123	Pauma Municipal Water ...		40000 · Member A...	4,872.75	17,718.06
Invoice	10/10/2023	124	Yuima MWD		40000 · Member A...	4,872.75	22,590.81
Payment	10/23/2023	1089	Pauma Municipal Water ...		12000 · Undeposit...	-4,872.75	17,718.06
Payment	10/23/2023	40344	Pauma Valley Community...		12000 · Undeposit...	-4,925.55	12,792.51
Payment	11/02/2023	40314	Pauma Valley Community...		12000 · Undeposit...	-7,919.76	4,872.75
Payment	11/08/2023	71928	Yuima MWD		12000 · Undeposit...	-4,872.75	0.00
Invoice	01/10/2024	125	Pauma Valley Community...		40000 · Member A...	10,571.82	10,571.82
Invoice	01/10/2024	126	Pauma Municipal Water ...		40000 · Member A...	10,571.82	21,143.64
Invoice	01/10/2024	127	Yuima MWD		40000 · Member A...	10,571.82	31,715.46
Payment	01/17/2024	1090	Pauma Municipal Water ...		12000 · Undeposit...	-10,571.82	21,143.64
Payment	01/18/2024	40536	Pauma Valley Community...		12000 · Undeposit...	-10,571.82	10,571.82
Payment	01/22/2024	72045	Yuima MWD		12000 · Undeposit...	-10,571.82	0.00
Invoice	02/13/2024	128	Pauma Valley Community...		40000 · Member A...	14,814.93	14,814.93
Invoice	02/13/2024	129	Pauma Municipal Water ...		40000 · Member A...	14,814.93	29,629.86
Invoice	02/13/2024	130	Yuima MWD		40000 · Member A...	14,814.93	44,444.79
Total 11400 · Accounts Receivable - Members						5,353.89	44,444.79

Upper San Luis Rey Groundwater Management Authority
General Ledger
As of February 29, 2024

Type	Date	Num	Name	Memo	Split	Amount	Balance
12000 · Undeposited Funds							0.00
Payment	07/31/2023	1085	Pauma Municipal Water ...		11400 · Accounts ...	13,030.30	13,030.30
Payment	08/09/2023	71768	Yuima MWD		11400 · Accounts ...	13,030.30	26,060.60
Deposit	08/09/2023	1085	Pauma Municipal Water ...	Deposit	10000 · General C...	-13,030.30	13,030.30
Deposit	08/09/2023	71768	Yuima MWD	Deposit	10000 · General C...	-13,030.30	0.00
Payment	08/10/2023	40116	Pauma Valley Community...		11400 · Accounts ...	13,030.30	13,030.30
Deposit	08/10/2023	40116	Pauma Valley Community...	Deposit	10000 · General C...	-13,030.30	0.00
Payment	08/17/2023	71823	Yuima MWD		11400 · Accounts ...	7,919.76	7,919.76
Payment	08/29/2023	1086	Pauma Municipal Water ...		11400 · Accounts ...	7,919.76	15,839.52
Deposit	09/19/2023	1086	Pauma Municipal Water ...	Deposit	10000 · General C...	-7,919.76	7,919.76
Deposit	09/25/2023	71823	Yuima MWD	Deposit	10000 · General C...	-7,919.76	0.00
Payment	10/23/2023	1089	Pauma Municipal Water ...		11400 · Accounts ...	4,872.75	4,872.75
Payment	10/23/2023	40344	Pauma Valley Community...		11400 · Accounts ...	4,925.55	9,798.30
Payment	11/02/2023	40314	Pauma Valley Community...		11400 · Accounts ...	7,919.76	17,718.06
Deposit	11/02/2023	1089	Pauma Municipal Water ...	Deposit	10000 · General C...	-4,872.75	12,845.31
Deposit	11/02/2023	40314	Pauma Valley Community...	Deposit	10000 · General C...	-7,919.76	4,925.55
Deposit	11/02/2023	40344	Pauma Valley Community...	Deposit	10000 · General C...	-4,925.55	0.00
Payment	11/08/2023	71928	Yuima MWD		11400 · Accounts ...	4,872.75	4,872.75
Deposit	11/08/2023	71928	Yuima MWD	Deposit	10000 · General C...	-4,872.75	0.00
Payment	01/17/2024	1090	Pauma Municipal Water ...		11400 · Accounts ...	10,571.82	10,571.82
Deposit	01/17/2024	1090	Pauma Municipal Water ...	Deposit	10000 · General C...	-10,571.82	0.00
Payment	01/18/2024	40536	Pauma Valley Community...		11400 · Accounts ...	10,571.82	10,571.82
Deposit	01/18/2024	40536	Pauma Valley Community...	Deposit	10000 · General C...	-10,571.82	0.00
Payment	01/22/2024	72045	Yuima MWD		11400 · Accounts ...	10,571.82	10,571.82
Deposit	01/22/2024	72045	Yuima MWD	Deposit	10000 · General C...	-10,571.82	0.00
Total 12000 · Undeposited Funds						0.00	0.00
12100 · Inventory Asset							0.00
Total 12100 · Inventory Asset							0.00
17760 · Inventory							0.00
Total 17760 · Inventory							0.00
15000 · Land							0.00
Total 15000 · Land							0.00
15100 · Wells							0.00
Total 15100 · Wells							0.00
15200 · Pumps							0.00
Total 15200 · Pumps							0.00
15300 · Meters							0.00
Total 15300 · Meters							0.00
15400 · Equipment							0.00
Total 15400 · Equipment							0.00
17100 · Accum. Depreciation - Wells							0.00
Total 17100 · Accum. Depreciation - Wells							0.00
17200 · Accum. Depreciation - Pumps							0.00
Total 17200 · Accum. Depreciation - Pumps							0.00
17300 · Accum. Depreciation - Meters							0.00
Total 17300 · Accum. Depreciation - Meters							0.00
17400 · Accum. Depreciation - Equipment							0.00
Total 17400 · Accum. Depreciation - Equipment							0.00
20000 · Accounts Payable							-43,149.60
Bill	07/05/2023	968843	Best, Best & Krieger	June Special Litig...	60300 · Legal Exp...	-6,378.50	-49,528.10
Bill	07/07/2023	01-22-05	Geoscience Support Serv...	2022 Annual Rep...	60901 · Prof. Servi...	-2,814.27	-52,342.37
Bill	07/12/2023	964912	Rutan & Tucker, LLP	June General Legal	60300 · Legal Exp...	-735.00	-53,077.37
Bill	07/12/2023	964903	Rutan & Tucker, LLP	June Special Litig...	60300 · Legal Exp...	-5,303.77	-58,381.14
Bill	07/14/2023	82023	Yuima Municipal Water Di...	Aug Service / July...	-SPLIT-	-1,548.98	-59,930.12
Bill	08/03/2023	971388	Best, Best & Krieger	July 2023 Genera...	60300 · Legal Exp...	-105.00	-60,035.12
Bill	08/03/2023	971389	Best, Best & Krieger	July Special Litig...	60300 · Legal Exp...	-2,815.00	-62,850.12
Bill Pmt -Check	08/09/2023	1012	Geoscience Support Serv...		10000 · General C...	24,718.25	-38,131.87
Bill Pmt -Check	08/09/2023	1014	Best, Best & Krieger		10000 · General C...	7,476.00	-30,655.87
Bill Pmt -Check	08/09/2023	1015	Rutan & Tucker, LLP		10000 · General C...	645.00	-30,010.87
Bill Pmt -Check	08/09/2023	1016	Yuima Municipal Water Di...		10000 · General C...	3,965.35	-26,045.52
Bill Pmt -Check	08/09/2023	1017	Rutan & Tucker, LLP		10000 · General C...	777.44	-25,268.08
Bill	08/14/2023	92023	Yuima Municipal Water Di...	September Mana...	-SPLIT-	-1,365.28	-26,633.36
Bill	08/21/2023	968922	Rutan & Tucker, LLP	SLRIWA Special ...	60300 · Legal Exp...	-3,012.62	-29,645.98
Bill	08/21/2023	968928	Rutan & Tucker, LLP	Acct 037732-002 ...	60300 · Legal Exp...	-105.00	-29,750.98
Bill	09/06/2023	974056	Best, Best & Krieger	General	60300 · Legal Exp...	-1,680.00	-31,430.98
Bill	09/06/2023	974057	Best, Best & Krieger	SLRIWA Special Lit	60300 · Legal Exp...	-1,840.50	-33,271.48
Bill	09/08/2023	USLRG-...	Geoscience Support Serv...	2022 Annual Rep...	60901 · Prof. Servi...	-1,204.50	-34,475.98
Bill	09/13/2023	102023	Yuima Municipal Water Di...	October Manage...	-SPLIT-	-3,866.45	-38,342.43
Bill	09/21/2023	971616	Rutan & Tucker, LLP	SLRIWA Special ...	60300 · Legal Exp...	-949.91	-39,292.34
Bill	09/21/2023	971618	Rutan & Tucker, LLP	Account 037732-...	60300 · Legal Exp...	-70.00	-39,362.34
Bill	10/01/2023	306	ACWA / JPIA	Member # U006	60200 · Insurance ...	-1,473.00	-40,835.34
Bill	10/05/2023	976582	Best, Best & Krieger	SLRIWA Special ...	60300 · Legal Exp...	-279.00	-41,114.34
Bill	10/05/2023	976583	Best, Best & Krieger	Genera; - Sept 20...	60300 · Legal Exp...	-408.73	-41,523.07
Bill Pmt -Check	10/11/2023	1018	Yuima Municipal Water Di...	June Contract an...	10000 · General C...	1,508.80	-40,014.27
Bill Pmt -Check	10/11/2023	1020	Geoscience Support Serv...	2022 Annual Rep...	10000 · General C...	2,814.27	-37,200.00
Bill Pmt -Check	10/11/2023	1021	Best, Best & Krieger		10000 · General C...	6,483.50	-30,716.50
Bill Pmt -Check	10/11/2023	1023	Rutan & Tucker, LLP		10000 · General C...	6,038.77	-24,677.73
Bill	10/17/2023	112023	Yuima Municipal Water Di...	management Ser...	-SPLIT-	-4,647.71	-29,325.44
Bill	10/25/2023	974703	Rutan & Tucker, LLP	September Legal ...	60300 · Legal Exp...	-7,000.00	-36,325.44
Bill	10/25/2023	974700	Rutan & Tucker, LLP	Sept Special Litig...	60300 · Legal Exp...	-12.92	-36,338.36

Upper San Luis Rey Groundwater Management Authority
General Ledger
As of February 29, 2024

Type	Date	Num	Name	Memo	Split	Amount	Balance
Bill Pmt -Check	11/02/2023	1027	Yuima Municipal Water Di...		10000 · General C...	2,933.01	-33,405.35
Bill Pmt -Check	11/02/2023	1026	Rutan & Tucker, LLP		10000 · General C...	6,812.26	-26,593.09
Bill Pmt -Check	11/02/2023	1025	Geoscience Support Serv...	2022 Annual Rep...	10000 · General C...	1,204.50	-25,388.59
Bill Pmt -Check	11/02/2023	1024	Best, Best & Krieger		10000 · General C...	7,023.23	-18,365.36
Bill Pmt -Check	11/02/2023	1029	ACWA / JPIA	Member # U006	10000 · General C...	1,473.00	-16,892.36
Bill	11/08/2023	979492	Best, Best & Krieger	October General ...	60300 · Legal Exp...	-525.00	-17,417.36
Bill	11/08/2023	19221	Nigro & Nigro		60400 · Audit Expe...	-1,150.00	-18,567.36
Bill	11/14/2023	976633	Rutan & Tucker, LLP		60300 · Legal Exp...	-7,604.10	-26,171.46
Bill	11/15/2023	12023	Yuima Municipal Water Di...		-SPLIT-	-1,988.56	-28,160.02
Bill	12/05/2023	978545	Rutan & Tucker, LLP	November 2023	60300 · Legal Exp...	-2,100.00	-30,260.02
Bill	12/06/2023	983000	Best, Best & Krieger	Special Litigation ...	60300 · Legal Exp...	-306.00	-30,566.02
Bill	12/06/2023	982999	Best, Best & Krieger	General thru 11/3...	60300 · Legal Exp...	-595.00	-31,161.02
Bill	12/14/2023	202401	Yuima Municipal Water Di...		-SPLIT-	-2,476.95	-33,637.97
Bill	12/18/2023	2024 Du...	Association of California ...	2024 Affiliate Sup...	60600 · Membershi...	-307.50	-33,945.47
Bill	01/04/2024	984389	Best, Best & Krieger	Special Litigation ...	60300 · Legal Exp...	-140.00	-34,085.47
Bill	01/04/2024	984388	Best, Best & Krieger	General thru 12/3...	60300 · Legal Exp...	-1,225.00	-35,310.47
Bill	01/11/2024	USLRG-...	Geoscience Support Serv...	Fall Groundwater ...	-SPLIT-	-877.00	-36,187.47
Bill	01/11/2024	USLRG-...	Geoscience Support Serv...	SGMA Annual Re...	-SPLIT-	-11,645.50	-47,832.97
Bill	01/16/2024	USLRG-...	Geoscience Support Serv...	Fall Groundwater ...	-SPLIT-	-11,362.50	-59,195.47
Bill	01/16/2024		Geoscience Support Serv...		60901 · Prof. Servi...	0.00	-59,195.47
Bill	01/17/2024	202402	Yuima Municipal Water Di...	February Contrac...	-SPLIT-	-1,762.29	-60,957.76
Bill	01/17/2024	SBS110...	SCI Consulting Group	Progress Billing C...	60902 · Prof. Servi...	-14,570.00	-75,527.76
Bill Pmt -Check	01/22/2024	1051	Association of California ...	2024 Affiliate Sup...	10000 · General C...	307.50	-75,220.26
Bill Pmt -Check	01/22/2024	1052	Best, Best & Krieger		10000 · General C...	2,791.00	-72,429.26
Bill Pmt -Check	01/22/2024	1053	Nigro & Nigro		10000 · General C...	1,150.00	-71,279.26
Bill Pmt -Check	01/22/2024	1054	Rutan & Tucker, LLP		10000 · General C...	16,717.02	-54,562.24
Bill Pmt -Check	01/22/2024	1055	Yuima Municipal Water Di...		10000 · General C...	11,868.00	-42,694.24
Bill	01/24/2024	982920	Rutan & Tucker, LLP	December 2023 ...	60300 · Legal Exp...	-1,575.00	-44,269.24
Bill	02/07/2024	987210	Best, Best & Krieger	Special Litigation ...	60300 · Legal Exp...	-2,162.50	-46,431.74
Bill	02/07/2024	987211	Best, Best & Krieger	General - Januar...	60300 · Legal Exp...	-490.00	-46,921.74
Bill	02/14/2024	98740	Rutan & Tucker, LLP	January Special L...	60300 · Legal Exp...	-887.41	-47,809.15
Bill	02/14/2024	984743	Rutan & Tucker, LLP	January 2024 Ge...	60300 · Legal Exp...	-315.00	-48,124.15
Bill	02/14/2024	202403	Yuima Municipal Water Di...		-SPLIT-	-2,477.42	-50,601.57
Total 20000 · Accounts Payable						-7,451.97	-50,601.57
24000 · Payroll Liabilities							0.00
Total 24000 · Payroll Liabilities							0.00
30000 · Opening Balance Equity							0.00
Total 30000 · Opening Balance Equity							0.00
32000 · Retained Earnings							4,055.70
Total 32000 · Retained Earnings							4,055.70
40000 · Member Agency Contributions							0.00
Invoice	08/09/2023	121	Yuima MWD	June - July 2023 ...	11400 · Accounts ...	-7,919.76	-7,919.76
Invoice	08/09/2023	120	Pauma Municipal Water ...	June-July 2023 M...	11400 · Accounts ...	-7,919.76	-15,839.52
Invoice	08/09/2023	119	Pauma Valley Community...	June-July 2023 M...	11400 · Accounts ...	-7,919.76	-23,759.28
Invoice	10/10/2023	122	Pauma Valley Community...	Member Contribut...	11400 · Accounts ...	-4,872.75	-28,632.03
Invoice	10/10/2023	123	Pauma Municipal Water ...	Member Contribut...	11400 · Accounts ...	-4,872.75	-33,504.78
Invoice	10/10/2023	124	Yuima MWD	Member Contribut...	11400 · Accounts ...	-4,872.75	-38,377.53
Invoice	01/10/2024	125	Pauma Valley Community...	Member Share of ...	11400 · Accounts ...	-10,571.82	-48,949.35
Invoice	01/10/2024	126	Pauma Municipal Water ...	Member Share of ...	11400 · Accounts ...	-10,571.82	-59,521.17
Invoice	01/10/2024	127	Yuima MWD	Member Share of ...	11400 · Accounts ...	-10,571.82	-70,092.99
Invoice	02/13/2024	128	Pauma Valley Community...	Member Contribut...	11400 · Accounts ...	-14,814.93	-84,907.92
Invoice	02/13/2024	129	Pauma Municipal Water ...	Member Contribut...	11400 · Accounts ...	-14,814.93	-99,722.85
Invoice	02/13/2024	130	Yuima MWD	Member Contribut...	11400 · Accounts ...	-14,814.93	-114,537.78
Total 40000 · Member Agency Contributions						-114,537.78	-114,537.78
40100 · Grant Funds							0.00
Total 40100 · Grant Funds							0.00
40500 · Assessments - Groundwater							0.00
Total 40500 · Assessments - Groundwater							0.00
40600 · Interest Earned							0.00
Total 40600 · Interest Earned							0.00
40700 · Delinquent Assessment Fee							0.00
Total 40700 · Delinquent Assessment Fee							0.00
40800 · Miscellaneous Income							0.00
Invoice	10/10/2023	122	Pauma Valley Community...	Late fee Invoice #...	11400 · Accounts ...	-52.80	-52.80
Total 40800 · Miscellaneous Income						-52.80	-52.80
40900 · Well Permit Processing Fee							0.00
Total 40900 · Well Permit Processing Fee							0.00
40901 · Undesirable Results Eval. Fee							0.00
Total 40901 · Undesirable Results Eval. Fee							0.00
50000 · Cost of Goods Sold							0.00
Total 50000 · Cost of Goods Sold							0.00

Upper San Luis Rey Groundwater Management Authority
General Ledger
As of February 29, 2024

Type	Date	Num	Name	Memo	Split	Amount	Balance
60000 · Yuima Management Fee							0.00
Bill	07/14/2023	82023	Yuima Municipal Water Di...	Aug Service / July...	20000 · Accounts ...	1,150.00	1,150.00
Bill	08/14/2023	92023	Yuima Municipal Water Di...	September 2023	20000 · Accounts ...	1,150.00	2,300.00
Bill	09/13/2023	102023	Yuima Municipal Water Di...	October Manage...	20000 · Accounts ...	1,150.00	3,450.00
Bill	10/17/2023	112023	Yuima Municipal Water Di...	management Ser...	20000 · Accounts ...	1,150.00	4,600.00
Bill	11/15/2023	12023	Yuima Municipal Water Di...	December Manag...	20000 · Accounts ...	1,150.00	5,750.00
Bill	12/14/2023	202401	Yuima Municipal Water Di...	January Manage...	20000 · Accounts ...	1,150.00	6,900.00
Bill	01/17/2024	202402	Yuima Municipal Water Di...	February Contrac...	20000 · Accounts ...	1,150.00	8,050.00
Bill	02/14/2024	202403	Yuima Municipal Water Di...	March Manageme...	20000 · Accounts ...	1,150.00	9,200.00
Total 60000 · Yuima Management Fee						9,200.00	9,200.00
60001 · Yuima Non-Contract Expense							0.00
Bill	07/14/2023	82023	Yuima Municipal Water Di...	Aug Service / July...	20000 · Accounts ...	398.98	398.98
Bill	08/14/2023	92023	Yuima Municipal Water Di...	June Reimb	20000 · Accounts ...	215.28	614.26
Bill	09/13/2023	102023	Yuima Municipal Water Di...	October Manage...	20000 · Accounts ...	2,716.45	3,330.71
Bill	10/17/2023	112023	Yuima Municipal Water Di...	management Ser...	20000 · Accounts ...	3,497.71	6,828.42
Bill	11/15/2023	12023	Yuima Municipal Water Di...	Reimb	20000 · Accounts ...	838.56	7,666.98
Bill	12/14/2023	202401	Yuima Municipal Water Di...	Reimb	20000 · Accounts ...	1,326.95	8,993.93
Bill	01/17/2024	202402	Yuima Municipal Water Di...	Checks and Mont...	20000 · Accounts ...	612.29	9,606.22
Bill	02/14/2024	202403	Yuima Municipal Water Di...	February Extra H...	20000 · Accounts ...	1,327.42	10,933.64
Total 60001 · Yuima Non-Contract Expense						10,933.64	10,933.64
60100 · Bank Service Charges							0.00
Check	07/31/2023			Service Charge	10000 · General C...	3.00	3.00
Check	08/31/2023			Service Charge	10000 · General C...	16.00	19.00
Check	09/29/2023			Service Charge	10000 · General C...	16.00	35.00
Check	10/11/2023	1019	VOID		10000 · General C...	0.00	35.00
Check	10/11/2023	1022	VOID		10000 · General C...		35.00
Check	10/29/2023			Service Charge	10000 · General C...	13.00	48.00
Check	11/02/2023	1028	VOID		10000 · General C...	0.00	48.00
Check	11/29/2023			Service Charge	10000 · General C...	13.00	61.00
Check	12/12/2023		NSF		10000 · General C...	29.00	90.00
Check	12/29/2023			Service Charge	10000 · General C...	13.00	103.00
Check	01/29/2024			Service Charge	10000 · General C...	13.00	116.00
Check	02/29/2024			Service Charge	10000 · General C...	13.00	129.00
Total 60100 · Bank Service Charges						129.00	129.00
60200 · Insurance Expense							0.00
Bill	10/01/2023	306	ACWA / JPIA	Member # U006	20000 · Accounts ...	1,473.00	1,473.00
Total 60200 · Insurance Expense						1,473.00	1,473.00
60300 · Legal Expense							0.00
Bill	07/05/2023	968843	Best, Best & Krieger	June Special Litig...	20000 · Accounts ...	6,378.50	6,378.50
Bill	07/12/2023	964912	Rutan & Tucker, LLP	June General Legal	20000 · Accounts ...	735.00	7,113.50
Bill	07/12/2023	964903	Rutan & Tucker, LLP	June Special Litig...	20000 · Accounts ...	5,303.77	12,417.27
Bill	08/03/2023	971388	Best, Best & Krieger	July 2023 Genera...	20000 · Accounts ...	105.00	12,522.27
Bill	08/03/2023	971389	Best, Best & Krieger	July Special Litig...	20000 · Accounts ...	2,815.00	15,337.27
Bill	08/21/2023	968922	Rutan & Tucker, LLP	SLRIWA Special ...	20000 · Accounts ...	3,012.62	18,349.89
Bill	08/21/2023	968928	Rutan & Tucker, LLP	Acct 037732-002 ...	20000 · Accounts ...	105.00	18,454.89
Bill	09/06/2023	974056	Best, Best & Krieger	General	20000 · Accounts ...	1,680.00	20,134.89
Bill	09/06/2023	974057	Best, Best & Krieger	SLRIWA Special Lit	20000 · Accounts ...	1,840.50	21,975.39
Bill	09/21/2023	971616	Rutan & Tucker, LLP	SLRIWA Special ...	20000 · Accounts ...	949.91	22,925.30
Bill	09/21/2023	971618	Rutan & Tucker, LLP	Account 037732-...	20000 · Accounts ...	70.00	22,995.30
Bill	10/05/2023	976582	Best, Best & Krieger	SLRIWA Special ...	20000 · Accounts ...	279.00	23,274.30
Bill	10/05/2023	976583	Best, Best & Krieger	Genera; - Sept 20...	20000 · Accounts ...	408.73	23,683.03
Bill	10/25/2023	974703	Rutan & Tucker, LLP	September Legal ...	20000 · Accounts ...	7,000.00	30,683.03
Bill	10/25/2023	974700	Rutan & Tucker, LLP	September Speci...	20000 · Accounts ...	12.92	30,695.95
Bill	11/08/2023	979492	Best, Best & Krieger	October General ...	20000 · Accounts ...	525.00	31,220.95
Bill	11/14/2023	976633	Rutan & Tucker, LLP	October 2023 Ge...	20000 · Accounts ...	7,604.10	38,825.05
Bill	12/05/2023	978545	Rutan & Tucker, LLP	November 2023 - ...	20000 · Accounts ...	2,100.00	40,925.05
Bill	12/06/2023	983000	Best, Best & Krieger	Special Litigation ...	20000 · Accounts ...	306.00	41,231.05
Bill	12/06/2023	982999	Best, Best & Krieger	General thru 11/3...	20000 · Accounts ...	595.00	41,826.05
Bill	01/04/2024	984389	Best, Best & Krieger	Special Litigation ...	20000 · Accounts ...	140.00	41,966.05
Bill	01/04/2024	984388	Best, Best & Krieger	General thru 12/3...	20000 · Accounts ...	1,225.00	43,191.05
Bill	01/24/2024	982920	Rutan & Tucker, LLP	December 2023 ...	20000 · Accounts ...	1,575.00	44,766.05
Bill	02/07/2024	987210	Best, Best & Krieger	Special Litigation ...	20000 · Accounts ...	2,162.50	46,928.55
Bill	02/07/2024	987211	Best, Best & Krieger	General - Januar...	20000 · Accounts ...	490.00	47,418.55
Bill	02/14/2024	98740	Rutan & Tucker, LLP	January 2024 Sp...	20000 · Accounts ...	887.41	48,305.96
Bill	02/14/2024	984743	Rutan & Tucker, LLP	Janaury 2024 Ge...	20000 · Accounts ...	315.00	48,620.96
Total 60300 · Legal Expense						48,620.96	48,620.96
60400 · Audit Expense							0.00
Bill	11/08/2023	19221	Nigro & Nigro	2022/23 Audit	20000 · Accounts ...	1,150.00	1,150.00
Total 60400 · Audit Expense						1,150.00	1,150.00
60500 · General & Administrative							0.00
Total 60500 · General & Administrative							0.00
60501 · Website & Email Expense							0.00
Total 60501 · Website & Email Expense							0.00
60600 · Membership Fees							0.00
Bill	12/18/2023	2024 Du...	Association of California ...	2024 Membership	20000 · Accounts ...	307.50	307.50
Total 60600 · Membership Fees						307.50	307.50

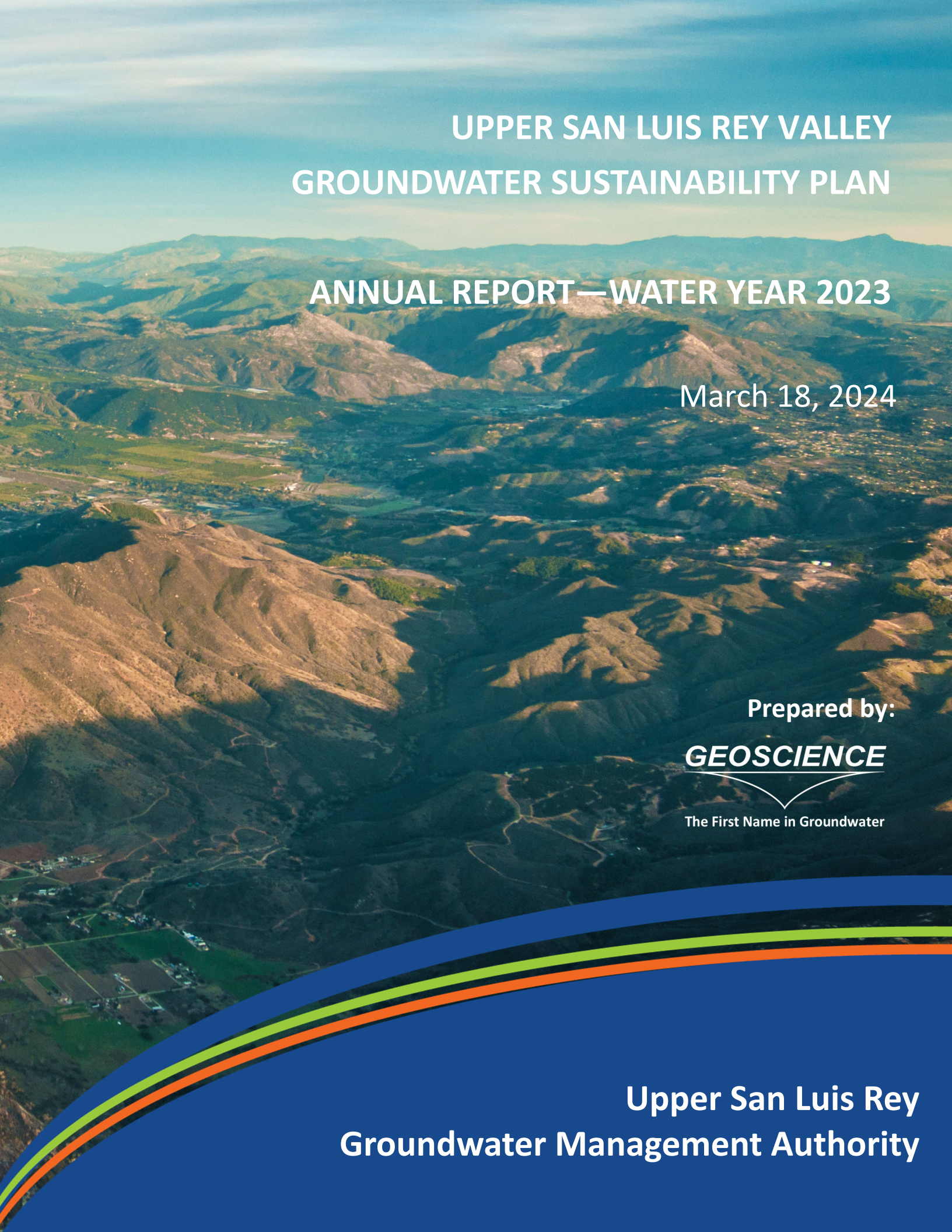
Upper San Luis Rey Groundwater Management Authority
General Ledger
As of February 29, 2024

Type	Date	Num	Name	Memo	Split	Amount	Balance
60700 · Permits & Licenses Expense							0.00
Total 60700 · Permits & Licenses Expense							0.00
60800 · Micellaneous Expense							0.00
Total 60800 · Micellaneous Expense							0.00
60900 · Professional Services							0.00
Total 60900 · Professional Services							0.00
60901 · Prof. Services - GSPConsultant							0.00
60901.1 · GSP Annual Report							0.00
Total 60901.1 · GSP Annual Report							0.00
60901.2 · GSP - Response to Comments							0.00
Total 60901.2 · GSP - Response to Comments							0.00
60901.3 · Prof. Services - GW Monitoring							0.00
Total 60901.3 · Prof. Services - GW Monitoring							0.00
60901 · Prof. Services - GSPConsultant - Other							0.00
Bill	07/07/2023	01-22-05	Geoscience Support Serv...	2022 Annual Rep...	20000 · Accounts ...	2,814.27	2,814.27
Bill	09/08/2023	USLRG-...	Geoscience Support Serv...	2022 Annual Rep...	20000 · Accounts ...	1,204.50	4,018.77
Bill	01/11/2024	USLRG-...	Geoscience Support Serv...	Fall Groundwater ...	20000 · Accounts ...	0.00	4,018.77
Bill	01/11/2024	USLRG-...	Geoscience Support Serv...	Fall Monitoring	20000 · Accounts ...	877.00	4,895.77
Bill	01/11/2024	USLRG-...	Geoscience Support Serv...	SGMA Annual Re...	20000 · Accounts ...	0.00	4,895.77
Bill	01/11/2024	USLRG-...	Geoscience Support Serv...	Complete Annual ...	20000 · Accounts ...	11,645.50	16,541.27
Bill	01/16/2024	USLRG-...	Geoscience Support Serv...	Fall Groundwater ...	20000 · Accounts ...	0.00	16,541.27
Bill	01/16/2024	USLRG-...	Geoscience Support Serv...	Annual Report - ...	20000 · Accounts ...	11,362.50	27,903.77
Bill	01/16/2024		Geoscience Support Serv...		20000 · Accounts ...	0.00	27,903.77
Total 60901 · Prof. Services - GSPConsultant - Other						27,903.77	27,903.77
Total 60901 · Prof. Services - GSPConsultant						27,903.77	27,903.77
60902 · Prof. Services - Rate Study							0.00
Bill	01/17/2024	SBS110...	SCI Consulting Group	Progress Billing C...	20000 · Accounts ...	14,570.00	14,570.00
Total 60902 · Prof. Services - Rate Study						14,570.00	14,570.00
60903 · Prof. Services - Engineering							0.00
Total 60903 · Prof. Services - Engineering							0.00
60904 · Prof. Services Grant Consultant							0.00
Total 60904 · Prof. Services Grant Consultant							0.00
61000 · Depreciation Expense							0.00
Total 61000 · Depreciation Expense							0.00
66000 · Payroll Expenses							0.00
Total 66000 · Payroll Expenses							0.00
No accnt							0.00
Total no accnt							0.00
TOTAL						**0.00**	**0.00**

Upper San Luis Rey Groundwater Management Authority
Deposit Detail
February 2024

Type	Date	Name	Account	Amount

ACTION / DISCUSSION



UPPER SAN LUIS REY VALLEY GROUNDWATER SUSTAINABILITY PLAN

ANNUAL REPORT—WATER YEAR 2023

March 18, 2024

Prepared by:

GEOSCIENCE

The First Name in Groundwater

Upper San Luis Rey Groundwater Management Authority

THIS REPORT IS RENDERED TO UPPER SAN LUIS REY GROUNDWATER MANAGEMENT AUTHORITY AS OF THE DATE HEREOF, SOLELY FOR THEIR BENEFIT IN CONNECTION WITH ITS STATED PURPOSE AND MAY NOT BE RELIED ON BY ANY OTHER PERSON OR ENTITY OR BY THEM IN ANY OTHER CONTEXT. ALL CALCULATIONS WERE PERFORMED USING ACCEPTED PROFESSIONAL STANDARDS.

AS DATA IS UPDATED FROM TIME TO TIME, ANY RELIANCE ON THIS REPORT AT A FUTURE DATE SHOULD TAKE INTO ACCOUNT UPDATED DATA.

Brian Villalobos, PG, CHG, CEG
Principal Geohydrologist

Lauren Wicks, PG
Project Geohydrologist

UPPER SAN LUIS REY VALLEY GROUNDWATER SUSTAINABILITY PLAN ANNUAL REPORT – WATER YEAR 2023

(October 2022 through September 2023)

Table of Contents

Figures

No. Description

(Attached)

Tables

Appendices

Acronyms, Abbreviations, and Initialisms

Abbrev.	Description
acre-ft/yr	acre-feet per year
amsl	above mean sea level
Authority	Upper San Luis Rey Groundwater Management Authority (aka "USLRGMA" or "GMA")
Basin Plan	Water Quality Control Plan for the San Diego Basin
bgs	below ground surface
CASGEM	California Statewide Groundwater Elevation Monitoring
CCR	California Code of Regulations
CIMIS	California Irrigation Management Information System
CLIP	California Laboratory Intake Portal
County	County of San Diego
CSD	Community Services District
DDW	Division of Drinking Water
DTW	depth to water
DWR	California Department of Water Resources
ET	evapotranspiration
ft	foot, or feet
GDE	groundwater dependent ecosystem
GMA	Upper San Luis Rey Groundwater Management Authority (aka "USLRGMA" or "Authority")
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
InSAR	Interferometric Synthetic Aperture Radar
MCL	Maximum Contaminant Level
Metropolitan	Metropolitan Water District of Southern California
mg/L	milligrams per liter
MNM	Monitoring Network Module
MO	Measurable Objective
MT	Minimum Threshold
MWD	Municipal Water District
NOAA	National Oceanic and Atmospheric Administration
NRCS	National Resources Conservation District
NWCC	National Water and Climate Center
PRISM	Parameter-elevation Regression on Independent Slopes Model

PVGSA	Pauma Valley Groundwater Sustainability Agency
RCA	Recommended Corrective Action
RMS	Representative Monitoring Site
SGMA	Sustainable Groundwater Management Act
SLRMWD	San Luis Rey Municipal Water District
SMC	Sustainable Management Criteria
SWP	State Water Project
TDS	Total Dissolved Solids
USLR	Upper San Luis Rey
USLRGM	Upper San Luis Rey Groundwater Model
USLRGMA	Upper San Luis Rey Groundwater Management Authority (aka “GMA” or “Authority”)
USLRRCD	Upper San Luis Rey Resource Conservation District
Water Authority	San Diego County Water Authority
WY	Water Year
YMWD	Yuima Municipal Water District

UPPER SAN LUIS REY VALLEY GROUNDWATER SUSTAINABILITY PLAN

ANNUAL REPORT – WATER YEAR 2023
(October 2022 through September 2023)

1.0 Executive Summary

The Upper San Luis Rey Groundwater Management Authority (USLRGMA, or Authority), successor to the Pauma Valley Groundwater Sustainability Agency (PVGSA), has prepared this annual report for the Upper San Luis Rey (USLR) Valley Groundwater Subbasin Groundwater Sustainability Plan (GSP) to be submitted to the Department of Water Resources (DWR) in accordance with the Sustainable Groundwater Management Act (SGMA). This annual report presents required data for Water Year (WY) 2023 (i.e., October 2022 through September 2023).

The USLR Valley Groundwater Subbasin (DWR subbasin 9-007.01) includes the Pauma and Pala Subbasins and encompasses approximately 19,200 acres in San Diego County. Valley areas are separated by narrow, steep-walled canyons and underlain by unconsolidated alluvial fill that serves as storage for groundwater. Land use within Pauma subbasin is predominantly irrigated agriculture. Likewise, the majority of water use within the subbasin (over 90%) is for agricultural purposes. Sources of water within the USLR Subbasin include groundwater, surface water, and imported water.

The USLR Valley Groundwater Subbasin was categorized as a medium-priority basin, resulting in the development of a GSP for the Subbasin which was submitted to DWR in January 2022. The goal of the GSP is to ensure that groundwater continues to be available to everyone who uses it far into the future. Sustainable Management Criteria (SMC) were developed for identifying undesirable results and measuring sustainability. DWR issued approval of the GSP for the USLR Valley Groundwater Subbasin on January 18, 2024, and provided recommended corrective actions (RCAs) to enhance the GSP and facilitate future evaluations.

Information provided in this annual report of the USLR Groundwater Subbasin indicate the following conditions:

- Precipitation during WY 2023 is classified as wet based on recorded precipitation of 47.8 inches at Henshaw Dam. Long-term average precipitation at this station is approximately 24.4 inches.
- Groundwater elevations in fall 2023 were higher in every monitored well than measured elevations in fall 2022 due to the significant amount of precipitation experienced in the groundwater basin during WY 2023. The greatest increases in groundwater elevations are seen in wells in the upper and lower Pauma Subbasin areas. The average fall water level increase throughout Pauma Subbasin was approximately 30 ft.
- Groundwater in storage was estimated to have increased by approximately 27,700 acre-ft during WY 2023.

- Groundwater levels and groundwater in storage for WY 2023 in all representative monitoring sites (RMSs) are above minimum thresholds (MTs) – indicating the absence of undesirable results related to chronic declines in groundwater levels or groundwater storage. Water levels in at least 79% of the RMSs are also above Management Objectives (MOs).
- WY 2023 average total dissolved solids (TDS) concentrations for available water quality measurements range from 260 mg/L to 850 mg/L while nitrate (NO_3) concentrations range from non-detect (<0.9 mg/L) to 220 mg/L. The highest nitrate (NO_3) concentrations from WY 2023 are located in the upper portions of Pauma Subbasin, above Sycamore Canyon. Historical water quality data from downgradient subbasins (i.e., Bonsall and Mission Subbasins), also indicates that TDS tends to increase downgradient. Increased levels of nitrate are found in the Pauma mid-Subbasin area (vicinity of MW-21 and MW-22) as well as in the Rincon area.
- Current ambient water quality in Pauma Subbasin (WY 2018-2023) is approximately 618 mg/L and 31.8 mg/L for TDS and nitrate as NO_3, respectively. This represents a decrease from the previous year of approximately 75 mg/L for TDS and an increase of 2.0 mg/L for nitrate as NO_3. However, changes in calculated ambient water quality could be a product of uncertainty associated with the current methodology and may not be reflective of actual changing conditions. Per DWR recommendations, SMCs for water quality and the evaluation of changes in water quality will be clarified and redefined as necessary in the next plan amendment.
- While land subsidence is not considered a concern for the USLR Groundwater Subbasin, available Interferometric Synthetic Aperture Radar (InSAR) data confirmed that no significant land subsidence occurred during WY 2023.
- Total water use in the subbasin in WY 2023 was estimated to be approximately 11,800 acre-ft, approximately 5,800 acre-ft less than what was estimated for the previous year. This includes 7,300 acre-ft of groundwater pumping, 3,200 acre-ft of imported water, and nearly 1,300 acre-ft of local surface water. The reduced water usage can be attributed to the wet conditions experienced during WY 2023; increased utilization of local surface water supplies and the ability of precipitation to satisfy a portion of agricultural water requirements lead to reduced need for imported water supplies and reduced reliance on groundwater pumping.
- WY 2023 groundwater pumping is well below the estimated safe yield for the USLR Groundwater Subbasin of between 12,700 acre-ft/yr (calculated for long-term historical conditions from 1991 through 2020) to 20,300 acre-ft/yr (calculated for current conditions from 2016 through 2020).

The Authority continued efforts to maintain sustainability in the USLR Valley Groundwater Subbasin throughout WY 2023, including ongoing development and implementation of projects and management actions. These efforts included:

- Incorporation of a new monitoring location in an identified data gap area.
- Installation of two new, dedicated monitoring wells to provide information for identified data gaps.
- Completion of an aquifer pumping test to provide estimates of aquifer parameters.

- Initiation of Cost-of-Service Study to develop a funding mechanism for ongoing GSP implementation.
- Establishment of an Interactive Tribal Work Group and Drought Resilience Work Group.
- Development of new protocols and application for well permitting coordination with the County of San Diego.
- Ongoing water conservation and agricultural irrigation best management practices.

Progress towards GSP implementation and sustainability will continue. New information will be used to assess, clarify, and refine RMSs and SMCs as needed during the next periodic assessment and plan amendment (due to DWR in January 2027), following DWR guidance identified in their RCAs. Results of basin monitoring efforts and investigations performed this coming water year will be presented in the next annual report (WY 2024), to be submitted to DWR by April 1, 2025.

2.0 Introduction and General Information

2.1 Background

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package, composed of AB 1739, SB 1168, and SB 1319, collectively known as the Sustainable Groundwater Management Act (SGMA), providing California with a framework for sustainable groundwater management. In accordance with SGMA, the Pauma Valley Groundwater Sustainability Agency (PVGSA[1]) was formed to prepare a Groundwater Sustainability Plan (GSP) for the Upper San Luis Rey (USLR) Valley Groundwater Subbasin, which was submitted to the Department of Water Resources (DWR) in January 2022[2]. DWR issued an approval of the plan, with recommended corrective actions, on January 18, 2024. The goal of the GSP is to ensure that groundwater continues to be available to everyone who uses it far into the future. The Plan describes basin conditions, including the geology of the basin and groundwater levels within it, establishes sustainability goals for the basin, and outlines steps and potential management actions to ensure sustainability.

Article 7 of the Emergency Groundwater Sustainability Plan Regulations (23 CCR §356.2) establishes the requirements for Groundwater Sustainability Agencies (GSAs) to submit annual reports to DWR by April 1 each year following adoption of a GSP. This report represents the third annual report of the USLR Groundwater Subbasin and covers the period for Water Year (WY) 2023 (i.e., October 2022 through September 2023).

2.2 Plan Area

The San Luis Rey Valley Groundwater Basin, located in San Diego County, extends from the confluence of the San Luis Rey River and Paradise Creek, continuing downstream through four valleys (Pauma, Pala, Bonsall, and Mission), and ending at the Pacific Ocean in the City of Oceanside (Figure 1). Assembly Bill No. 1944, Chapter 255 (AB 1944, 2018), enacted to amend Section 10721 and to add Section 10722.5 to the Water Code, defines the boundary that divides the Upper and Lower San Luis Rey Valley Groundwater Subbasins. The USLR Valley Groundwater Subbasin (DWR subbasin 9-007.01) includes the Pauma and Pala Subbasins and encompasses approximately 19,200 acres. The valley areas are separated by narrow, steep-walled canyons and underlain by unconsolidated alluvial fill that serves as storage for groundwater. Elevation ranges from approximately 250 ft above mean sea level (amsl) in valley areas to over 5,700 ft amsl in the surrounding watershed area.

The USLR Valley Groundwater Subbasin can be further subdivided into two subbasins: the Pauma Subbasin and the Pala Subbasin (Figure 1). The Pauma Subbasin extends from the confluence of the San

[1] The PVGSA consists of Yuima Municipal Water District (YMWD), Pauma Municipal Water District (Pauma MWD), Pauma Valley Community Services District (CSD), San Luis Rey Municipal Water District (SLRMWD), and the Upper San Luis Rey Resource Conservation District (USLRRCD). Since development of the GSP, the PVGSA has transitioned to the Upper San Luis Rey Groundwater Management Authority (USLRGMA, or Authority). See Appendix A for updated GSA administrative information.

[2] The USLR Valley GSP is available through the DWR SGMA Portal website at: https://sgma.water.ca.gov/portal/gsp/preview/76

Luis Rey River and Paradise Creek to the Agua Tibia Narrows near the confluence of the San Luis Rey River and Frey Creek. The Pala Subbasin extends from the Agua Tibia Narrows to Monserate Narrows. Based on prior decisions by the State of California, groundwater in Pala Subbasin, located downstream of Frey Creek, has been determined to be a subterranean stream flowing through known and definite channels (SWRCB, 2002). While subterranean streams are generally excluded from SGMA, Assembly Bill 1944 was put forth to include the area of the subbasin downstream from Frey Creek (i.e., Pala Subbasin) as part of SGMA for the purposes of groundwater sustainability. AB 1944 does not alter any existing water right. Therefore, the GSP components address both the Pauma and Pala Subbasins.

The general climate of the area is Mediterranean, with warm, dry summers and mild winters, although temperatures do occasionally fall below freezing. Most precipitation falls between the months of November and April with infrequent rain the rest of the year (particularly in summer months). Precipitation is two to three times greater in the surrounding hills and mountain areas than in the valley areas (Ellis and Lee, 1919). Cyclic hydrologic patterns are common, including wet periods of above-average rainfall and dry periods (drought) with below-average rainfall. Therefore, year-to-year rainfall – as well as groundwater recharge – can be highly variable.

Land use within Pauma Subbasin is predominantly irrigated agriculture/parks/golf (52%), followed by 27% open space/water, 17% residential, and 4% commercial/industrial/public facilities. In Pala Subbasin, land use is approximately 42% open space/water, 38% irrigated agriculture/parks, 12% residential, and 8% commercial/industrial/public facilities. Likewise, the majority of water use within the subbasin is for agricultural purposes, consisting primarily of citrus, avocados, and sub-tropical fruits (within the YMWD service area, approximately 91% of the water goes to agricultural use). Sources of water within the USLR Subbasin include groundwater, surface water, and imported water.

The majority of groundwater in the USLR Valley Groundwater Subbasin is produced from the porous flood plain and alluvial material representing valley fill. Productivity generally decreases with decreasing thickness of unconsolidated material. Alluvial sediments in valleys are generally thickest under the San Luis Rey River. In Pauma Valley, sediments may be up to 600 ft thick in localized areas of the northeast portion of the subbasin (Layne, 2010). However, these locations with greater sediment depth typically coincide with alluvial fan deposits, which tend to be less productive. The Pauma and Pala Subbasins are hydraulically connected, with groundwater from the upgradient Pauma Subbasin flowing into Pala Subbasin.

3.0 Hydrologic Conditions

The younger alluvium in the subbasin represents particularly productive aquifer units while the alluvial fans tend to be less productive due to their poorly sorted nature and the presence of significant amounts of fine-grained material. The alluvial aquifer system in the groundwater subbasin is largely unconfined in nature, though localized semi-confined and confined conditions may exist where substantial lacustrine deposits are present (i.e., areas underlying fine-grained lakebed deposits from paleo Lake Pauma) (Howes, 1955; Moreland, 1974). Available water level information generally has not indicated the presence of separate, distinct aquifer systems, though the majority of data are for wells with deeper completions. Water levels for new clustered monitoring wells constructed in Pauma Subbasin in 2023 (including one shallow and one deep completion; see Section 3.2 for additional discussion) indicate that there may be perched groundwater above the clay layer. However, since data on the shallow system are extremely limited, the discussion of hydrologic conditions in the subbasin considers one aquifer body, representative of the source for the majority of groundwater pumping.

3.1 Water Year Type

Historical annual rainfall is available at the National Oceanic and Atmospheric Administration (NOAA) precipitation station at Henshaw Dam (shown on Figure 1 inset). Annual water year precipitation here averages 24.4 inches per year from 1943 through 2023 (Figure 2). This gage is located at a higher elevation so precipitation in the USLR Valley Groundwater Subbasin is less than the amounts shown on Figure 2. However, the Henshaw gage has the most complete and extensive precipitation record of nearby gages. For the groundwater budget presented in the GSP, precipitation in the groundwater subbasin was determined based on records from Henshaw Dam, Palomar Mountain Observatory, and Vista stations. Daily precipitation values were distributed in the watershed model using adjustment factors based on 30-year (1981 through 2010) gridded PRISM (Parameter-elevation Regression on Independent Slopes Model) precipitation data developed by the National Resources Conservation Service (NRCS) National Water and Climate Center (NWCC) and the PRISM Climate Group at Oregon State University.

Precipitation trends (illustrated by the cumulative departure from mean precipitation curve shown in Figure 2) at the Henshaw Dam station are indicative of precipitation and recharge experienced in the USLR Groundwater Subbasin and provide information on WY type. WY type (i.e., wet, above normal, below normal, dry, or critical) was determined from recorded precipitation at Henshaw Dam using the categories presented in Table 3-1 below. These classifications are based on the thresholds outlined in DWR Water Year Type Dataset Development Report (2021). WY 2023 is classified as wet based on recorded precipitation of 47.8 inches at Henshaw Dam (Table 3-2).

Table 3-1. Percent Exceedance Ranges and Precipitation Thresholds for Water Year Type

Water Year Type	Percent Exceedance[1] Range [%]	Threshold Between Year Type [in/yr]	Number of Years in Historical Record (WY 1943-2023)
Wet	0% - 30%	27.66	24
Above Normal	>30% - 50%	21.04	16
Below Normal	>50% - 70%	17.55	16
Dry	>70% - 85%	15.08	12
Critical	>85% - 100%	-	13

[1] Percent exceedance refers to the percentage of precipitation values that are greater than a given threshold for the entire period of record. For example, for a year classified as wet hydrology type, that year's precipitation falls in the upper 30% of precipitation values observed at Henshaw Dam. For the Henshaw period of record (1943 through 2023), the highest 30% of annual precipitation records is represented by values greater than 27.66 inches.

Table 3-2. Water Year Type Based on Precipitation at Henshaw Dam Station

Water Year	Precipitation [inches]	Water Year Type
2015	18.03	Below Normal
2016	19.28	Below Normal
2017	35.44	Wet
2018	10.29	Critical
2019	35.21	Wet
2020	28.24	Wet
2021	15.78	Dry
2022	15.70	Dry
2023	47.84	Wet

3.2 Monitoring Network

The current USLR GSP monitoring network consists of 30 wells owned and operated by various water agencies and private agricultural operations. However, three new monitoring points were added to the monitoring events during WY 2023: MW-31, MW-32, and MW-33. These points will be officially added to the GSP monitoring network as part of a planned refinement of the network which will accompany the five-year review. Areas of network refinement include enhancing spatial coverage of the network by incorporating other existing wells through stakeholder cooperation and enhancing understanding of

selected monitoring well completion details to ensure measured elevations are reflective of groundwater subbasin conditions. This second consideration is of particular importance since additional information collected since GSP development has indicated that many wells in the basin have a bedrock component to them (i.e., the wells are completed, at least in part, below the bottom of the alluvial materials representing the groundwater basin). Water level signatures for these wells can look significantly different than surrounding alluvial wells depending on hydrologic and groundwater pumping conditions. Stakeholders that have wells in areas of the basin not currently well covered by the GSP monitoring network and who would like to participate in the sustainability effort are encouraged to contact the GMA. Figure 3 shows the locations of the monitoring network wells, including new monitoring points at MW-31, -32, and -33.

MW-31 represents a previously existing well in the southern Pauma area, which was offered as a monitoring point to the Authority to further understanding of basin conditions. This well provides important upgradient and near-river groundwater information in a previously identified data gap area. MW-32 and MW-33 are located near the end of Pauma Subbasin and represent the first dedicated monitoring wells designed and installed to provide information specific to SGMA. The wells were installed in May and June of 2023 through YMWD SGMA grant funding (see Appendix B for the monitoring well report). The wells are clustered near the San Luis Rey River and were constructed at different depths (one shallow, one deep) to provide discrete information on differences in shallow and deep groundwater conditions. Since the USLR Subbasin is relatively shallow, available well information has not been able to provide information on potential perched or shallow groundwater conditions – particularly in the central Pauma Subbasin area where the presence of a clay layer from a paleo lake is well documented.

Representative monitoring sites (RMSs), a subset of the monitoring network, were chosen to provide sufficient distribution throughout the subbasin, have known well construction details, are operational/pumping wells that may be impacted by undesirable results, and have screened intervals representative of alluvial material (see Figure 4). At the moment, RMSs are largely represented by municipal and agricultural supply wells since selection was limited to available information collected or supplied during the GSP development process. As mentioned above, the Authority plans to refine the monitoring network in the future to incorporate wells in data gap areas, if available, including shallow and/or domestic wells. Additional RMSs may also be needed to monitor sustainability management criteria for groundwater dependent ecosystems (GDEs) and interconnected surface water if additional data collection and analyses indicate these are present in the subbasin. It may also be necessary at the five-year review to adjust sustainability management criteria to accommodate new information collected through annual reporting and data collection efforts.

Static groundwater levels are measured twice per year: once in the spring and once in the fall, to represent seasonal high and seasonal low, respectively. Measured depth to water (DTW) data, land surface elevations, and measured groundwater elevations in feet above mean sea level (ft amsl) for WY 2023 are provided in Table 1. These data were filed on DWR's SGMA Portal Monitoring Network Module (MNM). Groundwater elevation data were used to produce contour maps and hydrographs for this annual report. Water quality data from wells in the basin are summarized in Table 2.

3.3 Groundwater Elevations

During development of the GSP, water level data were received from basin stakeholders or obtained through State databases, such as the California Statewide Groundwater Elevation Monitoring (CASGEM) Program database. Information received from various entities was reviewed to identify any anomalies. Water level measurements were also taken at wells in the GSP Monitoring Network (see Section 3.2). Very few water level measurements are available in Pala Subbasin. This is a data gap area that the Authority would like to address in the near future.

3.3.1 Elevation Contours

Contours of groundwater elevation were developed based on observed water level data. Water level contours for fall 2022, which were presented in the previous annual report, are shown on Figure 5. Water level contours for spring 2023 and fall 2023 (Figures 6 and 7, respectively) show the seasonal high and low groundwater elevations for WY 2023. Anomalous water level measurements reflecting bedrock signatures or pumping conditions were disregarded. The groundwater elevation contours represent lines of equal elevation on the groundwater surface, and groundwater flow occurs perpendicular (i.e., at 90°) to the contours. Contours are also dashed where there is little control, requiring inference of elevations.

Contours from both spring and fall show localized pumping depressions along the San Luis Rey River and mid-basin in Pauma Subbasin, where higher rates of pumping occur. A mound in groundwater elevations is also distinguishable near the Pauma Valley CSD percolation ponds, which recharged approximately 550 acre-ft of treated wastewater during WY 2023. Water elevations in fall 2023 were higher in every monitored well than measured elevations in fall 2022 due to the significant amount of precipitation experienced in the groundwater basin during WY 2023. The greatest increases in groundwater elevations are seen in wells in the upper and lower Pauma Subbasin areas. The average fall water level increase throughout Pauma Subbasin was approximately 30 ft. Water levels at the CASGEM well located near the Monserate Narrows, at the downstream end of the USLR Subbasin, remained fairly constant, likely due to its proximity to the San Luis Rey River[3]. Trends and changes in groundwater levels are better displayed in the hydrographs provided in the following section.

3.3.2 Hydrographs

Groundwater elevation hydrographs at key wells identified in the GSP (RMSs – see Section 3.2) are presented in Figures 8 and 9. Water level measurements from these key wells are also summarized in the following table, which provides a comparison of WY 2023 levels to measurements from the previous year. Evaluation of water levels relative to sustainable management criteria (SMC) is provided in Section 5.1.1.

[3] Due to the extreme consistency in groundwater level measurements at this location, this well may not be representative of water level changes in the basin. The consistency may be caused by the well's proximity to the river and/or construction, which is unknown. Additionally, there are no stream flow gages to provide information on changes in surface flow. At this downgradient location, there may be significant increases in streamflow due to high water level conditions that would not show up in a nearby groundwater signature.

Table 3-3. Fall and Spring Groundwater Elevations at Representative Monitoring Sites (RMSs)

RMS	Spring Groundwater Conditions			Fall Groundwater Conditions		
	WY 2022 [ft amsl]	WY 2023 [ft amsl]	Change from WY 2022 to 2023 [ft]	WY 2022 [ft amsl]	WY 2023 [ft amsl]	Change from WY 2022 to 2023 [ft]
MW-1	1,458	1,461	3	1,459	1,465	6
MW-2	1,270	1,274	4	1,265	1,280	15
MW-5	780[P]	785[P]	-	795	812	17
MW-9	703	731	28	696	727	31
MW-10	671	691	19	665	699	34
MW-12	638	672	34	631	661[P]	-
MW-13	612[R]	634	22	605	641	36
MW-19	600	605	4	569	590	21
MW-20	593	602	9	570	586	16
MW-23	593	598[P]	-	574[P]	610	-
MW-24	577	580	3	554	593	40
MW-25	546	536	-10	526	550	24
MW-26	555	574	20	539	572	33
MW-27	551	570	19	537	570	33

[R] = Recovering water level

[P] = Pumping water level (note: change in water level not calculated if a pumping water level was reported for WY 2022 or WY 2023)

3.4 Change in Groundwater Storage

Change in groundwater storage was estimated for WY 2023 using the water level contours developed in Figure 5 (Fall 2022) and Figure 7 (Fall 2023) and aquifer parameters values from the calibrated groundwater flow model. Using this information, the change in groundwater storage (in acre-ft) was calculated for each model cell using the following equation:

$$Change\ in\ Groundwater\ Storage = (WL_{2022} - WL_{2021}) \times SY \times A$$

Where:

WL_{2023} = Groundwater elevation from fall 2023 (spatially interpolated between water level contours), ft asml

WL_{2022} = Groundwater elevation from fall 2022 (spatially interpolated between water level contours), ft asml

SY = Specific yield of model cell from calibrated groundwater model, unitless

A = Model cell area (100 ft x 100 ft = 1,000 ft^2 or 0.02 acres), acres

The individual changes in groundwater storage were then summed over the model area for the entire USLR Valley Groundwater Subbasin. A map of WY 2023 groundwater storage change is provided as Figure 10 while annual change in storage since WY 2015 is summarized in the following table. Cumulative change in storage is shown on Figure 11. As shown, groundwater storage was estimated to increase by approximately 27,700 acre-ft during WY 2023. This change occurred throughout the basin, as evidenced by increases in observed water levels. Increases in fall 2023 water levels, compared to fall 2022 water levels, averaged approximately 27 feet in GSP monitoring wells. The cumulative change in groundwater storage is over 60,000 acre-ft higher than storage in 2015 with an average annual change in groundwater storage of 7,400 acre-ft/yr. The general increase in groundwater storage in the last few years is also consistent with observed water level trends at many of the RMSs showing a recent increase in water levels and the response to wet conditions in WY 2023.

Table 3-4. Annual Change in Groundwater Storage (WY 2015 – 2023)

Water Year	Water Year Type	Change in Groundwater Storage* [acre-ft]
2015	Below Normal	-5,594
2016	Below Normal	-25
2017	Wet	18,694
2018	Critical	-9,505
2019	Wet	20,413
2020	Wet	11,041
2021	Dry	4,195
2022	Dry	-575
2023	Wet	27,727
Average (2015-2023)	-	7,375

* Change in groundwater storage from WY 2015 through 2020 calculated from calibrated groundwater model. WY 2021 through 2023 change in groundwater storage calculated from the difference in groundwater elevation contours.

It is important to note that the groundwater storage change illustrated in Figure 10 is a direct product of the groundwater elevation contours used to calculate change in water level, which were generated using limited data in portions of the basin. Therefore, estimated change in groundwater storage has increased uncertainty in these data gap areas (e.g., upgradient areas and throughout Pala Subbasin). In addition,

slight changes in contour placement may cause apparent changes in groundwater storage. Revised estimates of change in groundwater storage will be conducted following future model updates and recalibration.

3.5 Water Quality

The water quality contaminants of most concern in the USLR Groundwater Subbasin are total dissolved solids (TDS) and nitrate (NO_3). The most common sources of these constituents include gradual accumulation through natural processes (which are especially pronounced in the absence of very wet precipitation years), agricultural applications, irrigation and septic return flows, recycled water use or spreading, use of imported water, and evapotranspiration. The Water Quality Control Plan for the San Diego Basin (Basin Plan) sets water quality objectives to protect the beneficial uses designated for the water body (surface or groundwater). TDS and nitrate (NO_3) groundwater objectives for the USLR Valley Groundwater Subbasin are summarized below.

Table 3-5. Groundwater Quality Objectives in the Upper San Luis Rey Valley Groundwater Subbasin

Hydrologic Subarea	TDS [mg/L]	Nitrate (NO_3) [mg/L]
Pauma Subbasin	800	45
Pala Subbasin	900	45
National and State Maximum Contaminant Levels (MCLs)		
Primary Drinking Water Standard	1,000	45
Secondary Drinking Water Standard	500	-

Notes:
- Concentrations not to be exceeded more than 10% of the time during any one-year period.
- The Basin Plan allows for measurable degradation of groundwater in this basin to permit continued agricultural land use. Point sources, however, would be controlled to achieve effluent quality corresponding to the tabulated numerical values. In future years demineralization may be used to treat groundwater to the desired quality prior to use.

Historical water quality data in the USLR Valley Groundwater Subbasin is generally very limited. Recent water quality data for public water systems are available from the Division of Drinking Water (DDW). Supplemental water quality samples were taken at select wells in the basin as part of the on-going GSP monitoring efforts. Average TDS and nitrate concentrations from available water quality data for WY 2023 are shown on Figures 12 and 13, respectively. Current TDS samples indicate concentrations ranging from 260 mg/L to 850 mg/L (Figure 12) while nitrate (NO_3) concentrations range from non-detect (<0.9 mg/L) to 220 mg/L (Figure 13). Changes in the range of average TDS and nitrate concentrations include differences in wells with available information and are not necessarily related to changes in overall basin water quality. Changes in water quality are discussed in Section 5.1.3. The highest nitrate (NO_3) concentrations from WY 2023 are located in the upper portions of Pauma Subbasin, above Sycamore Canyon. Historical water quality data from downgradient subbasins (i.e., Bonsall and Mission Subbasins),

also indicates that TDS tends to increase downgradient. Increased levels of nitrate are found in the Pauma mid-subbasin area (vicinity of MW-21 and MW-22) as well as in the Rincon area. Water quality results are provided in attached Table 2.

3.6 Interconnected Surface Water

Given the depth to groundwater in much of the basin, percolation from streamflow is thought to be largely in free fall conditions; that is, the streams are not in direct hydraulic connection with the underlying water table and aquifer system so surface recharge must percolate through the unsaturated zone before becoming accessible to groundwater pumping. This is especially true for tributaries to the San Luis Rey River (e.g., stream channels crossing alluvial fans). While there are areas within the basin where groundwater has been known to enter the San Luis Rey River (such as in the downgradient Pala Subbasin area where there is standing water), not enough stream flow or groundwater level information near stream channels is available to definitively delineate gaining or losing stream reaches – that is, where streams are interconnected or disconnected from underlying groundwater. This has been identified as a data gap area and additional data collection following GSP implementation will help to develop a better understanding of interconnected surface waters in the basin.

3.7 Land Subsidence

Land subsidence is not considered a concern for the USLR Groundwater Subbasin due to a lack of observed evidence of subsidence, absence of significant thickness of compressible fine-grained sediments, and overall shallow character of the alluvial basin. Furthermore, available Interferometric Synthetic Aperture Radar (InSAR) data, which estimates vertical displacement, has not indicated any subsidence in the USLR Subbasin in the past. Despite this, updated information on potential subsidence from DWR was evaluated. Updated InSAR data, available on the SGMA Data Viewer, indicates that the USLR Subbasin experienced displacement between -0.1 and 0.1 feet in WY 2023 (DWR, 2024b). Therefore, no significant land subsidence has occurred during the last year.

3.8 Seawater Intrusion

Given the distance of the downgradient boundary from the ocean, seawater intrusion is also not a concern for the USLR Groundwater Subbasin. In addition, while seawater intrusion has historically occurred in the downgradient Lower San Luis Rey Groundwater Subbasin, minimum threshold groundwater elevations designed to maintain a seaward groundwater gradient are currently being implemented in the Mission Subbasin to protect inland areas from further seawater intrusion. No recent data indicate the presence of seawater intrusion.

4.0 Water Use and Supply

The aquifers in the Pauma and Pala Subbasins are used for domestic, agricultural, commercial, and municipal water supply purposes. The majority of urban areas are supplied with water by water agencies but there are some private wells that provide water for domestic use. Residential water uses include household consumption, irrigation of landscape and/or agricultural crops, watering horses or other livestock, and pumping water to fill swimming pools or ponds. Commercial uses include store front and retail trade strip malls, low-rise office buildings, libraries, post offices, and fire and police stations. Industrial uses include extractive industry (mining), light industrial, and warehousing/public storage. The majority of private pumping in the subbasin is used for agricultural irrigation.

4.1 Groundwater Extractions

Groundwater pumping was estimated during development of the USLR GSP based on historical pumping records, where available. Estimates of unrecorded pumping for those areas not served by a water service entity were primarily based on land use and published associated water use, including the demand estimates provided in the County of San Diego's (County's) General Plan Update Groundwater Study (County, 2010) and other estimates of water use from previous studies. Since agricultural irrigation represents such a large portion of groundwater pumping in the basin, estimates of agricultural water use were based on crop type using available crop mapping data. Multi-year coverage was available from DWR at https://data.cnra.ca.gov/dataset/statewide-crop-mapping, as well as from the San Diego Association of Governments (SANDAG). Crop-specific agricultural demand estimates from the County's Table 3-6 were then applied to the areas identified by the crop mapping. Pumping estimations were also made for tribal areas, including casino usage, based on available reports (Geo-Logic Associates, 2009; Pala Band of Mission Indians, 2019; Stetson, 1984; Tierra Environmental Services, 2007). Estimated pumping rates were simulated in the groundwater model at locations of known or estimated pumping and adjusted during model calibration.

Groundwater pumping during WY 2023 was estimated using available reported pumping volumes from water agencies and private or agricultural pumpers in the groundwater subbasin, broken down by water use sector (i.e., agricultural versus residential and commercial use). Unreported pumping for WY 2023 was estimated based on an analysis of the relationship between previous model pumping estimates and precipitation, less any pumping from new reporting entities. Groundwater extraction volumes will be updated in subsequent annual reports as additional data becomes available, including updated land use and agricultural coverage maps as well as resources to estimate evapotranspiration and general water use. Reported and unreported groundwater pumping is summarized below for agricultural and residential/commercial use. For WY 2023, groundwater pumping in the subbasin was estimated to be approximately 7,300 acre-ft. This includes approximately 5,000 acre-ft of water for agricultural applications and 2,300 acre-ft for residential and commercial use. This represents a significant decrease from previous years and can likely be attributed to the wet conditions experienced during WY 2023; agricultural operations were able to rely on direct recharge from precipitation and available surface water to supplement irrigation requirements, allowing decreased reliance on groundwater (see discussion in Section 4.2).

Table 4-1. Groundwater Extractions in the Upper San Luis Rey Valley Groundwater Subbasin by Water Use Sector

Water Year	Reported		Unreported		Total
	Agricultural	Residential & Commercial	Agricultural[3]	Residential &[4] Commercial	
	[acre-ft]				
2015	4,075[1]	404[2]	6,341	1,199	**12,019**
2016	4,685[1]	380[2]	6,394	1,223	**12,681**
2017	5,316[1]	511[2]	5,308	1,082	**12,218**
2018	6,418[1]	626[2]	4,542	1,029	**12,614**
2019	5,551[1]	519[2]	4,877	1,052	**11,999**
2020	3,952[1]	347[2]	6,710	1,239	**12,248**
2021	2,735[1]	211[2]	7,518[5]	1,412[6]	**11,876**
2022	6,813	945	3,416	1,050	**12,225**
2023	4,366	1,219	663	1,050	**7,298**

[1] Reported pumping for water agencies did not specify agricultural vs. residential/commercial use. Agricultural use assumed to be 90% of reported pumping for these agencies.

[2] Reported pumping for water agencies did not specify agricultural vs. residential/commercial use. Residential and commercial use assumed to be 10% of reported pumping for these agencies.

[3] Unreported agricultural pumping was estimated for the development of groundwater budgets in the USLR GSP based primarily on land use and crop type, then adjusted during model calibration.

[4] Unreported residential and commercial pumping was estimated for the development of groundwater budgets in the USLR GSP based primarily on water consumption reports for tribal areas.

[5] The model calibration period covered January 1990 through December 2020. Therefore, agricultural groundwater pumping from January 2021 through September 2021 was estimated based on the relationship between precipitation and estimated agricultural groundwater pumping for previous years. Unreported agricultural pumping for WY 2021 that was reported for previous WYs was assumed to be the same as WY 2020 pumping.

[6] Unreported residential and commercial pumping for WY 2021 that was reported for previous WYs was assumed to be the same as WY 2020 pumping.

4.2 Surface Water Supply

Surface water supply in the USLR Valley Groundwater Subbasin includes imported water and local surface water diversion. Within the subbasin, YMWD receives imported water through Metropolitan Water District of Southern California (Metropolitan) and the San Diego County Water Authority (Water Authority). This imported water includes Colorado River supplies (transported from Lake Havasu through the Colorado River Aqueduct to Diamond Valley Lake and then to Lake Mathews in Riverside County via Lake Skinner) and State Water Project (SWP) supplies (delivered to Lake Perris, the terminus of the 444-mile California Aqueduct). The use of imported water in the basin has increased since imported water deliveries began in 1947 with the completion of the first San Diego Aqueduct (Recon, 1996). The increased

use of imported water in the subbasin has allowed for a reduction in groundwater pumping, contributing to the increase in groundwater levels within the last five to ten years.

Reported surface water diversions include diversions by Improvement District "A" to catchment basins and other diversions by surface water diversion permit holders. However, not all diverted surface water is reported. Therefore, actual local surface water diversions are likely underestimated – particularly during wet years when surface water is more abundant. Surface water diversion volumes will continue to be updated in subsequent annual reports as additional data become available.

Surface water deliveries are summarized below. Due to the wet year and sustained flow through spring, summer, and fall, some agricultural entities were able to rely on more surface water for irrigation – resulting in less groundwater pumping. Total surface water use in the USLR Valley Groundwater Subbasin for WY 2023 is estimated to be approximately 4,500 acre-ft. This includes 3,200 acre-ft of imported water and nearly 1,300 acre-ft of local surface water. As noted above, the high amount of precipitation during WY 2023 contributed to the shift in water use seen here. Increased utilization of local surface water supplies and the ability of precipitation to satisfy a portion of agricultural water requirements lead to reduced need for imported water supplies and reduced reliance on groundwater pumping.

Table 4-2. Surface Water Deliveries in the Upper San Luis Rey Valley Groundwater Subbasin

Water Year	Imported Water	Diversions from San Luis Rey and Tributaries[2] [acre-ft]	Total
2015	4,468[1]	455	**4,923**
2016	3,621[1]	467	**4,088**
2017	4,494[1]	742	**5,236**
2018	6,088[1]	368	**6,456**
2019	4,756[1]	678	**5,434**
2020	4,685[1]	466	**5,151**
2021	5,611[1]	406	**6,017**
2022	5,064	274	**5,338**
2023	3,239	1,268	**4,507**

[1] Values reported by Fiscal Year (July 1 through June 30)
[2] Values based on reported diversions for WY 2015 through 2020. WY 2021 estimated based on previous values and diversion correlation to precipitation at Henshaw Dam Station. WY 2022 and 2023 based on reported diversions.

4.3 Total Water Use

Total water use in the subbasin using the estimates developed above is summarized in Table 4-3 and Figure 14. As shown, water use in the subbasin in WY 2023 was estimated to be approximately 11,800 acre-ft.

Table 4-3. Total Water Use in Upper San Luis Rey Valley Groundwater Subbasin

Water Year	Groundwater	Imported Water	Surface Water Diversions	Total
	[acre-ft]			
2015	12,019	4,468[1]	455	**16,942**
2016	12,681	3,621[1]	467	**16,769**
2017	12,218	4,494[1]	742	**17,454**
2018	12,614	6,088[1]	368	**19,070**
2019	11,999	4,756[1]	678	**17,433**
2020	12,248	4,685[1]	466	**17,399**
2021	11,876	5,611[1]	406	**17,893**
2022	12,225	5,064	274	**17,563**
2023	7,298	3,239	1,268	**11,805**

[1] Values reported by Fiscal Year (July 1 through June 30)

5.0 Progress Towards GSP Implementation and Sustainability

The USLR Valley Groundwater Subbasin has been classified by DWR as a medium-priority basin. Pauma and Pala Subbasins were considered to be at or near hydrologic balance in the 1984 study by Stetson. Following this study, groundwater elevations – particularly in Pauma Subbasin – showed declines from the 1990s through the early 2000s. Over the last ten years or so, water levels have recently stabilized and have started to show recovery. This seems to be due in large part to the use of imported water to augment groundwater supplies, allowing for a reduction in groundwater pumping. The sustainability goal for the USLR Subbasin is to manage and preserve its groundwater resource as a sustainable water supply. To the greatest extent possible, the goal is to preserve historic operations of beneficial use in the basin as well as allow for future planned uses as conceived by the GSA and basin stakeholders. One of the main ways to accomplish this goal is to operate the subbasin within the sustainable yield.

Sustainable yield is defined by SGMA (Water Code, section 10721(w)) as the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result. Preliminary estimates of the sustainable yield of the subbasin range from approximately 12,700 acre-ft/yr under historical conditions (1991 through 2020) to 20,300 acre-ft/yr under current (2016 through 2020) conditions. Projections of future water budgets assuming similar land use, groundwater pumping, and imported water use indicate a sustainable yield of approximately 13,600 acre-ft/yr. As indicated in Section 4.1, groundwater pumping during WY 2023 was estimated to be 7,300 acre-ft.

The USLR GSP outlines sustainability criteria to allow the Authority to define, measure, and track sustainable management for different sustainability indicators in the subbasin. The GSP also proposed several potential management actions and projects that could be implemented to further ensure that undesirable results do not occur in the subbasin going forward. Progress towards implementing the Plan is discussed in the following sections.

5.1 Sustainable Management Criteria (SMC)

Sustainable groundwater management involves the use and management of groundwater without causing undesirable results. SGMA identified six sustainability indicators which refer to effects caused by groundwater conditions occurring throughout a basin that, when significant and unreasonable, cause undesirable results (Water Code Section 10721(x)). These are:

- Reduction of Groundwater in Storage
- Chronic Lowering of Groundwater Levels
- Degraded Water Quality
- Depletion of Interconnected Surface Water
- Land Subsidence (not considered applicable in the USLR Valley Groundwater Subbasin)
- Seawater Intrusion (also not considered applicable in the USLR Valley Groundwater Subbasin)

For these sustainability indicators, the USLR GSP developed quantitative sustainable management criteria (SMCs) that allow the GSA to define, measure, and track sustainable management. These include minimum thresholds (MTs) to define undesirable results for each sustainability indicator and measurable

objectives (MOs) to track the performance of sustainable management. The development of these sustainable management criteria relied upon information about the USLR Subbasin developed in the hydrogeologic conceptual model, the description of current and historical groundwater conditions, and the water budget. Additional information on the sustainability criteria can be found in Section 4.0 (Sustainable Management Criteria) in the USLR GSP.

Progress towards implementing sustainable management regarding the six sustainability indicators is described in the following subsections.

5.1.1 Chronic Lowering of Groundwater Levels

SMCs for groundwater levels in the USLR Groundwater Subbasin were developed based on input from local pumpers participating in the GSP process and monitoring network. Currently, these sites include municipal, private, and agricultural wells located almost exclusively in the Pauma Valley portion of the USLR Groundwater Subbasin. Participating pumpers provided the minimum depth for each of their wells to operate successfully based on their past experiences during drought conditions. Groundwater levels falling below these elevations (defined as the MT for each well) represent an undesirable result at the specific well location. Undesirable results for the subbasin are indicated when two consecutive exceedances occur in each of two consecutive years, in 25 percent or more of the Key Wells.

The MO for the USLR Subbasin is set at a groundwater elevation that coincides with three years of operational storage for the basin, where a minimum of 18,000 acre-ft/year is required to meet the water demands of the basin. Three years of groundwater storage is therefore equivalent to 54,000 acre-ft. This value is conservative because it allows three years of groundwater reserves to meet water demand, even though much of that demand is currently satisfied through imported water. Therefore, this approach for defining MOs against the lowering of groundwater levels (as well as groundwater storage) also allows protection against periods of prolonged drought or below average precipitation years. The calibrated USLR Groundwater Model (USLRGM) was used to calculate these elevations at the RMSs. In general, this corresponds to approximately 50 ft of groundwater elevation over MTs.

WY 2023 groundwater elevations (both spring and fall), MTs, and MOs at RMSs are summarized in Table 5-1 below. SMCs are also shown in relationship to historical groundwater levels and known well screen intervals for each key well on Figures 8 and 9.

Table 5-1. Water Year 2023 Groundwater Elevations and Sustainable Management Criteria for Representative Monitoring Sites

RMS	Groundwater Elevation		Sustainable Management Criteria	
	Spring 2023	Fall 2023	Minimum Threshold	Measurable Objective
	[ft amsl]		[ft amsl]	
MW-1	1,461	1,465	1,291	1,350
MW-2	1,274	1,280	1,108	1,168
MW-5	*785*[P]	812	730	789
MW-9	731	727	623	682

RMS	Groundwater Elevation		Sustainable Management Criteria	
	Spring 2023	Fall 2023	Minimum Threshold	Measurable Objective
	[ft amsl]		[ft amsl]	
MW-10	691	699	629	688
MW-12	672	661[P]	596	655
MW-13	634	641	566	625
MW-19	*605*	*590*	549	609
MW-20	*602*	*586*	545	604
MW-23	598[P]	610	506	565
MW-24	580	593	385	444
MW-25	536	550	157	216
MW-26	574	572	502	561
MW-27	570	570	497	557

Italicized values are above MTs but below MOs
[P] = Pumping water level

Currently (WY 2023), groundwater levels at the RMSs indicate:

- 11-12 of the representative wells (79-86%) are above measurable objectives under both spring and fall groundwater conditions. MW-5 is above measurable objectives according to the fall groundwater measurement but is under the objective for spring because the measured level is reflective of pumping conditions. Under static conditions, it is likely that MW-5 is above measurable objectives for spring as well.
- The remaining 2-3 representative wells (14-21%) are within the operating range between measurable objective and minimum threshold under both spring and fall groundwater conditions.
- 0 of the representative wells (0%) are below the minimum threshold under both spring and fall groundwater conditions.
- No undesirable results have been observed.

With ongoing monitoring, changes in individual wells status relative to MOs and MTs will be able to be identified and discussed in future annual reports and periodic reviews of the GSP. One of the ongoing management actions is to continue to evaluate current RMSs, improve coverage of RMSs to include sites in data gap areas (particularly Pala Subbasin), incorporate information from private and/or shallow groundwater wells, and revise SMCs as needed to protect beneficial use in the subbasin.

5.1.2 Reduction of Groundwater Storage

Based on historical and current pumping and groundwater trends, managing groundwater levels in the future above the MTs set for groundwater levels will result in an appropriate amount of groundwater in reserve to sustain pumping during drought periods. Therefore, groundwater elevation is used as a proxy for groundwater storage and SMCs for the reduction of groundwater storage are the same as those presented for groundwater levels above.

5.1.3 Degraded Water Quality

Ambient TDS and nitrate groundwater quality in the basin was evaluated by taking median concentration of average water quality in wells with at least three water quality readings from WY 2018 through 2023. Well locations with available datasets during this period are shown in Figure 15. The median was chosen as a representative value of overall basin water quality because medians can be reliably calculated for datasets with mixed censored and non-censored data (detects and non-detects), allow for the use of an entire water quality dataset while minimizing the skewing effect of potential data outliers, and do not rely on parametric statistical methods that assume normal data distribution to remove potential outliers. Results are summarized in the following table. However, it is important to note that changes in available water quality samples year-to-year, frequency of reported samples, and the spatial distribution of available measurements can still introduce bias and produce changes in calculated ambient values that may not be representative of overall basin water quality. Methodology for assessing basin water quality will be reassessed and refined during the next review period (five-year reporting period).

Table 5-2. Ambient Water Quality (WY 2018 – 2023)

Hydrologic Subarea	WY 2018-2023 Ambient Groundwater Quality (and Change in Ambient[1])		Minimum Threshold	
	TDS	Nitrate (NO_3)	TDS	Nitrate (NO_3)
	[mg/L]		[mg/L]	
Pauma Subbasin	618 (-75)	31.76 (+2.00)	800	45
Pala Subbasin	NA[2]	NA[2]	900	45

[1] Change in ambient quality from that calculated from WY 2017 through 2022 shown in parentheses
[2] Insufficient data to characterize ambient groundwater quality in Pala Subbasin

In Pala Subbasin, only one well met the criteria of having at least three water quality readings in the last six years (sampled as part of the GSP monitoring program). Since one data point would not be representative of the entire subbasin, ambient concentrations in this area were not able to be determined. The Pauma Subbasin current ambient values are approximately 618 mg/L and 31.8 mg/L for TDS and nitrate as NO_3, respectively. This represents a decrease from the previous year of approximately 75 mg/L for TDS and an increase of 2.0 mg/L for nitrate as NO_3. However, as acknowledged above, changes in calculated ambient water quality could be a product of uncertainty associated with the current methodology and may not be reflective of actual changing conditions. Per DWR recommendations, SMCs for water quality and the evaluation of changes in water quality will be clarified and redefined as necessary in the next plan amendment. Furthermore, continued use of imported water

and loss of natural recharge from Henshaw Dam diversions will produce a tendency for the accumulation of TDS and nitrate in the basin. This will need to be considered for future management.

5.1.4 Depletion of Interconnected Surface Water

Very few measurements of surface flow are available in Pauma and Pala Valleys. Therefore, current understanding of surface water and groundwater interactions in the USLR Subbasin are informed by reported observations, groundwater levels (where data are available), and model-calculated streamflow and groundwater elevations using the USLRGM (what limited gaged measurements of surface flow were available were used to calibrate the surface water model component). Since surface water is not a significant source of water supply in the USLR Subbasin, undesirable effects from depletions in interconnected surface water primarily relate to potentially groundwater dependent ecosystems (GDEs). Areas of potentially dependent vegetation were identified in the USLR GSP, but these areas need to be verified through field investigation and additional data collection. RMSs and SMCs will then be refined as necessary to avoid significant and unreasonable effects to GDEs.

5.1.5 Land Subsidence

Land subsidence as a sustainability indicator is not considered applicable to the USLR Groundwater Subbasin and no sustainability management criteria were developed. However, the GSA has determined that any land subsidence caused by the lowering of groundwater levels in the subbasin would be considered significant and unreasonable. Evidence of or potential for land subsidence will be reevaluated in the five-year report.

5.1.6 Seawater Intrusion

Seawater intrusion as a sustainability indicator is not applicable to the USLR Groundwater Subbasin and no sustainability management criteria were developed. The absence of seawater intrusion will be verified in the five-year report.

5.2 Projects and Management Actions

As outlined in the USLR GSP, the Authority intends to avoid future undesirable results through active monitoring and adaptive basin management. Frequent assessment of progress towards maintaining sustainability will allow the Authority to proactively enact management actions and/or projects as needed to curb any potential issues before they lead to undesirable results. If basin monitoring indicates that additional action is necessary, the Authority will research the feasibility of implementing supplementary management actions and/or projects. Proposed projects will be prioritized by considering potential cost, available funding, and anticipated benefits to groundwater levels, storage, water quality, and/or interconnected surface water. Section 6.3 of the USLR GSP describes potential projects and management actions.

During this last year, the Authority has worked towards actions that will result in additional data collection to refine understanding of basin conditions and water demand. Groundwater level and water quality monitoring programs are essential for effective management of groundwater resources and evaluating sustainability. Understanding the amount of groundwater pumping in the basin is also crucial for basin management and evaluating whether the subbasin is being operated within the conceptual sustainable

yield. As discussed in the USLR GSP, significant data gaps exist in the subbasin. The Authority was able to obtain/extend grant funding to cover additional studies and the installation of monitoring sites.

Studies and management actions conducted during WY 2023 include:

- **Incorporation of a new monitoring location in an identified data gap area:** A previously existing well in the southern Pauma Subbasin was incorporated into GSP monitoring efforts, starting in May 2023 (see MW-31 on Figure 3). The well was offered as a monitoring point to the Authority to further understanding of basin conditions. This well provides important upgradient and near-river groundwater information in a data gap area previously identified by the GSP. Groundwater monitoring will continue to occur at this location at least twice a year, during routine GSP monitoring events, and the Authority plans to officially add this point to the GSP monitoring network during a planned refinement of the network associated with the five-year (periodic) review.
- **Installation of two new, dedicated monitoring wells:** Two clustered monitoring wells were drilled and installed May/June 2023 in lower Pauma Subbasin to fill data gaps within this portion of the basin, thereby increasing the hydrogeologic understanding of the area and providing important information on specific conditions for future inclusion in GSP updates (see MW-32 and MW-33 on Figure 3). The monitoring wells are completed at different depths (one shallow, one deep) to provide discrete information on differences in shallow and deep groundwater conditions. Characterization of shallow groundwater conditions has been identified as a data gap in the GSP. Preliminary water level measurements indicate the potential presence of shallow perched groundwater conditions in this area. In addition, the location of the monitoring wells near the San Luis Rey River will provide insight into potential groundwater/surface water interactions – another identified data gap. The Authority is planning to equip both wells with transducers in the future to provide increased resolution on water level responses to precipitation and flow events. Until then, groundwater level monitoring will continue to occur at least twice a year, during routine GSP monitoring events, and these monitoring wells will officially be added to the GSP monitoring network during a planned refinement of the network associated with the five-year review. The monitoring well completion report is provided as Appendix B (Geoscience, 2023a).
- **Aquifer pumping test:** A 48-hour constant rate pump test was performed in the Pauma Subbasin in May/June 2023 to further develop data for basin aquifer parameters, such as transmissivity and storativity, to be used for future groundwater model updates and basin conceptualization. An aquifer test measures aquifer and well characteristics (specific capacity, well efficiency relationships, transmissivity and storativity) by creating a stress and measuring the response in the test well or observation well(s). Despite coordinating a shutdown of well pumping in the vicinity of the test, observed water levels showed continued recovery throughout the test – making traditional drawdown analyses unsuitable. This unexpected trend in water levels could be due to changes in unknown nearby pumping or a product of the wet conditions experienced that spring. Nevertheless, several calculation methodologies were applied to the data collected during

the test to provide a range of potential transmissivity values. Results of the aquifer pumping test are provided as Appendix C (Geoscience, 2023b).

- **Initiation of Cost-of-Service Study:** Part of the GSP development process indicated that the Authority should develop a pumping rate or other type of funding mechanism to create a permanent funding source for basin management and sustainability monitoring. Therefore, the Authority engaged a consultant in December 2022 to perform a cost-of-service study to develop a funding mechanism for ongoing and future expenses related to GSP implementation.
- **Establishment of Work Groups:** In accordance with proposed Tier 1 Projects/Management Actions outlined in the GSP (see Section 6.3.1 of the GSP), the Authority established two work groups to advance stakeholder collaboration and sustainability. The purpose of the Interactive Tribal Work Group is to encourage tribal participation, promote basin balancing maintenance activities, and ensure that federal reserve water rights are protected. This work group is currently trying to organize a meeting with key tribal members. The Drought Resilience Work Group will help identify avenues to obtain resiliency, minimize impacts of drought conditions on sustainability criteria, and develop long-term plans to facilitate groundwater conservation in the subbasin. This work group is currently investigating funding mechanisms for recharge projects within the Subbasin.
- **Development of new well permitting coordination with the County:** The Governor's Executive Order N-7-22 requires the County of San Diego to obtain written verification from the Authority, as the GSA, prior to approving new well applications within the USLR Valley Groundwater Subbasin to verify the proposed well would not be inconsistent with sustainable groundwater management. In response, the Authority developed new protocols and an application template to facilitate coordination with the County and the assessment of potential impacts from any new proposed groundwater production well in the subbasin.
- **Ongoing water conservation and agricultural irrigation best management practices:** In addition to progressing with data collection management actions and projects, the San Diego Regional Agricultural Water Management Plan drought response conservation program (Ordinance No. 100-08), and agricultural irrigation best management practices continue to be enacted within the USLR Subbasin. Additional details on these current management actions can be found in Sections 6.2.1.1 and 6.2.1.2 in the USLR GSP.

In WY 2023, the Authority also applied for and received preliminary approval for a SGMA Implementation Grant for $1.6 million to fund additional management actions critical for advancing basin understanding and tracking sustainability. However, the USLR Valley Groundwater Subbasin was not included in the final award list. Management actions slated to be covered under the grant included:

- **Well registration and meter installation program:** Mandatory metering of all pumping entities and pumping, as allowable under SGMA (excepting de minimis domestic users), would allow the GSA to definitively understand the amount of groundwater pumping occurring in the subbasin, refine estimates of sustainable yield, and assist with sustainable management.

- **Installation of surface flow gage(s) in the subbasin**: Streamflow data is important to evaluate long-term and seasonal changes in surface flow and potential depletions of interconnected surface water and impacts on verified groundwater dependent ecosystems (GDEs). However, there are no current streamflow gages in the subbasin. The Authority is currently exploring siting and teaming options for the installation of at least one surface flow gage, which would provide more resolution and understanding of groundwater and surface water interactions.
- **Installation of CIMIS station**: A local California Irrigation Management Information System (CIMIS) station would provide more accurate evapotranspiration (ET) estimates and other climatic data for the USLR Subbasin microclimate. This would allow agricultural users in the subbasin to adjust their irrigation system timing – leading to increased efficiency and reduced water demand, as encompassed within the agricultural management plan and best management practices. The Authority has already completed a lot of research related to the installation of the stage, including identifying a suitable site location and developing general costs associated with installation.
- **Five-Year Review and Plan Amendment:** SGMA regulations require GSAs to periodically evaluate an approved GSP, at least every five years, to assess whether the GSP is performing and whether modifications are necessary. In addition, the review will evaluate progress towards meeting sustainability goals and addressing recommended corrective actions and will include an assessment of the monitoring networks. The first periodic review for the USLR Groundwater Subbasin GSP is due in January 2027. It is anticipated that this review will be accompanied by a Plan Amendment incorporating new information, revised water budgets, refinements to the monitoring network, and clarified SMC definitions.

The Authority will continue to seek funding support for these critical projects and management actions.

Additionally, as noted in the GSP, the current DWR-defined basin boundaries do not adequately represent the true extent of the groundwater subbasin based on geologic contacts and topographic changes indicating the presence of crystalline bedrock. The difference between the current DWR groundwater subbasin and proposed subbasin is shown on Figure 1. The Authority plans to request a scientific basin modification for the refinement of the USLR Groundwater Subbasin boundaries when the next modification period begins. The DWR website indicates that the next basin modification period is not expected “before 2022,” but no additional information is provided.

5.3 Stakeholder Outreach and Engagement

The Authority conducts regular monthly Board meetings to support ongoing basin management activities in support of the GSP, discuss implementation of potential projects and management actions to further sustainability in the Subbasin, and receive input from the public. These meetings are typically held the third Tuesday of each month at 3:00 p.m., at the Offices of Yuima Municipal Water District. Meeting agendas, supporting materials, and meeting minutes are posted on the Authority’s website at https://uslrgma.com/.

During development of this annual report, the Authority also sent out a data request letter to basin stakeholders requesting additional information on groundwater pumping in the subbasin and inviting

stakeholders to participate in basin monitoring efforts. This information will facilitate understanding of hydrologic conditions and water use in the subbasin and be used in future annual reports and model updates to refine groundwater pumping estimates, generate groundwater elevation contours, and calculate change in groundwater storage. Stakeholder outreach will continue into WY 2024, including outreach efforts by the Interactive Tribal Work Group.

5.4 Progress on Addressing Recommended Corrective Actions

DWR issued approval of the GSP for the USLR Groundwater Subbasin on January 18, 2024, and provided recommended corrective actions (RCAs) to enhance the GSP and facilitate future evaluations (DWR, 2023a). DWR strongly encourages the Authority to address these RCAs prior to the first periodic evaluation (five-year review), which is due to DWR in January 2027. Given the recent issuance of GSP approval and recommended actions and per new guidance documentation issued by DWR in October 2023 regarding annual reports, periodic evaluations, and plan amendments, this section of the annual report has been added to provide an update on what actions have been taken to address the RCAs. Table 5-3 below summarizes each RCA and current progress and plan to address each of DWR's recommendations.

Table 5-3. Summary of Recommended Corrective Actions

Recommended Corrective Action Summary	Current Progress and Next Steps
RCA 1 – Administrative Information • Update the GMA's administrative information. • Update GSA spatial coverage to clearly show area covered by GSP. • Describe how groundwater management considers tribal interests and fully respects existing federal water rights.	• Updated administrative information for the GMA, including the governance structure and decision-making process is included in this annual report as Appendix A. This information will also be included in the next GSP amendment. • The GSA will coordinate with DWR staff to update the agency information and coverage map for the online SGMA Portal.
RCA 2 – Water Budget • Provide water budgets for both groundwater and surface water systems. • Continue stakeholder outreach. • Update estimates of water budget and develop management approach to achieve sustainability notwithstanding lack of data or jurisdiction over federally reserved lands.	• Data gaps continue to be filled with new information as data become available. An updated discussion of data gaps will be provided in the next GSP amendment. • Ongoing communication occurs as needed with basin stakeholders regarding important GSP notifications and implementation topics. Information is also posted to the GMA's website for public information. • Updated surface water and groundwater budgets will be provided in the next GSP amendment following incorporation of new data and model update.

Recommended Corrective Action Summary	Current Progress and Next Steps
RCA 3 – Sustainability Indicators for Groundwater Levels • Refine SMC for groundwater levels and clarify definition of undesirable results. • Conduct well impact analysis to evaluate if selected MTs are protective of domestic wells. • Describe how development of MTs for groundwater levels considered potential impacts to beneficial users and use, including tribal interests. • Describe how MTs for groundwater levels will avoid undesirable results for other sustainability indicators.	• SMC for groundwater level and groundwater storage will be reevaluated at the 5-year report and revised, as necessary, to protect beneficial use and users. Any updated SMC will be provided in the next GSP amendment. • A well impact analysis will be conducted as part of the next GSP amendment.
RCA 4 – Sustainability Indicators for Degraded Water Quality • Define significant and undesirable effects related to groundwater quality and define undesirable results based on MT exceedance.	• Groundwater quality continues to be collected and evaluated annually. • Groundwater quality conditions will be re-evaluated and updated in the next GSP amendment. • Undesirable effects from degraded groundwater quality will be clarified/redefined in the next GSP amendment.
RCA 5 – Sustainability Indicators for Land Subsidence • Establish SMC for land subsidence, incorporating review of InSAR data.	• Current annual reporting incorporates review of InSAR data to verify no land subsidence is occurring in the Subbasin. • SMC for land subsidence will be redefined in the next GSP amendment after re-evaluation of SMC for groundwater levels.

Recommended Corrective Action Summary	Current Progress and Next Steps
RCA 6 – Sustainability Indicators for Interconnected Surface Water • Establish specific SMC for depletions of interconnected surface water. • Continue to address data gaps related to interconnected surface water, including location and timing. • Collaborate/coordinate with local, state, and federal regulatory agencies and interested parties to understand beneficial uses and users that may be impacted by pumping induced surface water depletion.	• Two new monitoring wells were drilled in WY 2023 (USLR MW-1S and USLR MW-1D) near the San Luis Rey River in the Pauma Subbasin. The GSA will be evaluating monitoring data from these wells to see if they will provide additional clarity on interconnected surface water. As part of the ongoing management action to address data gaps, the GSA intends to install transducers in these wells to improve water level measurement timing resolution and is currently exploring potential funding. • The GSA is currently exploring potential partnership opportunities, technical assistance, and funding options for establishing at least one surface water monitoring gage in the Subbasin. • SMC for interconnected surface water will be defined in the next GSP amendment.

6.0 Conclusions

Information provided in this second annual report of the USLR Groundwater Subbasin, which covers the period for WY 2023 (i.e., October 2022 through September 2023), indicate the following conditions:

- Precipitation during WY 2023 is classified as wet based on recorded precipitation of 47.8 inches at Henshaw Dam. Long-term average precipitation at this station is approximately 24.4 inches.
- Groundwater elevations in fall 2023 were higher in every monitored well than measured elevations in fall 2022 due to the significant amount of precipitation experienced in the groundwater basin during WY 2023. The greatest increases in groundwater elevations are seen in wells in the upper and lower Pauma Subbasin areas. The average fall water level increase throughout Pauma Subbasin was approximately 30 ft.
- Groundwater in storage was estimated to have increased by approximately 27,700 acre-ft during WY 2023.
- Groundwater levels and groundwater in storage for WY 2023 in all RMSs are above MTs – indicating the absence of undesirable results related to chronic declines in groundwater levels or groundwater storage. Water levels in at least 79% of the RMSs are also above MOs.
- WY 2023 average TDS concentrations for available water quality measurements range from 260 mg/L to 850 mg/L while nitrate (NO_3) concentrations range from non-detect (<0.9 mg/L) to 220 mg/L. The highest nitrate (NO_3) concentrations from WY 2023 are located in the upper portions of Pauma Subbasin, above Sycamore Canyon. Historical water quality data from downgradient subbasins (i.e., Bonsall and Mission Subbasins), also indicates that TDS tends to increase downgradient. Increased levels of nitrate are found in the Pauma mid-Subbasin area (vicinity of MW-21 and MW-22) as well as in the Rincon area.
- Current ambient water quality in Pauma Subbasin (WY 2018-2023) is approximately 618 mg/L and 31.8 mg/L for TDS and nitrate as NO_3, respectively. This represents a decrease from the previous year of approximately 75 mg/L for TDS and an increase of 2.0 mg/L for nitrate as NO_3. However, changes in calculated ambient water quality could be a product of uncertainty associated with the current methodology and may not be reflective of actual changing conditions. Per DWR recommendations, SMCs for water quality and the evaluation of changes in water quality will be clarified and redefined as necessary in the next plan amendment.
- While land subsidence is not considered a concern for the USLR Groundwater Subbasin, available InSAR data confirmed that no significant land subsidence occurred during WY 2023.
- Total water use in the subbasin in WY 2023 was estimated to be approximately 11,800 acre-ft, approximately 5,800 acre-ft less than what was estimated for the previous year. This includes 7,300 acre-ft of groundwater pumping, 3,200 acre-ft of imported water, and nearly 1,300 acre-ft of local surface water. The reduced water usage can be attributed to the wet conditions experienced during WY 2023; increased utilization of local surface water supplies and the ability of precipitation to satisfy a portion of agricultural water requirements lead to reduced need for imported water supplies and reduced reliance on groundwater pumping.

- WY 2023 groundwater pumping is well below the estimated safe yield for the USLR Groundwater Subbasin of between 12,700 acre-ft/yr (calculated for long-term historical conditions from 1991 through 2020) to 20,300 acre-ft/yr (calculated for current conditions from 2016 through 2020).

6.1 Next Steps

Progress towards GSP implementation and sustainability will continue. New information will be used to assess, clarify, and refine RMSs and SMCs as needed during the next periodic assessment and plan amendment (due to DWR in January 2027), following DWR guidance identified in their RCAs. Results of basin monitoring efforts and investigations performed this coming water year will be presented in the next annual report (WY 2024), to be submitted to DWR by April 1, 2025. Next steps and recommendations include:

- Continue stakeholder outreach and data collection.
- Spring 2024 and fall 2024 monitoring events for water level and water quality at GSP Monitoring Network wells.
- Continue to refine estimates of groundwater pumping and water use in the Subbasin as information becomes available.
- Update existing groundwater contours if additional data become available and develop contours for WY 2024.
- Refine monitoring network by incorporating new wells.
- Develop a better understanding of interconnected surface waters and potential GDEs in the subbasin through additional data collection.
- Continue developing Interactive Tribal and Drought Resilience Work Groups.
- Continue pursuing funding opportunities to support identified projects and management actions.
- Work with DWR staff to update GSA information on SGMA Portal.
- Pursue scientific basin modification for the refinement of the USLR Groundwater Subbasin boundaries.

7.0 References

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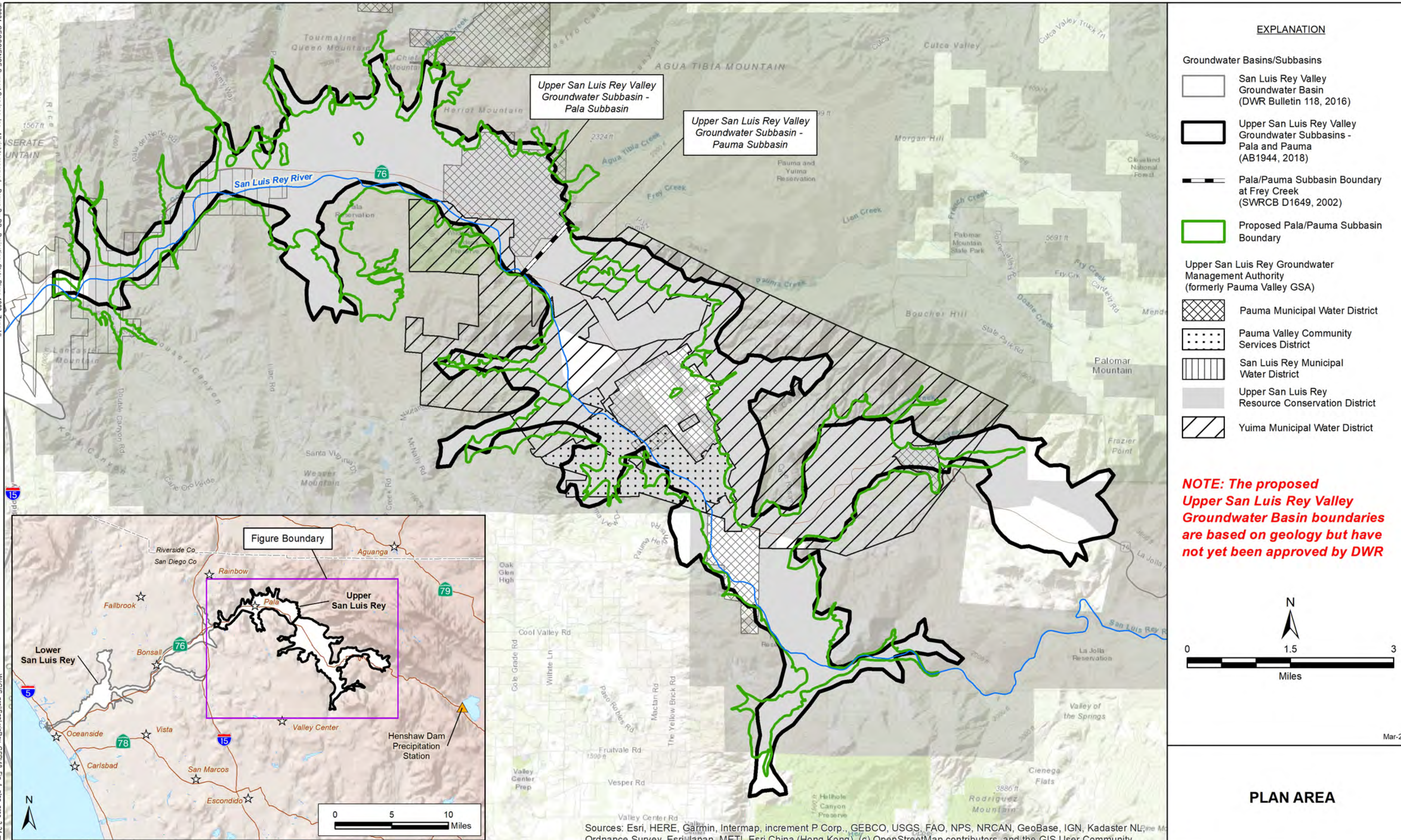
FIGURES



UPPER SAN LUIS REY GROUNDWATER MANAGEMENT AUTHORITY

UPPER SAN LUIS REY VALLEY GROUNDWATER SUSTAINABILITY PLAN ANNUAL REPORT - WATER YEAR 2023

FIGURE 1

GEOSCIENCE

Cumulative Departure from Mean Annual Precipitation
Henshaw Dam Station (1943-2023)

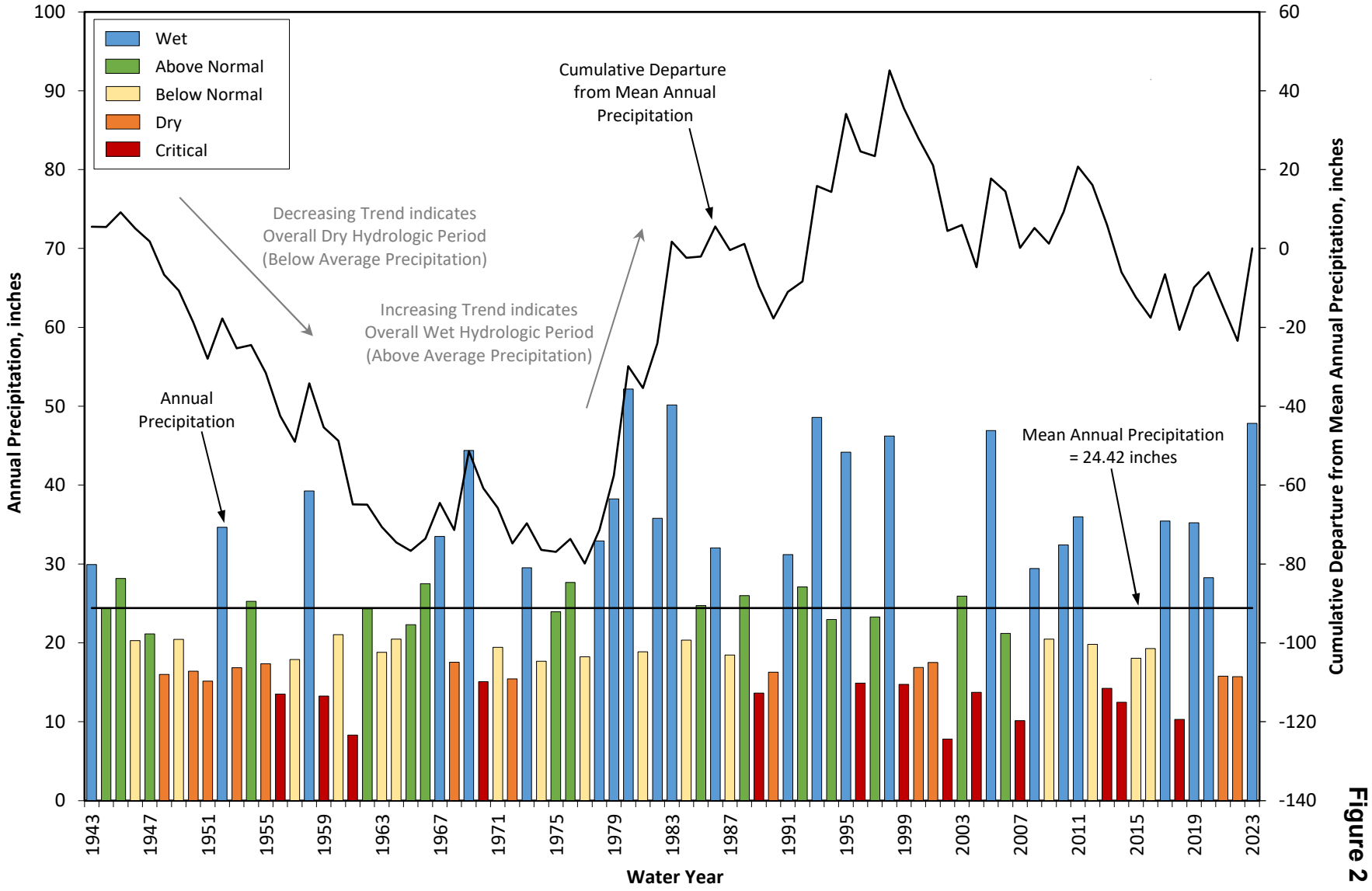
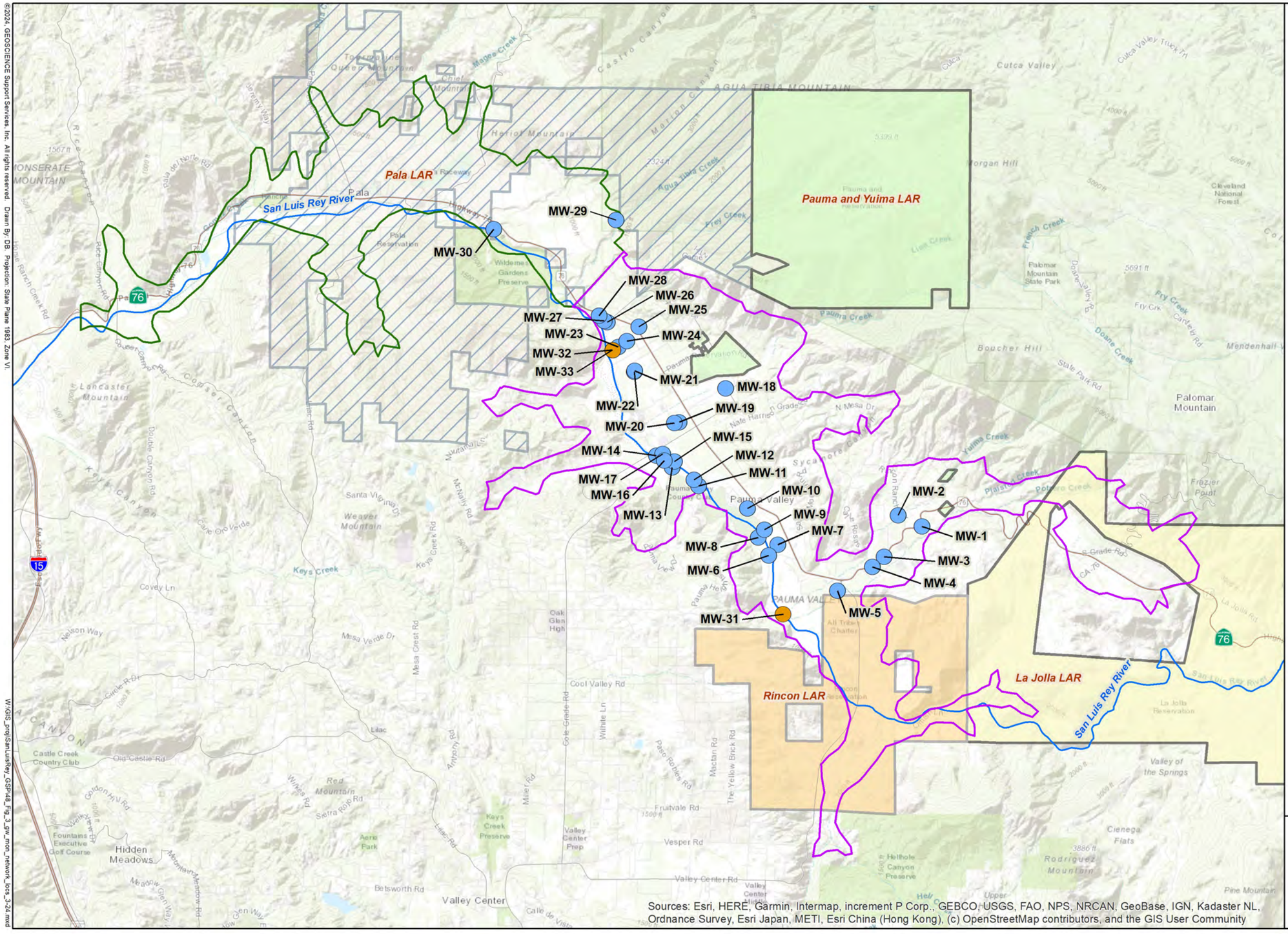


Figure 2



EXPLANATION

- Monitoring Network Well Location (Water Level)
- New Water Level Monitoring Well Location
- Pala Subbasin Boundary (SWRCB D1649, 2002; DWR Bulletin 118, 2020; and AB1944, 2018)
- Pauma Subbasin Boundary (SWRCB D1649, 2002; and DWR Bulletin 118, 2020)

Land Area Representation (BIA, 2020)

- La Jolla LAR
- Pala LAR
- Pauma and Yuima LAR
- Rincon LAR

N

0 1 2

Miles

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

MONITORING NETWORK

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UPPER SAN LUIS REY GROUNDWATER MANAGEMENT AUTHORITY

UPPER SAN LUIS REY VALLEY GROUNDWATER SUSTAINABILITY PLAN ANNUAL REPORT - WATER YEAR 2023

FIGURE 3

GEOSCIENCE

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MW-29
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MW-6
MW-2
MW-1
MW-3
MW-4
MW-5
MW-31

Pala LAR
Pauma and Yuima LAR
La Jolla LAR
Rincon LAR
San Luis Rey River

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

EXPLANATION

- Representative Monitoring Site with Minimum Threshold (MT) and Measurable Objective (MO) for Groundwater Elevation
- Monitoring Network Well Site
- New Water Level Monitoring Well Location
- Pala Subbasin Boundary (SWRCB D1649, 2002; DWR Bulletin 118, 2020; and AB1944, 2018)
- Pauma Subbasin Boundary (SWRCB D1649, 2002; and DWR Bulletin 118, 2020)
- Model-Estimated Depth to Groundwater Less Than 50 ft (2020) (represents location for potential interconnected surface waters, as suggested by the Nature Conservancy. Additional information needs to be collected to verify actual areas of interconnected groundwater / surface water)
- Model-Estimated Depth to Water 20 - 30 ft (2020) (30 ft represents the depth suggested by the Nature Conservancy to be used in identification of potential GDEs. Additional information needs to be collected to verify actual extent of GDEs)

Land Area Representation (BIA, 2020)

- La Jolla LAR
- Pala LAR
- Pauma and Yuima LAR
- Rincon LAR

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Miles

Mar-24

REPRESENTATIVE MONITORING SITES (RMSs)

UPPER SAN LUIS REY GROUNDWATER MANAGEMENT AUTHORITY

UPPER SAN LUIS REY VALLEY GROUNDWATER SUSTAINABILITY PLAN ANNUAL REPORT - WATER YEAR 2023

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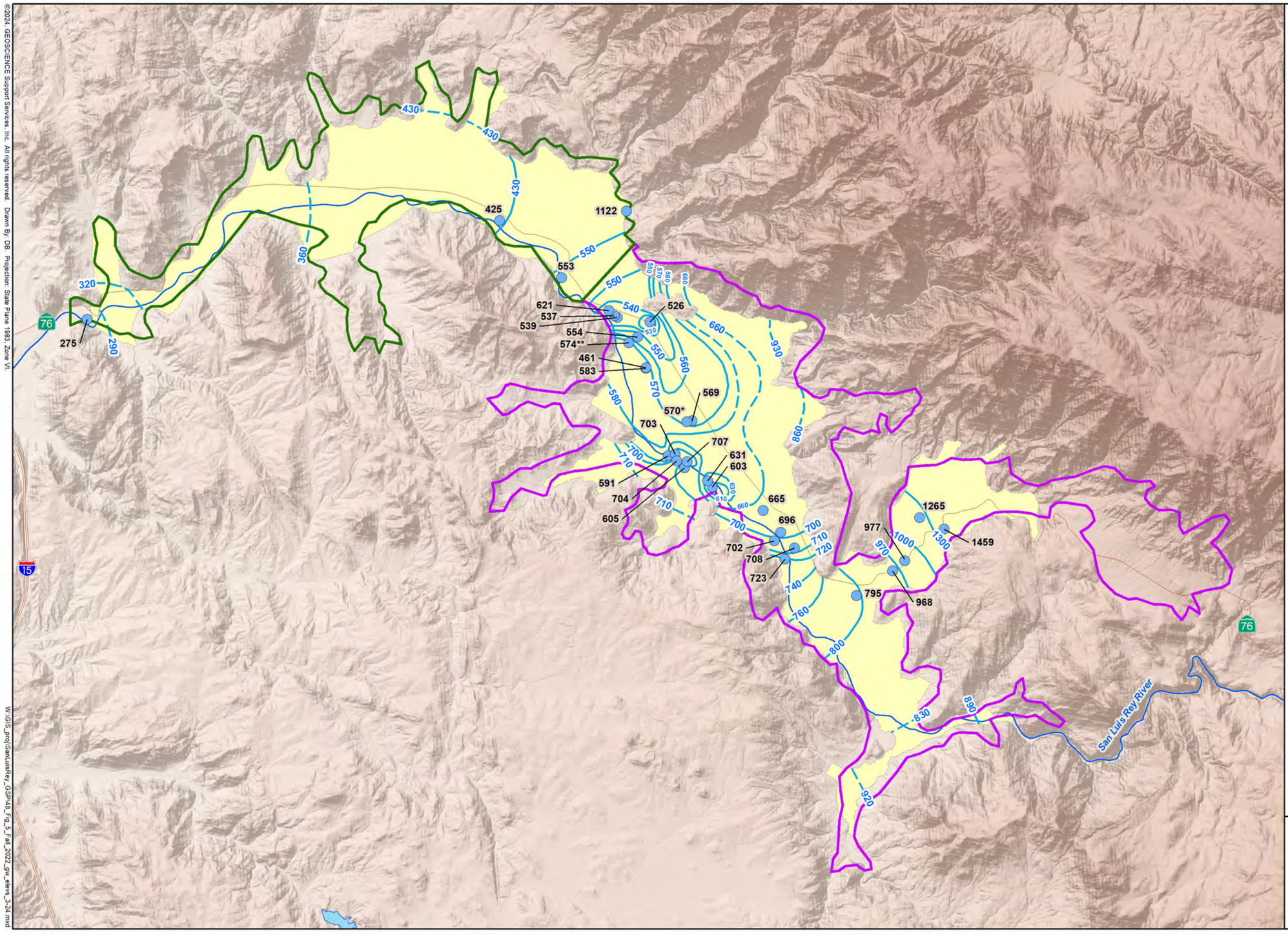
FIGURE 4

GEOSCIENCE



EXPLANATION

- Pala Subbasin Boundary (SWRCB D1649, 2002; DWR Bulletin 118, 2020; and AB1944, 2018)
- Pauma Subbasin Boundary (SWRCB D1649, 2002; and DWR Bulletin 118, 2020)
- 610 — Fall 2022 Groundwater Elevations (ft amsl) (dashed where inferred)
- 579 — Well with Fall 2022 Water Level Measurement (ft amsl)
  * Recovering Water Level
  ** Pumping Water Level
- Active Model Area (representative of alluvial aquifer area)

N

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Miles

Mar-24

GROUNDWATER ELEVATIONS FALL 2022

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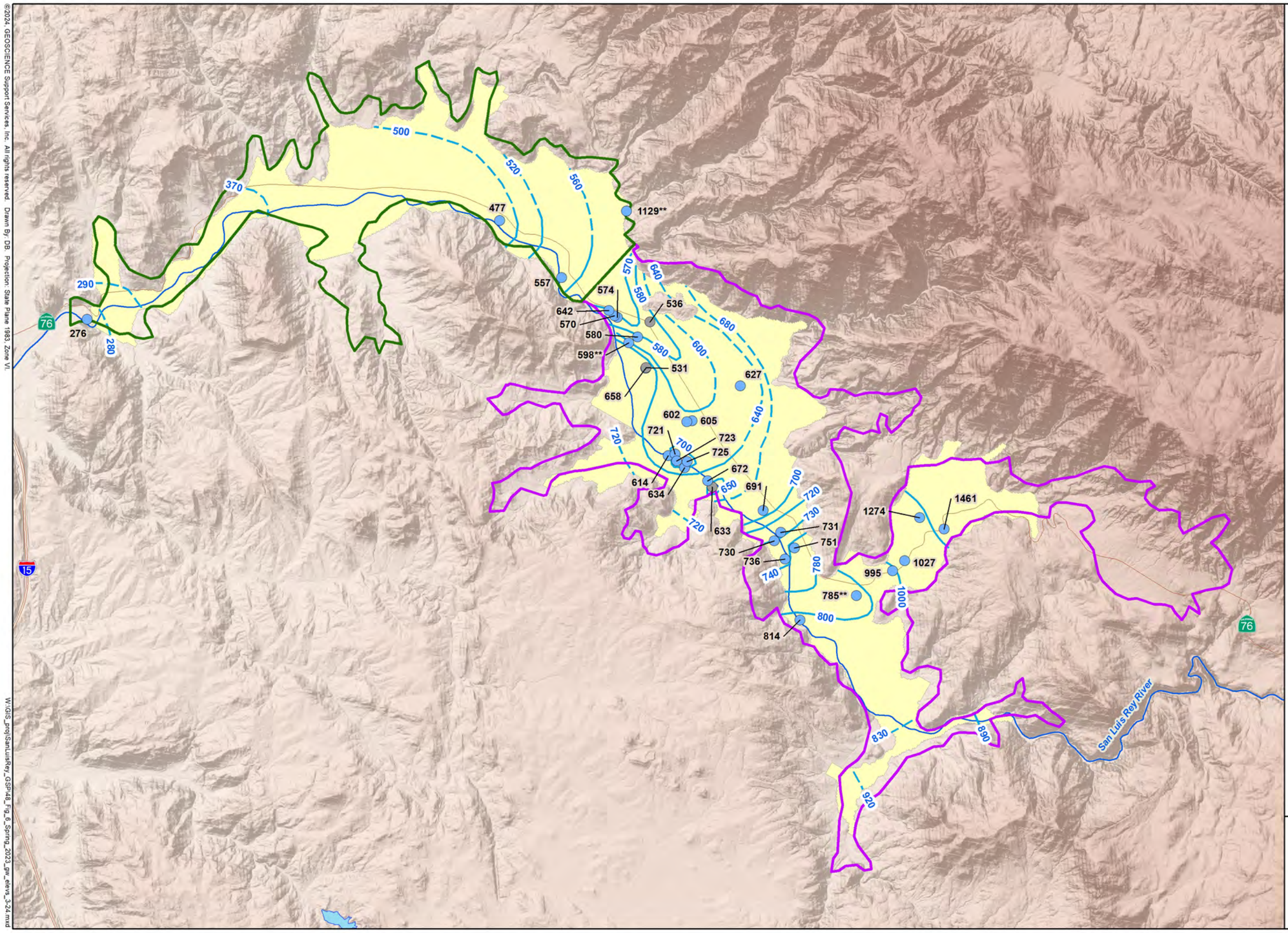
UPPER SAN LUIS REY GROUNDWATER MANAGEMENT AUTHORITY

UPPER SAN LUIS REY VALLEY GROUNDWATER SUSTAINABILITY PLAN ANNUAL REPORT - WATER YEAR 2023

FIGURE 5

GEOSCIENCE



EXPLANATION

- Pala Subbasin Boundary (SWRCB D1649, 2002; DWR Bulletin 118, 2020; and AB1944, 2018)
- Pauma Subbasin Boundary (SWRCB D1649, 2002; and DWR Bulletin 118, 2020)
- 610 — Spring 2023 Groundwater Elevations (ft amsl) (dashed where inferred)
- 579 — Well with Spring 2023 Water Level Measurement (ft amsl)
  * Recovering Water Level
  ** Pumping Water Level
  Note: Gray color indicates bedrock/suspected bedrock Well with anomalous level - measurement not used
- Active Model Area (representative of alluvial aquifer area)

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GROUNDWATER ELEVATIONS SPRING 2023

UPPER SAN LUIS REY GROUNDWATER MANAGEMENT AUTHORITY

UPPER SAN LUIS REY VALLEY GROUNDWATER SUSTAINABILITY PLAN ANNUAL REPORT - WATER YEAR 2023

FIGURE 6

GEOSCIENCE

EXPLANATION

Pala Subbasin Boundary (SWRCB D1649, 2002; DWR Bulletin 118, 2020; and AB1944, 2018)

Pauma Subbasin Boundary (SWRCB D1649, 2002; and DWR Bulletin 118, 2020)

610 — Fall 2023 Groundwater Elevations (ft amsl) (dashed where inferred)

579 Well with Fall 2023 Water Level Measurement (ft amsl)
* Recovering Water Level
** Pumping Water Level
Note: Gray color indicates bedrock/suspected bedrock
Well with anomalous level - measurement not used

Active Model Area (representative of alluvial aquifer area)

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Miles

Mar-24

GROUNDWATER ELEVATIONS FALL 2023

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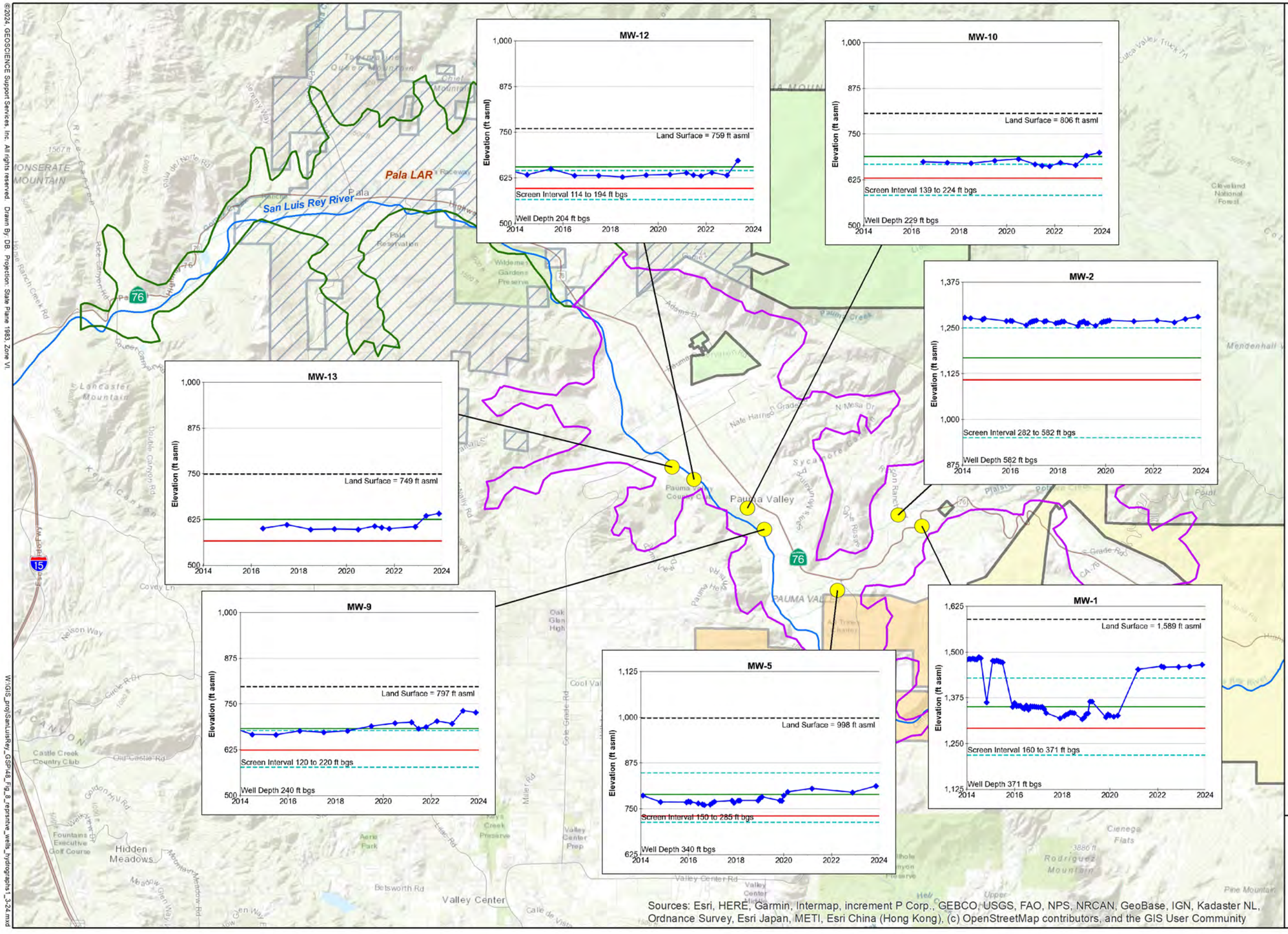
UPPER SAN LUIS REY GROUNDWATER MANAGEMENT AUTHORITY

UPPER SAN LUIS REY VALLEY GROUNDWATER SUSTAINABILITY PLAN ANNUAL REPORT - WATER YEAR 2023

FIGURE 7

GEOSCIENCE



EXPLANATION

- Representative Monitoring Site with Minimum Threshold (MT) and Measurable Objective (MO) for Groundwater Elevation
- Pala Subbasin Boundary (SWRCB D1649, 2002; DWR Bulletin 118, 2020; and AB1944, 2018)
- Pauma Subbasin Boundary (SWRCB D1649, 2002; and DWR Bulletin 118, 2020)

Land Area Representation (BIA, 2020)

- La Jolla LAR
- Pala LAR
- Pauma and Yuima LAR
- Rincon LAR

- Minimum Threshold
- Measurable Objective
- Screen (top and bottom)
- Land Surface
- Measured Groundwater Level

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Miles

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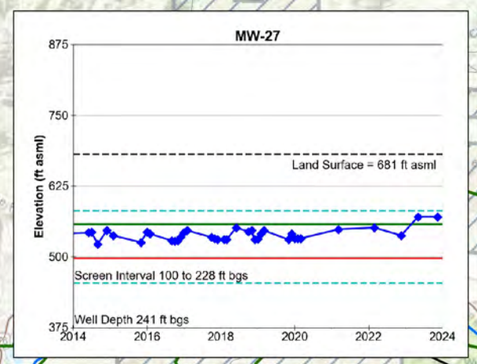
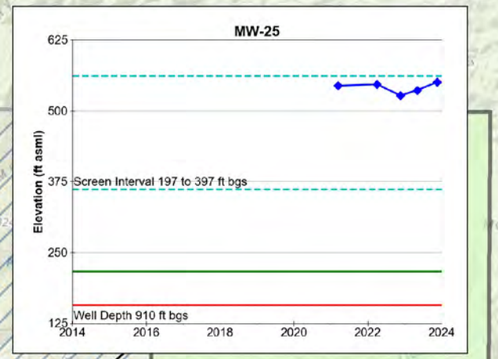
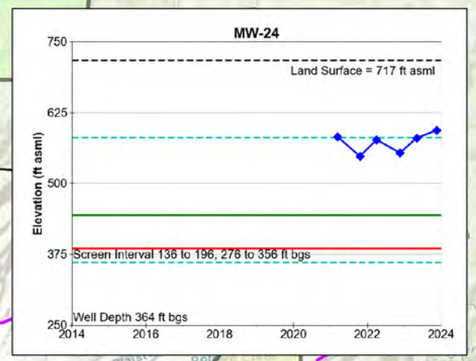
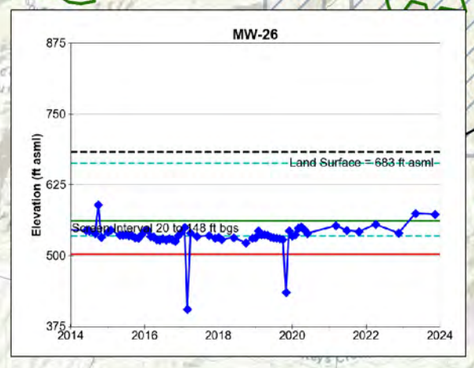
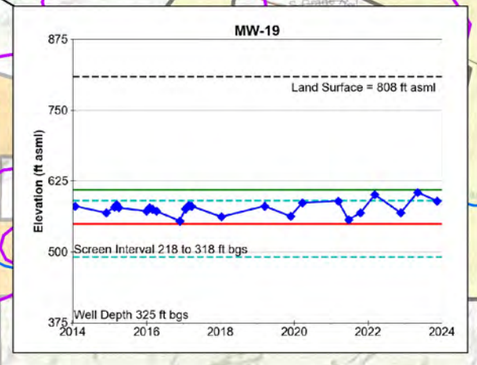
GROUNDWATER HYDROGRAPHS FOR REPRESENTATIVE WELLS 1 of 2

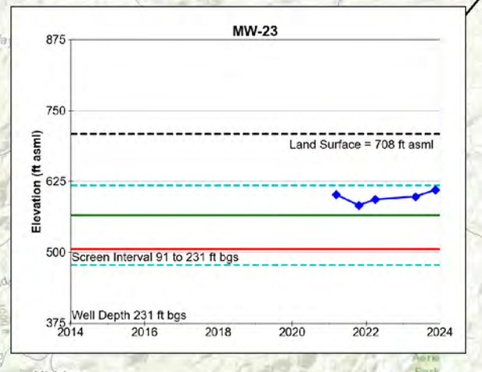


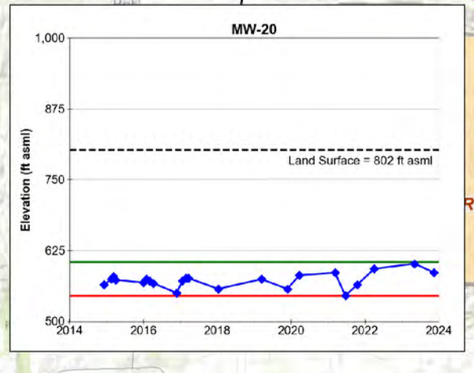












EXPLANATION

- Representative Monitoring Site with Minimum Threshold (MT) and Measurable Objective (MO) for Groundwater Elevation
- Pala Subbasin Boundary (SWRCB D1649, 2002; DWR Bulletin 118, 2020; and AB1944, 2018)
- Pauma Subbasin Boundary (SWRCB D1649, 2002; and DWR Bulletin 118, 2020)

Land Area Representation (BIA, 2020)

- La Jolla LAR
- Pala LAR
- Pauma and Yuima LAR
- Rincon LAR

- Minimum Threshold
- Measurable Objective
- Screen (top and bottom)
- Land Surface
- Measured Groundwater Level

N

0 1 2

Miles

Mar-24

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

GROUNDWATER HYDROGRAPHS FOR REPRESENTATIVE WELLS 2 of 2

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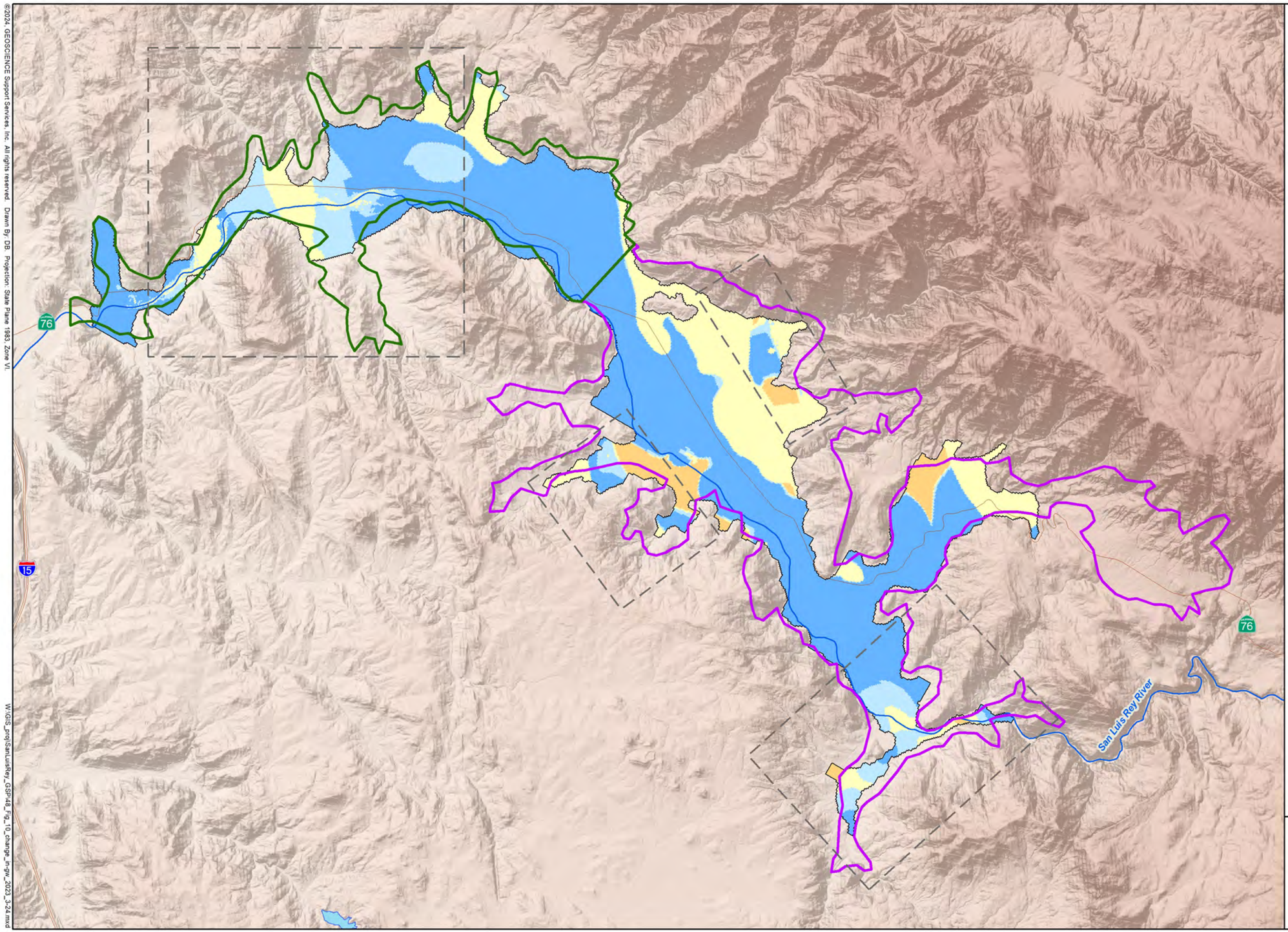

EXPLANATION

Pala Subbasin Boundary (SWRCB D1649, 2002; DWR Bulletin 118, 2020; and AB1944, 2018)

Pauma Subbasin Boundary (SWRCB D1649, 2002; and DWR Bulletin 118, 2020)

Active Model Area (representative of alluvial aquifer area)

Change in Groundwater Storage

Fall 2023 minus Fall 2022
(Total storage change calculated for each colored area)

Increasing Storage

- 28,800 acre-ft
- 340 acre-ft

Decreasing Storage

- -15 acre-ft
- -1,400 acre-ft

Area with limited water level control and therefore increased uncertainty for change in groundwater storage calculation

N

0 1.25 2.5

Miles

Mar-24

CHANGE IN GROUNDWATER STORAGE WATER YEAR 2023

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UPPER SAN LUIS REY GROUNDWATER MANAGEMENT AUTHORITY

UPPER SAN LUIS REY VALLEY GROUNDWATER SUSTAINABILITY PLAN ANNUAL REPORT - WATER YEAR 2023

FIGURE 10

GEOSCIENCE

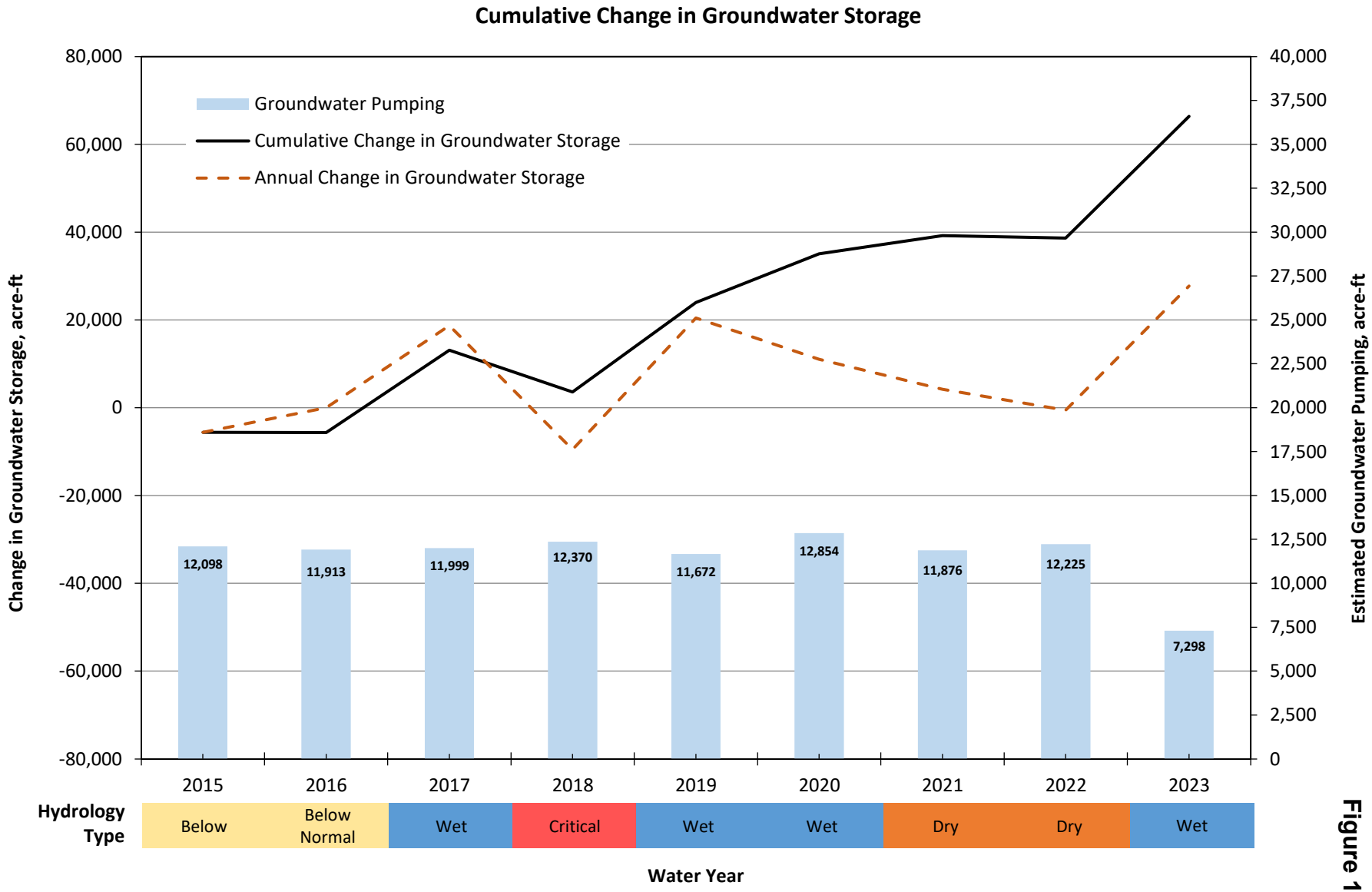
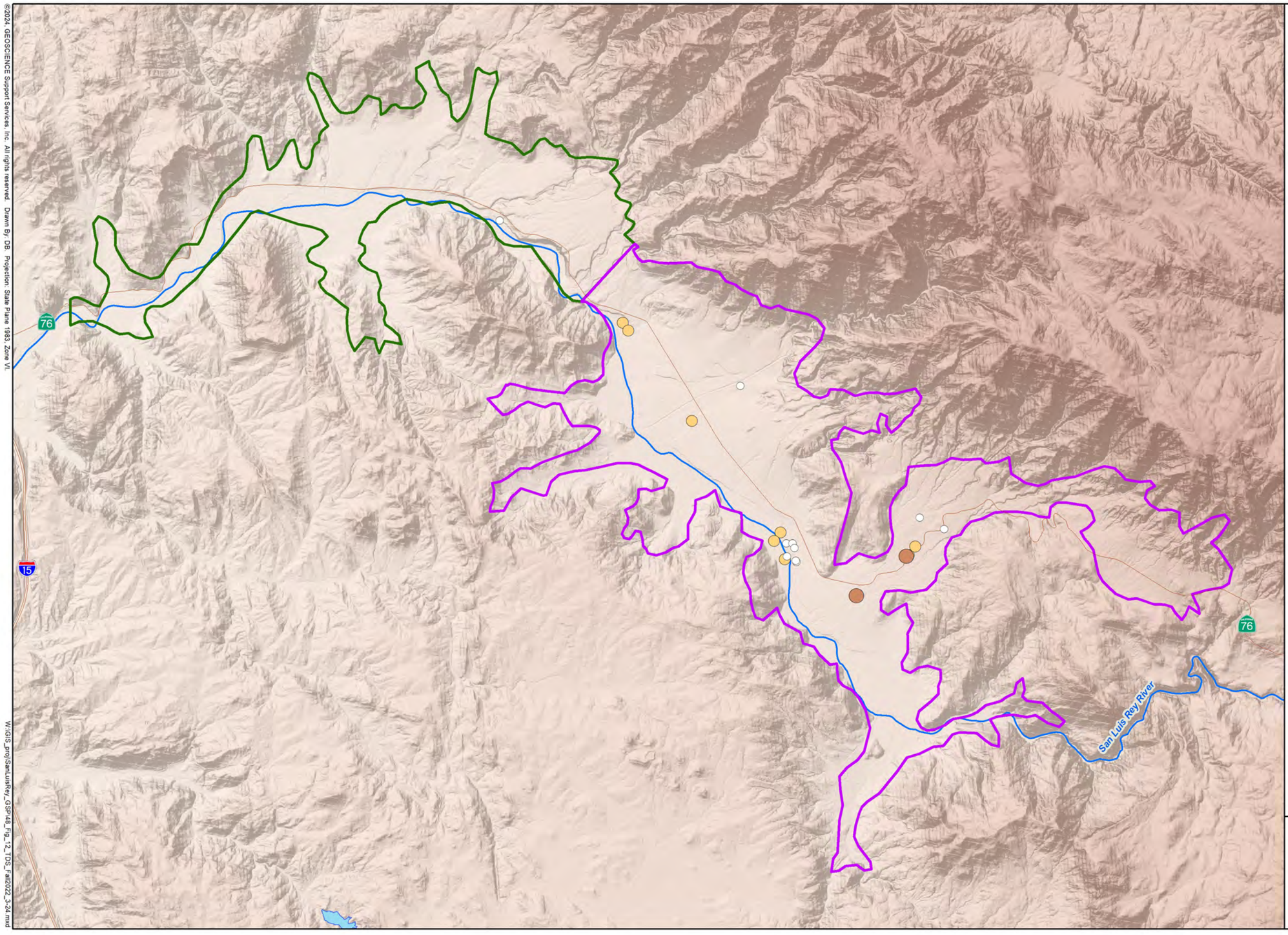

Cumulative Change in Groundwater Storage
Groundwater Pumping
Cumulative Change in Groundwater Storage
Annual Change in Groundwater Storage
Change in Groundwater Storage, acre-ft
Estimated Groundwater Pumping, acre-ft
80,000
60,000
40,000
20,000
0
-20,000
-40,000
-60,000
-80,000
40,000
37,500
35,000
32,500
30,000
27,500
25,000
22,500
20,000
17,500
15,000
12,500
10,000
7,500
5,000
2,500
0
12,098
11,913
11,999
12,370
11,672
12,854
11,876
12,225
7,298
2015
2016
2017
2018
2019
2020
2021
2022
2023
Hydrology Type
Below
Below Normal
Wet
Critical
Wet
Wet
Dry
Dry
Wet
Water Year

Figure 11



EXPLANATION

Pala Subbasin Boundary (SWRCB D1649, 2002; DWR Bulletin 118, 2020; and AB1944, 2018)

Pauma Subbasin Boundary (SWRCB D1649, 2002; and DWR Bulletin 118, 2020)

TDS Concentration, mg/L
(Source: DDW CLIP and Supplemental Water Quality Sampling, 2023)

- 0 - 500
- 500 - 800
- 800 - 1,000
- > 1,000

Primary Maximum Contaminant Level for TDS = 1,000 mg/L

N

0 1.25 2.5

Miles

Mar-24

TOTAL DISSOLVED SOLIDS WATER YEAR 2023

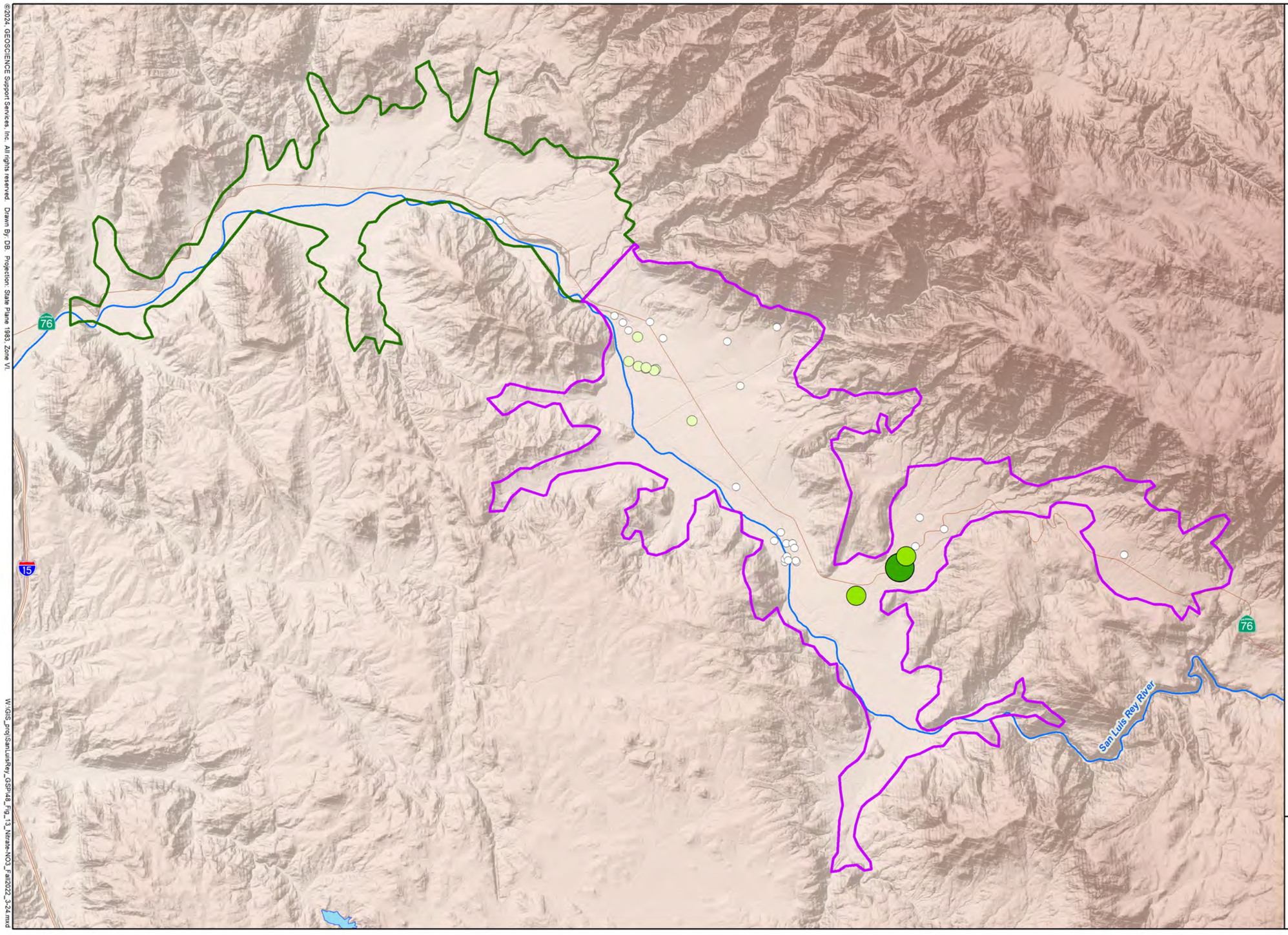
W:\GIS_proj\SanLuisRey_GSP\48_Fig_12_TDS_Fall2023_3-24.mxd

UPPER SAN LUIS REY GROUNDWATER MANAGEMENT AUTHORITY

UPPER SAN LUIS REY VALLEY GROUNDWATER SUSTAINABILITY PLAN ANNUAL REPORT - WATER YEAR 2023

FIGURE 12

GEOSCIENCE



EXPLANATION

Pala Subbasin Boundary (SWRCB D1649, 2002; DWR Bulletin 118, 2020; and AB1944, 2018)

Pauma Subbasin Boundary (SWRCB D1649, 2002; and DWR Bulletin 118, 2020)

Nitrate (as NO3), mg/L
(Source: DDW CLIP and Supplemental Water Quality Sampling, 2023)

- 0 - 45
- 45 -90
- 90 - 135
- > 135

Primary Maximum Contaminant Level for Nitrate (as NO3) = 45 mg/L

N

0 1.25 2.5

Miles

Mar-24

NITRATE (as NO3) CONCENTRATIONS - WATER YEAR 2023

W:\GIS_proj\SanLuisRey_GSP\48_Fig_13_Nitrate-NO3_Fall2022_3-24.mxd

UPPER SAN LUIS REY GROUNDWATER MANAGEMENT AUTHORITY

UPPER SAN LUIS REY VALLEY GROUNDWATER SUSTAINABILITY PLAN ANNUAL REPORT - WATER YEAR 2023

FIGURE 13

GEOSCIENCE

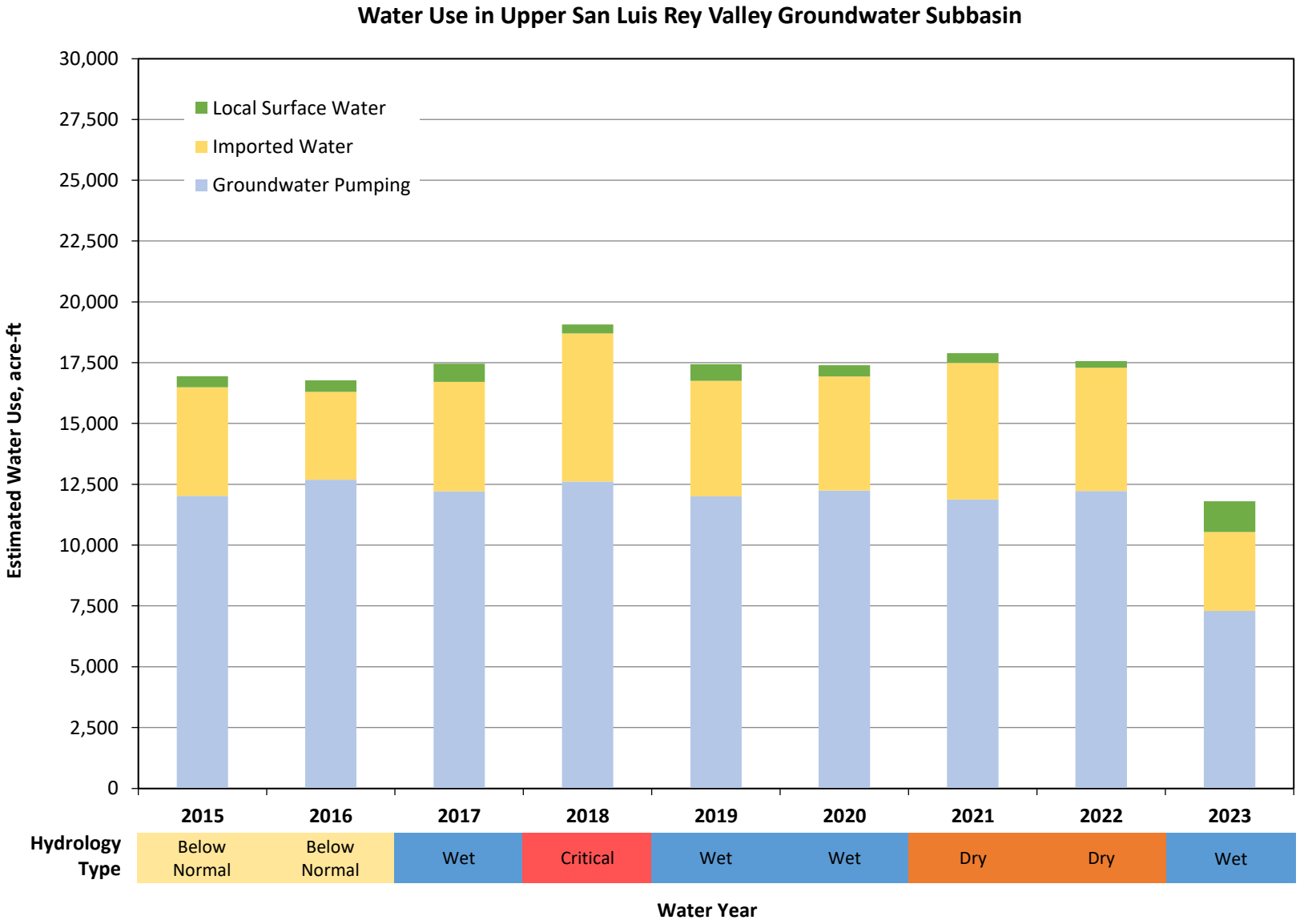
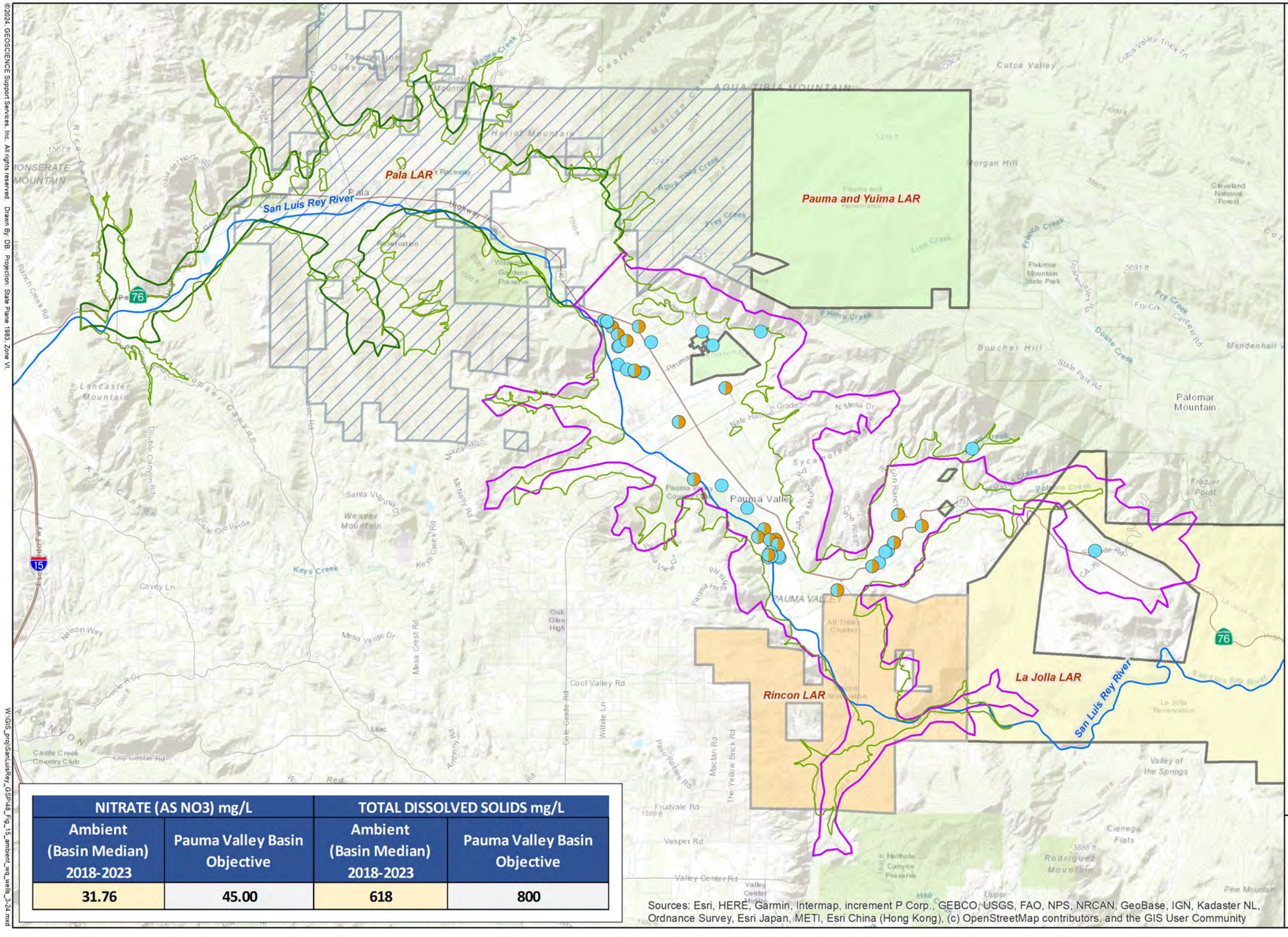

Water Use in Upper San Luis Rey Valley Groundwater Subbasin
Local Surface Water
Imported Water
Groundwater Pumping
Estimated Water Use, acre-ft
30,000
27,500
25,000
22,500
20,000
17,500
15,000
12,500
10,000
7,500
5,000
2,500
0
2015
2016
2017
2018
2019
2020
2021
2022
2023
Hydrology Type
Below Normal
Below Normal
Wet
Critical
Wet
Wet
Dry
Dry
Wet
Water Year

Figure 14



NITRATE (AS NO3) mg/L		TOTAL DISSOLVED SOLIDS mg/L	
Ambient (Basin Median) 2018-2023	Pauma Valley Basin Objective	Ambient (Basin Median) 2018-2023	Pauma Valley Basin Objective
31.76	45.00	618	800

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

EXPLANATION

Well Used to Calculate WY 2018-2023 Ambient Water Quality (3+ water quality readings from WY 2018-2023)

- Nitrate (as NO3)
- Total Dissolved Solids (TDS)
- Pala Subbasin Boundary (SWRCB D1649, 2002; DWR Bulletin 118, 2020; and AB1944, 2018)
- Pauma Subbasin Boundary (SWRCB D1649, 2002; and DWR Bulletin 118, 2020)
- Proposed Pala/Pauma Subbasin Boundary

Land Area Representation (BIA, 2020)

- La Jolla LAR
- Pala LAR
- Pauma and Yuima LAR
- Rincon LAR

N

0 1 2

Miles

Mar-24

WELLS USED FOR CALCULATION OF AMBIENT WATER QUALITY

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TABLES

Table 1. Water Year 2023 Water Level Measurements from Monitoring Network Wells

ID	Date	Time	Depth to Water	Reference Point Elevation	Water Level Elevation	Notes
			(ft)	(ft amsl)	(ft amsl)	
MW-1	11/21/22	8:51	131.84	1,590.91	1,459.07	
MW-1	05/05/23	8:32	130.07	1,590.91	1,460.84	
MW-2	11/21/22	9:02	268.29	1,533.45	1,265.16	
MW-2	05/05/23	8:40	258.97	1,533.45	1,274.48	
MW-3	11/21/22	8:40	300.82	1,278.20	977.38	
MW-3	05/05/23	8:51	250.74	1,278.20	1,027.46	
MW-4	11/21/22	8:30	231.76	1,199.66	967.90	
MW-4	05/05/23	9:01	204.20	1,199.66	995.46	
MW-5	11/21/22	8:12	205.72	1,000.24	794.52	
MW-5	05/05/23	8:07	215.35	1,000.24	784.89	Pumping
MW-6	11/21/22	9:21	82.10	805.36	723.26	
MW-6	05/05/23	9:17	69.10	805.36	736.26	
MW-7	11/22/22	9:47	94.04	801.90	707.86	
MW-7	05/08/23	9:32	51.18	801.90	750.72	
MW-8	11/22/22	9:08	97.88	799.70	701.82	
MW-8	05/08/23	9:05	69.41	799.70	730.29	
MW-9	11/22/22	9:39	102.21	798.24	696.03	
MW-9	05/08/23	9:27	66.85	798.24	731.39	
MW-10	11/22/22	9:28	144.14	808.66	664.52	
MW-10	05/08/23	9:20	117.95	808.66	690.71	
MW-11	11/22/22	9:20	164.82	768.07	603.25	New RP is 2.75 ft ags/ Old RP is 2.50 ft ags.
MW-11	05/08/23	9:16	134.70	768.07	633.37	
MW-12	11/22/22	8:09	130.75	762.18	631.43	New RP: 3.06 ft ags/ Old RP: 1.53 ft ags
MW-12	05/08/23	8:17	89.83	762.18	672.35	
MW-13	11/22/22	8:17	145.45	750.67	605.22	
MW-13	05/08/23	8:23	116.17	750.67	634.50	
MW-14	11/22/22	8:25	154.31	744.83	590.52	
MW-14	05/08/23	8:33	130.72	744.83	614.11	
MW-15	11/22/22	8:39	49.76	756.69	706.93	
MW-15	05/08/23	8:40	31.75	756.69	724.94	
MW-16	11/22/22	8:52	44.21	748.59	704.38	
MW-16	05/08/23	8:27	25.18	748.59	723.41	
MW-17	11/22/22	8:32	43.93	747.31	703.38	
MW-17	05/08/23	8:36	26.34	747.31	720.97	
MW-18	11/21/22	NA	NA	954.96		Water level probe too large
MW-18	05/08/23	11:17	327.80	954.96	627.16	
MW-19	11/21/22	13:23	242.75	811.47	568.72	
MW-19	05/08/23	11:34	206.81	811.47	604.66	
MW-20	11/21/22	13:37	233.88	804.18	570.30	Recovering water level
MW-20	05/08/23	11:30	202.65	804.18	601.53	
MW-21	11/21/22	14:04	280.21	741.04	460.83	
MW-21	05/05/23	10:43	210.18	741.04	530.86	
MW-22	11/21/22	14:00	158.80	741.34	582.54	
MW-22	05/05/23	10:39	83.34	741.34	658.00	
MW-23	11/22/22	12:09	136.18	710.35	574.17	Pumping. Used a different sounding port because water level probe is too large (RP: 2.03 ft bgs)
MW-23	05/05/23	13:16	112.55	710.57	598.02	Pumping, but only up to 0.12 gpm
MW-24	11/22/22	11:45	166.11	719.66	553.55	
MW-24	05/05/23	13:02	139.80	719.66	579.86	
MW-25	11/22/22	10:35	234.27	760.77	526.50	
MW-25	05/05/23	11:20	224.81	760.77	535.96	
MW-26	11/21/22	9:49	147.74	687.18	539.44	
MW-26	05/05/23	9:40	112.81	687.18	574.37	
MW-27	11/21/22	9:56	145.05	682.37	537.32	

Table 1. Water Year 2023 Water Level Measurements from Monitoring Network Wells

ID	Date	Time	Depth to Water	Reference Point Elevation	Water Level Elevation	Notes
			(ft)	(ft amsl)	(ft amsl)	
MW-27	05/05/23	9:50	112.42	682.37	569.95	
MW-28	11/21/22	10:02	129.14	749.92	620.78	
MW-28	05/05/23	9:55	107.60	749.92	642.32	
MW-29	11/22/22	11:00	126.93	1,248.98	1,122.05	
MW-29	05/05/23	12:08	120.47	1,248.98	1,128.51	Pumping
MW-30	11/22/22	11:24	75.67	501.05	425.38	Nearby wells pumping
MW-30	05/05/23	12:28	23.59	501.05	477.46	
MW-31	05/08/23	12:15	8.33	822.08	813.75	

Table 2: Water Year 2023 Water Quality

DDW[1] Code	SOURCE	SYSTEM	CHEMICAL[2]	SAMPLE DATE	FINDING (ND[3] = 0)	UNIT
CA3700276_002_002	WELL 02	OAK KNOLL VILLAGE	NITRATE	04/20/23	0.48	MG/L
CA3700276_002_002	WELL 02	OAK KNOLL VILLAGE	NITRATE	06/15/23	0.42	MG/L
CA3700934_001_001	WELL 01	PAUMA VALLEY WATER COMPANY	NITRATE	11/16/22	14	MG/L
CA3700934_001_001	WELL 01	PAUMA VALLEY WATER COMPANY	NITRATE	12/07/22	14	MG/L
CA3700934_001_001	WELL 01	PAUMA VALLEY WATER COMPANY	NITRATE	03/22/23	18	MG/L
CA3700934_001_001	WELL 01	PAUMA VALLEY WATER COMPANY	NITRATE	06/07/23	18	MG/L
CA3700934_001_001	WELL 01	PAUMA VALLEY WATER COMPANY	NITRATE	09/06/23	17	MG/L
CA3700934_003_003	WELL 03	PAUMA VALLEY WATER COMPANY	NITRATE	11/16/22	14	MG/L
CA3700934_003_003	WELL 03	PAUMA VALLEY WATER COMPANY	NITRATE	12/07/22	14	MG/L
CA3700934_003_003	WELL 03	PAUMA VALLEY WATER COMPANY	NITRATE	03/22/23	11	MG/L
CA3700934_003_003	WELL 03	PAUMA VALLEY WATER COMPANY	NITRATE	06/07/23	12	MG/L
CA3700934_003_003	WELL 03	PAUMA VALLEY WATER COMPANY	NITRATE	09/06/23	11	MG/L
CA3700934_004_004	WELL 04	PAUMA VALLEY WATER COMPANY	NITRATE	11/16/22	12	MG/L
CA3700934_004_004	WELL 04	PAUMA VALLEY WATER COMPANY	NITRATE	12/07/22	12	MG/L
CA3700934_004_004	WELL 04	PAUMA VALLEY WATER COMPANY	NITRATE	03/22/23	11	MG/L
CA3700934_004_004	WELL 04	PAUMA VALLEY WATER COMPANY	NITRATE	06/07/23	12	MG/L
CA3700934_004_004	WELL 04	PAUMA VALLEY WATER COMPANY	NITRATE	09/06/23	11	MG/L
CA3700934_005_005	WELL 05	PAUMA VALLEY WATER COMPANY	NITRATE	11/16/22	12	MG/L
CA3700934_005_005	WELL 05	PAUMA VALLEY WATER COMPANY	NITRATE	12/07/22	12	MG/L
CA3700934_005_005	WELL 05	PAUMA VALLEY WATER COMPANY	NITRATE	03/22/23	17	MG/L
CA3700934_005_005	WELL 05	PAUMA VALLEY WATER COMPANY	NITRATE	06/07/23	13	MG/L
CA3700934_005_005	WELL 05	PAUMA VALLEY WATER COMPANY	NITRATE	09/06/23	12	MG/L
CA3700934_006_006	WELL 06	PAUMA VALLEY WATER COMPANY	NITRATE	11/16/22	18	MG/L
CA3700934_006_006	WELL 06	PAUMA VALLEY WATER COMPANY	NITRATE	12/07/22	17	MG/L
CA3700934_006_006	WELL 06	PAUMA VALLEY WATER COMPANY	NITRATE	03/22/23	16	MG/L
CA3700934_006_006	WELL 06	PAUMA VALLEY WATER COMPANY	NITRATE	06/07/23	7.5	MG/L
CA3700934_006_006	WELL 06	PAUMA VALLEY WATER COMPANY	NITRATE	09/06/23	11	MG/L
CA3700934_007_007	WELL 07	PAUMA VALLEY WATER COMPANY	NITRATE	11/16/22	16	MG/L
CA3700934_007_007	WELL 07	PAUMA VALLEY WATER COMPANY	NITRATE	12/07/22	11	MG/L
CA3700934_007_007	WELL 07	PAUMA VALLEY WATER COMPANY	NITRATE	03/22/23	13	MG/L
CA3700934_007_007	WELL 07	PAUMA VALLEY WATER COMPANY	NITRATE	06/07/23	12	MG/L
CA3700934_007_007	WELL 07	PAUMA VALLEY WATER COMPANY	NITRATE	09/06/23	12	MG/L
CA3700934_008_008	WELL 08	PAUMA VALLEY WATER COMPANY	NITRATE	11/16/22	2.4	MG/L
CA3700934_008_008	WELL 08	PAUMA VALLEY WATER COMPANY	NITRATE	12/07/22	2.6	MG/L
CA3700934_009_009	WELL 09	PAUMA VALLEY WATER COMPANY	NITRATE	11/02/22	13	MG/L
CA3700934_009_009	WELL 09	PAUMA VALLEY WATER COMPANY	NITRATE	11/16/22	16	MG/L
CA3700934_009_009	WELL 09	PAUMA VALLEY WATER COMPANY	NITRATE	12/07/22	16	MG/L
CA3700934_009_009	WELL 09	PAUMA VALLEY WATER COMPANY	NITRATE	03/22/23	14	MG/L
CA3700934_009_009	WELL 09	PAUMA VALLEY WATER COMPANY	NITRATE	06/07/23	7	MG/L
CA3700934_009_009	WELL 09	PAUMA VALLEY WATER COMPANY	NITRATE	09/06/23	4.7	MG/L
CA3700934_010_010	WELL 10	PAUMA VALLEY WATER COMPANY	NITRATE	12/07/22	1.4	MG/L
CA3700934_010_010	WELL 10	PAUMA VALLEY WATER COMPANY	NITRATE	03/22/23	0	MG/L
CA3700934_010_010	WELL 10	PAUMA VALLEY WATER COMPANY	NITRATE	06/07/23	1	MG/L
CA3700934_010_010	WELL 10	PAUMA VALLEY WATER COMPANY	NITRATE	09/06/23	2.1	MG/L
CA3700936_008_008	WELL 08	RANCHO ESTATES MUTUAL WATER CO.	NITRATE	03/13/23	12	MG/L
CA3700936_008_008	WELL 08	RANCHO ESTATES MUTUAL WATER CO.	NITRATE	08/22/23	11	MG/L
CA3700936_010_010	WELL 10	RANCHO ESTATES MUTUAL WATER CO.	NITRATE	03/13/23	0.82	MG/L
CA3700936_010_010	WELL 10	RANCHO ESTATES MUTUAL WATER CO.	NITRATE	08/22/23	2.1	MG/L
CA3700936_011_011	WELL 11	RANCHO ESTATES MUTUAL WATER CO.	NITRATE	06/13/23	1.1	MG/L
CA3700936_012_012	WELL 12	RANCHO ESTATES MUTUAL WATER CO.	NITRATE	12/20/22	0	MG/L
CA3700937_001_001	WELL 01	LAZY H MUTUAL WATER COMPANY	TDS	02/13/23	360	MG/L
CA3700937_001_001	WELL 01	LAZY H MUTUAL WATER COMPANY	NITRATE	02/13/23	3.6	MG/L
CA3700937_004_004	WELL 04	LAZY H MUTUAL WATER COMPANY	NITRATE	01/09/23	2.4	MG/L

Table 2: Water Year 2023 Water Quality

DDW[1] Code	SOURCE	SYSTEM	CHEMICAL[2]	SAMPLE DATE	FINDING (ND[3] = 0)	UNIT
CA3700937_004_004	WELL 04	LAZY H MUTUAL WATER COMPANY	TDS	08/07/23	410	MG/L
CA3700937_004_004	WELL 04	LAZY H MUTUAL WATER COMPANY	NITRATE	08/07/23	0.92	MG/L
CA3700938_004_004	WELL 12	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	10/12/22	2.6	MG/L
CA3700938_004_004	WELL 12	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	01/10/23	1.9	MG/L
CA3700938_004_004	WELL 12	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	04/11/23	2.4	MG/L
CA3700938_004_004	WELL 12	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	07/11/23	1.2	MG/L
CA3700938_005_005	WELL 14	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	10/12/22	19	MG/L
CA3700938_005_005	WELL 14	YUIMA MUNICIPAL WATER DISTRICT IDA	TDS	10/25/22	650	MG/L
CA3700938_005_005	WELL 14	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	10/25/22	17	MG/L
CA3700938_005_005	WELL 14	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	11/15/22	21	MG/L
CA3700938_005_005	WELL 14	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	12/19/22	19	MG/L
CA3700938_005_005	WELL 14	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	01/09/23	19	MG/L
CA3700938_005_005	WELL 14	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	02/14/23	0	MG/L
CA3700938_005_005	WELL 14	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	04/10/23	22	MG/L
CA3700938_005_005	WELL 14	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	07/03/23	20	MG/L
CA3700938_005_005	WELL 14	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	09/06/23	20	MG/L
CA3700938_006_006	WELL 17	YUIMA MUNICIPAL WATER DISTRICT IDA	TDS	11/01/22	470	MG/L
CA3700938_006_006	WELL 17	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	11/01/22	6.7	MG/L
CA3700938_006_006	WELL 17	YUIMA MUNICIPAL WATER DISTRICT IDA	TDS	01/09/23	620	MG/L
CA3700938_006_006	WELL 17	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	01/09/23	12	MG/L
CA3700938_006_006	WELL 17	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	04/10/23	12	MG/L
CA3700938_006_006	WELL 17	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	07/11/23	7.8	MG/L
CA3700938_011_011	WELL 23	YUIMA MUNICIPAL WATER DISTRICT IDA	TDS	10/12/22	420	MG/L
CA3700938_011_011	WELL 23	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	10/12/22	11	MG/L
CA3700938_011_011	WELL 23	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	11/15/22	11	MG/L
CA3700938_011_011	WELL 23	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	12/19/22	10	MG/L
CA3700938_011_011	WELL 23	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	01/10/23	11	MG/L
CA3700938_011_011	WELL 23	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	02/14/23	9.4	MG/L
CA3700938_011_011	WELL 23	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	03/16/23	9.6	MG/L
CA3700938_011_011	WELL 23	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	04/10/23	9.1	MG/L
CA3700938_011_011	WELL 23	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	06/05/23	10	MG/L
CA3700938_011_011	WELL 23	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	07/11/23	8.9	MG/L
CA3700938_011_011	WELL 23	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	08/07/23	8.9	MG/L
CA3700938_012_012	WELL 24	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	10/12/22	6	MG/L
CA3700938_012_012	WELL 24	YUIMA MUNICIPAL WATER DISTRICT IDA	TDS	10/25/22	460	MG/L
CA3700938_012_012	WELL 24	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	10/25/22	6	MG/L
CA3700938_012_012	WELL 24	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	01/10/23	9.4	MG/L
CA3700938_012_012	WELL 24	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	04/18/23	9.8	MG/L
CA3700938_012_012	WELL 24	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	07/11/23	10	MG/L
CA3700938_020_020	WELL 25	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	04/11/23	3	MG/L
CA3700938_020_020	WELL 25	YUIMA MUNICIPAL WATER DISTRICT IDA	TDS	07/11/23	540	MG/L
CA3700938_020_020	WELL 25	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	07/11/23	2	MG/L
CA3700938_028_028	WELL 07A	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	10/12/22	49	MG/L
CA3700938_028_028	WELL 07A	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	11/15/22	51	MG/L
CA3700938_031_031	WELL 29	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	10/12/22	25	MG/L
CA3700938_031_031	WELL 29	YUIMA MUNICIPAL WATER DISTRICT IDA	TDS	10/25/22	850	MG/L
CA3700938_031_031	WELL 29	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	10/25/22	24	MG/L
CA3700938_031_031	WELL 29	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	11/15/22	23	MG/L
CA3700938_031_031	WELL 29	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	12/19/22	20	MG/L
CA3700938_031_031	WELL 29	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	01/09/23	18	MG/L
CA3700938_031_031	WELL 29	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	02/14/23	0	MG/L
CA3700938_031_031	WELL 29	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	03/16/23	21	MG/L
CA3700938_031_031	WELL 29	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	04/10/23	21	MG/L

Table 2: Water Year 2023 Water Quality

DDW[1] Code	SOURCE	SYSTEM	CHEMICAL[2]	SAMPLE DATE	FINDING (ND[3] = 0)	UNIT
CA3700938_031_031	WELL 29	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	05/01/23	24	MG/L
CA3700938_031_031	WELL 29	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	06/05/23	23	MG/L
CA3700938_031_031	WELL 29	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	07/11/23	25	MG/L
CA3700938_031_031	WELL 29	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	08/07/23	24	MG/L
CA3700938_031_031	WELL 29	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	09/06/23	26	MG/L
CA3700938_037_037	WELL 19A	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	01/10/23	2.4	MG/L
CA3700938_037_037	WELL 19A	YUIMA MUNICIPAL WATER DISTRICT IDA	TDS	06/05/23	460	MG/L
CA3700938_037_037	WELL 19A	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	06/05/23	2.2	MG/L
CA3700938_047_047	WELL 22	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	10/12/22	31	MG/L
CA3700938_047_047	WELL 22	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	11/16/22	30	MG/L
CA3700938_047_047	WELL 22	YUIMA MUNICIPAL WATER DISTRICT IDA	TDS	12/20/22	840	MG/L
CA3700938_047_047	WELL 22	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	12/20/22	30	MG/L
CA3700938_047_047	WELL 22	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	01/10/23	23	MG/L
CA3700938_047_047	WELL 22	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	02/14/23	24	MG/L
CA3700938_047_047	WELL 22	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	03/16/23	27	MG/L
CA3700938_047_047	WELL 22	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	04/11/23	27	MG/L
CA3700938_047_047	WELL 22	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	05/01/23	29	MG/L
CA3700938_047_047	WELL 22	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	06/05/23	32	MG/L
CA3700938_047_047	WELL 22	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	07/11/23	33	MG/L
CA3700938_047_047	WELL 22	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	08/07/23	32	MG/L
CA3700938_047_047	WELL 22	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	09/06/23	33	MG/L
CA3700938_048_048	WELL 20A	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	10/12/22	2.2	MG/L
CA3700938_048_048	WELL 20A	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	01/10/23	2.3	MG/L
CA3700938_048_048	WELL 20A	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	04/11/23	2.7	MG/L
CA3700938_048_048	WELL 20A	YUIMA MUNICIPAL WATER DISTRICT IDA	NITRATE	07/11/23	1.4	MG/L
CA3701408_003_003	WELL PV-2	YUIMA MUNICIPAL WATER DISTRICT	NITRATE	10/12/22	7.3	MG/L
CA3702754_001_001	WELL 01	RANCHO CORRIDO RV RESORT	TDS	01/17/23	800	MG/L
CA3702754_001_001	WELL 01	RANCHO CORRIDO RV RESORT	NITRATE	01/17/23	9.4	MG/L
CA3702754_004_004	WELL 04	RANCHO CORRIDO RV RESORT	TDS	01/17/23	800	MG/L
CA3702754_004_004	WELL 04	RANCHO CORRIDO RV RESORT	NITRATE	01/17/23	9.6	MG/L
CA3710012_004_004	WELL 14R	RANCHO PAUMA MUTUAL WC	NITRATE	10/11/22	1.3	MG/L
CA3710012_004_004	WELL 14R	RANCHO PAUMA MUTUAL WC	TDS	01/03/23	620	MG/L
CA3710012_004_004	WELL 14R	RANCHO PAUMA MUTUAL WC	NITRATE	01/03/23	5.6	MG/L
CA3710012_004_004	WELL 14R	RANCHO PAUMA MUTUAL WC	NITRATE	01/03/23	5.6	MG/L
CA3710012_004_004	WELL 14R	RANCHO PAUMA MUTUAL WC	NITRATE	04/04/23	2.8	MG/L
CA3710012_004_004	WELL 14R	RANCHO PAUMA MUTUAL WC	NITRATE	07/05/23	1.8	MG/L
CA3710012_010_010	WELL 36	RANCHO PAUMA MUTUAL WC	TDS	01/03/23	770	MG/L
CA3710012_010_010	WELL 36	RANCHO PAUMA MUTUAL WC	NITRATE	01/03/23	0.83	MG/L
CA3710012_010_010	WELL 36	RANCHO PAUMA MUTUAL WC	NITRATE	01/03/23	0.81	MG/L
CA3710012_019_019	WELL 39	RANCHO PAUMA MUTUAL WC	NITRATE	01/10/23	2.7	MG/L
CA3710012_019_019	WELL 39	RANCHO PAUMA MUTUAL WC	TDS	01/24/23	440	MG/L
CA3710012_019_019	WELL 39	RANCHO PAUMA MUTUAL WC	NITRATE	01/24/23	2.7	MG/L
CA3710012_024_024	WELL 38	RANCHO PAUMA MUTUAL WC	TDS	01/31/23	420	MG/L
CA3710012_024_024	WELL 38	RANCHO PAUMA MUTUAL WC	NITRATE	01/31/23	3.8	MG/L
CA3710012_024_024	WELL 38	RANCHO PAUMA MUTUAL WC	NITRATE	01/31/23	3.7	MG/L
CA3710012_031_031	WELL 42	RANCHO PAUMA MUTUAL WC	NITRATE	01/10/23	2.8	MG/L
CA3710012_031_031	WELL 42	RANCHO PAUMA MUTUAL WC	TDS	01/24/23	400	MG/L
CA3710012_031_031	WELL 42	RANCHO PAUMA MUTUAL WC	NITRATE	01/24/23	2.9	MG/L
CA3710012_033_033	WELL 7R2	RANCHO PAUMA MUTUAL WC	NITRATE	10/11/22	1.4	MG/L
CA3710012_033_033	WELL 7R2	RANCHO PAUMA MUTUAL WC	NITRATE	01/10/23	1.6	MG/L
GSP Supplemental	MW-30		TDS	12/22/22	300	MG/L
GSP Supplemental	MW-19		TDS	12/22/22	580	MG/L
GSP Supplemental	MW-18		TDS	12/22/22	260	MG/L

Table 2: Water Year 2023 Water Quality

DDW[1] Code	SOURCE	SYSTEM	CHEMICAL[2]	SAMPLE DATE	FINDING (ND[3] = 0)	UNIT
GSP Supplemental	MW-30		NITRATE (AS N)	12/22/22	5.6	MG/L
GSP Supplemental	MW-19		NITRATE (AS N)	12/22/22	11	MG/L
GSP Supplemental	MW-18		NITRATE (AS N)	12/22/22	0.48	MG/L
GSP Supplemental	MW-30		TDS	06/22/23	280	MG/L
GSP Supplemental	MW-30		NITRATE (AS N)	06/22/23	5.7	MG/L

[1] DDW = Division of Drinking Water. Water quality for public water suppliers is available from the California Laboratory Intake Portal (CLIP)
[2] Nitrate reported for Nitrate (as N). Value may be converted to Nitrate (as NO_3) by multiplying by 4.4268
[3] ND = Non-Detect

APPENDIX A

Upper San Luis Rey Groundwater Management Authority – Administrative Information

UPPER SAN LUIS REY GROUNDWATER MANAGEMENT AUTHORITY

ADMINISTRATIVE INFORMATION

1.0 Introduction

In accordance with the Sustainable Groundwater Management Act (SGMA), Groundwater Sustainability Plans (GSPs) are required to include administrative information identifying the submitting Groundwater Sustainability Agency (GSA), its decision-making process, and its legal authority. The GSP for the Upper San Luis Rey (USLR) Valley Groundwater Subbasin was submitted to the Department of Water Resources (DWR) in January 2022 by the Pauma Valley Groundwater Sustainability Agency (PVGSA), consisting of Yuima Municipal Water District, Pauma Municipal Water District, Pauma Valley Community Services District, San Luis Rey Municipal Water District (SLRMWD), and Upper San Luis Rey Resource Conservation District.

The PVGSA originally formed under a Memorandum of Understanding (MOU) for the Development of a Groundwater Sustainability Plan for the San Luis Rey Valley Groundwater Basin, dated June 27, 2017. Several amendments to this MOU were made effective before submittal of the GSP. However, the local agencies felt that a Joint Powers Authority (JPA) would be a more effective governance structure to implement SGMA and the Upper San Luis Rey Valley GSP. Therefore, on June 13, 2022, following GSP submittal, the PVGSA and its five signatory members submitted to DWR an executed Joint Powers Agreement creating the Upper San Luis Rey Groundwater Management Authority (USLRGMA, GMA, or Authority). The GMA, as the new GSA for the Subbasin, has also adopted the USLR Valley Groundwater Subbasin GSP and provided notification to DWR. DWR acknowledges these changes in their GSP Assessment Staff Report for the Upper San Luis Rey Valley Subbasin (dated January 18, 2024) and have recommended that the GMA provide an update of the GSA's administrative information, governance structure, and decision-making process in the next annual report and plan amendment/periodic evaluation. In accordance with this recommendation, updated information for the GMA is provided below. This information will also be incorporated in the next plan amendment.

2.0 Mailing Address

Upper San Luis Rey Groundwater Management Authority
P.O. Box 984
Pauma Valley CA 92061-0177

3.0 Organization and Management Structure

The PVGSA formed under a Memorandum of Understanding (MOU) for the Development of a Groundwater Sustainability Plan for the San Luis Rey Valley Groundwater Basin, dated June 27, 2017. This structured MOU was later amended and restated. A Joint Powers Authority was formed in May 2022 with the same member agencies as under the MOU to act as the GSA. The GSA is now known as the Upper San Luis Rey Groundwater Management Authority. This authority consists of:

- Two voting members from Yuima Municipal Water District (YMWD)
- Two voting members from Pauma Municipal Water District (Pauma MWD)
- Two voting members from Pauma Valley Community Services District (Pauma Valley CSD)
- One voting member from San Luis Rey Municipal Water District (SLRMWD)
- Two voting members from Upper San Luis Rey Resource Conservation District (USLRRCD)
- Two voting "Director-at-Large" members from the San Luis Rey Indian Water Authority[1]
- One At-Large Agricultural Community Director representing the private pumping community.

Contact: Amy Reeh, USLRGMA
Address: P.O. Box 984, Pauma Valley CA 92061-0177
Phone: 760-742-3704
Email: amy@uslrgma.com

A copy of the Joint Powers Agreement, the MOU and subsequent amendments for the development of the PVGSA are available on the YMWD website: https://uslrgma.com/

An Executive Team was created in the 2017 MOU to work on and manage the GSP development, which consisted of two voting members appointed by each Party with the authority from the appointing agency's Governing Body to act on behalf of that agency. Additional agencies, entities and/or individuals with specific knowledge about SGMA or groundwater management, and public agencies and/or governmental agencies with jurisdiction that overlie the USLR Subbasin were also invited to participate in Executive Team meetings. The San Luis Rey Indian Water Authority, Pauma Municipal Water District, Valley Center Municipal Water District, and Rainbow Municipal Water District were also invited to participate in the Executive Team as ex officio Members.

4.0 Legal Authority of the GMA

Parties of the GMA have each declared to be a GSA per Section 10723.8 of SGMA, as documented in the June 27, 2017 MOU and amendments, and the Joint Powers Agreement with the intent of collectively developing and implementing a single GSP to sustainably manage groundwater in the USLR Subbasin. These local agencies are authorized to manage groundwater per Water Code §10721(n) and SGMA throughout the USLR Valley Groundwater Subbasin other than on tribal reservation or federal lands.

DWR's GSP Assessment Staff Report (2024) notes that each of the GMA's member agencies is a local public agency characterized in materials submitted to DWR as satisfying the definition of a "local agency" under SGMA[2].

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1 Please note that the San Luis Rey Indian Water Authority has chosen to not participate in the USLRGMA and has not appointed representatives to their voting seats.

2 The DWR GSP Assessment Staff Report goes on to note that:
"A comment letter from the San Luis Rey Indian Water Authority (SLRIWA) claimed the Upper San Luis Rey Resource Conservation District did not fit this definition and on that grounds questioned the validity of the GSA. The Department's role in processing GSA notices is largely ministerial. Notices submitted by public agencies claiming to possess water supply, water management, or land use responsibilities within the applicable groundwater basin are generally presumed by the

5.0 Decision Making Process

The GSA Executive Committee is comprised of 12 members, 11 of which are voting members (see detail above). All final decisions are on a consensus basis. A consensus as used for this purpose means a majority vote of all voting members on any given decision.

During GSP implementation, the public will be notified of important developments or changes in the current status of the basin. The GMA will engage in water conservation and efficiency messaging to all stakeholders of the basin as well as establish a drought resiliency workgroup to assist with conservation messaging and stakeholder engagement in drought resilience monitoring of the basin to better avoid the occurrence of undesirable results.

The USLR Valley Groundwater Subbasin is comprised of mostly Native American, Hispanic and White residents. In order encourage involvement in the GSP Development and continued involvement during GSP implementation, the GMA employs the use of dual language correspondence to all property owners and tribal nations located within the basin. During GSP development, special invitations were extended to tribal representatives of all tribes located within the basin and to the San Luis Rey Indian Water Authority to attend GSA Executive Team meetings, in addition to stakeholder outreach meetings. Meeting invitations will continue throughout the GSP implementation process. More importantly, the GMA is actively developing an Interactive Tribal Work Group to encourage tribal participation, promote basin balancing maintenance activities, and ensure respecting of federal reserve water rights.

The GMA will utilize electronic (email and website postings), traditional mail, and possible social media methods to communicate and inform the public about the GSP implementation process and the necessity to perform any project or management actions as described in the GSP.

Department to be valid and the entity eligible to become a GSA. Also, an April 25, 2022 joint response letter from the Department and SWRCB to the SLRIWA further addressed this issue, explaining that a recent LAFCO municipal services review cited by the SLRIWA found the "Upper San Luis Rey RCD is currently authorized to provide two … functions … [one of which is] water conservation…." and found that the "RCD's water conservation service function involves economizing water resources for maximum beneficial uses." The LAFCO findings further substantiates that the RCD appears eligible to participate in a GSA based on its water conservation function, which is a "water management responsibility", making it a "local agency" under SGMA. (Water Code, § 10721(n).)" (DWR Staff Report page 8, footnote 45).

APPENDIX B

Results of Drilling and Construction –

Upper San Luis Rey MW-1D and MW-1S

GEOSCIENCE

The First Name in Groundwater

August 30, 2023

Mrs. Amy Reeh
General Manager
Yuima Municipal Water District
PO Box 177, Pauma Valley, CA 92061

Re: Results of Drilling and Construction
Upper San Luis Rey MW-1D and MW-1S

Dear Amy,

This letter summarizes the recent drilling and construction of a new clustered monitoring well for Yuima Municipal Water District (YMWD), referred to as the Upper San Luis Rey (USLR) MW-1S (Shallow) and MW-1D (Deep), located approximately 2,400 ft west of Highway 76, north of Pala Road within the unincorporated community of Pauma Valley, California (see Figure 1). The drilling and construction of MW-1D and MW-1S was performed by Stehly Brothers Drilling Inc. (Stehly Brothers) between May and July 2023.

The primary purposes for the drilling and construction of this monitoring well is to fill data gaps within this portion of the basin, thereby increasing the hydrogeologic understanding of the area and providing important information on specific conditions for future inclusion to updates of the Groundwater Sustainability Plan. The well was constructed as clustered monitoring wells with two (2) 4-inch PVC completions, designated MW-1D (Deep) and MW-1S (Shallow).

1.0 GENERAL GEOHYDROLOGY OF THE WELL SITE

ULSR MW-1D and MW-1S is located within the Upper San Luis Rey Valley in the Pauma Subbasin of the San Luis Rey Groundwater Basin. The primary groundwater aquifer within the Upper San Luis Rey River Valley-Pauma Sub-basin is the unconsolidated alluvium which overlies bedrock formations. Alluvial sediments in valleys are generally thickest under the San Luis Rey River. In Pauma Valley, sediments may be up to 600 ft thick in localized areas of the northeast portion of the subbasin (Layne, 2010).

In general, unconsolidated alluvial sediments encountered within the Pauma Sub-basin are typical of sediments associated with a meandering stream system such as the San Luis Rey River. The main geologic units found in the Upper San Luis Rey River Valley Groundwater Subbasin include (from oldest to youngest): bedrock, older alluvium, localized lakebed deposits, alluvial fan deposits, and younger alluvium.

2.0 WELL DRILLING, TESTING, AND CONSTRUCTION

Drilling and construction activities were performed by Stehly Brothers between May and July 2023. The work performed included the following:

USLR MW-1D:

- May 30, 2023: Drilling of 17-inch diameter conductor borehole using the mud rotary drilling method. The borehole was advanced to a depth of approximately 20 ft below ground surface (ft bgs). Installed 10-inch steel conductor casing and installed annular seal to ground level.
- May 31–June 2, 2023: Drilling of 10-inch diameter borehole using the mud rotary drilling method. The borehole was advanced to a depth of approximately 148 ft bgs.
- June 5, 2023: Geophysical borehole logging of the 10-inch borehole.
- June 7–June 8, 2023, and June 20, 2023: Construction of MW-1D.
- June 8–July 4, 2023: Initial development by open end airlifting, airlifting, and swabbing.
- July 5–July 6, 2023: Final development by pumping MW-1D. Following the development of each completion, groundwater samples were collected and submitted to Clinical Laboratories of San Bernardino (Clinical) for analysis of select constituents.
- July 8, 2023: Final well head completion, site clean-up, and contractor demobilization.

USLR MW-1S:

- June 9, 2023: Drilling of 17-inch diameter conductor borehole using the mud rotary drilling method. The borehole was advanced to a depth of approximately 20 ft bgs. Installed 10-inch steel conductor casing and installed annular seal to ground level.
- June 12, 2023: Drilling of 10-inch diameter borehole using the mud rotary drilling method. The borehole was advanced to a depth of approximately 65 ft bgs.
- June 13–14, 2023, and June 20, 2023: Construction of MW-1S.
- June 14–July 11, 2023: Initial development by open end airlifting, airlifting, and swabbing.
- July 12, 2023: Final development by pumping MW-1S. Following the development of each completion, groundwater samples were collected and submitted to Clinical Laboratories of San Bernardino (Clinical) for analysis of select constituents.
- July 15, 2023: Final well head completion, site clean-up, and contractor demobilization.

2.1 Conductor Casing Installation

At both drilling locations, a 17-inch diameter conductor borehole was drilled to a depth of approximately 20 ft bgs using a direct mud rotary drilling rig. The 10.75-inch outside diameter (OD) by 0.25-inch wall low carbon steel conductor casing was installed to 20 ft bgs and cemented in place from the bottom of the borehole to ground surface with 10.3 sack cement. Drilling and installation at MW-1D was completed on May 30, 2023, and drilling and installation was completed at MW-1S on June 9, 2023.

2.1 Pilot Borehole Drilling

A nominal 10-inch diameter pilot borehole was drilled at the USLR MW-1D and MW-1S location using a direct mud rotary drilling rig. Drilling of the MW-1D borehole began on May 30, 2023 and was advanced to a total depth of 148 ft bgs by June 2, 2023. Drilling of MW-1S began on June 9, 2023 and was advanced to a total depth of 65 ft bgs by June 12, 2023. Figure 2 shows the as-built drawings of the wells as they were constructed and includes details of the drilling and construction.

Formation materials from drilling efforts at USLR MW-1D consist predominately of fine- to coarse-grained sand with lesser amounts of fine and coarse gravel to depth of approximately 53 ft bgs. From 53 to 95 ft bgs, formation material consisted predominantly of clay with lesser amounts of fine sand. From 95 to approximately 127 ft bgs, formation samples consisted of fine- to coarse-sand with fine gravel. Minerals in this interval showed signs of weathering (i.e., discoloration), but contained relatively angular fragments, suggesting the possibility of a weathered bedrock surface. Competent granitic bedrock was encountered at a depth of 127 ft bgs and continued to the bottom of the borehole at 148 ft bgs. A detailed lithological log of the MW-1D and MW-1S borehole is presented in Figure 3.

2.2 Geophysical Borehole Logging

Upon reaching a final depth of 148 ft bgs in the 10-inch diameter borehole in MW-1D, fluids in the borehole were circulated for an adequate amount of time to verify the borehole stability before removing the drilling string. A suite of geophysical borehole logs was then run by Victory Well Surveys on June 5, 2023, which included the following:

(1) 16-inch short-normal and 64-inch long-normal resistivity;
(2) Spontaneous potential (SP);
(3) Laterlog 3 (focused resistivity – guard);
(4) Gamma-ray; and
(5) Acoustic (sonic) with a variable density log (VDL) and sonic porosity.

Attachment A contains the original geophysical logs.

2.3 Casing and Screen Design

Based on the data collected from both the formation samples and the geophysical borehole logs (MW-1D), the final design for the clustered monitoring wells was completed. Well construction activities, including the installation of the well casing, screen, filter pack, and seals, occurred between June 7 and June 8, 2023 at MW-1D and between June 13 and June 14, 2023 at MW-1S. The cement seals were installed on June 20, 2023 in both wells. Tables 1A and 1B provide the construction details for the completion of each of the monitoring wells. Figure 2 presents the as-built completion details.

Table 1A – Casing and Screen Schedule
USLR MW-1D and MW-1S

Interval [ft bgs]	Borehole Diameter [in.]	Nominal Casing Diameter [in.]	Casing Schedule	Screen Slot Size [in.]	Material Type
Deep					
+2–95	10	4	Sch 80	–	Flush Threaded Sch. 80 PVC Well Casing
95–125	10	4	Sch 80	0.020	Flush Threaded Sch. 80 PVC Slotted Well Screen with Cap
Shallow					
+2–35	10	4	Sch 80	–	Flush Threaded Sch. 80 PVC Well Casing
35–55	10	4	Sch 80	0.020	Flush Threaded Sch. 80 PVC Slotted Well Screen with Cap

Table 1B - Annular Fill Materials

USLR MW-1D and MW-1S

Interval [ft bgs]	Borehole Diameter [in.]	Material Type
Deep		
0-20	10	10.3-Sack Sand-Cement Seal
20-22	10	Bentonite-Sand Seal
22–148	10	CEMEX Lapis Lustre #3 Gravel
Shallow		
0-20	10	10.3-Sack Sand-Cement Seal
20–22	10	Bentonite Seal
22–28	10	Sand #6
28-58	10	CEMEX Lapis Lustre #3 Gravel
58-65	10	Sand #6

2.4 Well Development

USLR MW-1D and MW-1S was initially developed using a combination open-end airlifting followed by swabbing and airlifting to consolidate the filter pack after placement and to remove colloidal and fine-grained sediments from within the well, filter pack, and near-well zone. The initial development of the screened sections of each completion was completed on July 4, 2023 at MW-1D and on July 11, 2023 at MW-1S.

Final well development was conducted using a submersible test pump from July 5 to July 6, 2023 at MW-1D and July 12, 2023 at MW-1S. Final development consisted of pumping the well until the turbidity of the discharged water was less than 5 nephelometric turbidity units (NTU). The well was then "surged" repeatedly until the water discharging from the well remained below 5 NTU. Toward the end of the pump development, a series of groundwater samples were collected and submitted to Clinical for analysis. The results of this analysis are discussed in Section 3 of this report.

3.0 GROUNDWATER QUALITY

Following the development pumping of each well completion, a set of groundwater samples was collected by Geoscience personnel. The samples were submitted to Clinical for selected constituent analysis. The water quality results from each well are presented in Attachment B and summarized in Table 2 below.

All the water quality constituents were reported below the regulatory level.

Table 2 - Water Quality Analytical Results for USLR MW-1D and MW-1S

Constituent	Unit	MW-1D	MW-1S	Regulatory Standards
Alkalinity (as CaCO3)	[mg/L]	86	79	NA[5]
Arsenic	[µg/L]	1.8	ND	10[1]
Bicarbonate (as HCO3)	[mg/L]	100	96	NA[5]
Boron	[µg/L]	63	71	1,000[3]
Calcium	[mg/L]	59	35	NA[5]
Carbonate (as CO3)	[mg/L]	ND	ND	NA[5]
Chloride	[mg/L]	48	27	250–500[1]
Chromium, hexavalent	[µg/L]	ND	0.15	NA
Chromium, total	[µg/L]	4.1	1.2	50[1]
Color	[Color units]	ND	ND	15[2]
Fluoride	[mg/L]	0.25	0.34	2.0[1]
Iron	[µg/L]	23	27	300[2]
Manganese	[µg/L]	20	5.1	50[2]
Nitrate (as N)	[mg/L]	3.3	1.7	10[1]
Odor	[TON]	1	1	3[2]
Perchlorate	[µg/L]	ND	ND	6.0[1]
pH	[pH units]	7.4	7.2	6.5–8.5[4]
Sodium	[mg/L]	53	44	NA[5]
Sulfate (as SO4)	[mg/L]	160	100	250–500[2]
Total dissolved solids	[mg/L]	450	320	500–1,000[2]
Total hardness	[mg/L]	230	140	NA[5]
Total silica	[mg/L]	34	39	NA[5]
Turbidity	[NTU]	0.5	0.41	5[2]
Vanadium	[µg/L]	5.8	4.1	50[3]
1, 2, 3-Trichloropropane	[µg/L]	ND	ND	0.005[3]
Volatile Organic Compounds (EPA Method 524.2)	[µg/L]	ND	ND	Varies with Chemical[1]

1 Division of Drinking Water (DDW) primary maximum contaminant level (MCL).
2 DDW secondary MCL.
3 DDW notification level for unregulated chemicals.
4 United States Environmental Protection Agency (USEPA) secondary standard for pH.
5 DDW response level
NA Not applicable—no current MCL.
BOLD Equal to or above current DDW MCL or notification level.

4.0 WELL HEAD COMPLETION AND FINAL REPORTING

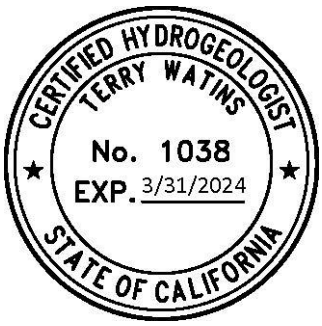
Following the development and water quality sampling, MW-1D and MW-1S were completed with a 10.75-inch diameter flush-mounted protective cover. The protective well cover was centered inside an approximately 38-inch cement pad with an approximate 1-inch slope away from the well.

Following completion of construction activities, Stehly Brothers submitted a well completion report with the State of California Department of Water Resources (DWR). A copy of the report is provided in Attachment C.

If you have any questions, please call me at your convenience.

Sincerely,

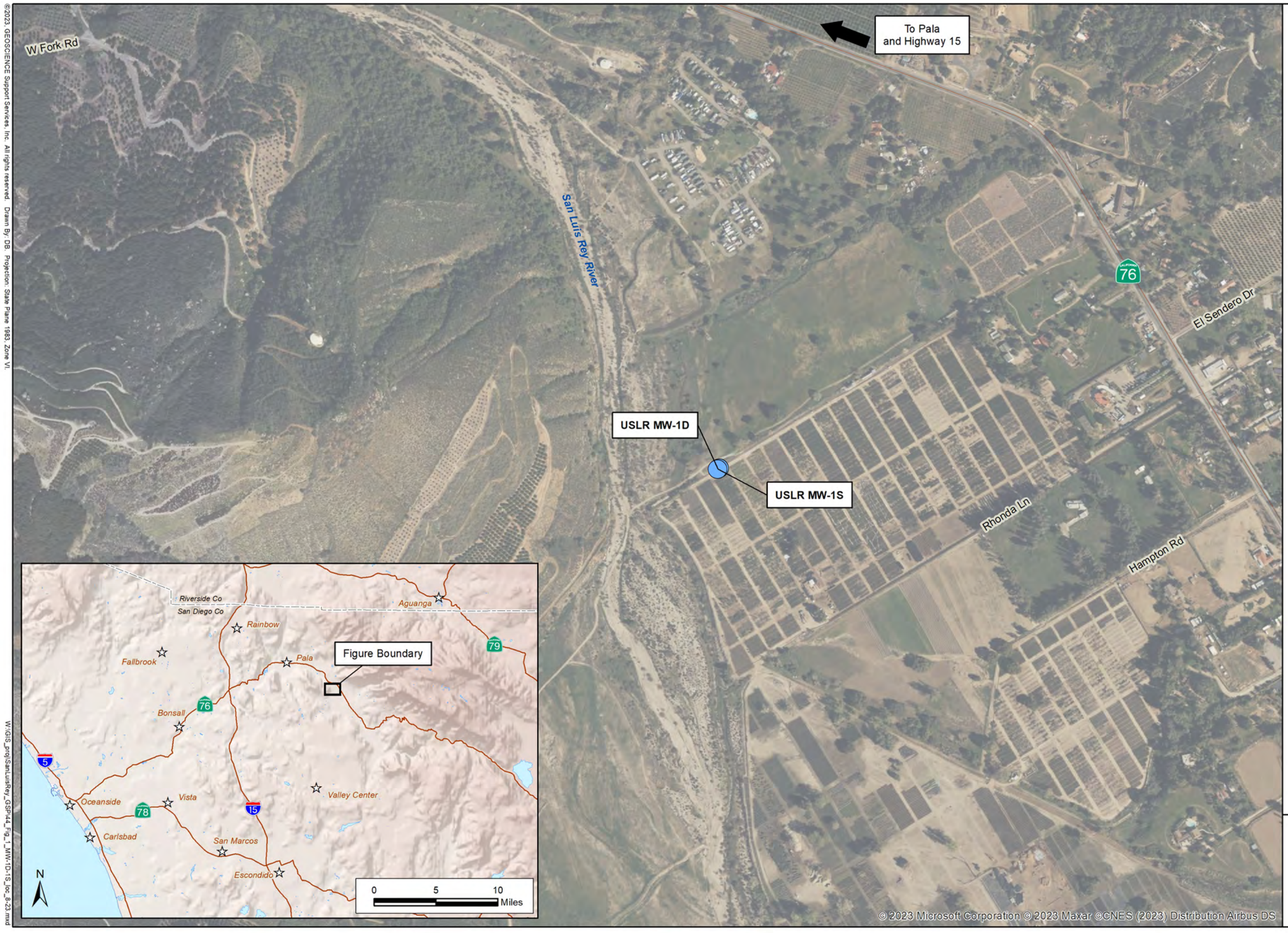
Terry Watkins, PG, CHG
Senior Geohydrologist



FIGURES

GEOSCIENCE

The First Name in Groundwater



EXPLANATION

Location of USLR MW-1D and USLR MW-1S

N

0 500 1,000

Feet

Aug-23

USLR MW-1D & MW-1S LOCATION

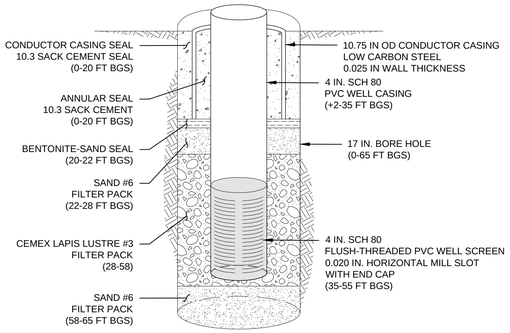
W:\GIS_proj\SanLuisRey_GSP\44_Fig_1_MW-1D-1S_loc_8-23.mxd

YUIMA MUNICIPAL WATER DISTRICT

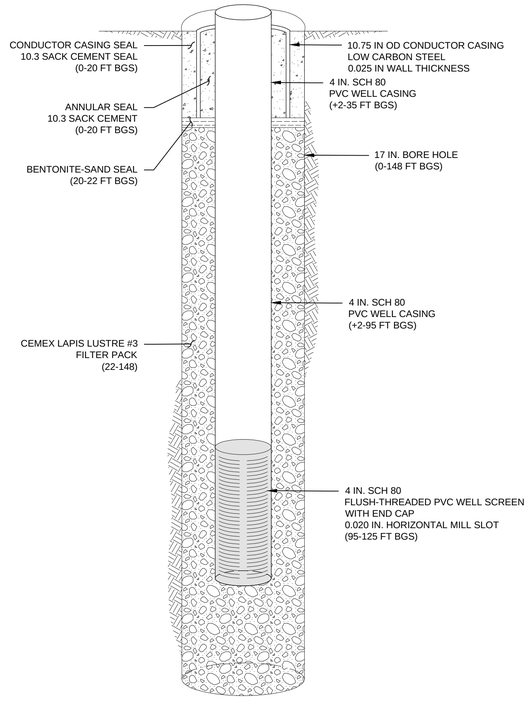
RESULTS OF DRILLING AND CONSTRUCTION UPPER SAN LUIS REY MW-1D AND MW-1S

FIGURE 1

GEOSCIENCE



MONITORING WELL MW-1S (SHALLOW)



MONITORING WELL MW-1D (DEEP)

WELL INFORMATION			
OWNER	YUIMA MUNICIPAL WATER DISTRICT		
WELL NAME	USLR MW-1D (DEEP)		
WELL LOCATION	APPROXIMATELY 2,400 FT WEST OF INTERSECTION HWY 76 AND DIRT ROAD NORTH OF PALA RD.		
LATITUDE (NAD83)	33.334048		
LONGITUDE (NAD83)	-117.012964		
LAND SURFACE ELEVATION (FT)	699		
WELL USE	MONITORING WELL		
CASING AND SCREEN SCHEDULE			
	CONDUCTOR	CASING	SCREEN
MATERIAL	LOW CARBON STEEL	SCH. 80 PVC	
NOMINAL DIAMETER (IN.)	10	4	
OUTSIDE DIAMETER (IN.)	10.75	4.50	
INSIDE DIAMETER (IN.)	10.25	3.826	
WALL THICKNESS (IN.)	0.25	0.337	
TOTAL INSTALLED LENGTH (FT)	20	97	30
INSTALLED INTERVALS (FT BGS) AND LENGTH (FT)			
INTERVAL 1	0 - 20 FT BGS (20 FT TOTAL)	+2 - 95 FT BGS (97 FT TOTAL)	95 - 125 FT BGS (30 FT TOTAL)
SCREEN PERFORATION TYPE	-	-	HORRIZONTAL MILL SLOT
PERFORATION OPENING (IN.)	-	-	0.020
CONNECTION TYPE	-	FLUSH THREADED	
CASING BOTTOM CAP	-	-	THREADED CAP
CENTRALIZER MATERIAL	-	STAINLESS STEEL	
CENTRILIZER ANGULAR SPACING	-	90°	
CENTRILIZER VERTICAL SPACING	-	ABOVE AND BELOW SCREEN	
BOREHOLE			
	CONDUCTOR	FINAL	
DRILL BIT TYPE	TRI-CONE		
DRILLING METHOD	MUD ROTARY		
DRILLING FLUID COMPOSITION	BENTONITE		
DIAMETER (IN.)	17	10	
TOTAL DEPTH (FT BGS)	20	148	
GROUTING AND SEALING			
DEPTH (FT BGS)	MATERIAL		
0 - 20	10.3 SACK CEMENT		
20 - 22	BENTONITE-SAND		
FILTER PACK DESIGN			
MATERIAL	CEMEX LAPIS LUSTRE #3 SAND		
FLUID USED FOR FILTER PACK PLACEMENT	POTABLE WATER		
FILTER PACK INTERVAL 1	22 - 148		

WELL INFORMATION			
OWNER	YUIMA MUNICIPAL WATER DISTRICT		
WELL NAME	USLR MW-1S (SHALLOW)		
WELL LOCATION	APPROXIMATELY 2,400 FT WEST OF INTERSECTION HWY 76 AND DIRT ROAD NORTH OF PALA RD.		
LATITUDE (NAD83)	33.33406		
LONGITUDE (NAD83)	-117.012935		
LAND SURFACE ELEVATION (FT)	699		
WELL USE	MONITORING WELL		
CASING AND SCREEN SCHEDULE			
	CONDUCTOR	CASING	SCREEN
MATERIAL	LOW CARBON STEEL	SCH. 80 PVC	
NOMINAL DIAMETER (IN.)	10	4	
OUTSIDE DIAMETER (IN.)	10.75	4.50	
INSIDE DIAMETER (IN.)	10.25	3.826	
WALL THICKNESS (IN.)	0.25	0.337	
TOTAL INSTALLED LENGTH (FT)	20	37	20
INSTALLED INTERVALS (FT BGS) AND LENGTH (FT)			
INTERVAL 1	0 - 20 FT BGS (20 FT TOTAL)	+2 - 35 FT BGS (37 FT TOTAL)	35 - 55 FT BGS (20 FT TOTAL)
SCREEN PERFORATION TYPE	-	-	HORRIZONTAL MILL SLOT
PERFORATION OPENING (IN.)	-	-	0.020
CONNECTION TYPE	-	FLUSH THREADED	
CASING BOTTOM CAP	-	-	THREADED CAP
CENTRALIZER MATERIAL	-	STAINLESS STEEL	
CENTRILIZER ANGULAR SPACING	-	90°	
CENTRILIZER VERTICAL SPACING	-	ABOVE AND BELOW SCREEN	
BOREHOLE			
	CONDUCTOR	FINAL	
DRILL BIT TYPE	TRI-CONE		
DRILLING METHOD	MUD ROTARY		
DRILLING FLUID COMPOSITION	BENTONITE		
DIAMETER (IN.)	17	10	
TOTAL DEPTH (FT BGS)	20	65	
GROUTING AND SEALING			
DEPTH (FT BGS)	MATERIAL		
0 - 20	10.3 SACK CEMENT		
20 - 22	BENTONITE-SAND		
FILTER PACK DESIGN			
MATERIAL	CEMEX LAPIS LUSTRE #3 SAND	SAND #6	
FLUID USED FOR FILTER PACK PLACEMENT	POTABLE WATER		
FILTER PACK INTERVAL 1	28 - 58	22 - 28	
FILTER PACK INTERVAL 2	-	58 - 65	

ABBREVIATIONS LIST:

AGS ABOVE GROUND SURFACE
BGS BELOW GROUND SURFACE
ID INSIDE DIAMETER
OD OUTSIDE DIAMETER

X:\Projects\CADAs-Builts\Yuima Municipal Water District\Drawings\YMWD MW-1_AsBuilt.dwg, 8/24/2023

GEOSCIENCE

The First Name in Groundwater
909.451.6650 | GSSIWATER.COM

811 CALL 811 AT LEAST TWO DAYS BEFORE YOU DIG
Know what's below. Call before you dig.
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

REV.	DATE	BY	DESCRIPTION
1			
2			
3			
4			

LINE IS 2 INCHES AT FULL SCALE (IF NOT 2" - SCALE ACCORDINGLY)
DESIGNED: AA
DRAWN: JFF
CHECKED: TW
DATE: 8/19/23

CITY ENGINEER:
_____ _____
_____, P.E. DATE
R.C.E. NO. _____ EXP. DATE: _____
PREPARED UNDER THE SUPERVISION OF:
_____ 8/19/23
TERRY WATKINS DATE
C.H.G. NO. 1038 EXP. DATE: 3/3/24

Yuima Municipal Water District

YUIMA MUNICIPAL WATER DISTRICT

RESULTS OF DRILLING AND CONSTRUCTION
UPPER SAN LUIS REY MW-1D & MW-1S

AS-BUILT WELL PROFILE AND CONSTRUCTION DETAILS

FIGURE NO.
2

GEOSCIENCE
The First Name in Groundwater

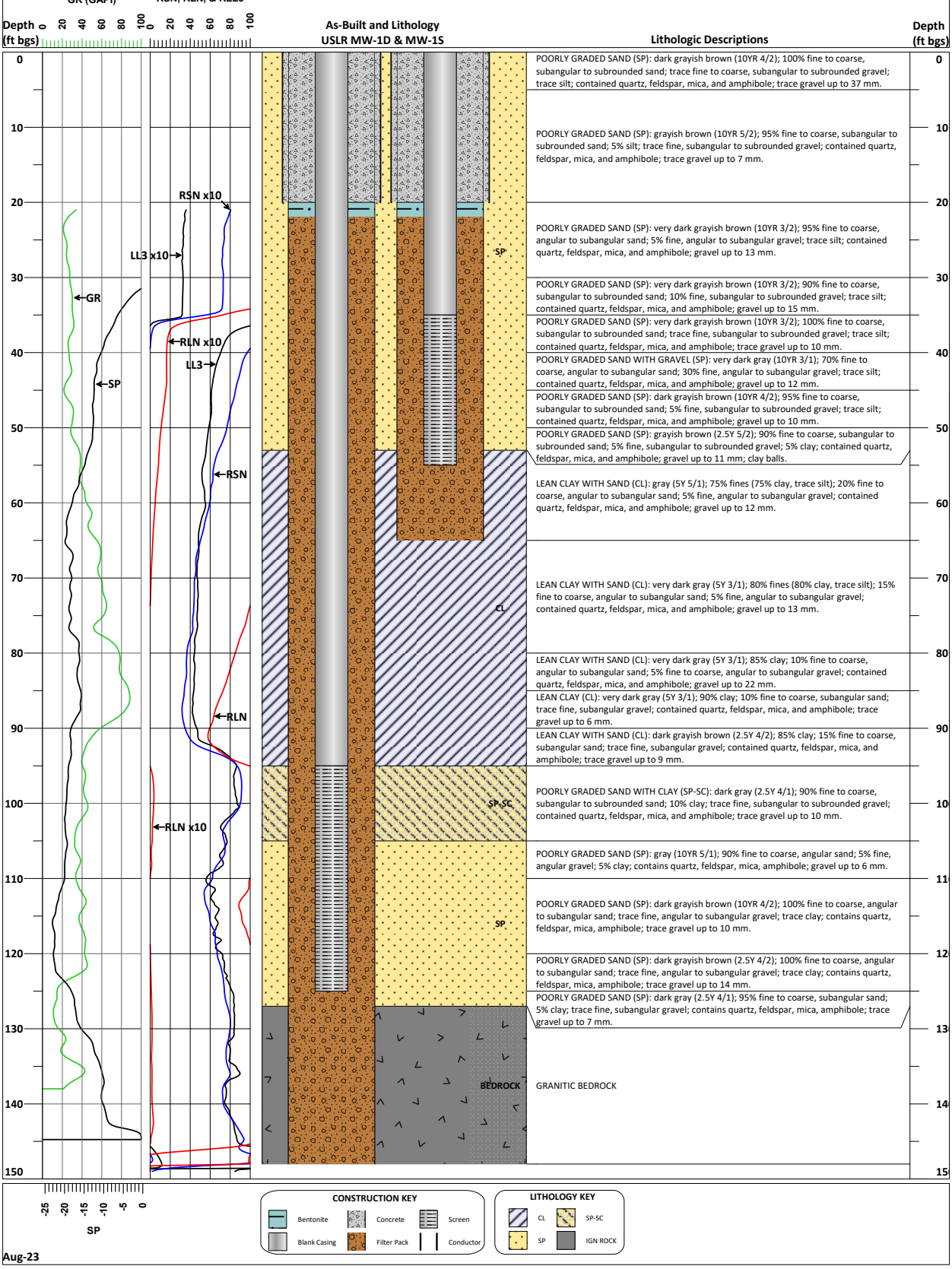
Geohydrologic Borehole Data and Well Construction Log
USLR MW-1D and MW-1S

Figure 3

WELL NUMBER: USLR MW-1D and MW-1S | **CLIENT:** YMWD | **Report Date:** August 2023

LOCATION: ~2400' West of HWY 76 and Dirt Road North of Pala Rd.
DRILLING CONTRACTOR: Stehly Brothers Inc.
DRILLING RIG TYPE AND METHOD: Direct Mud Rotary
DRILLER: Joe Edwards
LOGGED BY: A. Arita
SAMPLING METHOD: Grab
BOREHOLE DIAMETER: 10 in
SURFACE ELEVATION: ~698 ft
DRILLING BEGIN/END DATES: 5/30/23 - 6/8/23 (D); 6/9/23 - 6/14/23 (S)

COMPLETION ID	CASING SECTION	TOP DEPTH (ft bgs)	BOTTOM DEPTH (ft bgs)	LENGTH (ft)	MATERIAL	WALL THICKNESS (in)	DIAMETER (in)	SCREEN TYPE	PERF. SIZE (in)
MW-1D	Conductor	0	20	20	Low Carbon Steel	0.25	10.75/OD		
MW-1D	Blank	+2	95	97	Sch. 80 PVC	0.337	3.826/ID		
MW-1D	Screen with End Cap	95	125	30	Sch. 80 PVC	0.337	3.826/ID	Horizontal Mill Slot	0.020
MW-1S	Conductor	0	20	20	Low Carbon Steel	0.25	10.75/OD		
MW-1S	Blank	+2	35	37	Sch. 80 PVC	0.337	3.826/ID		
MW-1S	Screen with End Cap	35	55	20	Sch. 80 PVC	0.337	3.826/ID	Horizontal Mill Slot	0.020



Aug-23

ATTACHMENT A
Geophysical Logs

GEOSCIENCE

The First Name in Groundwater

ELECTRIC LOG
GUARD RESISTIVITY LOG
GAMMA RAY LOG

VWS No. 002465

Company STEHLY BROS. DRILLING

Well Name USLR MW-1D

City PAUMA VALLEY

County SAN DIEGO State CA

Location:

14999 CA-76
.25 MILE SOUTH OF HWY 76

Sec. Twp. Rge.

Other Services:

SONIC/VDL

Permanent Datum	G.L.		Elevation N/A	Elevation
Log Measured From	G.L.	0 ft	above perm. datum	G.L.
Drilling Measured From	G.L.			D.F.
				K.B.

Date	6-5-23		
Run Number	ONE		
Total Depth Driller	148'		
Total Depth Logger	149'		
Bottom Logged Depth	148'		
Top Logged Depth	10'		
Casing Driller	10" @ 22'		
Casing Logger	22'		
Bit Size	9 7/8"		
Type Fluid in Hole	MUD		
Density / Viscosity	N/A		
pH / Fluid Loss	N/A		
Source of Sample	PIT		
Rm @ Temp	15.5 @ 75F		
Rmf @ Temp	16.7 @ 75F		
Rmc @ Temp	N/A		
Source of Rmf / Rmc	MEASURED		
Rm @ BHT	N/A		
Time Since Circulation	1 HOUR		
Time Log Started	10:45 AM		
Max. Recorded Temperature	N/A		
Truck Number	ONE		
Location	CA		
Operator	LAPORTE		
Representative	A. ARITA		

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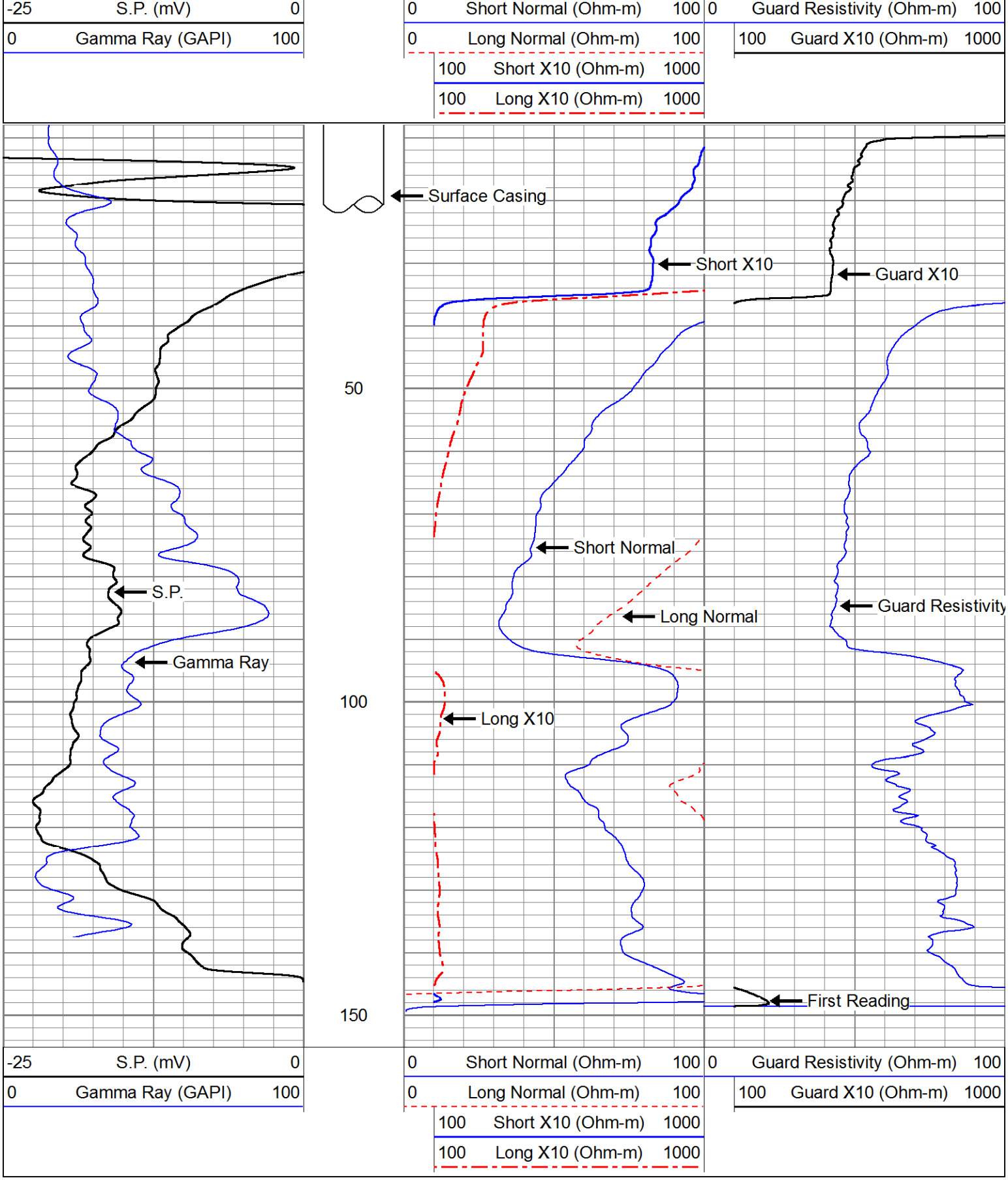
Comments

Database File 002465.db
Dataset Pathname Stehly/well/ELOG/pass1
Presentation Format elog2
Dataset Creation Mon Jun 05 10:50:12 2023
Charted by Depth in Feet scaled 1:240


-25 S.P. (mV) 0
0 Gamma Ray (GAPI) 100
0 Short Normal (Ohm-m) 100
0 Long Normal (Ohm-m) 100
100 Short X10 (Ohm-m) 1000
100 Long X10 (Ohm-m) 1000
0 Guard Resistivity (Ohm-m) 100
100 Guard X10 (Ohm-m) 1000
Surface Casing
Short X10
Guard X10
50
Short Normal
S.P.
Long Normal
Guard Resistivity
Gamma Ray
100
Long X10
First Reading
150
-25 S.P. (mV) 0
0 Gamma Ray (GAPI) 100
0 Short Normal (Ohm-m) 100
0 Long Normal (Ohm-m) 100
100 Short X10 (Ohm-m) 1000
100 Long X10 (Ohm-m) 1000
0 Guard Resistivity (Ohm-m) 100
100 Guard X10 (Ohm-m) 1000

VICTORY WELL SURVEYS

SONIC VELOCITY
VARIABLE DENSITY
SONIC POROSITY

VWS No. 002465

Company STEHLY BROS. DRILLING
Well Name USLR MW-1D
City PAUMA VALLEY
County SAN DIEGO State CA

Location:

14999 CA-76
.25 MILE SOUTH OF HWY 76

Sec. Twp. Rge.

Other Services:

E-LOG
GUARD

Permanent Datum	G.L.	Elevation N/A	Elevation
Log Measured From	G.L.	0 ft above perm. datum	G.L.
Drilling Measured From	G.L.		D.F.
			K.B.

Date	6-5-23		
Run Number	ONE		
Total Depth Driller	148'		
Total Depth Logger	149'		
Bottom Logged Depth	146'		
Top Logged Depth	10'		
Casing Driller	10" @ 22'		
Casing Logger	22'		
Bit Size	9 7/8"		
Type Fluid in Hole	MUD		
Density / Viscosity	N/A		
pH / Fluid Loss	N/A		
Source of Sample	PIT		
Rm @ Temp	15.5 @ 75F		
Rmf @ Temp	16.7 @ 75F		
Rmc @ Temp	N/A		
Source of Rmf / Rmc	MEASURED		
Rm @ BHT	N/A		
Time Since Circulation	1 HOUR		
Time Log Started	10:45 AM		
Max. Recorded Temperature	N/A		
Truck Number	ONE		
Location	CA		
Operator	LAPORTE		
Representative	A. ARITA		

<<< Fold Here >>>

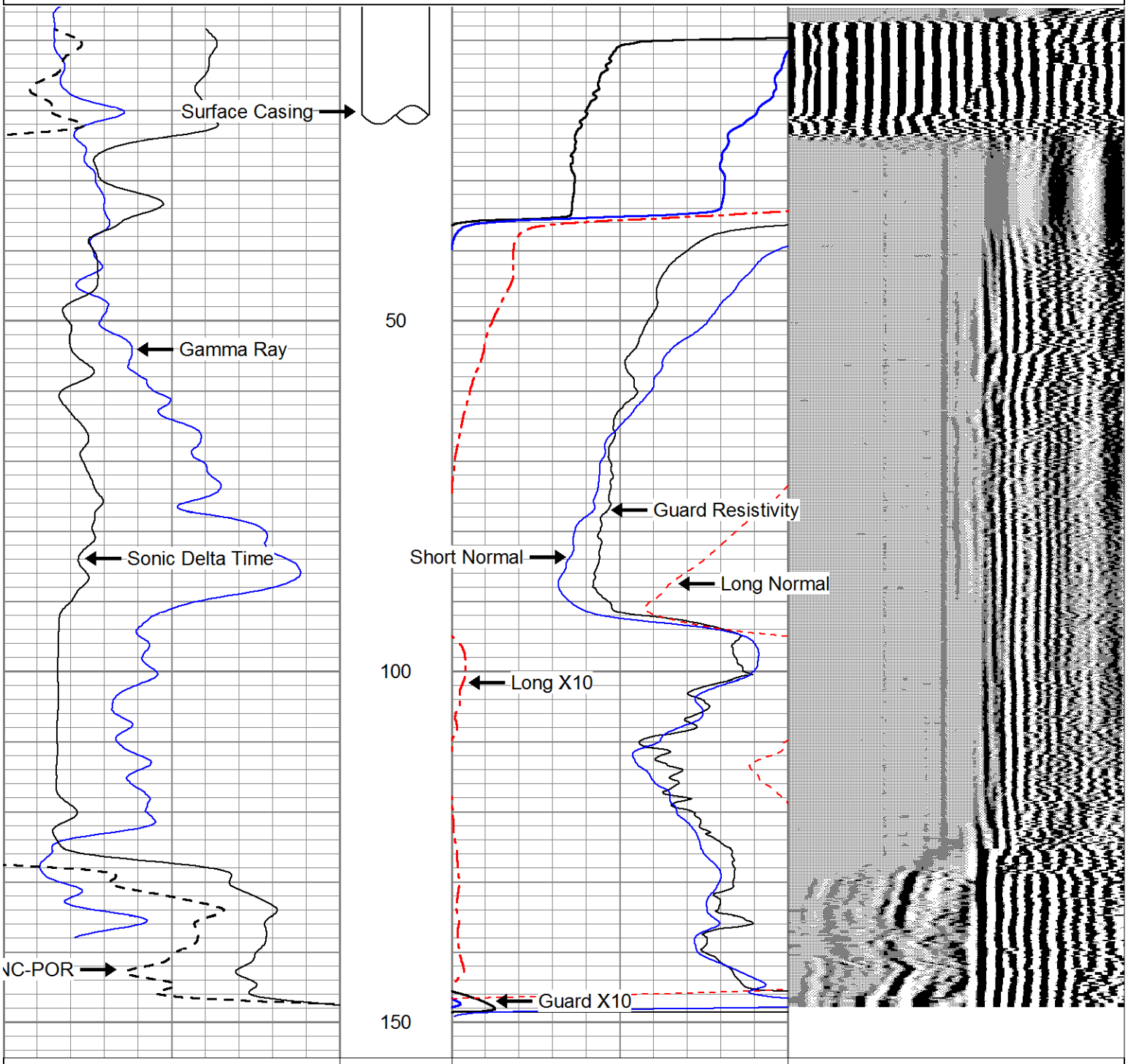
Comments

Database File 002465.db
Dataset Pathname Stehly/well/SNC/pass2
Presentation Format sonic_el
Dataset Creation Mon Jun 05 11:12:21 2023
Charted by Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	100
240	Sonic Velocity (usec/ft)	40
60	SPOR (pu)	0

0	GRD (Ohm-m)	100
100	GRD (Ohm-m)	1000
100	Short X10 (Ohm-m)	1000
100	Long X10 (Ohm-m)	1000
0	Short Normal (Ohm-m)	100
0	Long Normal (Ohm-m)	100

500	Variable Density Log	1500



0	Gamma Ray (GAPI)	100
240	Sonic Velocity (usec/ft)	40
60	SPOR (pu)	0

0	GRD (Ohm-m)	100
100	GRD (Ohm-m)	1000
100	Short X10 (Ohm-m)	1000
100	Long X10 (Ohm-m)	1000
0	Short Normal (Ohm-m)	100
0	Long Normal (Ohm-m)	100

500	Variable Density Log	1500

ATTACHMENT B
Water Quality Data

GEOSCIENCE

The First Name in Groundwater

Clinical Laboratory of San Bernardino, Inc.

Geoscience	Project: Routine	Work Order: 23G0398
P.O. 220	Sub Project: YMWD MWS	Received: 07/06/23 16:10
Claremont CA, 91711	Project Manager: Terry Watkins	Reported: 07/25/23

MW - 1D **23G0398-01 (Water)** **Sample Date:** 07/06/23 13:50 **Sampler:** Robert Sia

Analyte	Method	Result	Units	Rep. Limit	MDL	MCL	Prepared	Analyzed	Batch	Qualifier
Field Analyses										
Spec Conduct / E.C. (Field)	Field	**670**	uS/cm				07/06/23	07/06/23	2327059	
pH (Field)	Field	**7.13**	pH Units				07/06/23	07/06/23	2327059	
Temperature (Field)	Field	**20.4**	°C				07/06/23	07/06/23	2327059	
Turbidity (Field)	Field	**0.5**	NTU				07/06/23	07/06/23	2327059	
General Physical Analyses										
Apparent Color	SM 2120BM	ND	Color Units	3.0		15	07/06/23	07/06/23	2328044	
Odor Threshold	EPA 140.1-M	**1**	TON	1		3	07/06/23	07/06/23	2328044	
Turbidity	EPA 180.1	**0.16**	NTU	0.10	0.020	5	07/06/23	07/06/23	2328044	
General Chemical Analyses										
Alkalinity, Total (as CaCO3)	SM 2320 B	**86**	mg/L	5.0	2.3		07/12/23	07/13/23	2327125	
Bicarbonate (HCO3)	SM 2320 B	**100**	mg/L	5.0			07/12/23	07/13/23	2327125	
Carbonate (CO3)	SM 2320B	ND	mg/L	5.0			07/12/23	07/13/23	2327125	
Chloride (Cl)	EPA 300.0	**48**	mg/L	1.0	0.075	500	07/07/23	07/07/23	2327151	
Langelier Index at Source Tmp	SM 203	**-0.35**			-50.00		07/12/23	07/13/23	2327125	
Langelier Index at 60 C	SM 203	**0.26**			-50.00		07/12/23	07/13/23	2327125	
Aggressive Index	SM 203	**11.48**					07/12/23	07/13/23	2327125	
Cyanide (CN)	SM4500CNF	ND	ug/L	100	37	150	07/07/23	07/07/23	2327157	
Specific Conductance (E.C.)	SM 2510B	**660**	umhos/cm	2.0	0.20	1600	07/12/23	07/13/23	2327125	
Fluoride (F)	EPA 300.0	**0.25**	mg/L	0.10	0.026	2	07/07/23	07/07/23	2327151	
Hydroxide (OH)	SM 2320B	ND	mg/L	5.0			07/12/23	07/13/23	2327125	
MBAS (LAS Mole. Wt 340.0)	SM 5540C	ND	mg/L	0.10	0.047	0.5	07/07/23	07/07/23	2327156	
Nitrate as N (NO3-N)	EPA 300.0	**3.3**	mg/L	0.40	0.12	10	07/07/23	07/07/23	2327151	
Nitrate + Nitrite (as N)	EPA 300.0	**3.3**	mg/L	0.40	0.29	10	07/07/23	07/07/23	2327151	
Nitrite as N (NO2-N)	EPA 300.0	ND	mg/L	0.40	0.17	1	07/07/23	07/07/23	2327151	
Perchlorate (ClO4)	EPA 314.0	ND	ug/L	2.0	0.38	6	07/11/23	07/12/23	2328073	
pH (Lab)	SM 4500HB	**7.4**	pH Units				07/07/23	07/13/23	2327125	
Sulfate (SO4)	EPA 300.0	**160**	mg/L	0.50	0.14	500	07/07/23	07/07/23	2327151	
Sulfide (S)	SM 4500S2D	ND	mg/L	0.10	0.0043		07/12/23	07/12/23	2328066	
Sulfide, Dissolved (S)	SM 4500S2D	ND	mg/L	0.10	0.0043		07/10/23	07/12/23	2328066	HT-01
Total Filterable Residue/TDS	SM 2540C	**450**	mg/L	5.0	3.1	1000	07/13/23	07/14/23	2328133	
Total Organic Carbon	SM 5310B	**3.2**	mg/L	0.30	0.11		07/07/23	07/07/23	2327143	
Metals										
Aluminum (Al)	EPA 200.7	**39**	ug/L	50	14	200	07/12/23	07/12/23	2328079	J

Stu Styles
Client Services Manager

Post Office Box 329 San Bernardino, CA 92402 (909) 825-7693 Fax (909) 825-7696 ELAP Number 1088

Geoscience	Project: Routine	Work Order: 23G0398
P.O. 220	Sub Project: YMWD MWS	Received: 07/06/23 16:10
Claremont CA, 91711	Project Manager: Terry Watkins	Reported: 07/25/23

MW - 1D **23G0398-01 (Water)** **Sample Date:** 07/06/23 13:50 **Sampler:** Robert Sia

Analyte	Method	Result	Units	Rep. Limit	MDL	MCL	Prepared	Analyzed	Batch	Qualifier
Metals										
Antimony (Sb)	EPA 200.8	ND	ug/L	6.0	0.14	6	07/14/23	07/14/23	2328181	
Arsenic (As)	EPA 200.8	**1.8**	ug/L	2.0	0.40	10	07/14/23	07/14/23	2328181	J
Barium (Ba)	EPA 200.7	**28**	ug/L	100	12	1000	07/12/23	07/12/23	2328079	J
Beryllium (Be)	EPA 200.8	ND	ug/L	1.0	0.20	4	07/14/23	07/14/23	2328181	
Boron (B)	EPA 200.7	**63**	ug/L	100	32		07/12/23	07/12/23	2328079	J
Cadmium (Cd)	EPA 200.8	**0.17**	ug/L	1.0	0.11	5	07/14/23	07/14/23	2328181	J
Calcium (Ca)	EPA 200.7	**59**	mg/L	1.0	0.080		07/11/23	07/11/23	2328056	
Chromium (+6)	EPA 218.6	ND	ug/L	1.0	0.14		07/06/23	07/13/23	2328138	
Chromium (Total Cr)	EPA 200.8	**4.1**	ug/L	10	0.21	50	07/14/23	07/14/23	2328181	J
Copper (Cu)	EPA 200.7	**7.7**	ug/L	50	6.5	1000	07/12/23	07/12/23	2328079	J
Iron (Fe)	EPA 200.7	**23**	ug/L	100	14	300	07/12/23	07/12/23	2328079	J
Lead (Pb)	EPA 200.8	ND	ug/L	5.0	0.51		07/14/23	07/14/23	2328181	
Magnesium (Mg)	EPA 200.7	**20**	mg/L	1.0	0.51		07/11/23	07/11/23	2328056	
Manganese (Mn)	EPA 200.7	**20**	ug/L	20	0.80	50	07/12/23	07/12/23	2328079	
Mercury (Hg)	EPA 200.8	ND	ug/L	1.0	0.10	2	07/19/23	07/19/23	2329128	
Nickel (Ni)	EPA 200.8	**1.2**	ug/L	10	0.52	100	07/14/23	07/14/23	2328181	J
Potassium (K)	EPA 200.7	**3.9**	mg/L	1.0	0.18		07/11/23	07/11/23	2328056	
Selenium (Se)	EPA 200.8	**18**	ug/L	5.0	0.95	50	07/14/23	07/14/23	2328181	
Silica (SiO2)	EPA 200.7	**34**	mg/L	0.50	0.018		07/13/23	07/13/23	2328156	
Silver (Ag)	EPA 200.8	ND	ug/L	10	0.30	100	07/14/23	07/14/23	2328181	
Sodium (Na)	EPA 200.7	**53**	mg/L	1.0	0.21		07/11/23	07/11/23	2328056	
Thallium (Tl)	EPA 200.8	**0.28**	ug/L	1.0	0.18	2	07/14/23	07/14/23	2328181	J
Vanadium (V)	EPA 200.8	**5.8**	ug/L	3.0	0.25		07/14/23	07/14/23	2328181	
Zinc (Zn)	EPA 200.7	ND	ug/L	50	15	5000	07/12/23	07/12/23	2328079	
Calculated Analysis										
Hardness, Total (as CaCO3)	Calculated	**230**	mg/L	6.6			07/11/23	07/11/23	[CALC]	
Total Anions	Calculated	**6.33**	meq/L				07/11/23	07/13/23	[CALC]	
Total Cations	Calculated	**7**	meq/L				07/11/23	07/11/23	[CALC]	
% difference	Calculated	**10**					07/11/23	07/13/23	[CALC]	
Radiochemistry Analyses										
Gross Alpha	SM 7110C	ND	pCi/L	3.0	1.3	15	07/21/23	07/25/23	2329141	
Gross Alpha Counting Error	SM 7110C	**0.40**	pCi/L				07/21/23	07/25/23	2329141	
Gross Alpha Min Det Activity	SM 7110C	**0.38**	pCi/L				07/21/23	07/25/23	2329141	
Uranium	EPA 200.8	**0.72**	pCi/L	1.0	0.038	20	07/17/23	07/17/23	2329011	J

Stu Styles
Client Services Manager

Post Office Box 329 San Bernardino, CA 92402 (909) 825-7693 Fax (909) 825-7696 ELAP Number 1088

Geoscience	Project: Routine	Work Order: 23G0398
P.O. 220	Sub Project: YMWD MWS	Received: 07/06/23 16:10
Claremont CA, 91711	Project Manager: Terry Watkins	Reported: 07/25/23

MW - 1D **23G0398-01 (Water)** **Sample Date:** 07/06/23 13:50 **Sampler:** Robert Sia

Analyte	Method	Result	Units	Rep. Limit	MDL	MCL	Prepared	Analyzed	Batch	Qualifier
Volatile Organic Analyses										
Vinyl Chloride (VC)	EPA 524.2	ND	ug/L	0.50	0.22	0.5	07/11/23	07/12/23	2328049	
Trichlorofluoromethane (FREON 11)	EPA 524.2	ND	ug/L	5.0	1.5	150	07/11/23	07/12/23	2328049	
1,1-Dichloroethylene (1,1-DCE)	EPA 524.2	ND	ug/L	0.50	0.18	6	07/11/23	07/12/23	2328049	
1,1,2-Trichloro-1,2,2-trifluoroethane	EPA 524.2	ND	ug/L	10	0.20	1200	07/11/23	07/12/23	2328049	
Dichloromethane (Methylene Chloride)	EPA 524.2	ND	ug/L	0.50	0.29	5	07/11/23	07/12/23	2328049	
trans-1,2-Dichloroethylene (t-1,2-DCE)	EPA 524.2	ND	ug/L	0.50	0.23	10	07/11/23	07/12/23	2328049	
Methyl tert-Butyl Ether	EPA 524.2	ND	ug/L	3.0	0.26	13	07/11/23	07/12/23	2328049	
1,1-Dichloroethane (1,1-DCA)	EPA 524.2	ND	ug/L	0.50	0.25	5	07/11/23	07/12/23	2328049	
cis-1,2-Dichloroethylene (c-1,2-DCE)	EPA 524.2	ND	ug/L	0.50	0.21	6	07/11/23	07/12/23	2328049	
Chloroform (Trichloromethane)	EPA 524.2	ND	ug/L	1.0	0.57		07/11/23	07/12/23	2328049	
Carbon Tetrachloride	EPA 524.2	ND	ug/L	0.50	0.17	0.5	07/11/23	07/12/23	2328049	
1,1,1-Trichloroethane (1,1,1-TCA)	EPA 524.2	ND	ug/L	0.50	0.21	200	07/11/23	07/12/23	2328049	
Benzene	EPA 524.2	ND	ug/L	0.50	0.25	1	07/11/23	07/12/23	2328049	
1,2-Dichloroethane (1,2-DCA)	EPA 524.2	ND	ug/L	0.50	0.17	0.5	07/11/23	07/12/23	2328049	
Trichloroethylene (TCE)	EPA 524.2	ND	ug/L	0.50	0.24	5	07/11/23	07/12/23	2328049	
1,2-Dichloropropane	EPA 524.2	ND	ug/L	0.50	0.24	5	07/11/23	07/12/23	2328049	
Bromodichloromethane	EPA 524.2	ND	ug/L	1.0	0.44		07/11/23	07/12/23	2328049	
Toluene	EPA 524.2	ND	ug/L	0.50	0.29	150	07/11/23	07/12/23	2328049	
Tetrachloroethylene (PCE)	EPA 524.2	ND	ug/L	0.50	0.16	5	07/11/23	07/12/23	2328049	
1,1,2-Trichloroethane (1,1,2-TCA)	EPA 524.2	ND	ug/L	0.50	0.35	5	07/11/23	07/12/23	2328049	
Dibromochloromethane	EPA 524.2	ND	ug/L	1.0	0.36		07/11/23	07/12/23	2328049	
Monochlorobenzene (Chlorobenzene)	EPA 524.2	ND	ug/L	0.50	0.27	70	07/11/23	07/12/23	2328049	
Ethyl Benzene	EPA 524.2	ND	ug/L	0.50	0.22	300	07/11/23	07/12/23	2328049	
cis-1,3-Dichloropropene	EPA 524.2	ND	ug/L	0.50	0.16		07/11/23	07/12/23	2328049	
m,p-Xylene	EPA 524.2	ND	ug/L	1.0	0.44		07/11/23	07/12/23	2328049	
o-Xylene	EPA 524.2	ND	ug/L	0.50	0.22		07/11/23	07/12/23	2328049	
trans-1,3-Dichloropropene	EPA 524.2	ND	ug/L	0.50	0.22		07/11/23	07/12/23	2328049	
Styrene	EPA 524.2	ND	ug/L	0.50	0.20	100	07/11/23	07/12/23	2328049	
Bromoform	EPA 524.2	ND	ug/L	1.0	0.18		07/11/23	07/12/23	2328049	
1,1,2,2-Tetrachloroethane	EPA 524.2	ND	ug/L	0.50	0.14		07/11/23	07/12/23	2328049	
1,4-Dichlorobenzene (p-DCB)	EPA 524.2	ND	ug/L	0.50	0.19	5	07/11/23	07/12/23	2328049	
1,2-Dichlorobenzene (o-DCB)	EPA 524.2	ND	ug/L	0.50	0.15	600	07/11/23	07/12/23	2328049	

Stu Styles
Client Services Manager

Post Office Box 329 San Bernardino, CA 92402 (909) 825-7693 Fax (909) 825-7696 ELAP Number 1088

Geoscience
P.O. 220
Claremont CA, 91711

Project: Routine
Sub Project: YMWD MWS
Project Manager: Terry Watkins

Work Order: 23G0398
Received: 07/06/23 16:10
Reported: 07/25/23

MW - 1D **23G0398-01 (Water)** **Sample Date:** 07/06/23 13:50 **Sampler:** Robert Sia

Analyte	Method	Result	Units	Rep. Limit	MDL	MCL	Prepared	Analyzed	Batch	Qualifier
Volatile Organic Analyses										
1,2,4-Trichlorobenzene	EPA 524.2	ND	ug/L	0.50	0.18	5	07/11/23	07/12/23	2328049	
Total 1,3-Dichloropropene	EPA 524.2	ND	ug/L	0.50	0.22	0.5	07/11/23	07/12/23	2328049	
Total Trihalomethanes (TTHM)	EPA 524.2	ND	ug/L	1.0	0.57	80	07/11/23	07/12/23	2328049	
Total Xylenes (m,p & o)	EPA 524.2	ND	ug/L	0.50	0.44	1750	07/11/23	07/12/23	2328049	
Surrogate: 1,2-Dichlorobenzene-d4	*EPA 524.2*	*98 %*					*07/11/23*	*07/12/23*	*2328049*	
Surrogate: Bromofluorobenzene	*EPA 524.2*	*88 %*					*07/11/23*	*07/12/23*	*2328049*	
Semi-Volatile Organic Analyses / EPA 504										
Ethylene Dibromide (EDB)	EPA 504.1	ND	ug/L	0.020	0.0024	0.05	07/10/23	07/11/23	2328012	
Dibromochloropropane (DBCP)	EPA 504.1	ND	ug/L	0.010	0.0014	0.2	07/10/23	07/11/23	2328012	
Synthetic Organic Analyses / 1,2,3-TCP										
1,2,3-Trichloropropane	SRL 524M-TCP	ND	ug/L	0.0050	0.0012	0.005	07/08/23	07/08/23	2327149	
Synthetic Organic Analyses										
Endrin	EPA 508.1	ND	ug/L	0.10	0.0020	2	07/10/23	07/16/23	2328001	
Lindane (gamma-BHC)	EPA 508.1	ND	ug/L	0.20	0.0015	0.2	07/10/23	07/16/23	2328001	
Methoxychlor	EPA 508.1	ND	ug/L	10	0.017	30	07/10/23	07/16/23	2328001	
Toxaphene	EPA 508.1	ND	ug/L	1.0	0.20	3	07/10/23	07/16/23	2328001	
Chlordane	EPA 508.1	ND	ug/L	0.10	0.021	0.1	07/10/23	07/16/23	2328001	
Heptachlor	EPA 508.1	ND	ug/L	0.010	0.0018	0.01	07/10/23	07/16/23	2328001	
Heptachlor Epoxide	EPA 508.1	ND	ug/L	0.010	0.0024	0.01	07/10/23	07/16/23	2328001	
Hexachlorobenzene	EPA 508.1	ND	ug/L	0.50	0.0013	1	07/10/23	07/16/23	2328001	
Hexachlorocyclopentadiene	EPA 508.1	ND	ug/L	1.0	0.013	50	07/10/23	07/16/23	2328001	
Polychlorinated Biphenyls (PCBs)	EPA 508.1	ND	ug/L	0.50		0.5	07/10/23	07/16/23	2328001	
Surrogate: 4-4'-Dichlorobiphenyl	*EPA 508.1*	*74 %*					*07/10/23*	*07/16/23*	*2328001*	
Dalapon	EPA 515.4	ND	ug/L	10	3.0	200	07/17/23	07/21/23	2329007	
2,4,5-TP (SILVEX)	EPA 515.4	ND	ug/L	1.0	0.18	50	07/17/23	07/21/23	2329007	
Bentazon (BASAGRAN)	EPA 515.4	ND	ug/L	2.0	0.71	18	07/17/23	07/21/23	2329007	
Picloram	EPA 515.4	ND	ug/L	1.0	0.18	500	07/17/23	07/21/23	2329007	
2,4-D	EPA 515.4	ND	ug/L	10	1.3	70	07/17/23	07/21/23	2329007	
Pentachlorophenol (PCP)	EPA 515.4	ND	ug/L	0.20	0.028	1	07/17/23	07/21/23	2329007	
Dinoseb (DNBP)	EPA 515.4	ND	ug/L	2.0	0.34	7	07/17/23	07/21/23	2329007	
Surrogate: 2,4-Dichlorophenylacetic acid	*EPA 515.4*	*94 %*					*07/17/23*	*07/21/23*	*2329007*	
Alachlor (ALANEX)	EPA 525.2	ND	ug/L	1.0	0.44	2	07/12/23	07/18/23	2328117	

Stu Styles
Client Services Manager

Geoscience	Project: Routine	Work Order: 23G0398
P.O. 220	Sub Project: YMWD MWS	Received: 07/06/23 16:10
Claremont CA, 91711	Project Manager: Terry Watkins	Reported: 07/25/23

MW - 1D **23G0398-01 (Water)** **Sample Date:** 07/06/23 13:50 **Sampler:** Robert Sia

Analyte	Method	Result	Units	Rep. Limit	MDL	MCL	Prepared	Analyzed	Batch	Qualifier
Synthetic Organic Analyses										
Atrazine (AATREX)	EPA 525.2	ND	ug/L	0.50	0.15	1	07/12/23	07/18/23	2328117	
Benzo(a)pyrene	EPA 525.2	ND	ug/L	0.10	0.020	0.2	07/12/23	07/18/23	2328117	
Diethylhexylphthalate (DEHP)	EPA 525.2	ND	ug/L	3.0	1.0	4	07/12/23	07/18/23	2328117	
Di(2-ethylhexyl) adipate	EPA 525.2	ND	ug/L	5.0	2.4	400	07/12/23	07/18/23	2328117	
Molinate (ORDRAM)	EPA 525.2	ND	ug/L	2.0	0.68	20	07/12/23	07/18/23	2328117	
Simazine (PRINCEP)	EPA 525.2	ND	ug/L	1.0	0.14	4	07/12/23	07/18/23	2328117	
Thiobencarb (BOLERO)	EPA 525.2	ND	ug/L	1.0	0.25	70	07/12/23	07/18/23	2328117	
Surrogate: 1,3-dimethyl-2-nitrobenzene	*EPA 525.2*	*107 %*					*07/12/23*	*07/18/23*	*2328117*	
Surrogate: Perylene-d12	*EPA 525.2*	*104 %*					*07/12/23*	*07/18/23*	*2328117*	
Surrogate: Triphenylphosphate	*EPA 525.2*	*72 %*					*07/12/23*	*07/18/23*	*2328117*	
Oxamyl (VYDATE)	EPA 531.1	ND	ug/L	20	0.43	50	07/17/23	07/19/23	2329002	
Carbofuran (FURADAN)	EPA 531.1	ND	ug/L	5.0	0.56	18	07/17/23	07/19/23	2329002	
Glyphosate	EPA 547	ND	ug/L	25	8.6	700	07/16/23	07/18/23	2329001	
Endothall	EPA 548.1	ND	ug/L	45	0.60	100	07/12/23	07/15/23	2328048	
Diquat	EPA 549.2	ND	ug/L	4.0	0.10	20	07/13/23	07/21/23	2328134	
Subcontracted Analyses										
2,3,7,8-Tetrachlorodibenzo-p-dioxin	EPA 1613B	ND	pg/L	5.0	2.5	30	07/19/23	07/20/23	2329121	CERES
Asbestos	EPA 100.2	ND	MFL	0.20		7	07/19/23	07/20/23	2329121	LT
Bromide (Br)	EPA 300.0	**0.096**	mg/L	0.010	0.0030		07/10/23	07/24/23	2328033	BSK

LT	Analysis performed at LA Testing, ELAP 2283
J	Detected below the Reporting Limit; reported concentration is estimated; (J-Flag)
HT-01	Analysis performed outside of recommended hold time.
CERES	Analysis performed by Ceres Analytical Laboratory, Inc. ELAP # 3046
BSK	Analysis performed at BSK Associates - Fresno ELAP # 1180
	pH (Lab) was analyzed ASAP but received and analyzed past the 15 minute hold time.
ND	Analyte NOT DETECTED at or above the MDL; Method Detection Limit

Stu Styles
Client Services Manager

Post Office Box 329 San Bernardino, CA 92402 (909) 825-7693 Fax (909) 825-7696 ELAP Number 1088

LA Testing
520 Mission Street South Pasadena, CA 91030
Phone/Fax: (323) 254-9960 / (323) 254-9982
http://www.LATesting.com / pasadenalab@latesting.com

LA Testing Order ID: 322317282
Customer ID: 32CLIN51
Customer PO:
Project ID:

Attn: Stu Styles
Clinical Laboratory of San Bernardino
PO BOX 329
San Bernardino, CA 92402

Phone: (909) 825-7693
Fax:
Received: 07/07/2023
Analyzed: 07/16/2023

Proj: 23G0398

Test Report: Determination of Asbestos Structures >10µm in Drinking Water Performed by the 100.2 Method (EPA 600/R-94/134)

Sample ID Client / EMSL	Sample Filtration Date/Time	Original Sample Vol. Filtered (ml)	Effective Filter Area (mm²)	Area Analyzed (mm²)	ASBESTOS Asbestos Types	Fibers Detected	Analytical Sensitivity	Concentration	Confidence Limits
							MFL (million fibers per liter)		
MW - 1D / 23G0398-01 322317282-0001	7/7/2023 01:00 PM	30	1288	0.2227	None Detected	ND	0.19	<0.19	0.00 - 0.71
Collection Date/Time:	*07/06/2023 13:50 PM*								

Analyst(s)
Sherrie Ahmad (1)

Jerry Drapala Ph.D, Laboratory Manager
or Other Approved Signatory

Any questions please contact Jerry Drapala.

Initial report from: 07/20/2023 07:47:14

OrderID: 322317282

SUBCONTRACT ORDER

Clinical Laboratory of San Bernardino

23G0398 **#322317282**

SENDING LABORATORY:

Clinical Laboratory of San Bernardino
21881 Barton Road
Grand Terrace, CA 92313
Phone: 909.825.7693
Fax: 909.825.7696
Project Manager: Stu Styles

RECEIVING LABORATORY:

LA Testing
520 Mission Street
South Pasadena, CA 91030
Phone :(323) 254-9960
Fax: (323) 254-9982

Please email results to Project Manager: Stu Styles
[ ] navarro@clinical-lab.com [X] styles@clinical-lab.com [ ] jhernandez@clinical-lab.com [ ] durand@clinical-lab.com

CLIP transfer those samples with PS codes provided [ ] Yes [X] No
Water Trax Upload Client: _____ [ ] Yes [X] No
GeoTracker Upload Client: _____ [ ] Yes [X] No
MDL's / J Flags [ ] Yes [X] No

Turn Around Time [X] 10 Days [ ] 5 Days [ ] Other __ Days
Subcontract Comments:

Analysis	Comments
Sample ID: MW - 1D / 23G0398-01 Water	**Sampled: 07/06/23 13:50 PS Code: WTX ID:**
Asbestos in Drinking Water EPA 100.2	

Containers Supplied:

1 Quart Plastic (Q)

Released By	Date / Time	Received By	Date / Time
	7/7/23		7-7 0815
Released By	Date / Time	Received By	Date / Time
		Makenna Fuentes (ML)	7-7-23 11:50
Released By	Date / Time	Received By	Date / Time

Samples Received on ( ) Wet Ice ( ) Blue Ice ( ) No Ice Received Temp 1.8 (F) (C)

CERES Analytical Laboratory, Inc.
4919 Windplay Dr. Suite 1, El Dorado Hills, CA 95762

July 20, 2023 Ceres ID: 16612

Clinical Laboratory of San Bernardino
21881 Barton Road
Grand Terrace, CA 92313

The following report contains the results for the one drinking water sample received on July 12, 2023. This sample was analyzed for 2,3,7,8-TCDD by EPA method 1613. Routine turn-around time was provided for this work.

This work was authorized under your Subcontract Order # 23G0398.

Continuing Calibration Verification (CCV) Requirements
All associated calibration verification standard(s) (CCV) met the acceptance criteria.

The report consists of a Cover Letter, Sample Inventory (Section I), Data Summary (Section II), Sample Tracking (Section VI), and Qualifiers/Abbreviations (Section VII). Raw Data (Section III), Continuing Calibration (Section IV), and Initial Calibration (Section V) are available in a full report (.pdf format) upon request.

If you have any questions regarding this report, please feel free to contact me at (916)932-5011.

Sincerely,

James M. Hedin
Director of Operations/CEO
jhedin@ceres-lab.com

Section I: Sample Inventory

Ceres Sample ID:	Sample ID	Date Received	Collection Date	&Time
16612-001	MW-1D / 23G0398-01	7/12/2023	7/6/2023	13:50

Section II: Data Summary

CERES Analytical Laboratory, Inc.
4919 Windplay Dr.Suite 1, El Dorado Hills, CA 95762

EPA Method 1613B

Quality Assurance Sample **Method Blank**	**QC Batch #:** 2917	**Date Received:** NA
	Matrix: Drinking Water	**Date Extracted:** 7/18/2023
Project ID: 23G0398	**Sample Size:** 1.000 L	**Date Analyzed:** 7/18/2023

Analyte	Conc. (pg/L)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 2.46	3.12	5.00		13C-2378-TCDD	86.0	31-137	
					CRS			
					37Cl4-2378-TCDD	82.7	35-197	

DL - Signifies Non-Detect (ND<) sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit

Analyst: JMH **Reviewed by: BS**

CERES Analytical Laboratory, Inc.
4919 Windplay Dr. Suite 1, El Dorado Hills, CA 95762

EPA Method 1613B

Quality Assurance Sample **Ongoing Precision and Recovery**		**Date Received:** NA
	QC Batch #: 2917	**Date Extracted:** 7/18/2023
	Matrix: Drinking Water	**Date Analyzed:** 7/18/2023
Project ID: 23G0398	**Sample Size:** 1.000 L	

Analyte	Conc. (ng/mL)	Limits (a)	Labeled Standards	% Rec.	Limits (a)
2,3,7,8-TCDD	8.60	7.3-14.6	13C-2378-TCDD	82.5	25-141
			CRS		
			37Cl4-2378-TCDD	85.2	37-158

(a) Limits based on method acceptance criteria.

Analyst: JMH **Reviewed by: BS**

CERES Analytical Laboratory, Inc.
4919 Windplay Dr. Suite 1, El Dorado Hills, CA 95762

EPA Method 1613B

Client Sample ID: MW-1D / 23G0398-01		
Project ID: 23G0398	**Ceres Sample ID:** 16612-001	**Date Received:** 7/12/2023
	QC Batch #: 2917	**Date Extracted:** 7/18/2023
Date Collected: 7/6/2023	**Matrix:** Drinking Water	**Date Analyzed:** 7/18/2023
Time Collected: 13:50	**Sample Size:** 1.039 L	

Analyte	Conc. (pg/L)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 2.33	3.12	4.81		13C-2378-TCDD	80.9	31-137	
					CRS			
					37Cl4-2378-TCDD	87.4	42-164	

DL - Signifies Non-Detect (ND<) sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit

Analyst: JMH **Reviewed by: BS**

Section VI: Sample Tracking

SUBCONTRACT ORDER

Clinical Laboratory of San Bernardino

23G0398

SENDING LABORATORY:

Clinical Laboratory of San Bernardino
21881 Barton Road
Grand Terrace, CA 92313
Phone: 909.825.7693
Fax: 909.825.7696
Project Manager: Stu Styles

RECEIVING LABORATORY:

Ceres Analytical Laboratory, Inc.
4919 Windplay Dr., Ste. 1
El Dorado Hills, CA 95762
Phone :(916) 932-5011
Fax:

Please email results to Project Manager: Stu Styles
[ ] navarro@clinical-lab.com [X] styles@clinical-lab.com [ ] jhernandez@clinical-lab.com [ ] durand@clinical-lab.com

CLIP transfer those samples with PS codes provided [ ] Yes [X] No
Water Trax Upload Client: _____ [ ] Yes [X] No
GeoTracker Upload Client: _____ [ ] Yes [X] No
MDL's / J Flags [ ] Yes [X] No

Turn Around Time [X] 10 Days [ ] 5 Days [ ] Other __ Days
Subcontract Comments:

Analysis	Comments
Sample ID: MW - 1D / 23G0398-01 Water	**Sampled: 07/06/23 13:50 PS Code: WTX ID:**
1613 Dioxins TCDD DW Week	

Containers Supplied:

1 L Amber Glass Na Thio EPA 1613 (R) 1 L Amber Glass Na Thio EPA 1613 (S)

Released By	Date / Time	Received By	Date / Time
	7/10/23		7/10/23
	7/10/23		7/12/23 1240

Samples Received on ( ) Wet Ice ( ) Blue Ice ( ) No Ice Received Temp _____ (F / C)

Sample Receipt Check List Logged by: lk (initials)

Ceres ID: 16612	Date/Time: 7/12/23 1240
Client Project ID: 23 G0398	Received Temp: 6.0 °C Acceptable: Y / N
Chain of Custody Relinquished by signed?	Y / N
Chain of Custody Received by signed?	Y / N
Custody Seals? Present?	Y / N
Intact?	Y / N
NA:	NA
Unlabeled / Illegible Samples	Y / N
Proper Containers:	Y / N
Preservation Acceptable (Chemical or Temperature)?	Y / N
Drinking Water, Sodium Thiosulfate present?	Y / N / NA
Residual Cl?	Y / N / NA
Aqueous sample pH: 2	NA

List COC discrepancies:

lk 7/12/23

List Damaged Samples:

lk 7/12/23

Section VII: Qualifiers/Abbreviations

J	Concentration found below the lower quantitation limit but greater than zero.
B	Analyte present in the associated Method Blank.
E	Concentration found exceeds the Calibration range of the HRGC/HRMS.
D	This analyte concentration was calculated from a dilution.
X	The concentration found is the estimated maximum possible concentration due to chlorinated diphenyl ethers present in the sample.
H	Recovery limits exceeded. See cover letter.
*****	Results taken from dilution.
I	Interference. See cover letter.
Conc.	Concentration Found
DL	Calculated Detection Limit
ND	Non-Detect
% Rec.	Percent Recovery

BSK Associates San Bernardino
350 E. Commercial Road, Suite 110
San Bernardino, CA 92408
909-796-2059 (Main)

RGG0060
7/24/2023

Stu Styles
Clinical Laboratory of San Bernardino, Inc
21881 Barton Road
Grand Terrace, CA 92313

RE: Report for RGG0060 General - Trace

Dear Stu Styles,

Thank you for using BSK Associates for your analytical testing needs. In the following pages, you will find the test results for the samples submitted to our laboratory on 7/10/2023. The results have been approved for release by our Laboratory Director as indicated by the authorizing signature below.

The samples were analyzed for the test(s) indicated on the Chain of Custody (see attached) and the results relate only to the samples analyzed. BSK certifies that the testing was performed in accordance with the quality system requirements specified in the 2016 TNI Standard. Any deviations from this standard or from the method requirements for each test procedure performed will be annotated alongside the analytical result or noted in the Case Narrative. Unless otherwise noted, the sample results are reported on an "as received" basis.

If additional clarification of any information is required, please contact your Project Manager, Elaine M. Phillips , at 909-796-2059.

Thank you again for using BSK Associates. We value your business and appreciate your loyalty.

Sincerely,

Elaine M. Phillips, Project Manager

Accredited in Accordance with NELAP
ORELAP #4119

Case Narrative

Project and Report Details		Invoice Details	
Client:	Clinical Laboratory of San Bernardino, Inc	**Invoice To:**	Clinical Laboratory of San Bernardino, I
Report To:	Stu Styles	**Invoice Attn:**	Stu Styles
Project #:	23G0398	**Project PO#:**	-
Received:	7/10/2023 - 12:54		
Report Due:	7/24/2023		

Sample Receipt Conditions

Cooler: Default Cooler
Temperature on Receipt ºC: 5.3

Containers Intact
COC/Labels Agree
Preservation Confirmed
Received On Wet Ice
Packing Material - Other
Sample(s) were received in temperature range.
Initial receipt at BSK-RAL

Data Qualifiers

The following qualifiers have been applied to one or more analytical results:

None applied

Report Distribution

Recipient(s)	Report Format	CC:
Stu Styles	FINAL.RPT	

Certificate of Analysis

Sample ID: RGG0060-01
Sampled By: Client
Sample Description: MW-1D // 23G0398-01

Sample Date - Time: 07/06/2023 - 13:50
Matrix: Waste Water
Sample Type: Composite

Composite Start: 07/05/2023 - 13:50

BSK Associates Laboratory Fresno

General Chemistry

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Bromide	EPA 300.0	**0.096**	0.0030	0.010	mg/L	1	AGG1035	07/17/23	07/17/23	

BSK Associates Laboratory Fresno

General Chemistry Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 300.0 - Quality Control												
Batch: AGG1035											Prepared: 7/17/2023	
Prep Method: Method Specific Preparation											Analyst: CTD	
Blank (AGG1035-BLK1)												
Bromide	ND	0.0030	0.010	mg/L							07/17/23	
Blank Spike (AGG1035-BS1)												
Bromide	0.19	0.0030	0.010	mg/L	0.20		97	90-110			07/17/23	
Matrix Spike (AGG1035-MS1), Source: AGG0485-03												
Bromide	0.18	0.0030	0.010	mg/L	0.10	0.10	81	80-120			07/17/23	
Matrix Spike (AGG1035-MS2), Source: AGG1841-01												
Bromide	0.10	0.0030	0.010	mg/L	0.10	ND	101	80-120			07/17/23	
Matrix Spike Dup (AGG1035-MSD1), Source: AGG0485-03												
Bromide	0.19	0.0030	0.010	mg/L	0.10	0.10	91	80-120	5	10	07/17/23	
Matrix Spike Dup (AGG1035-MSD2), Source: AGG1841-01												
Bromide	0.10	0.0030	0.010	mg/L	0.10	ND	100	80-120	1	10	07/17/23	

Certificate of Analysis

Notes:

- The Chain of Custody document and Sample Integrity Sheet are part of the analytical report.
- Any remaining sample(s) for testing will be disposed of according to BSK's sample retention policy unless other arrangements are made in advance.
- All positive results for EPA Methods 504.1 and 524.2 require the analysis of a Field Reagent Blank (FRB) to confirm that the results are not a contamination error from field sampling steps. If Field Reagent Blanks were not submitted with the samples, this method requirement has not been performed.
- Samples collected by BSK Analytical Laboratories were collected in accordance with the BSK Sampling and Collection Standard Operating Procedures.
- J-value is equivalent to DNQ (Detected, not quantified) which is a trace value. A trace value is an analyte detected between the MDL and the laboratory reporting limit. This result is of an unknown data quality and is only qualitative (estimated). Baseline noise, calibration curve extrapolation below the lowest calibrator, method blank detections, and integration artifacts can all produce apparent DNQ values, which contribute to the un-reliability of these values.
- (1) - Residual chlorine and pH analysis have a 15 minute holding time for both drinking and waste water samples as defined by the EPA and 40 CFR 136. Waste water and ground water (monitoring well) samples must be field filtered to meet the 15 minute holding time for dissolved metals.
- Field tests are outside the scope of laboratory accreditation and there is no certification available for field testing.
- Summations of analytes (i.e. Total Trihalomethanes) may appear to add individual amounts incorrectly, due to rounding of analyte values occurring before or after the total value is calculated, as well as rounding of the total value.
- RL Multiplier is the factor used to adjust the reporting limit (RL) due to variations in sample preparation procedures and dilutions required for matrix interferences.
- Due to the subjective nature of the Threshold Odor Method, all characterizations of the detected odor are the opinion of the panel of analysts. The characterizations can be found in Standard Methods 2170B Figure 2170:1.
- The MCLs provided in this report (if applicable) represent the primary MCLs for that analyte.
- (2) - Formerly known as Bis(2-Chloroisopropyl) ether.

Unless otherwise noted, TOC results by SM 5310C method do not include purgeable organic carbon, which is removed along with the inorganic carbon interference. The POC contribution to TOC is considered to be negligible.

Certificate of Analysis

Definitions

mg/L:	Milligrams/Liter (ppm)	MDL:	Method Detection Limit	MDA95:	Min. Detected Activity
mg/Kg:	Milligrams/Kilogram (ppm)	RL:	Reporting Limit: DL x Dilution	MPN:	Most Probable Number
µg/L:	Micrograms/Liter (ppb)	ND:	None Detected below MRL/MDL	CFU:	Colony Forming Unit
µg/Kg:	Micrograms/Kilogram (ppb)	pCi/L:	PicoCuries per Liter	Absent:	Less than 1 CFU/100mLs
%:	Percent	RL Mult:	RL Multiplier	Present:	1 or more CFU/100mLs
NR:	Non-Reportable	MCL:	Maximum Contaminant Limit	U:	The analyte was not detected at or above the reported sample quantitation limit.

Please see the individual Subcontract Lab's report for applicable certifications.

The following parameters are not available for certification through CA ELAP:

Odor Diisopropyl ether (DIPE) by EPA 524.2

The following parameters are calculated values and are outside the scope of our NELAP accreditation:

Total Nitrogen Aggressive Index Trivalent Chromium

BSK is not accredited under the NELAP program for the following additional parameters: **NA**

Certifications: **Please refer to our website for a copy of our Accredited Fields of Testing under each certification.**

Fresno

State of California - ELAP	1180	State of Hawaii	4021
Los Angeles CSD	9254479	NELAP certified	4021-021
State of Nevada	CA000792022-1	State of Oregon - NELAP	4021-021
EPA UCMR5	CA00079	State of Washington	C997-23

Sacramento

State of California - ELAP	1180-S1		

San Bernardino

State of California - ELAP	1180-S2	Los Angeles CSD	9254478
NELAP certified	4119-007	State of Oregon - NELAP	4119-007

Vancouver

NELAP certified	WA100008-016	State of Oregon - NELAP	WA100008-016
State of Washington	C824-22		

BSK Associates SR-FL-0002-24

RGG0060 CLIN17693 07/10/2023

10

Sample Integrity

BSK Bottles: Yes No Page 1 of 1

COC Info

Was temperature within range? Chemistry ≤ 6°C Micro < 8°C	Yes No NA	Were correct containers and preservatives received for the tests requested?	Yes No NA
If samples were taken today, is there evidence that chilling has begun?	Yes No NA	Bubbles Present VOAs (524.2/TTHM/TCP)? TB Received? (Check Method Below)	Yes No NA Yes No NA
Did all bottles arrive unbroken and intact?	Yes No	Was a sufficient amount of sample received?	Yes No
Did all bottle labels agree with COC?	Yes No	Do samples have a hold time <72 hours?	Yes No
Was sodium thiosulfate added to CN sample(s) until chlorine was no longer present?	Yes NA	Was PM notified of discrepancies? PM: By/Time:	Yes No NA

Bottles Received

"—" means preservation/chlorine checks are either N/A or are performed in the lab

250ml(A) 500ml(B) 1Liter(C) 40mlVOA(V) 125ml(D)	Checks*	Passed?	-01				
Bacti $Na_2S_2O_3$	—	—					
None (P) White Cap	—	—	1A				
Cr6 (P) Lt. Green Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **DW**	Cl, pH > 8	P F					
Cr6 (P) Pink Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **WW**	pH 9.3-9.7	P F					
Cr6 (P) Black Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **7199** ***24 HOUR HOLD TIME***	pH 9.0-9.5	P F					
HNO_3 (P) Red Cap or HCl (P) Purple Cap/Lt. Blue Label	—	—					
H_2SO_4 (P) or (AG) Yellow Cap/Label	pH < 2	P F					
NaOH (P) Green Cap	Cl, pH >10	P F					
NaOH + ZnAc (P)	pH > 9	P F					
Dissolved Oxygen 300ml (g)	—	—					
None (AG) 608/8081/8082, 625, 632/8321, 8151, 8270	—	—					
HCl (AG) Lt. Blue Label O&G, Diesel, **TCP**	—	—					
Ascorbic, EDTA, KH_2Ct (AG) Pink Label 525	—	—					
Na_2SO_3 250mL (AG) Neon Green Label 515	—	—					
$Na_2S_2O_3$ 1 Liter (Brown P) 549	—	—					
$Na_2S_2O_3$ (AG) Blue Label 548, THM, 524	—	—					
$Na_2S_2O_3$ (CG) Blue Label 504, 505, 547	—	—					
$Na_2S_2O_3$ + MCAA (CG) Orange Label 531	pH < 3	P F					
NH_4Cl (AG) Purple Label 552	—	—					
EDA (P) or (AG) Brown Label DBPs	—	—					
HCL (CG) 524.2,BTEX,Gas, MTBE, 8260/624	—	—					
Buffer pH 4 (CG)	—	—					
H_3PO_4 (CG) Salmon Label	—	—					
Trizma – EPA 537.1 Light Blue Label **FB**	---	---					
Ammonia Acetate - EPA 533 Purple Label **FB**	---	---					
Bottled Water	—	—					
Asbestos 1L (P) w/ Foil / LL Metals Bottle	—	—					
Clear Glass	—	—					
OTHER:	—	—					

RMW

07/11

Split

	Container	Preservative	Lot #	Initials	Date/Time
S P					
S P					

Preservation Check
pH Lot #
Cl Lot #

Comments

***Preservation check completed by lab performing analysis.**

✓ **Indicates Blanks Received**

504 ___ 524.2 ___ TTHM ___ 537/533 ___ TCP___

✓ **MS/MSD Received Method:** _____

Labeled by: **Labels Checked by:**

Scanned: _____ Rush/Short HT Page: _____ Time: _____

RGG0060 CLIN7693 07/10/2023 10

SUBCONTRACT ORDER

Clinical Laboratory of San Bernardino

23G0398

SENDING LABORATORY:

Clinical Laboratory of San Bernardino
21881 Barton Road
Grand Terrace, CA 92313
Phone: 909.825.7693
Fax: 909.825.7696
Project Manager: Stu Styles

RECEIVING LABORATORY:

BSK Associates
350 E. Commercial Rd., Suite 110
San Bernardino, CA 92408
Phone :(909) 796-2059
Fax:

Please email results to Project Manager: Stu Styles
[ ] navarro@clinical-lab.com [ ] styles@clinical-lab.com [ ] jhernandez@clinical-lab.com [ ] durand@clinical-lab.com

CLIP transfer those samples with PS codes provided [ ] Yes [X] No
Water Trax Upload Client: _____ [ ] Yes [X] No
GeoTracker Upload Client: _____ [ ] Yes [X] No
MDL's / J Flags [X] Yes [ ] No

Turn Around Time [ ] 10 Days [ ] 5 Days [ ] Other __ Days
Subcontract Comments:

Analysis	Comments
Sample ID: MW - 1D / 23G0398-01 **Sampled: 07/06/23 13:50 PS Code:** **Water** **WTX ID:**	
Bromide 300.0 - BSK	
Containers Supplied:	
1/2 Pint Plastic (P)	

Released By	Date / Time	Received By	Date / Time
	7/10/23		7-10 0815
	7-10 12:50		7/10 1253

Samples Received on ( ) Wet Ice ( ) Blue Ice ( ) No Ice Received Temp 5.

SAMPLE TRANSIT ORDER

RGG0060

Elaine M. Phillips

Receipt temp @ FAL: 2.9 Thermometer/ IR Gun ID: 79

SENDING LABORATORY:

BSK Associates San Bernardino
350 E. Commercial Road, Suite 110
San Bernardino, CA 92408
909-796-2059 (Main)
909-796-2174 (FAX)

Project Manager: Elaine M. Phillips
E-mail: ephillips@bskassociates.com

RECEIVING LABORATORY:

BSK Associates Laboratory Fresno
687 N. Laverne Avenue
Fresno, CA 93727
559-497-2888 (Main)

Turnaround (Days): Standard
QC Deliverables: I Std III IV

Client: Clinical Laboratory of San Bernardino, Inc

Sample ID	Samp Desc	Comments	Sample Date
RGG0060-01	**MW-1D**	**Client Matrix** Waste Water	**07/06/2023 13:50**

Lab Matrix: Water

Analysis:

Bromide — trace

Containers Included

RGG0060-01 A 250mL P / None

Released By	7/10/23 Date	UPS Received By	7/10/23 Date
Released By	Date	Received By	7/10/23 Date

SAMPLE TRANSIT INTEGRITY

PM: Elaine M. Phillips

RGG0060
07/10/2023
CLINI7693
10

BSK Bottles: Yes No Page 1 of 1

COC Info

Was temperature within range? Chemistry ≤ 6°C Micro< 8°C	Yes No NA	Were correct containers and preservatives received for the tests requested?	Yes No NA
Did all bottles arrive unbroken and intact?	Yes No	Bubbles Present VOAs (524.2/TCP/TTHM)?	Yes No NA
Was a sufficient amount of sample received?	Yes No	TB Received? (Check Method Below)	Yes No NA
Do samples have a hold time <72 hours?	Yes No	Was PM notified of discrepancies?	Yes No NA
Was sodium thiosulfate added to CN sample(s) until chlorine was no longer present?	Yes No NA	PM: By/Time:	

Bottles Received

"---" means preservation/chlorine checks are either N/A or are performed in the lab

250ml(A) 500ml(B) 1Liter(C) 40ml VOA(V)	Checks	Passed?	1					
Bacti $Na_2S_2O_3$	---	---						
None (P) White Cap	---	---	NA					
Cr6 (P) Lt. Green Label/Blue Cap $NH_4OH(NH_4)SO_4$ **DW**	Cl, pH> 8	P F						
Cr6 (P) Pink Label/Blue Cap $NH_4OH(NH_4)SO_4$ **WW**	pH 9.3 - 9.7	P F						
Cr6 (P) Black Label/Blue Cap $NH_4OH(NH_4)SO_4$ **7199** ***24 HOUR HOLD TIME***	pH 9.0 - 9.5	P F						
HNO_3 (P) Red Cap or HCl (P) Purple Cap/Lt. Blue Label	---	---						
H_2SO_4 (P) or (AG) Yellow Cap/Label	pH < 2	P F						
NaOH (P) Green Cap	Cl, pH> 10	P F						
NaOH + ZnAc (P)	pH > 9	P F						
Dissolved Oxygen 300ml (g)	---	---						
None (AG) 608/8081/8082, 625, 632/8321, 8151, 8270	---	---						
HCl (AG) Lt. Blue Label O&G, Diesel, **TCP**	---	---						
Ascorbic, EDTA, KH_2Ct (AG) Pink Label 525	---	---						
Na_2SO_3 250ml (AG) Neon Green Label 515	---	---						
$Na_2S_2O_3$ 1 Liter (Brown P) 549	---	---						
$Na_2S_2O_3$ (AG) Blue Label 548, THM, 524	---	---						
$Na_2S_2O_3$ (CG) Blue Label 504, 505, 547	---	---						
$Na_2S_2O_3$ + MCAA (CG) Orange Label 531	pH < 3	P F						
NH_4Cl (AG) Purple Label 552	---	---						
EDA (AG) Brown Label DBPs	---	---						
HCL (CG) 524.2, BTEX, Gas, MTBE, 8260/624	---	---						
Buffer pH 4 (CG)	---	---						
H_3PO_4 (CG) Salmon Label	---	---						
250mL P / Trizma 531.1	---	---						
Other:								
Asbestos 1L (P) w/Foil / LL Metals Bottle	---	---						
Bottled Water	---	---						
Clear Glass 250ml / 500ml / 1 Liter	---	---						
Solids: Brass / Steel / Plastic Bag	---	---						

Split

	Container	Preservative	Date/Time/Initials		Container	Preservative	Date/Time/Initials
S P				S P			
S P				S P			

Comments

✓ **Indicates Blanks Received**

504_____ 524.2_____ TCP_____

TTHM_____ 537_____ 8260/624_____

Labels Checked by: JD @_____ Scanned by:_____@_____ RUSH Paged by:_____@_____

0-1-26

Clinical Lab of San Bernardino, Inc. Chain of Custody

WO 23G03918

21881 Barton Road Grand Terrace CA 92313 909 825-7693 / 516-A N 8th St. Lompoc CA 93436 805 737-7300

	GEOSCIENCE Support Services Inc.
Address:	PO Box 220
	Claremont, CA 91711
Client Contact:	Logan Wicks
Phone No.:	909.451.6650 FAX No.:
System No.:	
Project:	YMWD MWs
Sampled By:	Robert Sia
Comments:	

[X] Clinical Grand Terrace / ELAP 1088
[ ] Clinical Lompoc / ELAP 1678
[ ] Other:

Date	Time	Sample Identification	Container ID	Matrix	# Containers	Preservatives: Unpres	H2SO4	HNO3	HCl	NaOH	Na2S2O3	NaHSO4	MeOH	Other	Secondary Standards	Inorganic Chemicals	Chromium (VI)	524 VOC, 524M/SRL 1,2,3-TCP	SOC's 504, 508, 515, 525, 531, 547, 548, 549, 1613	Gross Alpha/ Uranium	Sulfides, Total & Dissolved	TOC	Silica	Asbestos	Bromide	Corrosivity			Comments
7/6/23	1350	MW-1D		GW		4	6	1	2	1	7	1	1		23	X	X	X	X	X	X	X	X	X	X	X	X			

Bottles:		
2 X 1 Liter Amber Glass w/$Na_2S_2O_3$		1613
4 X 40mL Amber Vials w/ HCl (524)		524
1 X 250 Liter Amber Glass w/Na2SO3 (		515
1X 1/2 Gallon Poly		SecIOC
1 X Quart Poly		Asbestos
1 X Pint Poly w/ HNO3		Metals
1 GP Bottle		GP
3 X 1 Liter Amber Glass w/HCl		508/525
1 X 250mL Amber Poly w/Na2S2O3		548
2 X 40mL Amber vials w/ Na2S2O3		504
1 X 125mL Amber Glass w/ Na2S2O3		547
1 X 250mL Amber Glass w/ Monochloroacetic Acid		531
1X 1/2 Pint w/ NaOH	CN	
1X 1/2 Gallon w/ HNO3	GA/U	
1/2 Pint Poly w/ Cr (VI) Buffer		1X250mL Amber--Sulfides, dissolved
1/2 Pint Poly	Br	1X250mL Amber w/ NaOH/ZnAcetate--Sulfide

Field Parameters:
pH: 7.13 SU
Temp: 20.4°C
Conductivity: 670 us
Turbidity: 0.50 NTU

1 X 125mL Amber w/ HCl - TOC

Matrix: DW - Drinking Water GW - Ground Water SW - Surface Water W - Water WW - Wastewater SWR - Stormwater Runoff S - Sludge O - Other

TAT: (10) Ten Day (5) Five Day Rush (2) Two Day Rush

Relinquished By	Printed Name	Date	Time	Received By	Printed Name
Robert Sia	Robert Sia (Geoscience)	7/6/23	1610		

Condition: [X] On Wet Ice [ ] On Blu Ice [X] Intact [ ] Custody Seals Samples / COC Checked By: _____ Work Order Logged By: _____

Receipt Comments: _____ Clinical Lab Receipt Temp.: _____ °C

0.4°C

Clinical Laboratory of San Bernardino, Inc.

Geoscience	Project: Routine	Work Order: 23G1076
P.O. 220	Sub Project: USLR MW-1S	Received: 07/12/23 16:25
Claremont CA, 91711	Project Manager: Terry Watkins	Reported: 08/08/23

MW - 1S **23G1076-01 (Water)** **Sample Date:** 07/12/23 14:00 **Sampler:** Robert Sia

Analyte	Method	Result	Units	Rep. Limit	MDL	MCL	Prepared	Analyzed	Batch	Qualifier
Field Analyses										
Spec Conduct / E.C. (Field)	Field	**473**	uS/cm				07/12/23	07/12/23	2328155	
pH (Field)	Field	**6.7**	pH Units				07/12/23	07/12/23	2328155	
Temperature (Field)	Field	**20.8**	°C				07/12/23	07/12/23	2328155	
Turbidity (Field)	Field	**2.19**	NTU				07/12/23	07/12/23	2328155	
General Physical Analyses										
Apparent Color	SM 2120BM	ND	Color Units	3.0		15	07/12/23	07/12/23	2329158	
Odor Threshold	EPA 140.1-M	**1**	TON	1		3	07/12/23	07/12/23	2329158	
Turbidity	EPA 180.1	**0.41**	NTU	0.10	0.020	5	07/12/23	07/12/23	2329158	
General Chemical Analyses										
Alkalinity, Total (as CaCO3)	SM 2320 B	**79**	mg/L	5.0	2.3		07/20/23	07/21/23	2328140	
Bicarbonate (HCO3)	SM 2320 B	**96**	mg/L	5.0			07/20/23	07/21/23	2328140	
Carbonate (CO3)	SM 2320B	ND	mg/L	5.0			07/20/23	07/21/23	2328140	
Chloride (Cl)	EPA 300.0	**27**	mg/L	1.0	0.075	500	07/13/23	07/13/23	2328082	
Langelier Index at Source Tmp	SM 203	**-0.80**			-50.00		07/20/23	07/21/23	2328140	
Langelier Index at 60 C	SM 203	**-0.19**			-50.00		07/20/23	07/21/23	2328140	
Aggressive Index	SM 203	**11.02**					07/20/23	07/21/23	2328140	
Cyanide (CN)	SM4500CNF	ND	ug/L	100	37	150	07/18/23	07/18/23	2329086	
Specific Conductance (E.C.)	SM 2510B	**480**	umhos/cm	2.0	0.20	1600	07/20/23	07/21/23	2328140	
Fluoride (F)	EPA 300.0	**0.34**	mg/L	0.10	0.026	2	07/13/23	07/13/23	2328082	
Hydroxide (OH)	SM 2320B	ND	mg/L	5.0			07/20/23	07/21/23	2328140	
MBAS (LAS Mole. Wt 340.0)	SM 5540C	**0.053**	mg/L	0.10	0.047	0.5	07/13/23	07/13/23	2328147	J
Nitrate as N (NO3-N)	EPA 300.0	**1.7**	mg/L	0.40	0.12	10	07/13/23	07/13/23	2328082	
Nitrate + Nitrite (as N)	EPA 300.0	**1.7**	mg/L	0.40	0.29	10	07/13/23	07/13/23	2328082	
Nitrite as N (NO2-N)	EPA 300.0	ND	mg/L	0.40	0.17	1	07/13/23	07/13/23	2328082	
Perchlorate (ClO4)	EPA 314.0	ND	ug/L	2.0	0.38	6	07/24/23	07/25/23	2330041	
pH (Lab)	SM 4500HB	**7.2**	pH Units				07/13/23	07/21/23	2328140	
Sulfate (SO4)	EPA 300.0	**100**	mg/L	0.50	0.14	500	07/13/23	07/13/23	2328082	
Sulfide (S)	SM 4500S2D	ND	mg/L	0.10	0.0043		07/19/23	07/19/23	2328170	
Sulfide, Dissolved (S)	SM 4500S2D	**0.0050**	mg/L	0.10	0.0043		07/13/23	07/19/23	2328170	J
Total Filterable Residue/TDS	SM 2540C	**320**	mg/L	5.0	3.1	1000	07/19/23	07/20/23	2329117	
Total Organic Carbon	SM 5310B	**4.0**	mg/L	0.30	0.11		07/13/23	07/13/23	2328131	
Metals										
Aluminum (Al)	EPA 200.7	**50**	ug/L	50	14	200	07/20/23	07/20/23	2329187	
Antimony (Sb)	EPA 200.8	**0.61**	ug/L	6.0	0.14	6	07/26/23	07/26/23	2330101	J

Stu Styles
Client Services Manager

Post Office Box 329 San Bernardino, CA 92402 (909) 825-7693 Fax (909) 825-7696 ELAP Number 1088

Geoscience	Project: Routine	Work Order: 23G1076
P.O. 220	Sub Project: USLR MW-1S	Received: 07/12/23 16:25
Claremont CA, 91711	Project Manager: Terry Watkins	Reported: 08/08/23

MW - 1S **23G1076-01 (Water)** **Sample Date:** 07/12/23 14:00 **Sampler:** Robert Sia

Analyte	Method	Result	Units	Rep. Limit	MDL	MCL	Prepared	Analyzed	Batch	Qualifier
Metals										
Arsenic (As)	EPA 200.8	ND	ug/L	2.0	0.40	10	07/26/23	07/26/23	2330101	
Barium (Ba)	EPA 200.7	**19**	ug/L	100	12	1000	07/20/23	07/20/23	2329187	J
Beryllium (Be)	EPA 200.8	ND	ug/L	1.0	0.20	4	07/26/23	07/26/23	2330101	
Boron (B)	EPA 200.7	**71**	ug/L	100	32		07/20/23	07/20/23	2329187	J
Cadmium (Cd)	EPA 200.8	ND	ug/L	1.0	0.11	5	07/26/23	07/26/23	2330101	
Calcium (Ca)	EPA 200.7	**35**	mg/L	1.0	0.080		07/21/23	07/21/23	2329224	
Chromium (+6)	EPA 218.6	**0.15**	ug/L	1.0	0.14		07/12/23	07/25/23	2330076	J
Chromium (Total Cr)	EPA 200.8	**1.2**	ug/L	10	0.21	50	07/26/23	07/26/23	2330101	J
Copper (Cu)	EPA 200.7	ND	ug/L	50	6.5	1000	07/20/23	07/20/23	2329187	
Iron (Fe)	EPA 200.7	**27**	ug/L	100	14	300	07/20/23	07/20/23	2329187	J
Lead (Pb)	EPA 200.8	ND	ug/L	5.0	0.51		07/26/23	07/26/23	2330101	
Magnesium (Mg)	EPA 200.7	**13**	mg/L	1.0	0.51		07/21/23	07/21/23	2329224	
Manganese (Mn)	EPA 200.7	**5.1**	ug/L	20	0.80	50	07/20/23	07/20/23	2329187	J
Mercury (Hg)	EPA 200.8	ND	ug/L	1.0	0.10	2	07/19/23	07/19/23	2329128	
Nickel (Ni)	EPA 200.8	ND	ug/L	10	0.52	100	07/26/23	07/26/23	2330101	
Potassium (K)	EPA 200.7	**2.8**	mg/L	1.0	0.18		07/21/23	07/21/23	2329224	
Selenium (Se)	EPA 200.8	**11**	ug/L	5.0	0.95	50	07/26/23	07/26/23	2330101	
Silica (SiO2)	EPA 200.7	**39**	mg/L	0.50	0.018		07/21/23	07/21/23	2329223	
Silver (Ag)	EPA 200.8	ND	ug/L	10	0.30	100	07/26/23	07/26/23	2330101	
Sodium (Na)	EPA 200.7	**44**	mg/L	1.0	0.21		07/21/23	07/21/23	2329224	
Thallium (Tl)	EPA 200.8	ND	ug/L	1.0	0.18	2	07/26/23	07/26/23	2330101	
Vanadium (V)	EPA 200.8	**4.1**	ug/L	3.0	0.25		07/26/23	07/26/23	2330101	
Zinc (Zn)	EPA 200.7	ND	ug/L	50	15	5000	07/20/23	07/20/23	2329187	
Calculated Analysis										
Hardness, Total (as CaCO3)	Calculated	**140**	mg/L	6.6			07/21/23	07/21/23	[CALC]	
Total Anions	Calculated	**4.43**	meq/L				07/21/23	07/21/23	[CALC]	
Total Cations	Calculated	**4.81**	meq/L				07/21/23	07/21/23	[CALC]	
% difference	Calculated	**8.1**					07/21/23	07/21/23	[CALC]	
Radiochemistry Analyses										
Gross Alpha	SM 7110C	ND	pCi/L	3.0	1.3	15	07/28/23	08/03/23	2330178	
Gross Alpha Counting Error	SM 7110C	**0.45**	pCi/L				07/28/23	08/03/23	2330178	
Gross Alpha Min Det Activity	SM 7110C	**0.47**	pCi/L				07/28/23	08/03/23	2330178	
Uranium	EPA 200.8	**0.46**	pCi/L	1.0	0.038	20	07/25/23	07/25/23	2330065	J

Stu Styles
Client Services Manager

Post Office Box 329 San Bernardino, CA 92402 (909) 825-7693 Fax (909) 825-7696 ELAP Number 1088

Geoscience	Project: Routine	Work Order: 23G1076
P.O. 220	Sub Project: USLR MW-1S	Received: 07/12/23 16:25
Claremont CA, 91711	Project Manager: Terry Watkins	Reported: 08/08/23

MW - 1S **23G1076-01 (Water)** **Sample Date:** 07/12/23 14:00 **Sampler:** Robert Sia

Analyte	Method	Result	Units	Rep. Limit	MDL	MCL	Prepared	Analyzed	Batch	Qualifier
Volatile Organic Analyses										
Vinyl Chloride (VC)	EPA 524.2	ND	ug/L	0.50	0.22	0.5	07/22/23	07/22/23	2329243	
Trichlorofluoromethane (FREON 11)	EPA 524.2	ND	ug/L	5.0	1.5	150	07/22/23	07/22/23	2329243	
1,1-Dichloroethylene (1,1-DCE)	EPA 524.2	ND	ug/L	0.50	0.18	6	07/22/23	07/22/23	2329243	
1,1,2-Trichloro-1,2,2-trifluoroethane	EPA 524.2	ND	ug/L	10	0.20	1200	07/22/23	07/22/23	2329243	
Dichloromethane (Methylene Chloride)	EPA 524.2	ND	ug/L	0.50	0.29	5	07/22/23	07/22/23	2329243	
trans-1,2-Dichloroethylene (t-1,2-DCE)	EPA 524.2	ND	ug/L	0.50	0.23	10	07/22/23	07/22/23	2329243	
Methyl tert-Butyl Ether	EPA 524.2	ND	ug/L	3.0	0.26	13	07/22/23	07/22/23	2329243	
1,1-Dichloroethane (1,1-DCA)	EPA 524.2	ND	ug/L	0.50	0.25	5	07/22/23	07/22/23	2329243	
cis-1,2-Dichloroethylene (c-1,2-DCE)	EPA 524.2	ND	ug/L	0.50	0.21	6	07/22/23	07/22/23	2329243	
Chloroform (Trichloromethane)	EPA 524.2	ND	ug/L	1.0	0.57		07/22/23	07/22/23	2329243	
Carbon Tetrachloride	EPA 524.2	ND	ug/L	0.50	0.17	0.5	07/22/23	07/22/23	2329243	
1,1,1-Trichloroethane (1,1,1-TCA)	EPA 524.2	ND	ug/L	0.50	0.21	200	07/22/23	07/22/23	2329243	
Benzene	EPA 524.2	ND	ug/L	0.50	0.25	1	07/22/23	07/22/23	2329243	
1,2-Dichloroethane (1,2-DCA)	EPA 524.2	ND	ug/L	0.50	0.17	0.5	07/22/23	07/22/23	2329243	
Trichloroethylene (TCE)	EPA 524.2	ND	ug/L	0.50	0.24	5	07/22/23	07/22/23	2329243	
1,2-Dichloropropane	EPA 524.2	ND	ug/L	0.50	0.24	5	07/22/23	07/22/23	2329243	
Bromodichloromethane	EPA 524.2	ND	ug/L	1.0	0.44		07/22/23	07/22/23	2329243	
Toluene	EPA 524.2	ND	ug/L	0.50	0.29	150	07/22/23	07/22/23	2329243	
Tetrachloroethylene (PCE)	EPA 524.2	ND	ug/L	0.50	0.16	5	07/22/23	07/22/23	2329243	
1,1,2-Trichloroethane (1,1,2-TCA)	EPA 524.2	ND	ug/L	0.50	0.35	5	07/22/23	07/22/23	2329243	
Dibromochloromethane	EPA 524.2	ND	ug/L	1.0	0.36		07/22/23	07/22/23	2329243	
Monochlorobenzene (Chlorobenzene)	EPA 524.2	ND	ug/L	0.50	0.27	70	07/22/23	07/22/23	2329243	
Ethyl Benzene	EPA 524.2	ND	ug/L	0.50	0.22	300	07/22/23	07/22/23	2329243	
cis-1,3-Dichloropropene	EPA 524.2	ND	ug/L	0.50	0.16		07/22/23	07/22/23	2329243	
m,p-Xylene	EPA 524.2	ND	ug/L	1.0	0.44		07/22/23	07/22/23	2329243	
o-Xylene	EPA 524.2	ND	ug/L	0.50	0.22		07/22/23	07/22/23	2329243	
trans-1,3-Dichloropropene	EPA 524.2	ND	ug/L	0.50	0.22		07/22/23	07/22/23	2329243	
Styrene	EPA 524.2	ND	ug/L	0.50	0.20	100	07/22/23	07/22/23	2329243	
Bromoform	EPA 524.2	ND	ug/L	1.0	0.18		07/22/23	07/22/23	2329243	
1,1,2,2-Tetrachloroethane	EPA 524.2	ND	ug/L	0.50	0.14		07/22/23	07/22/23	2329243	
1,4-Dichlorobenzene (p-DCB)	EPA 524.2	ND	ug/L	0.50	0.19	5	07/22/23	07/22/23	2329243	
1,2-Dichlorobenzene (o-DCB)	EPA 524.2	ND	ug/L	0.50	0.15	600	07/22/23	07/22/23	2329243	

Stu Styles
Client Services Manager

Post Office Box 329 San Bernardino, CA 92402 (909) 825-7693 Fax (909) 825-7696 ELAP Number 1088

Geoscience	Project: Routine	Work Order: 23G1076
P.O. 220	Sub Project: USLR MW-1S	Received: 07/12/23 16:25
Claremont CA, 91711	Project Manager: Terry Watkins	Reported: 08/08/23

MW - 1S **23G1076-01 (Water)** **Sample Date:** 07/12/23 14:00 **Sampler:** Robert Sia

Analyte	Method	Result	Units	Rep. Limit	MDL	MCL	Prepared	Analyzed	Batch	Qualifier
Volatile Organic Analyses										
1,2,4-Trichlorobenzene	EPA 524.2	ND	ug/L	0.50	0.18	5	07/22/23	07/22/23	2329243	
Total 1,3-Dichloropropene	EPA 524.2	ND	ug/L	0.50	0.22	0.5	07/22/23	07/22/23	2329243	
Total Trihalomethanes (TTHM)	EPA 524.2	ND	ug/L	1.0	0.57	80	07/22/23	07/22/23	2329243	
Total Xylenes (m,p & o)	EPA 524.2	ND	ug/L	0.50	0.44	1750	07/22/23	07/22/23	2329243	
Surrogate: 1,2-Dichlorobenzene-d4	*EPA 524.2*	*90 %*					*07/22/23*	*07/22/23*	*2329243*	
Surrogate: Bromofluorobenzene	*EPA 524.2*	*82 %*					*07/22/23*	*07/22/23*	*2329243*	
Semi-Volatile Organic Analyses / EPA 504										
Ethylene Dibromide (EDB)	EPA 504.1	ND	ug/L	0.020	0.0024	0.05	07/20/23	07/21/23	2329168	
Dibromochloropropane (DBCP)	EPA 504.1	ND	ug/L	0.010	0.0014	0.2	07/20/23	07/21/23	2329168	
Synthetic Organic Analyses / 1,2,3-TCP										
1,2,3-Trichloropropane	SRL 524M-TCP	ND	ug/L	0.0050	0.0012	0.005	07/20/23	07/21/23	2329129	
Synthetic Organic Analyses										
Endrin	EPA 508.1	ND	ug/L	0.10	0.0020	2	07/24/23	08/02/23	2330025	
Lindane (gamma-BHC)	EPA 508.1	ND	ug/L	0.20	0.0015	0.2	07/24/23	08/02/23	2330025	
Methoxychlor	EPA 508.1	ND	ug/L	10	0.017	30	07/24/23	08/02/23	2330025	
Toxaphene	EPA 508.1	ND	ug/L	1.0	0.20	3	07/24/23	08/02/23	2330025	
Chlordane	EPA 508.1	ND	ug/L	0.10	0.021	0.1	07/24/23	08/02/23	2330025	
Heptachlor	EPA 508.1	ND	ug/L	0.010	0.0018	0.01	07/24/23	08/02/23	2330025	
Heptachlor Epoxide	EPA 508.1	ND	ug/L	0.010	0.0024	0.01	07/24/23	08/02/23	2330025	
Hexachlorobenzene	EPA 508.1	ND	ug/L	0.50	0.0013	1	07/24/23	08/02/23	2330025	
Hexachlorocyclopentadiene	EPA 508.1	ND	ug/L	1.0	0.013	50	07/24/23	08/02/23	2330025	
Polychlorinated Biphenyls (PCBs)	EPA 508.1	ND	ug/L	0.50		0.5	07/24/23	08/02/23	2330025	
Surrogate: 4-4'-Dichlorobiphenyl	*EPA 508.1*	*119 %*					*07/24/23*	*08/02/23*	*2330025*	
Dalapon	EPA 515.4	ND	ug/L	10	3.0	200	07/17/23	07/21/23	2329007	
2,4,5-TP (SILVEX)	EPA 515.4	ND	ug/L	1.0	0.18	50	07/17/23	07/21/23	2329007	
Bentazon (BASAGRAN)	EPA 515.4	ND	ug/L	2.0	0.71	18	07/17/23	07/21/23	2329007	
Picloram	EPA 515.4	ND	ug/L	1.0	0.18	500	07/17/23	07/21/23	2329007	
2,4-D	EPA 515.4	ND	ug/L	10	1.3	70	07/17/23	07/21/23	2329007	
Pentachlorophenol (PCP)	EPA 515.4	ND	ug/L	0.20	0.028	1	07/17/23	07/21/23	2329007	
Dinoseb (DNBP)	EPA 515.4	ND	ug/L	2.0	0.34	7	07/17/23	07/21/23	2329007	
Surrogate: 2,4-Dichlorophenylacetic acid	*EPA 515.4*	*100 %*					*07/17/23*	*07/21/23*	*2329007*	
Alachlor (ALANEX)	EPA 525.2	ND	ug/L	1.0	0.44	2	07/19/23	07/26/23	2329116	

Stu Styles
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Post Office Box 329 San Bernardino, CA 92402 (909) 825-7693 Fax (909) 825-7696 ELAP Number 1088

Geoscience	Project: Routine	Work Order: 23G1076
P.O. 220	Sub Project: USLR MW-1S	Received: 07/12/23 16:25
Claremont CA, 91711	Project Manager: Terry Watkins	Reported: 08/08/23

MW - 1S **23G1076-01 (Water)** **Sample Date:** 07/12/23 14:00 **Sampler:** Robert Sia

Analyte	Method	Result	Units	Rep. Limit	MDL	MCL	Prepared	Analyzed	Batch	Qualifier
Synthetic Organic Analyses										
Atrazine (AATREX)	EPA 525.2	ND	ug/L	0.50	0.15	1	07/19/23	07/26/23	2329116	
Benzo(a)pyrene	EPA 525.2	ND	ug/L	0.10	0.020	0.2	07/19/23	07/26/23	2329116	
Diethylhexylphthalate (DEHP)	EPA 525.2	ND	ug/L	3.0	1.0	4	07/19/23	07/26/23	2329116	
Di(2-ethylhexyl) adipate	EPA 525.2	ND	ug/L	5.0	2.4	400	07/19/23	07/26/23	2329116	
Molinate (ORDRAM)	EPA 525.2	ND	ug/L	2.0	0.68	20	07/19/23	07/26/23	2329116	
Simazine (PRINCEP)	EPA 525.2	ND	ug/L	1.0	0.14	4	07/19/23	07/26/23	2329116	
Thiobencarb (BOLERO)	EPA 525.2	ND	ug/L	1.0	0.25	70	07/19/23	07/26/23	2329116	
Surrogate: 1,3-dimethyl-2-nitrobenzene	*EPA 525.2*	*107 %*					*07/19/23*	*07/26/23*	*2329116*	
Surrogate: Perylene-d12	*EPA 525.2*	*72 %*					*07/19/23*	*07/26/23*	*2329116*	
Surrogate: Triphenylphosphate	*EPA 525.2*	*60 %*					*07/19/23*	*07/26/23*	*2329116*	QM-08
Oxamyl (VYDATE)	EPA 531.1	ND	ug/L	20	0.43	50	07/17/23	07/19/23	2329002	
Carbofuran (FURADAN)	EPA 531.1	ND	ug/L	5.0	0.56	18	07/17/23	07/19/23	2329002	
Glyphosate	EPA 547	ND	ug/L	25	8.6	700	07/16/23	07/18/23	2329001	
Endothall	EPA 548.1	ND	ug/L	45	0.60	100	07/13/23	07/17/23	2328048	
Diquat	EPA 549.2	ND	ug/L	4.0	0.10	20	07/17/23	07/21/23	2329020	
Subcontracted Analyses										
2,3,7,8-Tetrachlorodibenzo-p-dioxin	EPA 1613B	ND	pg/L	5.0	2.5	30	07/25/23	07/28/23	2330062	CERES
Asbestos	EPA 100.2	ND	MFL	0.20		7	07/19/23	07/26/23	2329121	LT
Bromide (Br)	EPA 300.0	**0.058**	mg/L	0.010	0.0030		07/25/23	07/25/23	2330062	BSK

QM-08 The surrogate recovery was outside acceptance limits for this sample due to probable matrix interference.

LT Analysis performed at LA Testing, ELAP 2283

J Detected below the Reporting Limit; reported concentration is estimated; (J-Flag)

CERES Analysis performed by Ceres Analytical Laboratory, Inc. ELAP # 3046

BSK Analysis performed at BSK Associates - Fresno ELAP # 1180

pH (Lab) was analyzed ASAP but received and analyzed past the 15 minute hold time.

ND Analyte NOT DETECTED at or above the MDL; Method Detection Limit

Stu Styles
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BSK Associates San Bernardino
350 E. Commercial Road, Suite 110
San Bernardino, CA 92408
909-796-2059 (Main)

RGG0089
7/25/2023

Stu Styles
Clinical Laboratory of San Bernardino, Inc
21881 Barton Road
Grand Terrace, CA 92313

RE: Report for RGG0089 General - Trace

Dear Stu Styles,

Thank you for using BSK Associates for your analytical testing needs. In the following pages, you will find the test results for the samples submitted to our laboratory on 7/13/2023. The results have been approved for release by our Laboratory Director as indicated by the authorizing signature below.

The samples were analyzed for the test(s) indicated on the Chain of Custody (see attached) and the results relate only to the samples analyzed. BSK certifies that the testing was performed in accordance with the quality system requirements specified in the 2016 TNI Standard. Any deviations from this standard or from the method requirements for each test procedure performed will be annotated alongside the analytical result or noted in the Case Narrative. Unless otherwise noted, the sample results are reported on an "as received" basis.

If additional clarification of any information is required, please contact your Project Manager, Elaine M. Phillips , at 909-796-2059.

Thank you again for using BSK Associates. We value your business and appreciate your loyalty.

Sincerely,

Elaine M. Phillips, Project Manager

Accredited in Accordance with NELAP
ORELAP #4119

Case Narrative

Project and Report Details		Invoice Details	
Client:	Clinical Laboratory of San Bernardino, Inc	**Invoice To:**	Clinical Laboratory of San Bernardino, I
Report To:	Stu Styles	**Invoice Attn:**	Stu Styles
Project #:	23G1076	**Project PO#:**	-
Received:	7/13/2023 - 08:40		
Report Due:	7/25/2023		

Sample Receipt Conditions

Cooler: Default Cooler
Temperature on Receipt ºC: 4.4

Containers Intact
COC/Labels Agree
Preservation Confirmed
Received On Wet Ice
Packing Material - Other
Sample(s) were received in temperature range.
Initial receipt at BSK-RAL

Data Qualifiers

The following qualifiers have been applied to one or more analytical results:

None applied

Report Distribution

Recipient(s)	Report Format	CC:
Stu Styles	FINAL.RPT	

Certificate of Analysis

Sample ID: RGG0089-01
Sampled By: Client
Sample Description: MW-1S // 23G1076-01

Sample Date - Time: 07/12/2023 - 14:00
Matrix: Water
Sample Type: Grab

BSK Associates Laboratory Fresno

General Chemistry

Analyte	Method	Result	MDL	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Bromide	EPA 300.0	**0.058**	0.0030	0.010	mg/L	1	AGG1035	07/17/23	07/17/23	

BSK Associates Laboratory Fresno

General Chemistry Quality Control Report

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
EPA 300.0 - Quality Control												
Batch: AGG1035											Prepared: 7/17/2023	
Prep Method: Method Specific Preparation											Analyst: CTD	
Blank (AGG1035-BLK1)												
Bromide	ND	0.0030	0.010	mg/L							07/17/23	
Blank Spike (AGG1035-BS1)												
Bromide	0.19	0.0030	0.010	mg/L	0.20		97	90-110			07/17/23	
Matrix Spike (AGG1035-MS1), Source: AGG0485-03												
Bromide	0.18	0.0030	0.010	mg/L	0.10	0.10	81	80-120			07/17/23	
Matrix Spike (AGG1035-MS2), Source: AGG1841-01												
Bromide	0.10	0.0030	0.010	mg/L	0.10	ND	101	80-120			07/17/23	
Matrix Spike Dup (AGG1035-MSD1), Source: AGG0485-03												
Bromide	0.19	0.0030	0.010	mg/L	0.10	0.10	91	80-120	5	10	07/17/23	
Matrix Spike Dup (AGG1035-MSD2), Source: AGG1841-01												
Bromide	0.10	0.0030	0.010	mg/L	0.10	ND	100	80-120	1	10	07/17/23	

Certificate of Analysis

Notes:

- The Chain of Custody document and Sample Integrity Sheet are part of the analytical report.
- Any remaining sample(s) for testing will be disposed of according to BSK's sample retention policy unless other arrangements are made in advance.
- All positive results for EPA Methods 504.1 and 524.2 require the analysis of a Field Reagent Blank (FRB) to confirm that the results are not a contamination error from field sampling steps. If Field Reagent Blanks were not submitted with the samples, this method requirement has not been performed.
- Samples collected by BSK Analytical Laboratories were collected in accordance with the BSK Sampling and Collection Standard Operating Procedures.
- J-value is equivalent to DNQ (Detected, not quantified) which is a trace value. A trace value is an analyte detected between the MDL and the laboratory reporting limit. This result is of an unknown data quality and is only qualitative (estimated). Baseline noise, calibration curve extrapolation below the lowest calibrator, method blank detections, and integration artifacts can all produce apparent DNQ values, which contribute to the un-reliability of these values.
- (1) - Residual chlorine and pH analysis have a 15 minute holding time for both drinking and waste water samples as defined by the EPA and 40 CFR 136. Waste water and ground water (monitoring well) samples must be field filtered to meet the 15 minute holding time for dissolved metals.
- Field tests are outside the scope of laboratory accreditation and there is no certification available for field testing.
- Summations of analytes (i.e. Total Trihalomethanes) may appear to add individual amounts incorrectly, due to rounding of analyte values occurring before or after the total value is calculated, as well as rounding of the total value.
- RL Multiplier is the factor used to adjust the reporting limit (RL) due to variations in sample preparation procedures and dilutions required for matrix interferences.
- Due to the subjective nature of the Threshold Odor Method, all characterizations of the detected odor are the opinion of the panel of analysts. The characterizations can be found in Standard Methods 2170B Figure 2170:1.
- The MCLs provided in this report (if applicable) represent the primary MCLs for that analyte.
- (2) - Formerly known as Bis(2-Chloroisopropyl) ether.

Unless otherwise noted, TOC results by SM 5310C method do not include purgeable organic carbon, which is removed along with the inorganic carbon interference. The POC contribution to TOC is considered to be negligible.

Certificate of Analysis

Definitions

mg/L:	Milligrams/Liter (ppm)	MDL:	Method Detection Limit	MDA95:	Min. Detected Activity
mg/Kg:	Milligrams/Kilogram (ppm)	RL:	Reporting Limit: DL x Dilution	MPN:	Most Probable Number
µg/L:	Micrograms/Liter (ppb)	ND:	None Detected below MRL/MDL	CFU:	Colony Forming Unit
µg/Kg:	Micrograms/Kilogram (ppb)	pCi/L:	PicoCuries per Liter	Absent:	Less than 1 CFU/100mLs
%:	Percent	RL Mult:	RL Multiplier	Present:	1 or more CFU/100mLs
NR:	Non-Reportable	MCL:	Maximum Contaminant Limit	U:	The analyte was not detected at or above the reported sample quantitation limit.

Please see the individual Subcontract Lab's report for applicable certifications.

The following parameters are not available for certification through CA ELAP:

Odor Diisopropyl ether (DIPE) by EPA 524.2

The following parameters are calculated values and are outside the scope of our NELAP accreditation:

Total Nitrogen Aggressive Index Trivalent Chromium

BSK is not accredited under the NELAP program for the following additional parameters: **NA**

Certifications: **Please refer to our website for a copy of our Accredited Fields of Testing under each certification.**

Fresno

State of California - ELAP	1180	State of Hawaii	4021
Los Angeles CSD	9254479	NELAP certified	4021-021
State of Nevada	CA000792022-1	State of Oregon - NELAP	4021-021
EPA UCMR5	CA00079	State of Washington	C997-23

Sacramento

State of California - ELAP	1180-S1		

San Bernardino

State of California - ELAP	1180-S2	Los Angeles CSD	9254478
NELAP certified	4119-007	State of Oregon - NELAP	4119-007

Vancouver

NELAP certified	WA100008-016	State of Oregon - NELAP	WA100008-016
State of Washington	C824-22		

BSK Associates SR-FL-0002-24

RGG0089 CLIN17693 07/13/2023

10

Sample Integrity

BSK Bottles: Yes (No) Page 1 of 1

COC Info

Was temperature within range? Chemistry ≤ 6°C Micro < 8°C	(Yes) No NA	Were correct containers and preservatives received for the tests requested?	(Yes) No NA
If samples were taken today, is there evidence that chilling has begun?	(Yes) No NA	Bubbles Present VOAs (524.2/TTHM/TCP)? TB Received? (Check Method Below)	Yes No (NA) Yes No (NA)
Did all bottles arrive unbroken and intact?	(Yes) No	Was a sufficient amount of sample received?	(Yes) No
Did all bottle labels agree with COC?	(Yes) No	Do samples have a hold time <72 hours?	Yes (No)
Was sodium thiosulfate added to CN sample(s) until chlorine was no longer present?	Yes (NA)	Was PM notified of discrepancies? PM: By/Time:	Yes No (NA)

Bottles Received — "—" means preservation/chlorine checks are either N/A or are performed in the lab

250ml(A) 500ml(B) 1Liter(C) 40mlVOA(V) 125ml(D)	Checks*	Passed?	-01				
Bacti $Na_2S_2O_3$	—	—					
None (P) White Cap	—	—	1A				
Cr6 (P) Lt. Green Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **DW**	Cl, pH > 8	P F					
Cr6 (P) Pink Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **WW**	pH 9.3-9.7	P F					
Cr6 (P) Black Label/Blue Cap $NH_4OH(NH_4)_2SO_4$ **7199** ******24 HOUR HOLD TIME******	pH 9.0-9.5	P F					
HNO_3 (P) Red Cap or HCl (P) Purple Cap/Lt. Blue Label	—	—					
H_2SO_4 (P) or (AG) Yellow Cap/Label	pH < 2	P F					
NaOH (P) Green Cap	Cl, pH >10	P F					
NaOH + ZnAc (P)	pH > 9	P F					
Dissolved Oxygen 300ml (g)	—	—					
None (AG) 608/8081/8082, 625, 632/8321, 8151, 8270	—	—					
HCl (AG) Lt. Blue Label O&G, Diesel, **TCP**	—	—					
Ascorbic, EDTA, KH_2Ct (AG) Pink Label 525	—	—					
Na_2SO_3 250mL (AG) Neon Green Label 515	—	—					
$Na_2S_2O_3$ 1 Liter (Brown P) 549	—	—					
$Na_2S_2O_3$ (AG) Blue Label 548, THM, 524	—	—					
$Na_2S_2O_3$ (CG) Blue Label 504, 505, 547	—	—					
$Na_2S_2O_3$ + MCAA (CG) Orange Label 531	pH < 3	P F					
NH_4Cl (AG) Purple Label 552	—	—					
EDA (P) or (AG) Brown Label DBPs	—	—					
HCL (CG) 524.2,BTEX,Gas, MTBE, 8260/624	—	—					
Buffer pH 4 (CG)	—	—					
H_3PO_4 (CG) Salmon Label	—	—					
Trizma – EPA 537.1 Light Blue Label **FB**	---	---					
Ammonia Acetate - EPA 533 Purple Label **FB**	---	---					
Bottled Water	—	—					
Asbestos 1L (P) w/ Foil / LL Metals Bottle	—	—					
Clear Glass	—	—					
OTHER:	—	—					

RMW 7/13/23

Split

	Container	Preservative	Lot #	Initials	Date/Time
S P					
S P					

Preservation Check
pH Lot #
Cl Lot #

Comments

*Preservation check completed by lab performing analysis.

✓ **Indicates Blanks Received**

504 ___ 524.2 ___ TTHM ___ 537/533 ___ TCP___

✓ **MS/MSD Received Method:** _____

Labeled by: **Labels Checked by:**

Scanned: _____ Rush/Short HT Page: _____ Time:_____

RGG0089 CLINI7693 07/13/2023 10

SUBCONTRACT ORDER

Clinical Laboratory of San Bernardino

23G1076

SENDING LABORATORY:

Clinical Laboratory of San Bernardino
21881 Barton Road
Grand Terrace, CA 92313
Phone: 909.825.7693
Fax: 909.825.7696
Project Manager: Stu Styles

RECEIVING LABORATORY:

BSK Associates
350 E. Commercial Rd., Suite 110
San Bernardino, CA 92408
Phone :(909) 796-2059
Fax:

Please email results to Project Manager: Stu Styles
[ ] navarro@clinical-lab.com [X] styles@clinical-lab.com [ ] jhernandez@clinical-lab.com [ ] durand@clinical-lab.com

CLIP transfer those samples with PS codes provided [ ] Yes [X] No
Water Trax Upload Client: _____ [ ] Yes [X] No
GeoTracker Upload Client: _____ [ ] Yes [X] No
MDL's / J Flags [X] Yes [ ] No

Turn Around Time [ ] 10 Days [ ] 5 Days [X] Other 8 Days
Subcontract Comments:

Analysis	Comments
Sample ID: MW - 1S / 23G1076-01 **Sampled: 07/12/23 14:00 PS Code: Water** **WTX ID:**	
Bromide 300.0 - BSK	
Containers Supplied: 1/2 Pint Plastic (P)	

Released By	Date / Time	Received By	Date / Time
[signature]	7/13/23	M. Salazar	7/13/23 - 8:00
M. Salazar	7/13/23 - 8:39	[signature]	7/13/23 8:40

Samples Received on ( ) Wet Ice ( ) Blue Ice ( ) No Ice

Received Temp 4.4 - 0 IR#65

SAMPLE TRANSIT ORDER

RGG0089

Elaine M. Phillips

Receipt temp @ FAL: 1.0 Thermometer/ IR Gun ID: 65

SENDING LABORATORY:

BSK Associates San Bernardino
350 E. Commercial Road, Suite 110
San Bernardino, CA 92408
909-796-2059 (Main)
909-796-2174 (FAX)

Project Manager: Elaine M. Phillips
E-mail: ephillips@bskassociates.com

RECEIVING LABORATORY:

BSK Associates Laboratory Fresno
687 N. Laverne Avenue
Fresno, CA 93727
559-497-2888 (Main)

Turnaround (Days): Standard
QC Deliverables: I Std III IV

Client: Clinical Laboratory of San Bernardino, Inc

Sample ID	Samp Desc	Comments	Sample Date
RGG0089-01	**MW-1S**	**Client Matrix** Waste Water	**07/12/2023 14:00**
Lab Matrix:	Water		
	Analysis:		
	Bromide	trace	

Containers Included

RGG0089-01 A 250mL P / None

Released By 7-13-23 Date — UPS Received By — 7-13-23 Date

Released By Date — Received By — 7.14.23 Date

UPS W/B B

SAMPLE TRANSIT INTEGRITY

PM: Elaine M. Phillips

RGG0089
07/13/2023
CLINI7693
10

BSK Bottles: Yes No Page 1 of 1

COC Info

Was temperature within range? Chemistry ≤ 6°C Micro< 8°C	Yes No NA	Were correct containers and preservatives received for the tests requested?	Yes No NA
Did all bottles arrive unbroken and intact?	Yes No	Bubbles Present VOAs (524.2/TCP/TTHM)?	Yes No NA
Was a sufficient amount of sample received?	Yes No	TB Received? (Check Method Below)	Yes No NA
Do samples have a hold time <72 hours?	Yes No	Was PM notified of discrepancies? PM: By/Time:	Yes No NA
Was sodium thiosulfate added to CN sample(s) until chlorine was no longer present?	Yes No NA		

Bottles Received

"---" means preservation/chlorine checks are either N/A or are performed in the lab

250ml(A) 500ml(B) 1Liter(C) 40ml VOA(V)	Checks	Passed?	1					
Bacti $Na_2S_2O_3$	---	---						
None (P) White Cap	---	---	1A					
Cr6 (P) Lt. Green Label/Blue Cap $NH_4OH(NH_4)SO_4$ **DW**	Cl, pH> 8	P F						
Cr6 (P) Pink Label/Blue Cap $NH_4OH(NH_4)SO_4$ **WW**	pH 9.3 - 9.7	P F						
Cr6 (P) Black Label/Blue Cap $NH_4OH(NH_4)SO_4$ **7199** *****24 HOUR HOLD TIME*****	pH 9.0 - 9.5	P F						
HNO_3 (P) Red Cap or HCl (P) Purple Cap/Lt. Blue Label	---	---						
H_2SO_4 (P) or (AG) Yellow Cap/Label	pH < 2	P F						
NaOH (P) Green Cap	Cl, pH> 10	P F						
NaOH + ZnAc (P)	pH > 9	P F						
Dissolved Oxygen 300ml (g)	---	---						
None (AG) 608/8081/8082, 625, 632/8321, 8151, 8270	---	---						
HCl (AG) Lt. Blue Label O&G, Diesel, **TCP**	---	---						
Ascorbic, EDTA, KH_2Ct (AG) Pink Label 525	---	---						
Na_2SO_3 250ml (AG) Neon Green Label 515	---	---						
$Na_2S_2O_3$ 1 Liter (Brown P) 549	---	---						
$Na_2S_2O_3$ (AG) Blue Label 548, THM, 524	---	---						
$Na_2S_2O_3$ (CG) Blue Label 504, 505, 547	---	---						
$Na_2S_2O_3$ + MCAA (CG) Orange Label 531	pH < 3	P F						
NH_4Cl (AG) Purple Label 552	---	---						
EDA (AG) Brown Label DBPs	---	---						
HCL (CG) 524.2, BTEX, Gas, MTBE, 8260/624	---	---						
Buffer pH 4 (CG)	---	---						
H_3PO_4 (CG) Salmon Label	---	---						
250mL P / Trizma 531.1	---	---						
Other:								
Asbestos 1L (P) w/Foil / LL Metals Bottle	---	---						
Bottled Water	---	---						
Clear Glass 250ml / 500ml / 1 Liter	---	---						
Solids: Brass / Steel / Plastic Bag	---	---						

7/14/23

Split

	Container	Preservative	Date/Time/Initials		Container	Preservative	Date/Time/Initials
S P				S P			
S P				S P			

Comments

✓ **Indicates Blanks Received**

504_____ 524.2_____ TCP_____

TTHM_____ 537_____ 8260/624_____

Labels Checked by:_____ Scanned by:_____ RUSH Paged by:_____@_____

LA Testing
520 Mission Street South Pasadena, CA 91030
Phone/Fax: (323) 254-9960 / (323) 254-9982
http://www.LATesting.com / pasadenalab@latesting.com

LA Testing Order ID: 322317926
Customer ID: 32CLIN51
Customer PO:
Project ID:

Attn: Stu Styles
Clinical Laboratory of San Bernardino
PO BOX 329
San Bernardino, CA 92402

Phone: (909) 825-7693
Fax:
Received: 07/13/2023
Analyzed: 07/26/2023

Proj: 23G1076

Test Report: Determination of Asbestos Structures >10µm in Drinking Water Performed by the 100.2 Method (EPA 600/R-94/134)

Sample ID Client / EMSL	Sample Filtration Date/Time	Original Sample Vol. Filtered (ml)	Effective Filter Area (mm²)	Area Analyzed (mm²)	ASBESTOS Asbestos Types	Fibers Detected	Analytical Sensitivity	Concentration	Confidence Limits
							MFL (million fibers per liter)		
MW-1S / 23G1076-01 322317926-0001	7/13/2023 02:40 PM	30	1288	0.2227	None Detected	ND	0.19	<0.19	0.00 - 0.71
Collection Date/Time:	*07/12/2023 14:00 PM*								

Analyst(s)
Kyeong Corbin (1)

Jerry Drapala Ph.D, Laboratory Manager
or Other Approved Signatory

Any questions please contact Jerry Drapala.

Initial report from: 07/26/2023 12:29:02

OrderID: 322317926

SUBCONTRACT ORDER

Clinical Laboratory of San Bernardino

23G1076 #322317926

SENDING LABORATORY:

Clinical Laboratory of San Bernardino
21881 Barton Road
Grand Terrace, CA 92313
Phone: 909.825.7693
Fax: 909.825.7696
Project Manager: Stu Styles

RECEIVING LABORATORY:

LA Testing
520 Mission Street
South Pasadena, CA 91030
Phone :(323) 254-9960
Fax: (323) 254-9982

Please email results to Project Manager: Stu Styles
[ ] navarro@clinical-lab.com [X] styles@clinical-lab.com [ ] jhernandez@clinical-lab.com [ ] durand@clinical-lab.com

CLIP transfer those samples with PS codes provided [ ] Yes [X] No
Water Trax Upload Client: _____ [ ] Yes [X] No
GeoTracker Upload Client: _____ [ ] Yes [X] No
MDL's / J Flags [ ] Yes [X] No

Turn Around Time [X] 10 Days [ ] 5 Days [ ] Other __ Days
Subcontract Comments:

Analysis	Comments
Sample ID: MW - 1S / 23G1076-01	**Sampled: 07/12/23 14:00 PS Code: Water** **WTX ID:**
Asbestos in Drinking Water EPA 100.2	
Containers Supplied:	
1 Quart Plastic (Q)	

Released By	Date / Time	Received By	Date / Time
[signature]	7/13/23	M. Salazar	7/13/23 - 8:00
M. Salazar	7/13/23 - 12:09	Annette Mckissack (LIS)	07/13/23 1240
Released By	Date / Time	Received By	Date / Time
Released By	Date / Time	Received By	Date / Time

Samples Received on ( ) Wet Ice ( ) Blue Ice ( ) No Ice

Received Temp 1.3° (F) (C)

CERES Analytical Laboratory, Inc.
4919 Windplay Dr. Suite 1, El Dorado Hills, CA 95762

July 28, 2023 Ceres ID: 16664

Clinical Laboratory of San Bernardino
21881 Barton Road
Grand Terrace, CA 92313

The following report contains the results for the one drinking water sample received on July 17, 2023. This sample was analyzed for 2,3,7,8-TCDD by EPA method 1613. Routine turn-around time was provided for this work.

This work was authorized under your Subcontract Order # 23G1076.

Continuing Calibration Verification (CCV) Requirements
All associated calibration verification standard(s) (CCV) met the acceptance criteria.

The report consists of a Cover Letter, Sample Inventory (Section I), Data Summary (Section II), Sample Tracking (Section VI), and Qualifiers/Abbreviations (Section VII). Raw Data (Section III), Continuing Calibration (Section IV), and Initial Calibration (Section V) are available in a full report (.pdf format) upon request.

If you have any questions regarding this report, please feel free to contact me at (916)932-5011.

Sincerely,

James M. Hedin
Director of Operations/CEO
jhedin@ceres-lab.com

Section I: Sample Inventory

Ceres Sample ID:	Sample ID	Date Received	Collection Date	&Time
16664-001	MW-1S / 23G1076-01	7/17/2023	7/12/2023	14:00

Section II: Data Summary

CERES Analytical Laboratory, Inc.
4919 Windplay Dr.Suite 1, El Dorado Hills, CA 95762

EPA Method 1613B

Quality Assurance Sample **Method Blank**		**Date Received:** NA
	QC Batch #: 2921	**Date Extracted:** 7/26/2023
	Matrix: Drinking Water	**Date Analyzed:** 7/26/2023
Project ID: 23G1076	**Sample Size:** 1.000 L	

Analyte	Conc. (pg/L)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 4.11	3.12	5.00		13C-2378-TCDD	82.0	31-137	
					CRS			
					37Cl4-2378-TCDD	103	35-197	

DL - Signifies Non-Detect (ND<) sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit

Analyst: JMH **Reviewed by: BS**

CERES Analytical Laboratory, Inc.
4919 Windplay Dr. Suite 1, El Dorado Hills, CA 95762

EPA Method 1613B

Quality Assurance Sample **Ongoing Precision and Recovery**		**Date Received:** NA
	QC Batch #: 2921	**Date Extracted:** 7/26/2023
	Matrix: Drinking Water	**Date Analyzed:** 7/26/2023
Project ID: 23G1076	**Sample Size:** 1.000 L	

Analyte	Conc. (ng/mL)	Limits (a)	Labeled Standards	% Rec.	Limits (a)
2,3,7,8-TCDD	8.69	7.3-14.6	13C-2378-TCDD	83.7	25-141
			CRS		
			37Cl4-2378-TCDD	108	37-158

(a) Limits based on method acceptance criteria.

Analyst: JMH **Reviewed by: BS**

CERES Analytical Laboratory, Inc.
4919 Windplay Dr. Suite 1, El Dorado Hills, CA 95762

EPA Method 1613B

Client Sample ID: MW-1S / 23G1076-01		
Project ID: 23G1076	**Ceres Sample ID:** 16664-001	**Date Received:** 7/17/2023
	QC Batch #: 2921	**Date Extracted:** 7/26/2023
Date Collected: 7/12/2023	**Matrix:** Drinking Water	**Date Analyzed:** 7/26/2023
Time Collected: 14:00	**Sample Size:** 1.000 L	

Analyte	Conc. (pg/L)	MDL	RL	Qual.	Labeled Standards	% R	LCL-UCL (a)	Qualifiers
2,3,7,8-TCDD	DL= 3.46	3.12	5.00		13C-2378-TCDD	74.2	31-137	
					CRS			
					37Cl4-2378-TCDD	104	42-164	

DL - Signifies Non-Detect (ND<) sample specific detection limit.
EMPC - Estimated Maximum Possible Concentration due to ion abundance ratio failure.
(a) - Lower control limit - Upper control limit

Analyst: JMH **Reviewed by: BS**

Section VI: Sample Tracking

SUBCONTRACT ORDER

Clinical Laboratory of San Bernardino

23G1076

SENDING LABORATORY:

Clinical Laboratory of San Bernardino
21881 Barton Road
Grand Terrace, CA 92313
Phone: 909.825.7693
Fax: 909.825.7696
Project Manager: Stu Styles

RECEIVING LABORATORY:

Ceres Analytical Laboratory, Inc.
4919 Windplay Dr., Ste. 1
El Dorado Hills, CA 95762
Phone :(916) 932-5011
Fax:

Please email results to Project Manager: Stu Styles
[ ] navarro@clinical-lab.com [X] styles@clinical-lab.com [ ] jhernandez@clinical-lab.com [ ] durand@clinical-lab.com

CLIP transfer those samples with PS codes provided	[ ] Yes	[X] No
Water Trax Upload Client: _____	[ ] Yes	[X] No
GeoTracker Upload Client: _____	[ ] Yes	[X] No
MDL's / J Flags	[ ] Yes	[X] No

Turn Around Time [X] ~~10 Days~~ [ ] 5 Days [ ] Other __ Days
Subcontract Comments:

Analysis	Comments
Sample ID: MW - 1S / 23G1076-01	**Sampled: 07/12/23 14:00 PS Code:** **Water** **WTX ID:**
1613 Dioxins TCDD DW Week	

Containers Supplied:

1 L Amber Glass Na Thio EPA 1613 (R) 1 L Amber Glass Na Thio EPA 1613 (S)

Released By	Date / Time	Received By	Date / Time
	7/13/23		7/13/23 1306
	7/13/23 1506		7/17/23

Samples Received on ( ) Wet Ice ( ) Blue Ice ( ) No Ice

Received Temp _____ (F) (C)

Sample Receipt Check List Logged by: HH (initials)

Ceres ID: 16664	Date/Time: 7/17/23 11:33
Client Project ID: 23G1076	Received Temp: 6.0 °C Acceptable: (Y) / N
Chain of Custody Relinquished by signed?	(Y) / N
Chain of Custody Received by signed?	(Y) / N
Custody Seals? Present?	Y / N
Intact?	Y / N
NA:	(NA)
Unlabeled / Illegible Samples	Y / (N)
Proper Containers:	(Y) / N
Preservation Acceptable (~~Chemical or Temperature~~)?	(Y) / N
Drinking Water, Sodium Thiosulfate present?	(Y) / N / NA
Residual Cl?	Y / (N) / NA
Aqueous sample pH: 7	NA

List COC discrepancies:

HH 7/17/23

List Damaged Samples:

HH 7/17/23

Section VII: Qualifiers/Abbreviations

J	Concentration found below the lower quantitation limit but greater than zero.
B	Analyte present in the associated Method Blank.
E	Concentration found exceeds the Calibration range of the HRGC/HRMS.
D	This analyte concentration was calculated from a dilution.
X	The concentration found is the estimated maximum possible concentration due to chlorinated diphenyl ethers present in the sample.
H	Recovery limits exceeded. See cover letter.
*****	Results taken from dilution.
I	Interference. See cover letter.
Conc.	Concentration Found
DL	Calculated Detection Limit
ND	Non-Detect
% Rec.	Percent Recovery

23G1076

WO _____

0-1-25

Clinical Lab of San Bernardino, Inc. Chain of Custody

21881 Barton Road Grand Terrace CA 92313 909 825-7693 / 516-A N 8th St. Lompoc CA 93436 805 737-7300

Client	GEOSCIENCE Support Services Inc.
Address:	PO Box 220
	Claremont, CA 91711
Client Contact:	Logan Wicks
Phone No.:	909.451.6650 FAX No.:
System No.:	
Project:	USLR MW-15
Sampled By:	N. Nguyen (GSSI)
Comments:	

Destination Laboratory

[X] Clinical Grand Terrace / ELAP 1088

[ ] Clinical Lompoc / ELAP 1678

[ ] Other:

Date	Time	Sample Identification	Container ID	Matrix	No. of Preserved Containers: Unpreserved	$Na_2S_2O_3$	Monochloroacetic Acid	HNO_3	CrVI Buffer	HCl			Total Containers	Secondary Standards	Inorganic Chemicals	Chromium (VI)	524 VOC, 524M/SRL 1,2,3-TCP	SOC's 504, 508, 515, 525, 531, 547, 548, 549, 1613	Gross Alpha/ Uranium	Sulfides, Total & Dissolved	TOC	Silica	Asbestos	Bromide	Corrosivity			Comments	Turn Around Time (TAT)
				GW	4	6	1	2	1	7	1	1	23	X	X	X	X	X	X	X	X	X	X	X	X				
		Bottles:																											
7/12/2023		2 X 1 Liter Amber Glass w/$Na_2S_2O_3$		1613																									
	14:00	4 X 40mL Amber Vials w/ HCl (524)		524																									
		1 X 250 Liter Amber Glass w/Na2SO3 (		515																									
		1X 1/2 Gallon Poly		SeeIOC																									
		1 X Quart Poly		Asbestos																									
		1 X Pint Poly w/ HNO3		Metals																									
		1 GP Bottle		GP																									
		3 X 1 Liter Amber Glass w/HCl		508/525																									
		4 X 250mL Amber Poly w/Na2S2O3		548																									
		2 X 40mL Amber vials w/ Na2S2O3		504																									
		4 X 125mL Amber Glass w/ Na2S2O3		547																									
		1 X 250mL Amber Glass w/ Monochloroacetic Acid					531																						
		1X 1/2 Pint w/ NaOH	CN																										
		1X 1/2 Gallon w/ HNO3	GA/U																										
		1/2 Pint Poly w/ Cr (VI) Buffer							1X250mL Amber--Sulfides, dissolved											1	A	125mL Amber w/HCl-TOC						
		1/2 Pint Poly	Br						1X250mL Amber w/ NaOH/ZnAcetate--Sulfide																				

Field Parameters:

Turbidity = 2.19 NTU

pH = 6.70

E.C = 473uS

temp = 20.80°C

Matrix: DW - Drinking Water GW - Ground Water SW - Surface Water W - Water WW - Wastewater SWR - Stormwater Runoff S - Sludge O - Other _____

TAT: (10) Ten Day (5) Five Day Rush (2) Two Day Rush

Relinquished By: Signature	Print Name	Date Time	Received By	Received By
	Nicolette Nguyen	07/12/23 16:25		
		7/12 16:25	CC	Olivia/GSSB

Condition: [X] On Wet Ice [ ] On Blu Ice [ ] Intact [ ] Custody Seals Samples / COC Checked By: _____ Work Order Logged By:

Receipt Comments: Clinical Lab Receipt Temp: 5.3 °C

ATTACHMENT C
DWR WELL COMPLETION REPORT

GEOSCIENCE

The First Name in Groundwater

State of California

Well Completion Report

Form DWR 188 Submitted 8/24/2023

WCR2023-009340

Owner's Well Number: USLR MW-1D | Date Work Began: 05/30/2023 | Date Work Ended: 06/08/2023

Local Permit Agency: County of San Diego DEH/LWQD Land Water and Quality Division, Monitoring Well Program

Secondary Permit Agency: | Permit Number: DEH2023-LMWP-005932 | Permit Date: 05/25/2023

Well Owner (must remain confidential pursuant to Water Code 13752)

Name: YUIMA MUNICIPAL WATER DISTRICT, C/O AMY REEH

Mailing Address: P.O. BOX 177

City: PAUMA VALLEY | State: CA | Zip: 92061

Planned Use and Activity

Activity: New Well

Planned Use: Monitoring

Well Location

Address: 15057 HIGHWAY 76

City: PAUMA VALLEY | Zip: 92061 | County: San Diego

Latitude: 33 Deg. 20 Min. 2.5728 Sec. N | Longitude: -117 Deg. 0 Min. 46.6703 Sec. W

Dec. Lat.: 33.334048 | Dec. Long.: -117.012964

Vertical Datum: | Horizontal Datum: WGS84

Location Accuracy: | Location Determination Method:

APN: 130-050-14-00

Township: 10 S

Range: 01 W

Section: 05

Baseline Meridian: San Bernardino

Ground Surface Elevation:

Elevation Accuracy:

Elevation Determination Method:

Borehole Information

Orientation: Vertical | Specify:

Drilling Method: Other - MUD ROTARY | Drilling Fluid: Other - MUD

Total Depth of Boring: 148 Feet

Total Depth of Completed Well: 125 Feet

Water Level and Yield of Completed Well

Depth to first water: (Feet below surface)

Depth to Static Water Level: 30.2 (Feet) | Date Measured: 07/11/2023

Estimated Yield*: (GPM) | Test Type:

Test Length: (Hours) | Total Drawdown: (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	53	POORLY GRADED SAND
53	85	CLAY WITH SAND
85	90	CLAY
90	95	CLAY WITH SAND
95	105	POORLY GRADED SAND WITH CLAY
105	127	POORLY GRADED SAND
127	148	GRANITIC BEDROCK

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	20	Blank	Low Carbon Steel	Grade: ASTM A53	0.25	10.75			SANITARY SEAL CASING
2	0	95	Blank	PVC	N/A	0.337	4.5			SCH80 FLUSH-THREADED PVC
2	95	125	Screen	PVC	N/A	0.337	4.5	Milled Slots	0.02	SCH80 FLUSH-THREADED PVC

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	20	Cement	Portland Cement/Neat Cement		SANITARY SEAL (OUTSIDE 10" STEEL CASING)
0	20	Cement	Portland Cement/Neat Cement		SANITARY SEAL (INSIDE 10" STEEL CASING AND OUTSIDE 4" PVC LINER)
20	22	Bentonite	Other Bentonite		BENTONITE CHIPS - SANITARY SEAL
22	148	Other Fill	See description.	NO. 3	LAPIS LUSTRE #3 FILTER PACK

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	20	17
20	148	10

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: STEHLY BROTHERS DRILLING INC, Paul Stehly
Person, Firm or Corporation

13268 MC NALLY RD | VALLEY | CA | 92082
Address | City | State | Zip

Signed: *electronic signature received* | 08/24/2023 | 709686
C-57 Licensed Water Well Contractor | Date Signed | C-57 License Number

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N

Latitude Deg/Min/Sec

W

Longitude Deg/Min/Sec

TRS:

APN:

State of California

Well Completion Report

Form DWR 188 Submitted 8/24/2023

WCR2023-009341

Owner's Well Number: USLR MW-1S | Date Work Began: 06/09/2023 | Date Work Ended: 06/15/2023

Local Permit Agency: County of San Diego DEH/LWQD Land Water and Quality Division, Monitoring Well Program

Secondary Permit Agency: | Permit Number: DEH2023-LMWP-005932 | Permit Date: 05/25/2023

Well Owner (must remain confidential pursuant to Water Code 13752)

Name: YUIMA MUNICIPAL WATER DISTRICT, C/O AMY REEH

Mailing Address: P.O. BOX 177

City: PAUMA VALLEY | State: CA | Zip: 92061

Planned Use and Activity

Activity: New Well

Planned Use: Monitoring

Well Location

Address: 15057 HIGHWAY 76

City: PAUMA VALLEY | Zip: 92061 | County: San Diego

Latitude: 33 Deg. 20 Min. 2.6159 Sec. N | Longitude: -117 Deg. 0 Min. 46.566 Sec. W

Dec. Lat.: 33.33406 | Dec. Long.: -117.012935

Vertical Datum: | Horizontal Datum: WGS84

Location Accuracy: | Location Determination Method:

APN: 130-050-14-00

Township: 10 S

Range: 01 W

Section: 05

Baseline Meridian: San Bernardino

Ground Surface Elevation:

Elevation Accuracy:

Elevation Determination Method:

Borehole Information

Orientation: Vertical | Specify:

Drilling Method: Other - MUD ROTARY | Drilling Fluid: Other - MUD

Total Depth of Boring: 65 Feet

Total Depth of Completed Well: 55 Feet

Water Level and Yield of Completed Well

Depth to first water: (Feet below surface)

Depth to Static Water Level: 30.2 (Feet) | Date Measured: 07/11/2023

Estimated Yield*: (GPM) | Test Type:

Test Length: (Hours) | Total Drawdown: (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	22	SAND AND SMALL BOULDERS
22	53	SAND AND BOULDERS WITH CLAY
53	65	CLAY WITH SAND

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	20	Blank	Low Carbon Steel	Grade: ASTM A53	0.25	10.75			SANITARY SEAL CASING
2	0	35	Blank	PVC	N/A	0.337	4.5			SCH80 FLUSH-THREADED PVC
2	35	55	Screen	PVC	N/A	0.337	4.5	Milled Slots	0.02	SCH80 FLUSH-THREADED PVC

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	20	Cement	Portland Cement/Neat Cement		SANITARY SEAL (OUTSIDE 10" STEEL CASING)
0	20	Cement	Portland Cement/Neat Cement		SANITARY SEAL (INSIDE 10" STEEL CASING AND OUTSIDE 4" PVC LINER)
20	22	Bentonite	Other Bentonite		BENTONITE CHIPS - SANITARY SEAL
22	28	Other Fill	See description.	NO. 6	SAND #6 FILTER PACK
28	58	Other Fill	See description.	NO. 3	LAPIS LUSTRE#3 FILTER PACK
58	65	Other Fill	See description.	NO. 6	SAND #6 FILTER PACK

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	20	17
20	65	10

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: STEHLY BROTHERS DRILLING INC, Paul Stehly
Person, Firm or Corporation

13268 MC NALLY RD | VALLEY | CA | 92082
Address | City | State | Zip

Signed: *electronic signature received* | 08/24/2023 | 709686
C-57 Licensed Water Well Contractor | Date Signed | C-57 License Number

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

					N
Latitude Deg/Min/Sec					

					W
Longitude Deg/Min/Sec					

TRS:

APN:

APPENDIX C

Aquifer Testing and Analysis in the Upper San Luis Rey Groundwater Subbasin

GEOSCIENCE

The First Name in Groundwater

August 31, 2023

Ms. Amy Reeh
General Manager
Yuima Municipal Water District
PO Box 177, Pauma Valley, CA 92061
Claremont, CA 91711

Re: Aquifer Testing and Analysis in the Upper San Luis Rey Groundwater Subbasin

Dear Amy:

This letter summarizes aquifer testing conducted in the Upper San Luis Rey (USLR) Groundwater Subbasin to further develop data for basin aquifer parameters, transmissivity and storativity to be used to refine the groundwater model at a later date for on-going basin management considerations. A constant rate test was performed at Yuima Municipal Water District (YMWD) Well 20. YMWD Well 19, located 250 ft from Well 20 was used as an observation well during the test. These wells were selected for testing after a site reconnaissance visit to make sure the selected wells are properly equipped with working totalizer, water level monitoring ports, and transducer installation capabilities. Both wells are located on a parcel of land approximately 1,800 ft northwest of intersection Highway 76 and Lazy H Drive in Pauma Valley, CA. The aquifer parameters specified herein are based on analysis of data collected during the constant rate test performed in May/June 2023 (see Attachment A).

Testing Issues

To reduce risk of well interference, Geoscience coordinated with YMWD, McMillan Farming, Peppercorn Mutual Water Company, and Rancho Pauma Mutual Water Company to pause pumping on May 31st through June 1st, 2023 at 23 nearby pumping wells. McMillan Farming and Peppercorn Mutual Water Company reported shutting pumping wells off starting at 11 A.M. on May 31st, an hour before the start of the pumping test. During the pumping test, water levels in the pumping and observation well started to recover while pumping at a constant rate at 50 and 62 minutes, respectively, and continued recovering through the end of pumping suggesting that one or more pumping wells had not been turned off, effecting

the trend of the water levels (see Figures 1 & 2). At the end of the initial scheduled 24-hour pumping period, the test was extended to a total of 48-hours of consecutive pumping.

Methodology

During the pumping test, the pumping water level and discharge rate were closely monitored (see Attachment A). The field procedure for these tests followed the American Society for Testing and Materials (ASTM, 1994, standard test method D 4050).

According to Jacob (1950), for small values of "u" ($u < 0.05$), the Theis Equation may be approximated by Jacob's Equation:

$$s(r,t) = \frac{264Q}{T}\log\left(\frac{0.3\,Tt}{r^2\,S}\right)$$ "Jacob's Equation"

Jacob's Equation is valid for use for most hydrogeologic problems of practical interest, is easier to use than the Theis equation, and involves a simple graphical procedure to calculate transmissivity and storativity. This method (D 4105) is summarized by ASTM (1994).

Transmissivity (T, in gpd/ft) can be calculated as:

$$T = \frac{264Q}{\Delta s}$$

where:

Q = Pumping rate, [gpm]
Δs = Change in drawdown over one log cycle of time, [ft]

Storativity can be calculated as:

$$S = \frac{0.3Tt_0}{r^2}$$

where:

T = Transmissivity, [gpd/ft]
t_0 = Time at the zero-drawdown intercept, [days]
r = Radial distance from the pumping well, [ft]

Additionally, residual drawdown analysis (Theis, 1935) was performed to estimate aquifer properties from recovery data in the pumping well to compare to values calculated from the pumping test. The procedure involves fitting a straight line on a residual drawdown plot of s' (residual drawdown) versus t/t' (ratio of time since pumping began to time since pumping stopped).

Lastly, Geoscience's in-house geologic toolbox program (USGS, 1963) and Driscoll's equation (Driscoll, 1986) were utilized to estimate transmissivity from specific capacity and was compared to the values calculated from the pumping tests. According to Driscoll (1986), the following equations estimate transmissivity:

$T = 2{,}000 * Q/s$ (confined aquifer)

$T = 1{,}500 * Q/s$ (unconfined aquifer)

where:

T = Transmissivity, [gpd/ft]
Q/s = Specific Capacity, [gpm/ft]

Results

The 48-hour constant rate pumping test was conducted on May 31st through June 2nd, 2023, at an average discharge rate of 329 gpm in Well 20. Evaluation of water level change data obtained from the pumping and observation well, using Jacob's straight-line interpretation was delineated using water level data before the start of recovery at 50 and 62 minutes, respectively. Results show an aquifer transmissivity of approximately 26,300 gallons per day, per foot (gpd/ft) in Well 20 and 37,700 gpd/ft in Well 19 with a storativity value of 0.0007 (see Figures 1 & 2).

Residual drawdown analysis from data obtained from the Well 20 was not valid as measured water levels recovered above the static water level within 3 minutes following the end of pumping.

Based on review of specific capacity data (discharge rate / drawdown during pumping) obtained from the pumping well, transmissivity can be estimated using Driscoll's approximation equation (Driscoll, 1986). Assuming confined conditions, and using a range of specific capacity values between 16.7 to 12 gpm/ft obtained prior to the recovery event and at the end of the pumping test, respectively, transmissivity values range from 33,400 to 24,000 gpd/ft. Transmissivity values range from 25,000 to 18,000 gpd/ft in unconfined conditions. The specific capacity value of 16.7 gpm/ft is more representative of the aquifer's characteristics under the observed pumping conditions.

Estimates of aquifer transmissivity were calculated utilizing Geoscience's in-house geologic toolbox (USGS, 1963). Assuming a well efficiency of 70%, storativity value of 0.1 (for unconfined aquifer) and 0.005

(for semi-confined aquifer), and using the same measured specific capacity values of 16.7 and 12 gpm/ft, estimated transmissivity values range from 31,300 and 21,800 gpd/ft, respectively in an unconfined aquifer. Estimated transmissivity values range from 40,200 and 28,200 gpd/ft in a semi-confined aquifer.

Conclusion

Table 1 below summarizes transmissivity values using the various methods described above. Coordinating efforts to stop nearby well pumping during the constant rate test were performed. YMWD Well 20 (pumping well) and YMWD Well 19 (observation well) both observe recovering water levels 50 and 62 minutes into pumping, respectively. The pumping test was extended to 48-hours in efforts to observe water levels stabilize in a normal downward constant rate trend, but water levels in both wells continued to recover throughout the entire pumping period. A nearby well or wells possibly shut off early into the pumping test and affected water levels.

Table 1: Comparison of Calculated Transmissivity Values Using Various Methods

Method	Transmissivity			
	gpd/ft			
Jacobs Straight-Line Interpretation (Observation Well)	37,700			
Jacobs Straight-Line Interpretation (Pumping Well)	26,300			
	Unconfined		*Confined*	
Driscoll, 1986	18,000 [1]	25,000 [2]	24,000 [1]	33,400 [2]
Geoscience In-House Geologic Toolbox (USGS, 1963)	21,800 [1]	31,300 [2]	28,200 [1]	40,200 [2]

[1] specific capacity of 12 gpm/ft

[2] specific capacity of 16.7 gpm/ft

If you have any questions, please contact me at your convenience.

Sincerely,

Brian Villalobos, PG, CHG, CEG
Principal Geohydrologist

Alexander Arita
Senior Associate Geohydrologist

References

American Society for Testing and Materials, 1994. Standard Test Method for (Field Procedure) for Withdrawal and Injection Well Testing for Determining Hydraulic Properties of Aquifer Systems.

Driscoll, F. G., 1986. Groundwater and Wells (2nd Edition). Johnson Division, St. Paul Minnesota, p. 1021.

Jacob, C. E., 1950. Engineering Hydraulics. John Wiley & Sons, New York.

Theis, C. V., 1935. The Relation Between the Lowering of the Piezometric Surface and the Rate and Duration of Discharge of a Well Using Groundwater Storage, Am. Geophys. Union Trans., vol. 16 pp. 519-524.

United States Geological Survey, 1963. Methods of Determining Permeability, Transmissivity, and Drawdown, Water Supply Paper 1963. U.S. Government Publishing Office.

Constant Rate Pumping Test
YMWD Well 20

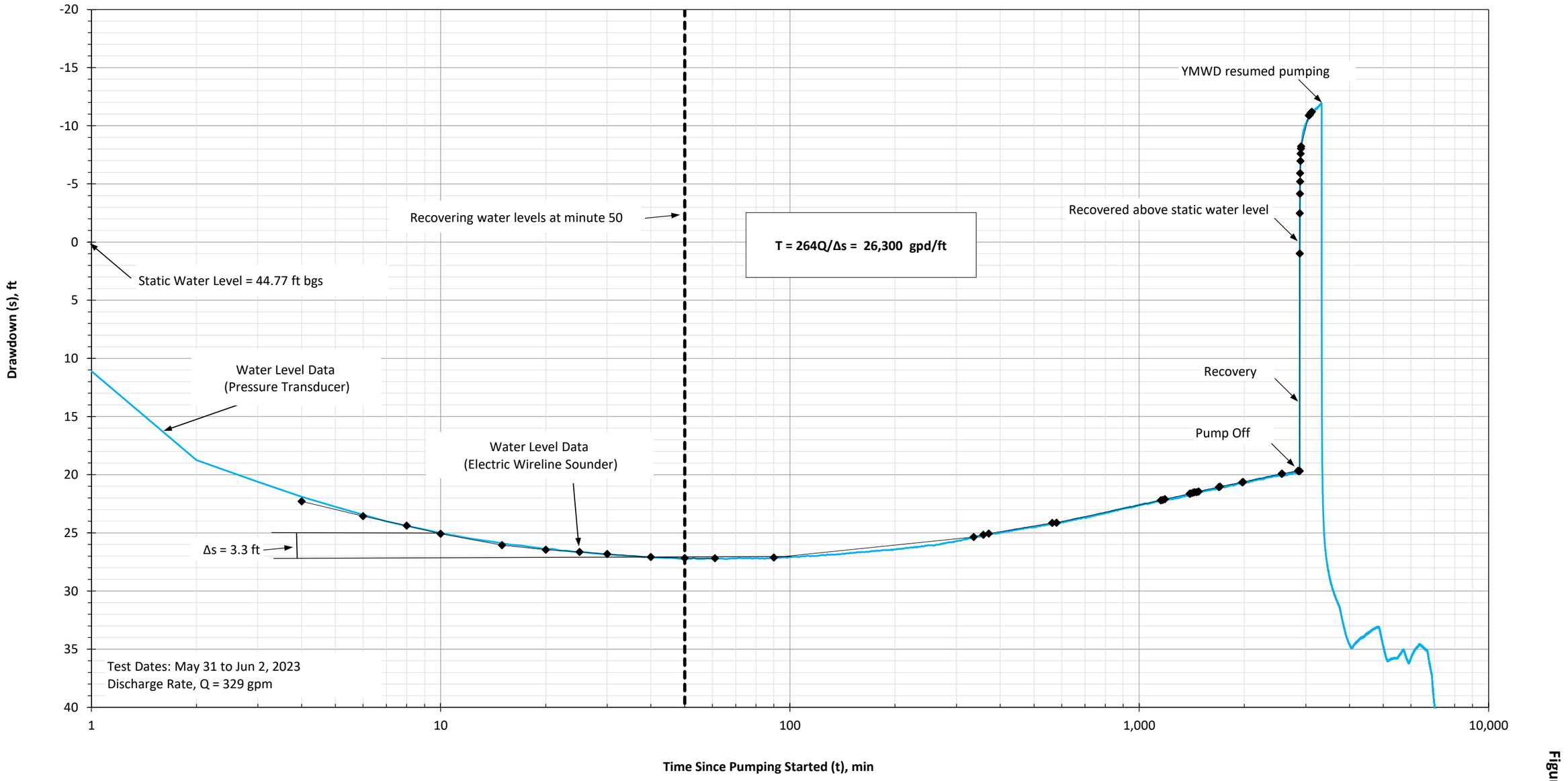

Figure 1

Time-Drawdown Analysis
Pumping Well: YMWD Well 20
Observation Well: YMWD Well 19

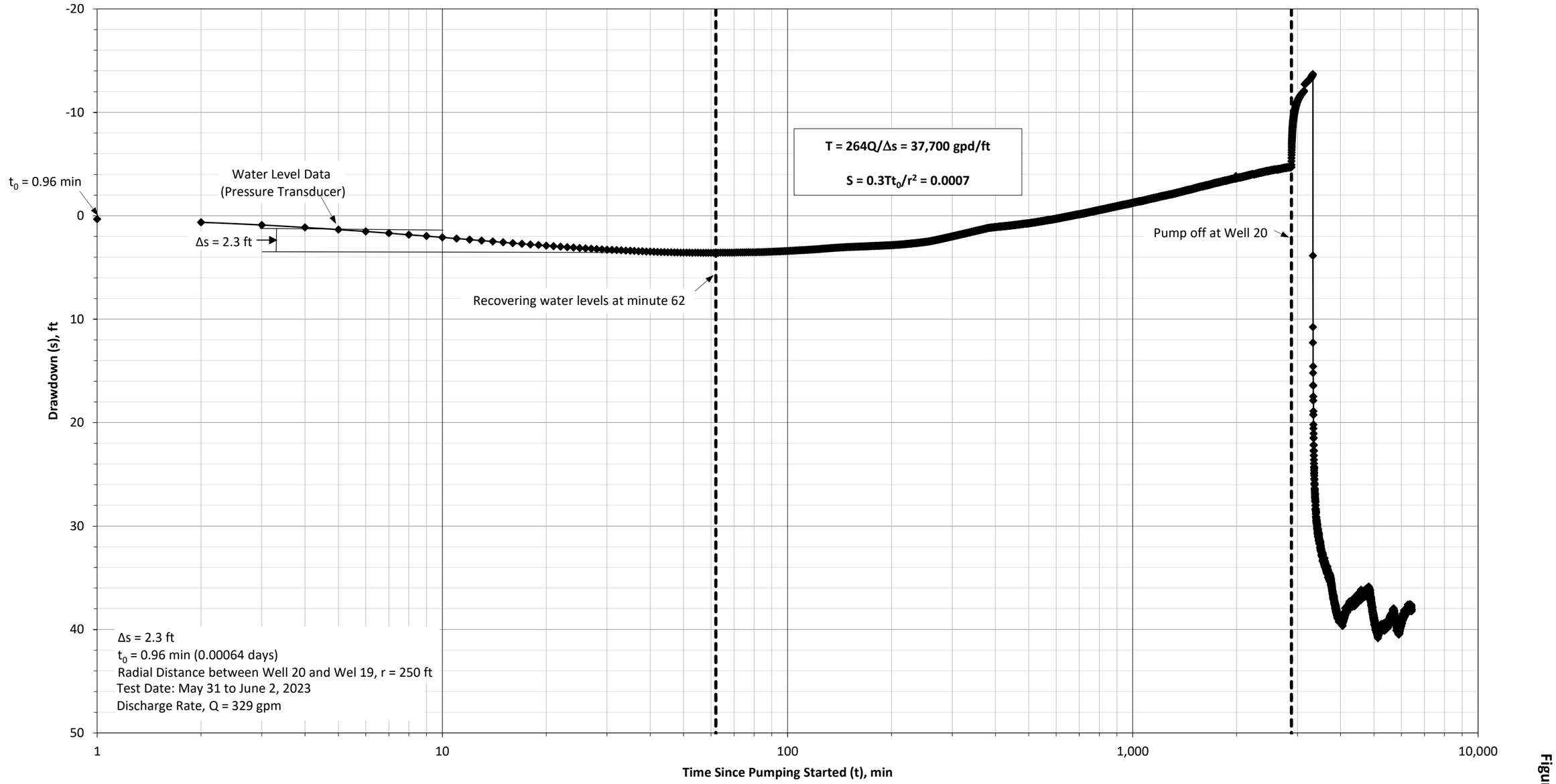

Figure 2

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GEOSCIENCE Support Services, Inc.
P.O. Box 220, Claremont, CA 91711
Tel: (909) 451-6650 Fax: (909) 451-6638
www.gssiwater.com

PUMPING TEST DATA

Test Date: 5/31/23 to 6/2/23

Well Name: YMWD Well 20

Circle Well Type: (Pumping) Observation (r = ft)

Circle Test Type: Step Drawdown (Constant Rate) Recovery Development

Static Water Level Depth: 44.77 ft bgs Reference Point Elevation: 3.26 ft ags

Time of Day	Time Step [min]	Time Total [min]	Depth to Water [ft brp]	Draw-down [ft]	Pumping Rate [gpm]	Sand Content [ppm]	Totalizer [100ft3]	Remarks and Other Data
12:00	0	0	48.03	-	-	-	89,857.70	Pump on
12:02	2	2	-	-	-	-	-	
12:04	4	4	70.32	22.29	174	-	89,858.63	
12:06	6	6	71.59	23.56	337	-	89,859.53	
12:08	8	8	72.41	24.38	337	-	89,860.43	
12:10	10	10	73.11	25.08	325	-	89,861.30	
12:15	15	15	74.09	26.06	326	-	89,863.48	
12:20	20	20	74.48	26.45	314	-	89,865.58	
12:25	25	25	74.67	26.64	340	-	89,867.85	
12:30	30	30	74.84	26.81	329	-	89,870.05	
12:40	40	40	75.11	27.08	325	-	89,874.40	
12:50	50	50	75.20	27.17	325	-	89,878.75	
13:01	61	61	75.21	27.18	326	-	89,883.55	
13:15	75	75	-	-	326	-	89,889.65	
8:30	90	90	75.15	27.12	325	-	89,896.18	
17:36	336	336	73.38	25.35	327	-	90,003.65	
17:58	358	358	73.20	25.17	327	-	90,013.28	
18:11	371	371	73.10	25.07	329	-	90,019.00	
21:24	564	564	72.17	24.14	328	-	90,103.50	
21:40	580	580	72.16	24.13	327	-	90,110.50	
7:14	1,154	1,154	70.24	22.21	328	-	90,362.43	
7:28	1,168	1,168	70.20	22.17	329	-	90,368.58	
7:45	1,185	1,185	70.13	22.10	329	-	90,376.05	
11:15	1,395	1,395	69.66	21.63	329	-	90,468.35	
11:23	1,403	1,403	69.65	21.62	330	-	90,471.88	
11:43	1,423	1,423	69.59	21.56	306	-	90,480.05	
12:00	1,440	1,440	69.54	21.51	356	-	90,488.15	
12:21	1,461	1,461	69.53	21.50	328	-	90,497.35	
12:40	1,480	1,480	69.47	21.44	329	-	90,505.70	
16:10	1,690	1,690	69.09	21.06	329	-	90,598.08	
16:25	1,705	1,705	69.05	21.02	328	-	90,604.65	
20:54	1,974	1,974	68.69	20.66	329	-	90,723.10	
21:04	1,984	1,984	68.66	20.63	327	-	90,727.48	
6:37	2,557	2,557	67.96	19.93	330	-	90,979.88	
6:47	2,567	2,567	67.95	19.92	331	-	90,984.30	
11:30	2,850	2,850	67.69	19.66	330	-	91,109.00	
11:40	2,860	2,860	67.72	19.69	329	-	91,113.40	
11:45	2,865	2,865	67.72	19.69	329	-	91,115.60	
11:55	2,875	2,875	67.71	19.68	329	-	91,120.00	Q_{avg} = 328.5 gpm; Q/s = 16.7 gpm/ft
12:00	2,880	2,880	67.71	19.68	329	-	91,122.48	Pump off

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PUMPING TEST DATA

Test Date: June 2, 2023

Well Name: YMWD Well 20

Circle Well Type: (Pumping) Observation (r = ft)

Circle Test Type: Step Drawdown Constant Rate (Recovery) Development

Static Water Level Depth: 44.77 ft bgs Reference Point Elevation: 3.26 ft agl

Time of Day	Time Step [min]	Time Total [min]	Depth to Water [ft]	Draw-down [ft]	Pumping Rate [gpm]	Sand Content [ppm]	Totalizer [100ft3]	Remarks and Other Data
12:00	0	2,880	67.71	19.68	-	-	-	Pump off
12:02	2	2,882	49.02	0.99	-	-	-	
12:04	4	2,884	45.55	-2.48	-	-	-	
12:06	6	2,886	43.87	-4.16	-	-	-	
12:08	8	2,888	42.83	-5.20	-	-	-	
12:10	10	2,890	42.11	-5.92	-	-	-	
12:15	15	2,895	41.06	-6.97	-	-	-	
12:20	20	2,900	40.43	-7.60	-	-	-	
12:25	25	2,905	39.99	-8.04	-	-	-	
12:28	28	2,908	39.81	-8.22	-	-	-	
15:00	180	3,060	37.15	-10.88	-	-	-	
15:15	195	3,075	37.12	-10.91	-	-	-	
15:30	210	3,090	37.00	-11.03	-	-	-	
15:45	225	3,105	36.90	-11.13	-	-	-	
16:00	240	3,120	36.82	-11.21	-	-	-	

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GEOSCIENCE Support Services, Inc.
P.O. Box 220, Claremont, CA 91711
Tel: (909) 451-6650 Fax: (909) 451-6638
www.gssiwater.com

PUMPING TEST DATA

Test Date: 5/31/23 to 6/2/23

Well Name: YMWD Well 19

Circle Well Type: Pumping (Observation (r= 250 ft)

Circle Test Type: Step Drawdown (Constant Rate) (Recovery) Development

Static Water Level Depth: 51.23 ft bgs Reference Point Elevation: 4.03 ft ags

Time of Day	Time Step [min]	Time Total [min]	Depth to Water [ft brp]	Draw-down [ft]	Pumping Rate [gpm]	Sand Content [ppm]	Totalizer [100ft3]	Remarks and Other Data
12:00	0	0	55.26		-	-	-	Pump on at Well 20
12:43	43	43	57.39	2.13				
12:54	54	54	57.59	2.33	-	-	-	
12:08	8	8	57.66	2.40	-	-	-	
13:04	64	64	57.68	2.42	-	-	-	
17:41	341	341	55.67	0.41	-	-	-	
18:15	375	375	55.36	0.10	-	-	-	
21:29	569	569	54.55	-0.71	-	-	-	
7:20	1,160	1,160	52.38	-2.88	-	-	-	
7:49	1,189	1,189	52.31	-2.95	-	-	-	
11:18	1,398	1,398	51.77	-3.49	-	-	-	
12:44	1,484	1,484	51.56	-3.70	-	-	-	
16:03	1,683	1,683	51.12	-4.14	-	-	-	
8:30	1,993	1,993	50.75	-4.51	-	-	-	
6:52	2,572	2,572	49.75	-5.51	-	-	-	
11:47	2,867	2,867	49.48	-5.78	-	-	-	
12:12	2,892	2,892	46.99	-8.27	-	-	-	Pump off at Well 20 at minute 2,880
12:30	2,910	2,910	45.25	-10.01	-	-	-	
15:34	3,094	3,094	42.34	-12.92	-	-	-	
15:48	3,108	3,108	42.20	-13.06	-	-	-	
16:13	3,133	3,133	42.08	-13.18	-	-	-	
16:30	3,150	3,150	41.99	-13.27	-	-	-	

RESOLUTION NO. ~~01-2022~~12-2024

**A RESOLUTION OF THE BOARD OF DIRECTORS
OF THE
UPPER SAN LUIS REY GROUNDWATER MANAGEMENT AUTHORITY
SUCCESSOR TO
THE PAUMA VALLEY GROUNDWATER SUSTAINABILITY AGENCY
PROVIDING FOR THE CALLING AND HOLDING OF REGULAR MEETINGS, DETERMINING THE TIME AND PLACE OF SUCH MEETINGS,
DETERMINING HOW ITS RECORDS SHALL BE KEPT, ESTABLISHING RULES AND REGULATIONS GOVERNING PROCEDURE OF SAID BOARD AND ADOPTING ADMINISTRATION AND STAFFING FOR THE AUTHORITY**

WHEREAS, The Upper San Luis Rey Groundwater Management Authority ("Authority") was established by a Joint Exercise of Powers Agreement ("JPA Agreement") on May 1, 2022 as a fourth amendment to that certain Memorandum of Understanding for the Development of a Groundwater Sustainability Plan dated June 27 ,2017 ("2017 MOU") which created the Pauma Valley Groundwater Sustainability Agency ("PVGSA"); and

WHEREAS ,the JPA Agreement provides that the Authority, upon formation, shall serve as the successor to the PVGSA as the groundwater sustainability agency ("GSA") for the Upper San Luis Rey Valley Subbasin ("Subbasin") with the responsibility for implementing the Groundwater Sustainability Plan ("GSP") submitted by PVGSA to the California Department of Water Resources ("DWR").

WHEREAS, it is necessary for the Authority, in order to function as a separate joint powers entity, to establish certain administrative policies for the operation of the Authority; and

WHEREAS, said resolution is not in conflict with the JPA Agreement.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE UPPER SAN LUIS REY GROUNDWATER MANAGEMENT AUTHORITY, SUCCESSOR TO THE PAUMA VALLEY GROUNDWATER SUSTAINABILITY AGENCY, as follows:

1. The Regular meetings of the Board of Directors of the Authority shall be held within the boundary of the territory of at least one of the member agencies of the Authority. Regular meetings of the Board of Directors shall be held and noticed in accordance with the Ralph M. Brown Act and shall be held on the third Tuesday of each month at ~~3:00~~ 3:30 p.m. Said meeting shall be held at the District offices of Yuima Municipal Water District or at such times and places as the Board of Directors of the Authority may, from time to time, determine and/or adjourn.

2. Special meetings of the Board of Directors of the Authority may be called at any time by the Chairperson of the Board of Directors of the Authority, a majority of the members of said Board of Directors, or the Administrator of the Authority after consultation with the Board Chairperson. Special meetings shall be noticed in accordance with the Ralph M. Brown Act.

3. If, at any time, any Regular meeting shall fall on a holiday, such meeting shall be rescheduled to a day and time as determined by the Board of Directors. If, by reason of fire, flood, earthquake or other emergency, it shall be unsafe to meet at the place designated for Regular meetings then such meetings shall be held for the duration of the emergency at such place as is designated by the Chairperson of the Board of Directors of the Authority.

4. All meetings of the Board of Directors of the Authority shall be open and public, and all persons shall be permitted to attend any open sessions of meetings of the Board of Directors; provided however, that nothing contained herein shall be deemed to prevent the Board of Directors from holding closed sessions in accordance with the Brown Act. Moreover, by this resolution the Board of Directors, the Authority hereby adopts the following policy regarding disclosure of information discussed during closed session of the Authority, as authorized by Government Code § 54956.96.
    a. All information received by an Authority Director in closed session shall be confidential unless the Authority Board votes to release such information to the public. However, a Director of the Authority may disclose information obtained in a closed session that potentially has direct financial or liability implications for member agencies of the Authority to the following individuals at that Director's appointing member agency:

        (1) Legal counsel of that appointing member agency for purposes of obtaining advice on whether the matter has direct financial or liability implications;

        (2) Other members of the legislative body of the appointing member agency, or members and staff of aligned entities in litigation, who are present in a closed session of that local agency member.

    b. Any designated alternate member of the Authority Board who is attending a properly noticed meeting of the Board in lieu of the regular member may similarly attend closed sessions of the Authority in the absence of the regular member, and may disclose information received during closed session to their appointing member agency where authorized by Section 4.a.

5. At the first meeting of the Board of Directors, the Board shall elect by majority vote, a Chairperson, Vice-Chairperson, Secretary and Treasurer.

    At the first meeting of the Board of Directors, or as soon thereafter as practicable, the Board shall appoint, by majority vote, an Administrator, one or more Authority Attorneys and an Auditor, and each shall serve at the pleasure of the Board of Directors.

    a. At the first meeting of the Board of Directors in the Month of January of each even-numbered year, the Board of Directors shall appoint, by a majority vote, a Chairperson, Vice-Chairperson, Secretary and Treasurer.
    b. The Chairperson and Vice-Chairperson shall be Directors of the Board and the Secretary and Treasurer may, but need not, be Directors of the Board. The Chairperson shall preside at all meetings of the Board, and the Vice-Chairperson shall act as the Chairperson in the absence of the Chairperson elected by the Board.

c. No one person shall, at the same time, hold the offices of Chairperson and Secretary.
d. In the event the positions of Chairperson, Vice-Chairperson, Secretary, Treasurer, Administrator, Attorney or Auditor shall for any reason become vacant, the Board of Directors, by majority vote, shall appoint a qualified person to fill such vacated position.

6. In accordance with Section 4.5 of the JPA Agreement, a majority of the Board of Directors will constitute a quorum for the purpose of conducting business, unless there is an even number of Directors on the Board of Directors, in which case a quorum may be established with half of the total appointed directors, plus one.. The Board of Directors of the Authority shall act only by ordinance, resolution or motion. No ordinance, resolution or motion shall be passed or become effective without the required affirmative vote of the number of directors specified in Sections 4.6 and 4.7 of the JPA Agreement, at any regular or special meeting. Ordinances, resolutions and motions shall all be adopted by roll-call vote and all ayes, noes and abstentions recorded in the minutes of the meetings of the Board of Directors.
7. Except as otherwise provided by The Ralph M. Brown Act or an ordinance adopted by this Board of Directors, Rosenberg's Rules of Order, https://www.cacities.org/UploadedFiles/LeagueInternet/77/77d4ee2b-c0bc-4ec2-881b-42ccdbbe73c9.pdf, are hereby adopted as the rules of practice and procedure Governing the conduct of the business before this Board of Directors. In the absence of the Chairperson, the Vice-Chairperson shall preside, and in the absent of both, the presiding officer shall be elected by a majority vote of the members of the Board of Directors.

The Chairperson, or the Vice-Chairperson in their absence, is authorized to vary the order of business where necessary to the orderly conduct of the Authority's business.

8. The Minutes of the Board of Directors shall be recorded in written form and kept by or under the direction of the Secretary of the Board of Directors in both a book and electronic format for that purpose entitled "Minutes of the Board of Directors of the Upper San Luis Rey Groundwater Management Authority". Unless otherwise expressly directed by the Board of Directors at the time of their adoption, all ordinances and resolutions adopted by the Board of Directors shall be referred to in the Minutes of the meetings of the Board of Directors by number and title. The same shall be recorded in full in books and electronic file, kept for that purpose, entitled "Ordinances" and "Resolutions" respectively.

   The Chairperson or other person who may preside at the meeting and Secretary shall authenticate the minutes, ordinances and resolutions after these have been transcribed and adopted by the Board of Directors and, when so authenticated, shall constitute the official minutes, ordinances and resolutions of the Board of Directors of the UPPER SAN LUIS REY GROUNDWATER MANAGEMENT AUTHORITY, successor to the Pauma Valley Groundwater Sustainability Agency.

   All adopted Minutes, Ordinances and Resolutions shall be kept at the offices of the appointed Administrator of the Authority.
9. The Chairperson, in addition, may from time to time appoint one or more committees. The Treasurer, and such other person or persons as may be authorized by the Board of Directors, shall draw checks or warrants to pay demands on the Authority when such demands have been approved by the Board of Directors. The Authority Attorney (s) shall be the legal advisor(s) of the Authority and shall perform such duties as may be prescribed by the Board of Directors.

10. The Board of Directors shall designate a depository to have the custody of the funds of the Authority, who shall give security sufficient to secure the Authority against possible loss and who shall be authorized to and shall pay checks drawn by the Authority for demands against the Authority when approved by the Board of Directors.
11. This Resolution may be amended by a majority vote of the members of the Board of Directors of the Authority at any properly noticed meeting by the adoption of a resolution amending any section of this resolution and rescinding this resolution.

PASSED AND ADOPTED at the regular meeting of the board of Directors of UPPER SAN LUIS REY GROUNDWATER MANAGEMENT AUTHORITY SUCCESSOR TO THE PAUMA VALLEY GROUNDWATER SUSTAINABILITY AGENCY held on the 19th day of March 2024, by the following vote to wit:

AYES:
NOES:
ABSENT:
ABSTAIN:

ATTEST:

_____

Greg Kamin, Chairman

_____

Michael Perricone, Secretary

I.
SPECIAL REPORTS

FEBRUARY 21, 2024

Overview of the Sustainable Groundwater Management Act

PRESENTED TO:

Assembly Committee on Water, Parks, and Wildlife
Hon. Diane Papan, Chair

Assembly Budget Subcommittee No. 4 on Climate Crisis, Resources, Energy and Transportation
Hon. Steve Bennett, Chair

LEGISLATIVE ANALYST'S OFFICE

Context for Sustainable Groundwater Management Act (SGMA)

Groundwater Is Important Component of State's Water Resources

- Provides between 40 percent and 60 percent of statewide water supply, with reliance increasing during dry years. Provides up to 100 percent of water supplies in some regions.

Severe Groundwater Depletion in Some Areas of State

- On average, California uses more groundwater each year than is replenished, causing certain underground basins to become gradually depleted, or "overdrafted."
- Overdraft has led to serious impacts, including failed wells, deteriorated water quality, permanent collapse of underground basins, and land subsidence.

Before 2014, Groundwater Use Was Not Regulated on Statewide Basis

- Contrasts with state's approach to monitoring and enforcing surface water rights.

Overview of SGMA

SGMA Enacted in 2014

- Chapters 346 (SB 1168, Pavley), 347 (AB 1739, Dickinson), and 348 (SB 1319, Pavley) established SGMA in 2014.
- With the goal of achieving long-term groundwater sustainability by 2040, SGMA marks the first comprehensive statewide requirement to monitor and operate groundwater basins to avoid overdraft.
- SGMA's requirements apply to 94 out of the state's 515 groundwater basins. Currently, 29 basins are not subject to all of SGMA's requirements because they are adjudicated. The 94 basins, considered "high and medium priority," along with the 29 adjudicated basins, represent 98 percent of annual statewide groundwater pumping.
  - Of the 94 groundwater basins subject to regulation, 21 are considered critically overdrafted.

SGMA Requires Groundwater to Be Managed Locally

- By 2017, local public agencies were required to form Groundwater Sustainability Agencies (GSAs) that are vested with broad management authority over their basins, including (1) defining basins' sustainable yield, (2) limiting extractions, and (3) imposing fees.
- SGMA requires GSAs to develop enforceable Groundwater Sustainability Plans (GSPs) defining practices that govern use of basins. GSPs for critically overdrafted basins were due to the Department of Water Resources (DWR) by January 2020 and for other basins by January 2022. Some agencies submitted alternative management plans based on existing plans they already had in place.

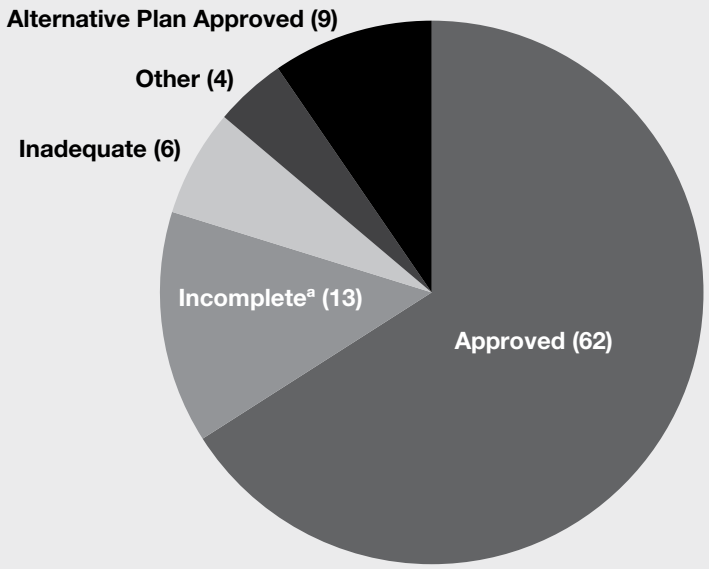
SGMA Implementation Overseen by Two State Agencies

- DWR led the initial phases of implementation. Responsibilities have included defining and prioritizing basins, collecting and disseminating data, providing technical assistance, and administering local grants. DWR also reviews and assesses GSPs for compliance with SGMA; these reviews will take place every five years.

Overview of SGMA

(Continued)

DWR's Current Groundwater Sustainability Plan Determinations



[a] When groundwater basins' GSPs are determined to be incomplete, GSAs have 180 days to resubmit their GSPs.

DWR = Department of Water Resources; GSA = Groundwater Sustainability Agency; and GSP = Groundwater Sustainability Plan.

LAO

- State Water Resources Control Board (SWRCB) enforces the law and intervenes when local entities fail to comply, such as when DWR determines GSPs are inadequate to achieve sustainability in a basin. Intervention may include holding probationary hearings, imposing reporting requirements, issuing fees, assuming basin management responsibilities (including developing and implementing usage plans), and conducting enforcement actions.

SGMA Requirements Phased in Over Several Years

Implementation Time Line for Major Sustainable Groundwater Management Act (SGMA) Requirements

January 2015
The Department of Water Resources (DWR) released initial basin prioritization. High- and medium-priority basins are subject to SGMA requirements.

January 2016
DWR identified final list of basins subject to critical conditions of overdraft. These basins face some expedited compliance deadlines.

June 30, 2017
Local agencies established groundwater sustainability agencies (GSAs).

January 31, 2020
GSAs from basins in critical overdraft had to adopt and begin implementing groundwater sustainability plans (GSPs). DWR reviewed plans for adequacy after adoption and required resubmission of plans it deemed incomplete.

January 31, 2022
GSAs from basins not in critical overdraft had to adopt and begin implementing GSPs. DWR was required to review plans for adequacy by January 2024.

January 31, 2040
GSAs from basins in critical overdraft must achieve sustainability goals.

January 31, 2042
GSAs from basins not in critical overdraft must achieve sustainability goals.

LAO

State Fiscal Support for SGMA Implementation

State Has Provided More Than $900 Million to Support SGMA Implementation

(In Millions)

	State Operations	Local Planning Grants	Local Implementation Grants	Totals
2014-15	$7[a]	—	—	$7
2015-16	16[a]	$7[b]	—	23
2016-17	18[a]	52[b]	—	70
2017-18	33[a]	34[b]	—	67
2018-19	48[c]	46[d]	—	95
2019-20	47[c]	—	$88[d]	135
2020-21	45[c]	—	—	45
2021-22	74[c]	—	180[a]	254
2022-23	48[c]	—	116[a]	164
2023-24	55[c]	—	—	55
Totals	**$391**	**$139**	**$384**	**$914**

[a] General Fund.
[b] Proposition 1 (2014).
[c] General Fund and Proposition 68 (2018).
[d] Proposition 68.

More Than Half of State Funding Has Gone to Support Local Agencies

- Planning grants ($139 million) supported GSAs as they developed their GSPs.
- Implementation grants ($384 million) supported a wide variety of projects that GSAs proposed to implement their GSPs. Examples include:
  - Developing recharge basins, expanding floodplains, and constructing conveyance; installing monitoring wells and developing well inventories; and developing or upgrading infrastructure to increase recycled water use.

Funding for State Operations to Implement SGMA

Most State Operations Funding Has Supported DWR Staff and Activities

(Dollars in Millions)

Department	Total Funding 2014-15 to 2023-24	Authorized Positions, as of 2023-24
DWR	$358[a]	80[b]
SWRCB	33[c]	40
Totals	**$391**	**120**

[a] $270 million from the General Fund and $88 million from Proposition 68 (2018).
[b] Additional positions are on loan to the Sustainable Groundwater Planning Grant Program from other programs.
[c] General Fund.

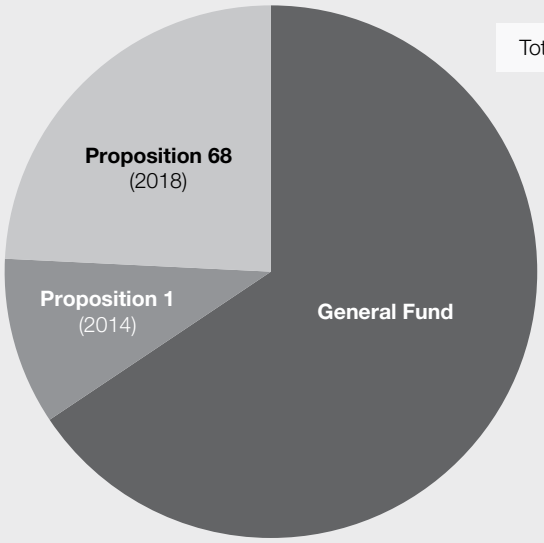
DWR = Department of Water Resources and SWRCB = State Water Resources Control Board.

- ***DWR.*** DWR currently has 80 authorized positions for SGMA (with associated annual funding of about $40 million). It also has additional positions on loan from other DWR programs on a limited-term basis.
- ***SWRCB.*** SWRCB currently has about $10 million in funding in 2023-24 and 40 authorized positions for SGMA activities. Some of this funding is limited-term and will expire. SWRCB will begin to use fee revenues as early as 2025-26 to support some state operations costs.

Sources of Funding for SGMA Implementation

General Fund Has Provided Two-Thirds of the State Support for SGMA Implementation

2014-15 through 2023-24



- Bond funds supported some state operations activities (such as grants administration), funded local planning grants, and supported some of the implementation grants.
- Bond funds are mostly expended, leading to increased reliance on General Fund support since 2021-22.
- The Governor's 2024-25 budget proposal includes previously authorized funding of about $50 million from the General Fund (of which $44 million is ongoing) for state operations activities. The proposal does not include any funding for local implementation.

Issues and Questions for Legislative Consideration

Funding

- ***What Is the Appropriate Role for the State—as Compared to Local Groundwater Users—in Funding SGMA Implementation?*** How much financial responsibility should groundwater users, particularly those responsible for overdraft and groundwater contamination, bear in implementing sustainability measures? What framework should guide the state in providing financial assistance to GSAs? How can the state target funding to ensure groundwater basins achieve sustainability along with other priority goals (such as reducing land subsidence, preventing dry domestic wells, and improving water quality)?
- ***What Funding Sources Should the State Use to Support Continued SGMA Implementation Activities?*** Given that currently authorized bonds are mostly expended, how much should the state rely on the General Fund versus consider another bond (which also relies on General Fund for repayment, but spreads out the cost over numerous years)? Which types of costs could reasonably be funded by bonds and which costs are more appropriate for the General Fund? Given the expected General Fund condition over the next several years, how should the Legislature weigh spending on SGMA implementation relative to its other budget priorities?
- ***Will Fee Revenues Be Sufficient to Cover SWRCB's Oversight and Management Activities?*** SWRCB can begin assessing fees for extraction or pumping of groundwater in unmanaged areas or from basins that are on probation. How much does SWRCB expect to raise in fees over the next several years and will that be sufficient to cover its administrative costs? Will state funds be required to supplement fee revenues?
- ***How Will Local Agencies Fund SGMA Implementation Activities?*** GSAs have authority to raise fees to pay for the various projects and activities needed to implement sustainability plans. Will this option be sufficient? How are fees being implemented currently and what implications are arising? What is the magnitude of funding needed?

Issues and Questions for Legislative Consideration

(Continued)

- ***How Can the State Help Ensure GSAs in Disadvantaged Communities Are Well-Positioned to Achieve SGMA Goals?*** To what degree are GSAs in disadvantaged communities facing both financial and technical hurdles in implementing sustainability plans? To what extent should the state focus its efforts and funding (when available) to aid these GSAs?

Policy

- ***What Role Should the State Play in Addressing Economic Impacts to the Agricultural Sector?*** What effects are groundwater sustainability activities having on the state's farmers and farmworkers and how much responsibility should the state shoulder in assisting them? For example, what steps is the administration taking to help farmworkers transition into other jobs? What steps could the Legislature consider taking?
- ***How Can the State Minimize Air Pollution on Fallowed/Former Farmland?*** As farmland is taken out of production or fallowed, this could lead to an increase in toxic dust and air pollution in areas that already experience high rates of respiratory disease. How will the administration monitor these effects? Are GSAs requiring the incorporation of dust suppression measures on fallowed/former farmland? How are DWR and SWRCB considering these potential impacts in their oversight roles?
- ***Are Any Statutory Changes Needed to Smooth Implementation of SGMA?*** Now that SGMA implementation is well underway, have issues arisen that might merit additional legislative guidance and intervention? Should the Legislature consider adopting statutory changes to further the goals of SGMA, for example, to address the various legal challenges that have arisen against GSAs, to establish a groundwater trading framework, or to institute changes to water rights laws?

Issues and Questions for Legislative Consideration

(Continued)

- ***How Can the State Help Facilitate Groundwater Trading?*** As groundwater limits are put in place, water trades will become increasingly important to align remaining supplies with demands. What steps should the state consider taking to help facilitate these transactions? For example, DWR received $900,000 in the 2023-24 budget to develop an implementation plan based on recommendations in the California Water Commission's 2022 white paper on the subject—what is the status of this plan?
- ***How Can the State Ensure Equitable Implementation of GSPs and Help Avoid Negative Consequences for Vulnerable Communities?*** Some community groups have raised equity concerns about how SGMA is being implemented in certain areas, including related to GSAs' board composition and GSPs' consideration of potential impacts on drinking water supply and quality. Do current statute and regulations adequately protect the interests of disadvantaged communities and residential well users? Do DWR's and SWRCB's oversight processes include sufficient focus on such considerations? How is the administration monitoring and regulating GSAs to ensure that agricultural groundwater pumping and future groundwater trading do not negatively affect communities that rely on wells for drinking water?

Groundwater Well Permitting

Observations and Analysis of Executive Orders N-7-22 and N-3-23

DEPARTMENT OF WATER RESOURCES • STATE OF CALIFORNIA •

MARCH 2024

Preamble

The following report, developed by the Sustainable Groundwater Management Office at the California Department of Water Resources (Department, DWR), summarizes the local actions taken by well permitting agencies and groundwater sustainability agencies to comply with the March 28, 2022 Executive Order N-7-22 (Executive Order or EO), paragraph 9 (superseded by Executive Order N-3-23, paragraph 4 on February 13, 2023), which included new well permitting requirements for local agencies to prepare for and lessen the effects of several years of intense drought conditions. While much of the focus of this report is on EO N-7-22 paragraph 9, the provisions in EO N-3-23 paragraph 4 are still in effect as of the release of this report. The Executive Orders specified additional considerations for local agencies to make when considering permitting wells to improve the understanding of the potential the effects of new or modified wells, such as potential interference with nearby, existing wells and adverse land subsidence impacts. This report includes a summary of various approaches taken by local agencies to comply with the Executive Orders, observations of groundwater conditions that occurred while these actions were taken, and policy recommendations that can be used to develop future solutions to align land use planning, well permitting, and groundwater management and use.

In December 2021, in response to paragraph 11 of the April 2021 Drought Proclamation, the Department of Water Resources in coordination with the State Water Resources Control Board, released the State's Groundwater Management and Drinking Water Wells Principles and Strategies. This document presents a framework of principles and strategies for State agencies to continue or implement to monitor, minimize, and analyze drought impacts on drinking water well users. The Principles and Strategies framework was developed with input from a robust public engagement process and specifically identified and recognized the importance of improving well permitting as it relates to the effects on groundwater extraction on shallow drinking water wells. The observations and analyses in this report, which were also informed by public input discussed further below, support the intent of Strategy 3.4 – Informed Well Permitting, by further defining the challenges related to well permitting and providing recommended solutions to improve these processes across the state of California.

Acknowledgements

DWR would like to recognize and acknowledge the engagement and contributions of the following organizations during the implementation of the Executive Order and the development of this report:

- The California State Association of Counties
- Rural County Representatives of California
- The Groundwater Resources Association
- Community Water Center
- Leadership Counsel for Justice and Accountability
- Self-Help Enterprises
- Clean Water Action
- Northern California Water Association

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DEFINITIONS OF KEY TERMS USED THROUGHOUT THIS DOCUMENT

EO – Executive Order
GSA – groundwater sustainability agency
LEA – local enforcing agency

I. Problem Statement

Over the last decade, California has experienced a significant shift in its climate, including increased temperatures and aridification, as well as steep swings between drought and flood. While experts stated in 2022 that California was facing a megadrought – the most intense drought conditions in over 1,200 years – the winter of 2023 then brought 31 atmospheric river systems that resulted in record snowpack conditions along portions of the Sierra Mountain Range in just several months. The variability in weather patterns, surrounded by unprecedented and prolonged drought conditions, has highlighted the importance of California's groundwater basins as the buffer for water supplies when snowpack and surface water supplies are volatile and less plentiful. A wide variety of users, including industries, businesses, communities, and individual households, rely on and increase groundwater use during drought and dry periods – increasing from 40 to 60 percent of the state's overall water use during average to drought years. Many groundwater basins have chronic lowering of groundwater levels and significant overdraft, which can lead to significant impacts. Increased groundwater demand during droughts can cause episodic impacts and in overdrafted basins those impacts can be significantly exacerbated. Impacts such as dry wells and infrastructure damage from land subsidence are known to have major consequences to communities or domestic well owners that rely on groundwater for drinking water purposes and critical infrastructure has major damage effects from sinking lands below. The intent of Executive Order N-7-22 paragraph 9 was to evaluate the permitting of wells that could impact domestic wells or increase subsidence during the drought emergency.

Executive Orders N-7-22 paragraph 9 and N-3-23 paragraph 4 applied to well permitting requirements within identified groundwater basins, therefore this report does not include analysis or recommendations for well permitting decisions in areas of fractured bedrock. Executive Order N-7-22 set the framework for coordination requirements between local well permit and groundwater management agencies, and Executive Order N-3-23 added a exemption on restrictions on permits for wells acquired by eminent domain or while under threat of condemnation. Land use planning and coordination is fundamental. With mounting demands for a reliable water supply, California's groundwater supplies are continuing to be tapped. Consistent coordination of land use planning, well permitting, and groundwater use is essential to mitigate negative impacts. New and increased well permitting and construction, particularly in areas experiencing the impacts of dry wells and land subsidence, require careful planning to ensure that groundwater extraction does not exacerbate these issues.

Currently, most groundwater well permits are issued ministerially and done so in compliance with well construction standards (Bulletin 74) that primarily address protections for groundwater quality. Analyzing the availability of groundwater supply and the potential effects of increasing groundwater extraction when issuing well permits is usually not a consideration. There also is a lack of consistent and, in some areas of California, effective coordination between local well permitting entities and local groundwater sustainability agencies (GSAs), who are tasked with long-term groundwater planning and management. Lastly, there are no statewide standards, oversight, or centralization of local decisions made by well permitting entities to help advance and bring awareness to the variety of standards and practices related to well permitting.

To address current affects and proactively reduce future impacts like more dry wells and greater land subsidence, concerted actions are needed to improve the understanding of local effects on groundwater

basin conditions. Information such as the location, construction, and pumping capacity of proposed wells increase analytical quality and better inform local decision-making, including the issuance of well permits, land use planning, and the management of groundwater resources. By taking wholistic consideration of the effects of these decisions, coupled with improved coordination, Californians can help mitigate worsening groundwater conditions and reduce the risk of negative and potentially irreversible impacts to California's well users. This report includes policy recommendations and actions to help address identified challenges with the implementation of well permitting under the Executive Orders and foster continued collaboration.

II. Background

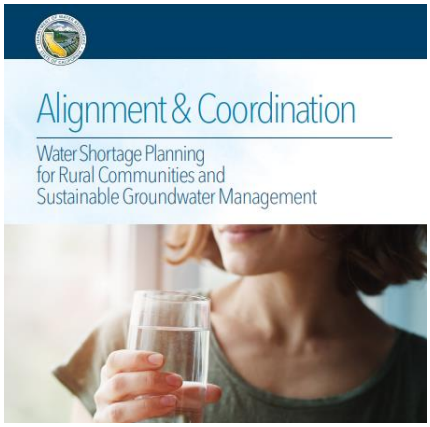
In California, multiple local government authorities typically oversee well permitting, land use planning, and groundwater management. Regulatory authority over well construction, alteration, and destruction activities can reside with any local agency (cities, counties, or water agencies) who has the authority to adopt a local well ordinance. Enforcement of the well ordinances, including issuing well permits, are administered by these local agencies and are also often referred to as local enforcing agencies (LEAs) because they can overlap multiple jurisdictions. Most frequently, the county departments of environmental health are the LEA. DWR maintains a list of statewide LEAs by county and encourages local agencies to help keep this list up to date.

State law requires that all California counties and cities adopt a General Plan, including a set of goals, objectives, policies, implementation measures, and maps. The General Plan is a blueprint for physical development, addressing needs such as new population growth, housing needs, and environmental protection. Seven elements (chapters) are mandatory in General Plans, including land use, circulation (mobility), housing, conservation, open space, noise and safety. General Plans can include optional elements such as a water resource element.

In March 2023, DWR issued guidance to GSAs implementing GSPs under SGMA and considerations for identifying and addressing drinking water well impacts.

With the enactment of the Sustainable Groundwater Management Act (SGMA) in 2014, new local public agencies – called groundwater sustainability agencies or GSAs – formed in the state's 94 high- and medium-priority basins to provide specific oversight and management of groundwater resources, and to achieve sustainable groundwater management within 20 years through the development and implementation of groundwater sustainability plans (GSPs) and associated projects and management actions. GSAs are required to include in their GSPs a discussion of how they will coordinate their groundwater management efforts with local land use authorities, including LEAs, and must consider all beneficial uses and users in their planning and implementation efforts, including drinking water well users among a variety of other industries and environmental needs. GSAs have a broad set of authorities including pumping limitations and well spacing. However, GSAs do not have authority over well permitting or land use. With the implementation of SGMA, the effects of groundwater extraction have begun to be quantified and analyzed for the capacity to cause undesirable results related to sustainability indicators like the chronic lowering of groundwater levels and land subsidence. As the first

GSPs were only recently developed in 2020 and 2022, and with land use planning and well permitting processes under the authorities of other local agencies, GSAs are working to develop a comprehensive understanding of such effects. GSPs are now in the implementation phase for basins providing 98 percent of the total groundwater pumped in the state.



In March 2023, DWR issued guidance to GSAs implementing GSPs under SGMA and counties developing drought resilience plans under Senate Bill 552 on how to improve coordination and alignment.

While GSAs are managing for groundwater sustainability over the long-term, more recent state law, Senate Bill 552 (2021), requires counties to establish a standing drought task force and develop drought resilience plans for rural communities, including domestic well owners and state small water systems (typically a system of 5 to 14 connections). While the drought resilience plans are a relatively new requirement that are currently being developed by county planning or utility staff, these plans must include a domestic well drinking water mitigation program, provisions for emergency and interim drinking water solutions, consolidations for existing water systems and domestic wells, an analysis of steps necessary to implement the plan, and an analysis of local, state, and federal funding sources available to implement the plan. While dry wells can occur at any time of the year, they typically increase during drought or seasons of below average rainfall when groundwater extractions increase. Senate Bill 552 set forth a framework for counties to consider the actions, solutions, and, more specifically, domestic well mitigation programs to help plan for a reliable water supply for the shallow-most wells in a groundwater basin during times of drought. With the new drought resilience plans currently under development, great opportunities lie ahead for coordination and alignment between counties, GSAs, and LEAs, particularly in understanding the nexus of well permitting and groundwater use in their area.

III. The Drought Executive Orders

On March 28, 2022 Governor Newsom issued Executive Order N-7-22 (EO) that included new well permitting requirements for local agencies to prepare for and lessen the effects of drought conditions (paragraph 9). Then on February 13, 2023 the Governor issued EO N-3-23, which included paragraph 4 to add the exemption on restrictions on permits for equivalent replacement wells because the currently permitted well is acquired by eminent domain or acquired while under threat of condemnation.

Given the record drought conditions the state faced in prior years, the EOs required additional actions be taken by LEAs prior to issuing a new or modified well permit. Local LEAs retained existing well permitting authorities, including reviewing and administering well permits. However, under the EOs, LEAs are required to make the following considerations during the well permitting process for new or modified wells:

If the proposed well is located in one of the 94 high- or medium-priority groundwater basins, according to the Department's basin prioritization, the well permitting agency or LEA needs to consult with the GSA and receive written verification from the GSA that the proposed well location is generally consistent (not inconsistent) with the applicable GSP and will not decrease the likelihood of achieving the sustainability goals that the GSAs have developed under SGMA.

For all well permit applications, including areas of the state that do not have a designated high- and medium-priority groundwater basin, the local well permitting agency or LEA needs to determine before issuing a well permit that the extraction of groundwater from the proposed well is not likely to interfere with the production and functionality of existing nearby wells and is not likely to cause subsidence that would adversely impact or damage nearby infrastructure. As seen in the last paragraph of the excerpt to the right, domestic and public supply wells, and those being replaced because the currently permitted well is acquired by eminent domain or acquired while under threat of condemnation, are exempt from paragraph 4.

Excerpt of Paragraph 4 from Drought Executive Order N-3-23:

To protect health, safety, and the environment during this drought emergency, a county, city, or other public agency shall not:

a. *Approve a permit for a new groundwater well or for alteration of an existing well in a basin subject to the Sustainable Groundwater Management Act and classified as medium- or high-priority without first obtaining written verification from a Groundwater Sustainability Agency managing the basin or area of the basin where the well is proposed to be located that groundwater extraction by the proposed well would not be inconsistent with any sustainable groundwater management program established in any applicable Groundwater Sustainability Plan adopted by that Groundwater Sustainability Agency and would not decrease the likelihood of achieving a sustainability goal for the basin covered by such a plan; or*

b. *Issue a permit for a new groundwater well or for alteration of an existing well without first determining that extraction of groundwater from the proposed well is (1) not likely to interfere with the production and functioning of existing nearby wells, and (2) not likely to cause subsidence that would adversely impact or damage nearby infrastructure.*

This paragraph shall not apply to permits for wells (i) that will provide less than two acre-feet per year of groundwater for individual domestic users, (ii) that will exclusively provide groundwater to public water supply systems as defined in section 116275 of the Health and Safety Code, or (iii) that are replacing existing, currently permitted wells with new wells that will produce an equivalent quantity of water as the well being replaced when the existing well is being replaced because it has been acquired by eminent domain or acquired while under threat of condemnation.

IV. Local Approaches Taken to Comply with the Executive Orders

The EOs uniquely protect existing authorities of LEAs and GSAs and other facets of local planning and water management; therefore, approaches to comply with the EOs varied by region and local entity. In April of 2022, DWR hosted a webinar for LEA and GSA representatives to understand the various local directives in EO N-7-22 and reinforced that there was no state oversight or enforcement included in the EO. The presentation, recording, Fact Sheet, and Frequently Asked Questions document from the webinar session are available on DWR's Drought webpage, under Drought Well Permitting Requirements.

After one year of the EO provisions being implemented by local agencies, DWR conducted a feedback survey during the spring of 2023 for local well permitting entities and GSAs representatives to share the actions they took to comply with EO N-7-22 paragraph 9. A full synthesis of DWR's survey results can be found in Appendix A of this report. Of all 58 counties and the 94 high- and medium-priority groundwater basins required to comply with the EO, DWR received a 50 percent survey response rate from well permitting staff and a 45 percent survey response rate from the GSAs. All respondents identified the region of the state they are located in, which is available in Appendix A, with the exception of one LEA and two GSAs who did not specify which county or basin they represented.

On-the-ground perspectives were shared by community members during a listening session that took place in September 2023 (included in Appendix B), and was facilitated by local non-governmental and community-based groups. Many of the community members have been affected by conditions due to the installation of nearby high-capacity wells during the implementation of the EOs. Appendix B also includes local agency case examples taken from the survey results, which identifies a variety of approaches taken to comply with EO N-7-22 paragraph 9, including developing procedural, technical, and informational assistance for permit applicants.

V. Observed Conditions Summary

While conducting the local agency feedback survey, DWR also analyzed groundwater conditions statewide to understand the effects of EO N-7-22. The EO specified analyzing impacts from proposed new wells on neighboring wells (dry wells) and land subsidence. Updated maps and figures of these and more recent observed conditions can be found in Appendix C of this report.

Dry Wells and Subsidence Conditions

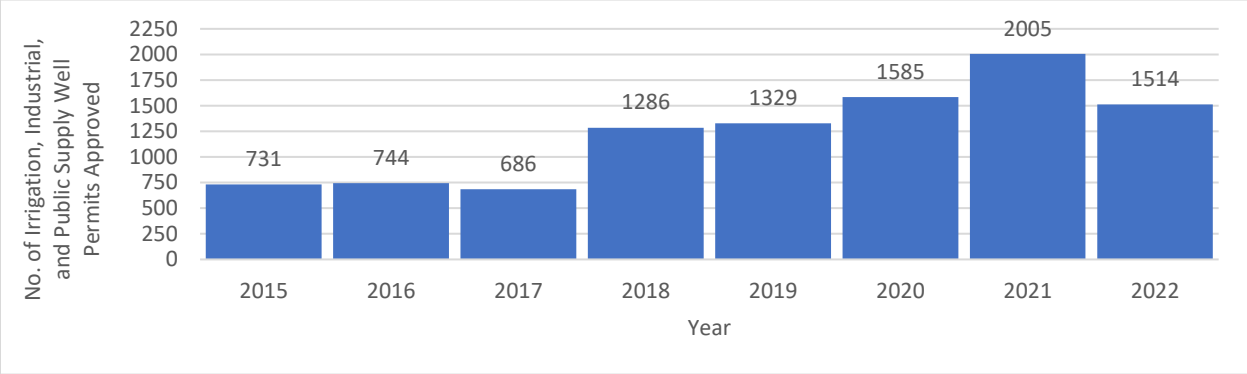
Since enactment of EO N-7-22, observed state-wide groundwater conditions data indicated 1,911 wells were voluntarily reported dry to DWR's Dry Well Reporting System through August 28, 2023. The top ten counties with the greatest number of wells reported to the Dry Well Reporting System since the EO include: Fresno, Tulare, Madera, Tehama, Merced, San Joaquin, Stanislaus, San Luis Obispo, Kings, and Shasta; a large concentration of these reports were from the San Joaquin and Tulare Basins (see Figure C-1 in Appendix C). Land subsidence was also observed in various regions of the state since April 2022 (see Figure C-5 in Appendix C), with vertical ground surface displacements ranging as follows:

- Sacramento Valley: approximately -0.1 up to -1.0 feet with two primary areas exceeding -0.5 feet in Glenn and Colusa Counties.
- San Joaquin Valley: approximately -0.1 feet to -0.8 feet in Madera and Merced Counties, up to -1.0 feet or more within the Tulare Basin located mainly in Tulare and Kings Counties.

Statewide groundwater elevation data, elevation trends, subsidence data, well infrastructure updates, and a discussion of current concerns such as drought conditions can be found in DWR's *California's Groundwater Conditions Semi-Annual Update*. These reports are published in March and October.

Reported Well Permitting

Of the 2,012 industrial, irrigation, and public supply wells installed statewide between March 28, 2022 and September 7, 2023, 541 of those wells were permitted on or before March 28, 2022, meaning that those wells were approved for permitting before EO N-7-22 was enacted and that permit was potentially not re-evaluated due to the EO. As such, 1,471 industrial, irrigation, and public supply wells were permitted between March 28, 2022 and September 7, 2023. For context, the graph below shows the number of industrial, irrigation, and public supply well permits approved statewide for completed wells each calendar year since SGMA went into effect (January 1, 2015). Compared to 2021, the number of well permits issued statewide decreased by 24 percent in 2022, which contrasts with the increasing trend observed each year since 2018.



As reported to DWR, the top ten counties with the greatest total number of well permits approved for industrial, irrigation, and public supply wells since the EOs include: Tulare, Fresno, Kern, Kings, Merced, Stanislaus, Madera, Sonoma, San Luis Obispo, and Glenn (see Figure C-2 in Appendix C). Seven of these ten counties overlie an extensive clay layer in the San Joaquin Valley, known as the Corcoran Clay (see Figure C-6 in Appendix C). Areas overlying the Corcoran Clay have historically exhibited the greatest extent and rate of land subsidence in the state. Reported well permitting data indicated 408 irrigation, industrial, and public supply wells were permitted for completion at depths below the top of the Corcoran Clay in all counties. Wells completed at those depths suggest deep aquifer and potentially higher capacity pumping with greater potential to exacerbate land subsidence in those areas than lower pumping capacity wells completed at shallower depths above the Corcoran Clay.

VI. Conclusion

The analyses and observations summarized in this report demonstrate that the EOs caused some changes in well permitting considerations, by increasing coordination among local agencies responsible for differing aspects of protecting groundwater for all users. The EOs accomplished a shift in the well permitting process from the primary concern of protecting groundwater quality to a broader concern that includes SGMA regulations and the goal of sustainable groundwater management. Managing groundwater sustainably in a basin or subbasin beckons the need to fully consider the effects of new or modified well construction. During the most severe drought emergency, the EOs provided critical direction and understanding to local agencies of how SGMA requirements should be considered and

how those considerations could be included in the well permitting process. However, as indicated in the results of the well permitting survey (Attachment A), the EOs as written do not fully address the complexities of well permitting and more structure is needed to align the process with SGMA goals.

There also is no mechanism in the EOs to ensure compliance. The observed conditions of continued subsidence and well permitting in vulnerable areas indicate that in many respects, the EOs failed to achieve its goal. Further, well interference and increase subsidence from new wells can occur in non-drought years. Therefore, enactment of well permitting standards to address well interference and subsidence should apply to all water year types and in all basins. There are a variety of efforts (e.g., policies, assistance, rules) that could be employed to fulfill the intent of the EOs and minimize impacts from new well extractions, not just during droughts, but in all years.

The following Department recommendation is informed by local input, to support improvements to the well permitting process, groundwater management, land use planning, and drought management, each of which have a particular facet of the challenges that the EO was intending to address. These recommendations are presented to foster constructive dialogue in the hopes of reaching consensus on a solution.

Department Recommendation

The Department recommends enactment of the following statutory concepts to replace the provisions of EO N-3-23 paragraph 4 and to ensure continued advancement toward a reliable groundwater supply for the future. The statutory language consists of four components:

1. **Require Disclosures**
   One of the key facets of the EOs are the provision for improved coordination between LEAs and GSAs. This report identified that improved communication and disclosure to the public about pending well permit applications will improve transparency. Statutory provisions should be enacted that provides public disclosure of well permit applications and collaboration between LEAs and GSAs.

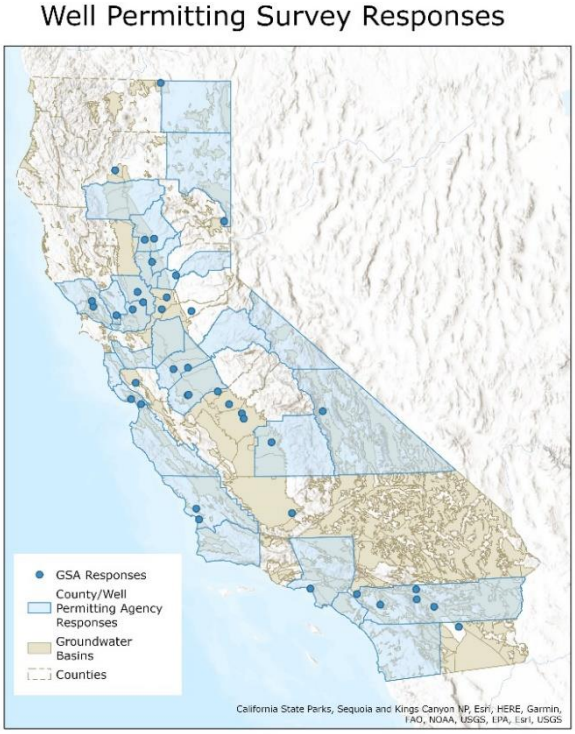
2. **Set Minimum Standards**
   Statutorily set well spacing and well depth standards to reduce future impacts to community supplies and domestic wells. The prohibition of new well permits in areas where subsidence impacts are occurring will minimize or eliminate subsidence and impacts to critical infrastructure.

3. **Exempt Certain Discrete Types of Wells and Procedures**
   Exempt certain domestic wells based on size and volume as well as small, public supply wells.

4. **Establish Applicability of Requirements**
   The previous provisions are applicable within all groundwater basins, as defined in the Department's *California's Groundwater* (Bulletin 118). There should be standards of applicability or exemption set for basins with low- and very low-priority designations (those with optional GSAs and GSPs) or in non-alluvial areas.

Appendix A: Summary of State Survey Conducted: Local Approaches Taken

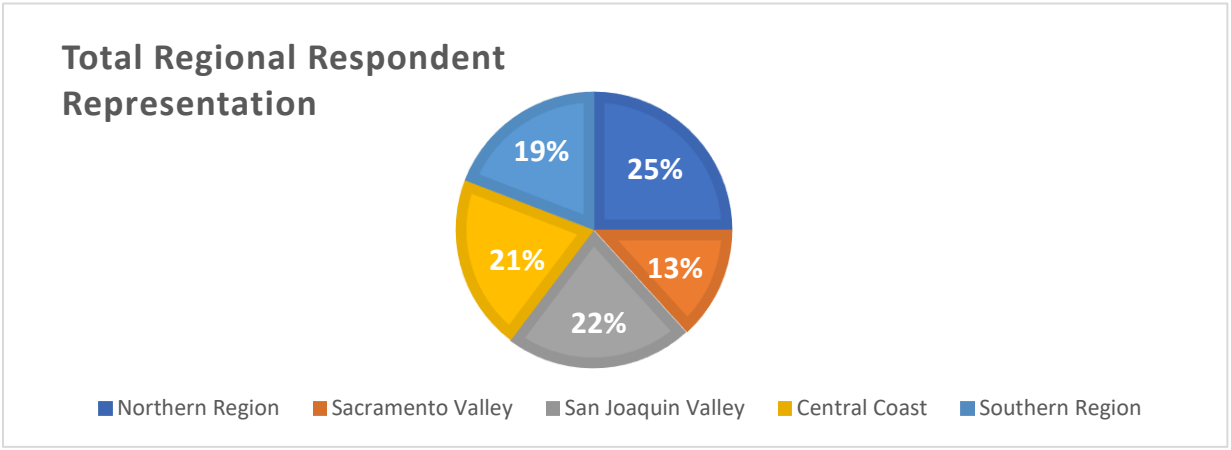
Survey Solicitation and Participation



On April 7, 2023, DWR sent solicitations to county well permitting entities and representatives of GSAs to participate in an informational survey regarding actions taken to comply with the EO N-7-22, paragraph 9. The survey was open for approximately six weeks and closed on May 23, 2023. Survey questions were tailored to both local well permitting agencies, LEAs, and GSAs to better understand the approaches these agencies deployed when implementing the EO. The goal of the survey was to hear from local entities as to what approaches were or were not successful and to centralize suggestions for improved long-term coordination of well permitting and groundwater management beyond the EO expiration. The survey information has also served as a basis for DWR to develop the observations and analysis contained in this report, which discusses how the EO was implemented and offers policy recommendations. Note: the survey did not address the additional language from EO N-3-23 paragraph 4. Survey responses are summarized below.

Regional Representation of Respondents

Survey respondents were located throughout the state (shown in the figure above) and regional representation of respondents is shown in the chart below. Generally, both GSA and County responses were limited in less populated areas, such as the northwestern and southeastern parts of the state. GSA responses came from 42 groundwater basins, out of the 94 medium- or high-priority basins required to form GSAs and develop GSPs as part of SGMA. Responses from 11 GSAs came from the state's 21 critically overdrafted groundwater basins. LEA responses came from 29 out of the 58 counties in California, overlapping 15 critically overdrafted groundwater basins. Responses from one LEA and two GSAs did not specify which county and basin they represented.



Executive Order Exemptions

As stated above, the EO specified that its requirements did not apply to wells that pump less than 2 acre-feet per year (de minimus users) and wells that exclusively provide groundwater to public water supply systems. GSAs and LEAs processed these exemptions in several ways. Some local agencies required the verification of domestic and public supply wells through the use of data and tools, relying on expertise from GSA and county staff, and implementing certain processes or requirements, such as:

- Requiring applicants to submit a "declaration of use" or self-certification form.
- Allowing individual wells used for drinking water consumption to be categorically exempt and therefore processing the well permit applications ministerially.
- Requiring information for review and concurrence pursuant to Senate Bill 1263 of 2016 (where public supply well must submit a preliminary technical report to the Regional or State Water Resources Control Board on their water supply).
- Requiring water quality and quantity testing to be performed after the well is drilled for the exempt wells.

In ten county respondents to the survey, no additional requirements were set in place due to the EO for the exempt wells. In at least one county, the exemptions under the EO were not upheld for public supply wells, but instead a California Environmental Quality Act (CEQA) review of the proposed well was required, placing additional burdens to what should have been a well exempt from the EO requirements.

Required Consultation Between GSAs and LEAs

In complying with EO N-7-22 paragraph 9(a), consultation and coordination were required between the GSAs and LEAs. Half of respondents indicate that paragraph 9 helped build the working relationships between the LEAs and GSAs, while almost a quarter of respondents feel they either already had a working relationship or were working to establish that prior to the EO. The most commonly reported form of communication and coordination between the LEAs and GSAs from the survey was regular communication and specific procedures that were either in place or established due to the EO. Additional feedback from survey reported that there was some confusion in roles and responsibilities between the GSAs and the LEAs as well as both parties looking to have the legal liability of "making findings" on the other local entity, which led to local challenges.

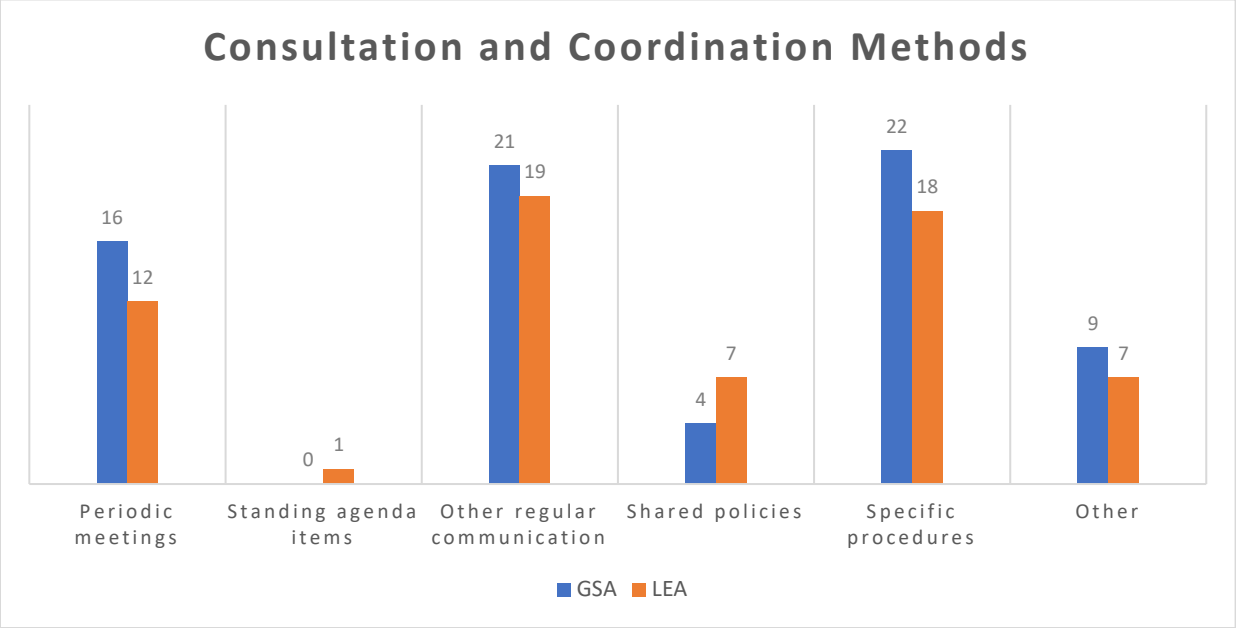
When asked about the types of well permit application practices that were in place prior to the EO, respondents indicated the following were in place in various regions of the state:

- Local ordinances or regulations related to well permitting.
- General Plan provisions related to groundwater use and land use.
- Coordination with the local GSAs and local water agencies.
- Setback requirements and referencing DWR Bulletins 74-81 and 74-90 and the California Water Well Standards.

Local ordinances that were referenced in the survey included a variety of well permitting considerations, such as: well design, well drilling, well spacing (up to a 1/4 of a mile), well capacity limits, and other well permitting restrictions, including moratoriums (i.e., suspensions or freezes), limits on the number of permits issued in a given time period, and stricter requirements during declared drought emergencies.

Consultation and coordination between GSAs and LEAs to comply with the EO was conducted in the following additional ways: periodic meetings, standing agenda items, other regular communication,

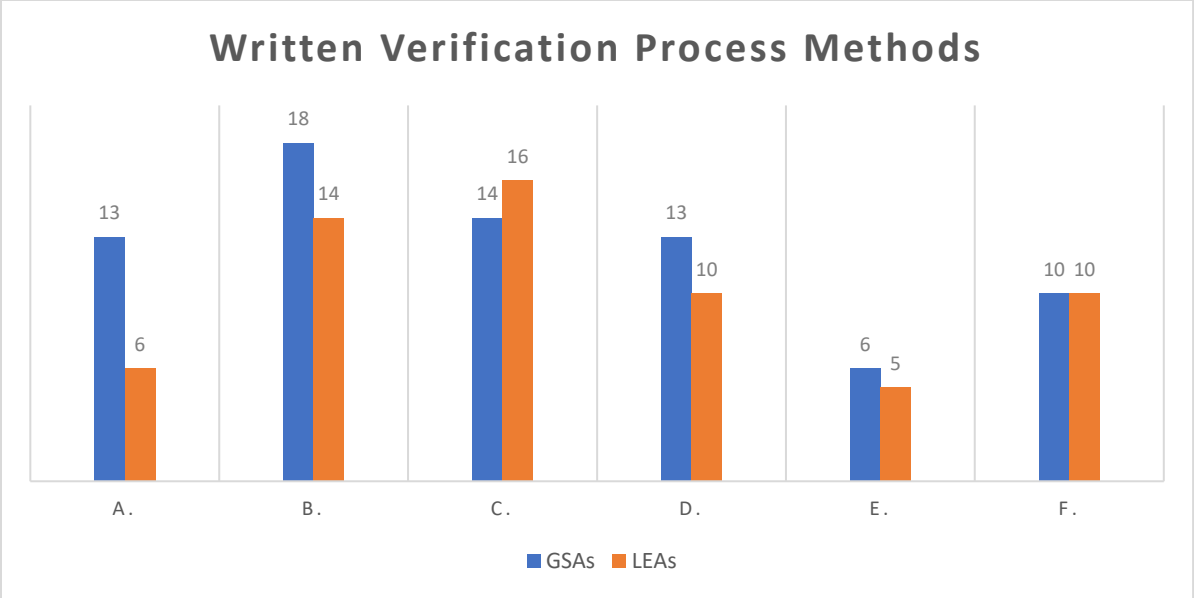
shared policies, and 'other'. Some of the 'other' responses included feedback such as that the GSAs and LEAs were not working well together, some held initial meetings and then did not need to meet again, some hosted joint public workshops together, others passed local resolutions claiming any new well proposed would not be inconsistent with the GSP and therefore coordination was not needed and well permitting could continue during the drought, per status quo. Some respondents shared in feedback that compliance with EO paragraph 9 was focused on "on paper" coordination only (see written verification responses below) and others stated that coordination was not needed since no wells were permitted since EO paragraph 9 took effect.



Required Written Verification Process and Methods Between GSAs and LEAs

Under the EO, LEAs were required to obtain written verification from the GSA managing the area of the proposed new or modified well within groundwater basins. Respondents could select from the general methods for meeting the written verification requirement from the options below, shown in the following chart:

A. The GSA performs general consultation with the local well permitting agency.
B. The GSA performs an evaluation on new well permit applications prior to issuance by the local well permitting agency, including evaluation of the potential for interference with nearby wells and the location with respect to areas of land subsidence.
C. The GSA makes findings from reviewing new well permit applications and provides recommendations to approve or not approve well permits.
D. The GSA and local well permitting agency developed and use a shared form, tool, or process to route well permit applications.
E. Either the GSA or County contracts with a professional (e.g., Hydrogeologist, Engineer, etc.) to certify well permitting applications.
F. Other (write-in answer)



In the survey feedback, GSA respondents ranked the highest that their written verification steps were consistent with the approach identified by the EO. LEA respondents ranked the highest that the GSA written verification process was done in a way that the GSA made findings from reviewing new well permit applications and provided recommendations to approve or deny well permits. The remaining responses in option F, 'other' included:

- Individual consultation on a permit-by-permit basis.
- GSAs only provided information to the LEA or applicant based on request.
- The LEA had existing setback requirements that were considered sufficient.
- The LEA and GSA were the same entity and therefore a process was not needed.
- GSAs did not provide verification, so LEA prepared a technical report.
- LEA or GSA contracted with either a Certified Hydrogeologist and/or a Professional Engineer to certify the well permit applications.
- GSAs and LEAs were both not willing to perform verification process.

Data and Information Gathering Approaches to Complying with the Executive Order

GSAs and LEAs took many approaches to gather relevant information on whether the issuance of a well permit could potentially interfere with nearby wells or contribute to land subsidence in areas where it may or is known to be occurring. These approaches include the use of various local and state agency data and tools, and relying on the expertise from hired consultants, existing county and GSA staff, and other professionals such as drillers and hydrogeologists with local and historical knowledge. Many entities relied on information that was provided by well permit applicants, including maps of all wells in the area (with specific capacities/sizes, setbacks, and analyses), and reports and certifications from hired professionals (at the applicant's expense). In one case, well permit applicants were to provide a report to the local permitting agency, signed by a hydrogeologist, certifying that no interference would occur with nearby wells and there were no issues with subsidence. In another case, the GSAs determined that there were generally no significant impacts to the local groundwater basin and therefore well permit applicants submitted a pre-populated acknowledgement form attesting they understood the implications and possible future impacts of their well.

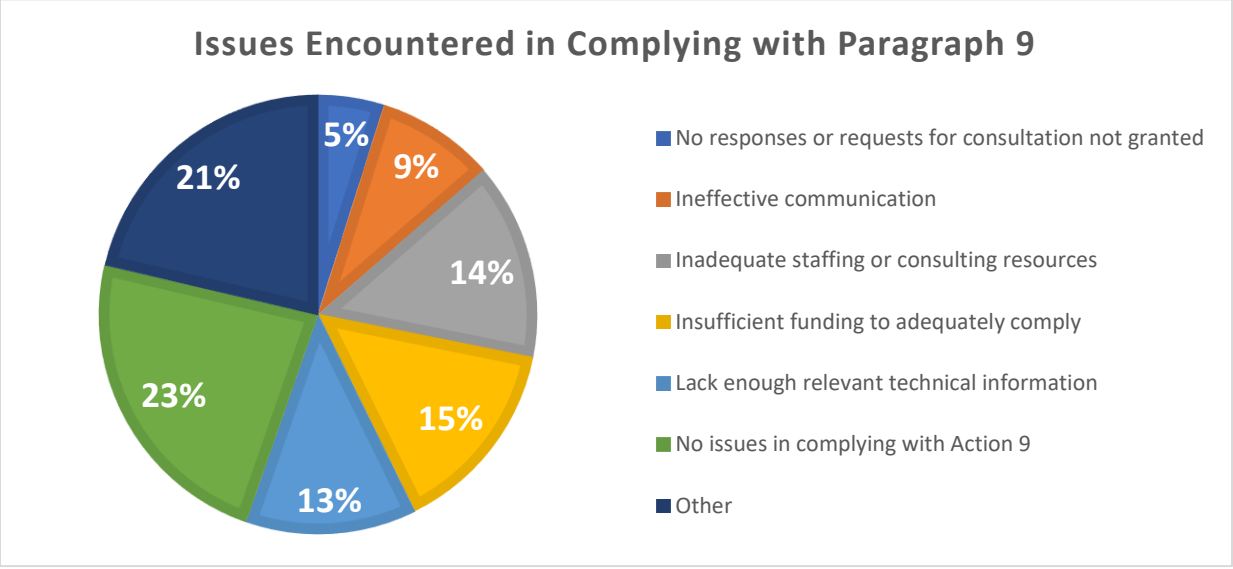
Cost and Time Feedback to Implement the Executive Order

In the majority of responses from LEAs, no additional costs were incurred by the well permitting agencies for a variety of reasons, including the applicant and/or property owner had to pay the fee (or newly increased fees), the requirements of the EO were previously required by a county ordinance, costs were absorbed by another local department within the county, and in several examples very few well permits were processed due to an ongoing well permit moratorium. With regard to requiring costs be covered by the well permit applicant, one LEA stated that applicants paid for a $5,000 report to include in their application to comply with the EO. Some LEAs did not know what the costs to them were since the EO processes were still being established, but others estimate that due to a significant increase in staff time, costs could be as much as an additional $50,000 per year for local agencies to implement.

In the survey responses, ten counties reported no effect in the processing time of permit applications for all well types (domestic, agriculture, and "other"). Processing times for domestic well permit applications remained the same for approximately 60 percent of LEA respondents, approximately 31 percent of agriculture wells, and approximately 47 percent of "other" well types while carrying out the EO. Processing times were reported to range from as little as a 1 to 2 hours to as long as 3 to 6 months, depending on the completeness of applications, information to consider, and whether a CEQA review was necessary. The average survey response regarding the amount of time to process a well permit application was 2 weeks. With regard to time delays, one survey respondent stated that the GSA's unwillingness to comply with the EO for a new "non-exempt" well adversely impacted their business and profitability of a small agricultural producer in an economically disadvantaged area (compared to larger producers).

Issues in Complying with the Executive Order

While 23 percent of entities indicated they did not encounter issues in complying with the EO, the remaining LEAs and GSAs encountered some form of issue or challenge.



The remaining respondents primarily indicated other issues, including:

- Difficulty explaining the requirements to applicants and GSAs.
- The inability of GSAs "to provide written verifications" which delayed the well permitting process.
- Confusion over who is in charge of the well permitting process and questioning the distinction between the roles and responsibilities of the GSAs and LEAs (legally, who is responsible for the end decision of approving or denying a well permit application based on the EO requirements).
- A sense of 'overreach' by certified professionals urging certain analyses that local agencies were unsure were needed (providing a certain level of legal basis for decisions under the EO).
- Adding another process to perform while GSAs are in the process of implementing groundwater pumping allocations to control use.
- Local agencies shared opinions about not have autonomy over their existing authorities.
- Some local entities shared they felt the EO was a punitive, restrictive, and unfair process.

Local Recommendations for Improvements Related to the Executive Order

Approximately half of respondents had no recommendations to improve their efforts to meet EO requirements. While many respondents shared they would like to see the EO discontinued since these actions are already covered through SGMA implementation, another respondent believes that the EO is a good policy, and it should continue as a requirement beyond the drought. Some respondents reported their negative experiences in implementing the EO and working with other agencies in their areas.

Some respondents indicated that ***more data and tools*** are needed to support their written verification, such as a spreadsheet or online calculator to support the evaluation of well interference, a well permitting agency database or portal where information such as well completion reports and groundwater information can more easily be obtained by the local agencies, and a central clearinghouse for local agencies to leverage other approaches to implement the EO. Many respondents stated that ***state funding and technical assistance*** are needed to support local agencies, including hydrogeologists or technical experts, general funding and staffing to local jurisdictions to implement these efforts, additional support from DWR for GSAs and the "review certainty" of their GSPs to complete the written verification process, and additional local staffing and time to implement metering to better understand groundwater extraction and use. Some survey respondents called the EO an "unfunded mandate."

Additional or standardized guidance on how to implement the EO was another area that local agencies needed assistance, including clearer language for terms such as "likely to impact", standard (or specific when necessary) procedures for reviewing well permits developed by the State Office of Planning and Research (OPR), checklists to better facilitate permit reviews, and better educational information for interested parties regarding the well permitting review process and groundwater management. Respondents indicated that ***improved communication was needed from the state*** on the expectations of the EO between the GSAs and well permitting agencies. One respondent suggested that there should be a delineated appeals process with the GSA if the homeowner or property owner wants to contest the GSA's written verification and recommendation for a well permit denial. As previously stated, legal challenges were raised over who is responsible for the well permit approval or denial. What has been an established ministerial process became a discretionary, complicated, and data-specific process, which has been challenging for some. For example, creating general guidelines on where agriculture wells should be screened to avoid interaction with neighboring wells.

Respondents had ***other recommendations***, including allowing GSAs to incorporate activities required in EO in their next GSP update, requiring GSAs to work with their counties and cities on a permitting process, not exempting domestic and public wells (as this was stated to be a “bad policy” that could lead to wells being drilled without any considerations, thus creating issues in those areas of increased extraction), and clarifying the LEA's responsibilities under the EO and ensuring compliance with those obligations.

Appendix B: On-the-Ground Perspectives & Local Agency Case Examples

On-the-Ground Perspectives

The following perspectives were shared by individuals who experienced effects such as dry wells during the drought in the following communities or County Service Areas:

- Cantua Creek, El Porvenir, and Lanare in Fresno County that are unincorporated and severely disadvantaged.
- Fairmead in Madera County, where community members have had to deepen their well to deal with nitrate concentrations up to three times California maximum contaminant levels for drinking water and otherwise insufficient well capacity.
- Orosi/East Orosi, West Goshen and other small communities in Tulare County that rely on small capacity community wells or individual private wells.

With respect to conditions experienced during drought, the shared perspectives included:

- Their areas and neighboring areas have generally experienced disproportionately challenging water supply conditions compared to many other parts of the state.
- Descriptions of unresolved dry well outages dating as far back as 2011.
- Continued reliance on bottled and tanked (hauled) water to meet basic household needs.
- Receiving a quote for $30,000 to deepen a 190-foot-deep domestic well to keep up with the lowering groundwater table, but that the driller could not guarantee the well would produce enough water to sustain the needs of the home.
- One person's account of their neighbor receiving a local assistance in the form of a tank on their property to be regularly filled by water haul trucks; however, for reasons unknown to them, their own property was not deemed eligible for a tank.

Shared perspectives about local well impacts included:

- Accounts of an increase of new irrigation wells surrounding their communities being the cause of wells going dry in many homes reliant on groundwater for domestic water needs.
- Suffering of residents because agricultural wells operate with such large capacities and cause such great drawdown of groundwater levels.
- Unreliable and often contaminated residential water supplies due to excessive groundwater level drawdowns have caused many residents to be afraid each morning due to uncertainty of whether or not water will come from the tap and if it will be drinkable.
- Concerns that their community was being surrounded by irrigation wells so that residents would be "run out of town," or that "a new phenomenon" of high-capacity wells being installed adjacent to residents has become a standard practice that residents should expect.
- A report of an irrigation well being installed within approximately 75 yards of their residence.
- Concerns from residents whose community can install a new drinking water well, but are fearful the new well will quickly become obsolete if nearby irrigation wells are allowed to run unregulated.
- That irrigation wells can run 24-hours a day, sometimes five to six days at a time, have an unfair effect on their right to pump groundwater.

In conclusion, community members that spoke with DWR collectively feel the number of irrigation well installations have increased and irrigation pumping has been prioritized over domestic well users in their areas. More assistance is needed in these communities and local agencies should be aware of the challenges residents are facing when competing with high-capacity wells.

Local Agency Case Examples

As identified in Appendix A, local agencies took a variety of approaches to implement EO N-7-22. Different local agency examples are identified below to highlight procedural, technical, and informational assistance to prospective well permittees.

Local Ordinances in Place Prior to EO N-7-22

Some local agencies shared that they have been evaluating well permit applications using similar methods to what the EO required, prior to its adoption. Three such examples are:

The Sierra Valley Groundwater Management District (SVGMD), one of the GSAs for the Sierra Valley Groundwater Subbasin (No. 5-012.01), adopted Ordinance No. 18-01 in April 2018. Section 8 of Ordinance 18-01 discusses the required coordination between the Counties (Plumas and Sierra) and the SVGMD, upon receipt of an application for a new or modified high-capacity well. Ordinance 18-01 also includes a map (Exhibit A), which shows areas where high-capacity wells are prohibited from being installed, as specified by the SVGMD's appointed hydrogeologist; a new map with a larger high-capacity well restriction area was adopted in May 2021.

Merced County adopted Ordinance No. 1930 in March 2015. Domestic well permits are exempt from the Ordinance and are processed and issued by the County; however, public supply wells are not exempt. Chapter 27, Section 050 of Ordinance 1930 requires entities claiming an exemption to pump groundwater in excess of established extraction patterns, to work with the County (who is a member agency of the Merced Subbasin GSA) directly to obtain the determination that their application is consistent with groundwater management plans prior to permit issuance. One criterion required for a claimant to meet the burden of establishing that the exemption applies includes that "replacement of existing wells… do not produce further decline of groundwater levels, land subsidence, or other significant environmental damage."

In November 2014, Stanislaus County adopted their Well Permit Application Review Process, which discusses the process of County review (Section 2) to determine whether an application is subject to, or exempt from, the prohibitions in the Groundwater Ordinance against unsustainable groundwater extraction and the export of water. Based on this review, if the application is found to be exempt, it is processed and a permit is issued. The Process document goes on to state that "[a]fter adoption of a Groundwater Sustainability Plan (GSP), the prohibition against unsustainable groundwater extraction will be applicable to any well for which the County reasonably concludes that the extraction of groundwater constitutes unsustainable extraction of groundwater. This would include applications for wells that are found not to be in compliance with a GSP." The Process document also includes a 'Discretional Well Permitting Framework under the Stanislaus County Groundwater Ordinance', which discusses county management thresholds and actions and potential well permit conditions related to undesirable results for applicable SGMA sustainability indicators.

Well Permit Moratoriums

Some local agencies shared that they have placed temporary prohibitions or moratoriums on approving well permits since adoption of the EO. One such example is:

In October 2022, the Sonoma County Board of Supervisors adopted a temporary moratorium on well permits, which directed the permitting agency to convene a working group to discuss policy options for consideration of impacts on public trust resources. The resulting recommendations were considered, and an amended well ordinance was brought to the Board of Supervisors and final approval was granted in April 2023. Additionally, a Well Ordinance Map viewer tool was developed for the public to view which areas of the County are within the "Public Trust Review Area"; if a proposed well site is within this area, additional review related to impacts to public trust resources may be required by the well permitting agency.

LEA Use of Well Setback Requirements

The use of "separation", also known as "setbacks" is a common way that LEAs provide guidance to well permit applicants to locate their well an adequate horizontal distance, or separation from, sites of known or potential sources of pollution and contamination. Setbacks can be an effective presumption for attempting to reduce land subsidence and impacts to neighboring wells. Some local agencies shared how they have encouraged or required the use of setbacks. Six such examples are:

- Mono County stated they use setback requirements per the County Code, consistent with DWR's Bulletin 74-81, Water Well Standards (December 1981) and 74-90, California Well Standards (June 1991).
- Yolo County explained they hired a local engineering firm to develop a setback table, based on local conditions, to ensure the impact of the proposed new well to the nearby wells is unlikely.
- San Mateo County indicated their Wells Ordinance has adequate setback requirements to deal with almost all of the setback issues encountered, which mitigate potential well-to-well interference. Further evaluation is built into the San Mateo County Local Coastal Program.
- Butte County stated that applicants must use a local GIS map, which shows nearby groundwater monitoring wells, to include all nearby wells if well pump capacity is large enough to warrant nearby well setbacks. Setbacks are required for large diameter wells that are greater than 8 inches in diameter with a minimum pump capacity of 1,000 gallons per minute or greater.

Bulletin 74-81/74-90, Part II., Section 8. Well Location With Respect to Pollutants and Contaminants, and Structures:

A. Separation. All water wells shall be located an adequate horizontal distance from known or potential sources of pollution and contamination. Such sources include, but are not limited to:

- *sanitary, industrial, and storm sewers;*
- *septic tanks and leachfields;*
- *sewage and industrial waste ponds;*
- *barnyard and stable areas;*
- *feedlots;*
- *solid waste disposal sites;*
- *above and below ground tanks and pipelines for storage and conveyance of petroleum products or other chemicals;*
- *storage and preparation areas for pesticides, fertilizers, and other chemicals.*

Consideration should also be given to adequate separation from sites or areas with known or suspected soil or water pollution or contamination.

- Stanislaus County explained they hired a qualified professional to develop a Technical Memorandum, which includes the use of lookup nomographs to determine compliance with the Executive Order, on behalf of the permit applicant. Information provided by the applicant allows the County to determine if any minimum setback screening distance is required to prevent well interference, or subsidence that may likely adversely impact or damage critical infrastructure.
- Solano County stated they require applicants to provide a map of existing water wells within 1,500 feet of the proposed well. Wells within that setback may require additional testing to ensure no negative impacts will occur to nearby wells.

Well Permitting Information, Processes, Tools, and Additional EO Requirements

Many local agencies shared that they developed guidance and information, and web tools and maps to inform well permit applicants about requirements of the EO and their permitting process. Three such examples are:

Yolo County's Water Well Program website has a 'News & Updates' Section, which includes information about the EO N-7-22 paragraph 9, declaration forms for exempt well applicants, and temporary well permitting procedures to ensure compliance with paragraph 9, including additional handouts and a supplemental questionnaire.

Riverside County's "Map My County" interactive mapping tool has, among many others, layers that identify General Plan land uses (within 'Planning Layers') and subsidence (within 'Geographic Layers'). The map can be used to gather relevant information on whether the issuance of a well permit could potentially interfere with nearby wells or contribute to land subsidence in areas where it may be or is known to occur.

Glenn County amended Chapter 20.08 of Ordinance 1323 in May 2023 to include, among other additions, Section 20.08.090: Consultant Review Required for Non-Exempt Wells. This Section describes the process and requirements that all non-exempt well permit applications shall include, the proposed well construction design, and the maximum pump size and specifications, which shall be reviewed against categories identified in the GSP. A technical review required is to determine the likelihood that extractions from the proposed well will cause any of the following: interference with the production and function of existing nearby wells; subsidence that would adversely impact or damage nearby infrastructure or cause exceedance of GSP minimum thresholds for land subsidence; groundwater level declines that will cause exceedance of GSP minimum thresholds for groundwater levels; exceedance of GSP minimum thresholds for water quality; or, exacerbate a substantial adverse impact on public trust resources of navigable waters.

Appendix C: Observed Conditions Maps and Figures

This report, and specifically this appendix, discusses various types of wells and utilizes publicly available datasets to show observed conditions since the adoption of the EO. The well types discussed in this document and shown in this appendix are primarily defined in the Bulletin 74-81/74-90 California Well Standards, Combined, as:

- ***Well or Water Wells*.** As defined in Section 13710 of the Water Code, well or water well:
    - "…means any artificial excavation constructed by any method for the purpose of extracting water from, or injecting water into, the underground. This definition shall not include: (a) oil and gas wells, or geothermal wells constructed under the jurisdiction of the California Department of Conservation, except those wells converted to use as water wells; or (b) wells used for the purpose of (1) dewatering excavations during construction, or (2) stabilizing hillsides or earth embankments."
- **Community Water Supply Well.** A water well used to supply water for domestic purposes in systems subject to Chapter 7, Part 1, Division 5 of the California Health and Safety Code. Included are wells supplying public water systems classified by the Department of Health Services as "Noncommunity water systems" and "State small water systems" (California Waterworks Standards, Title 22, California Administrative Code). Such wells are variously referred to as "Municipal Wells", "City Wells", or "Public Water Supply Wells".
    - **Public Water System**, as mentioned in the EO, is defined in the California Health & Safety Code Section 116275(h). The Department's datasets refer to these as "Public Supply Wells".
- ***Individual Domestic Well*.** A water well used to supply water for the domestic needs of an individual residence or systems of four or less service connections (or "hook-ups" as they are often called).
- ***Industrial Wells*.** Water wells used to supply industry on an individual basis (in contrast to supplies provided through community systems).
- ***Agricultural Wells*.** Water wells used to supply water only for irrigation or other agricultural purposes, including so-called "stock wells". The Department's datasets refer to these as "Irrigation Wells".

Some of the Department's curated set of data, interactive mapping tools, and reports, which are important resources to inform sustainable groundwater management decision-making, include the following. You can use these interactive tools to further explore data shown in Appendix C maps and other information.

- California's Groundwater Live Online – A user-friendly interactive website that allows users to explore, analyze, and visualize the latest groundwater data and information for California.
- Dry Well Reporting System – Californians experiencing problems with their private wells can report a dry well in a few steps and find available resources.
- Online System for Well Completion Reports (OSWCR) and Well Completion Report Map Application – Drillers must submit a well completion report to OSWCR when a well is constructed, altered, or destroyed within 60 days of the completion of the work. DWR stores those well reports and have also created an interactive map for searching them.
- SGMA Data Viewer – Provides access to groundwater related datasets that are organized by the requirements of SGMA and the GSP Regulations for the purpose of supporting GSP development and implementation.

- GSA Map Viewer – Find your local groundwater sustainability agency and engage in their long-term groundwater planning efforts (simply type in your address).

Department datasets can be found on the California Natural Resources Agency Open Data Portal:

- Dry Well Reporting System Data
- Well Completion Reports (WCRs)
- InSAR Remote Sensing Subsidence Data

Data Methods and Assumptions Made in Preparing Appendix C

Below are general methods and assumptions that were taken to prepare this appendix. Specific approaches taken for the figures in the following pages are included in the text preceding that figure. Unless otherwise specified, only WCR Record Types of "New" or "Modified/Repaired" are included in these analyses.

Dates Used for Analysis: Data are presented, unless otherwise noted, as the period of "after 3/28/2022" (the day the EO was enacted) through 9/7/2023. Note that the WCR data used in the analyses or observed conditions represent wells that were completed and had a WCR submitted to the Department's Online System of Well Completion Reports (OSWCR) after 3/28/2022. Because the WCR dataset is so large and is not able to be saved outside of Excel ".csv" format, Department staff suggest users add filters in the 'Preview' mode of the data in the Open Data Portal, rather than downloading the full dataset. For example, to find the number of wells permitted since SGMA was enacted (see the graph in the Observed Conditions Summary section), a filter was applied to show only "Modification or Repair" and "New" Production or Monitoring Wells, which made the dataset smaller and therefore, easier to sort and filter.

WCR 'Date Work Ended' Data: Of the 9,440 WCRs analyzed for this report, 582 WCRs were submitted to the Department after 3/28/2022, but had a 'DateWorkEnded' (i.e., well installation completion date) after 9/7/2023. These dates are assumed by Department staff to be errors since WCRs submitted by 9/7/2023 would indicate that the well was installed prior to that date. These incorrect dates are associated with WCRs submitted prior to the implementation of a required permit and end date in completing a WCR. As such, these 582 WCRs are included in this analysis.

Well Types Analyzed: The well types used in the analyses below vary and are described for each figure. Although public supply wells are exempt from consideration in the EOs, they were included in many of the analyses with non-exempt well types due to their high pumping capacity. Of the 9,440 total wells with Well Completion Reports after 3/28/2022 (shown in the table to the right), 719 well types were left blank (i.e., unspecified) and 1,622 were monitoring wells.
Neither of these well types are included in this observed data. For informational purposes, the top ten counties that installed monitoring wells during this time period were: Los Angeles (293), Alameda (213), Orange (143), Santa Clara (108), San Diego (58), Contra Costa (57), Kern (53), San Mateo (52), Santa Cruz (47), and Sacramento (44). Note: if a well is permitted, that may not guarantee that a WCR was submitted to OSWCR; also, DWR is not informed of wells that are permitted but never drilled, and therefore, DWR does not know how many installed wells do not have WCRs submitted to OSWCR.

	Well Type	No. of WCRs
Exempt	Domestic	5,042
	Public Supply	146
Non-Exempt	Industrial	31
	Irrigation	1,880
Misc.	Monitoring	1,622
	Unknown	719
	Total	**9,440**

Figure C-1 shows the locations of voluntarily reported dry wells statewide with a report date after 3/28/2022. Key terms shown on this figure are defined as 1) Outage: A dry well report that has been submitted to the Dry Well Reporting System with no reported resolution and 2) Resolved: A dry well condition that has been addressed by either repair, replacement, or groundwater level recovery. As of 8/31/2023, approximately 48 percent of the dry wells reported have been flagged as resolved based on follow-up efforts, though the Department notes that not all initial reports of outages are verified with followed up efforts.

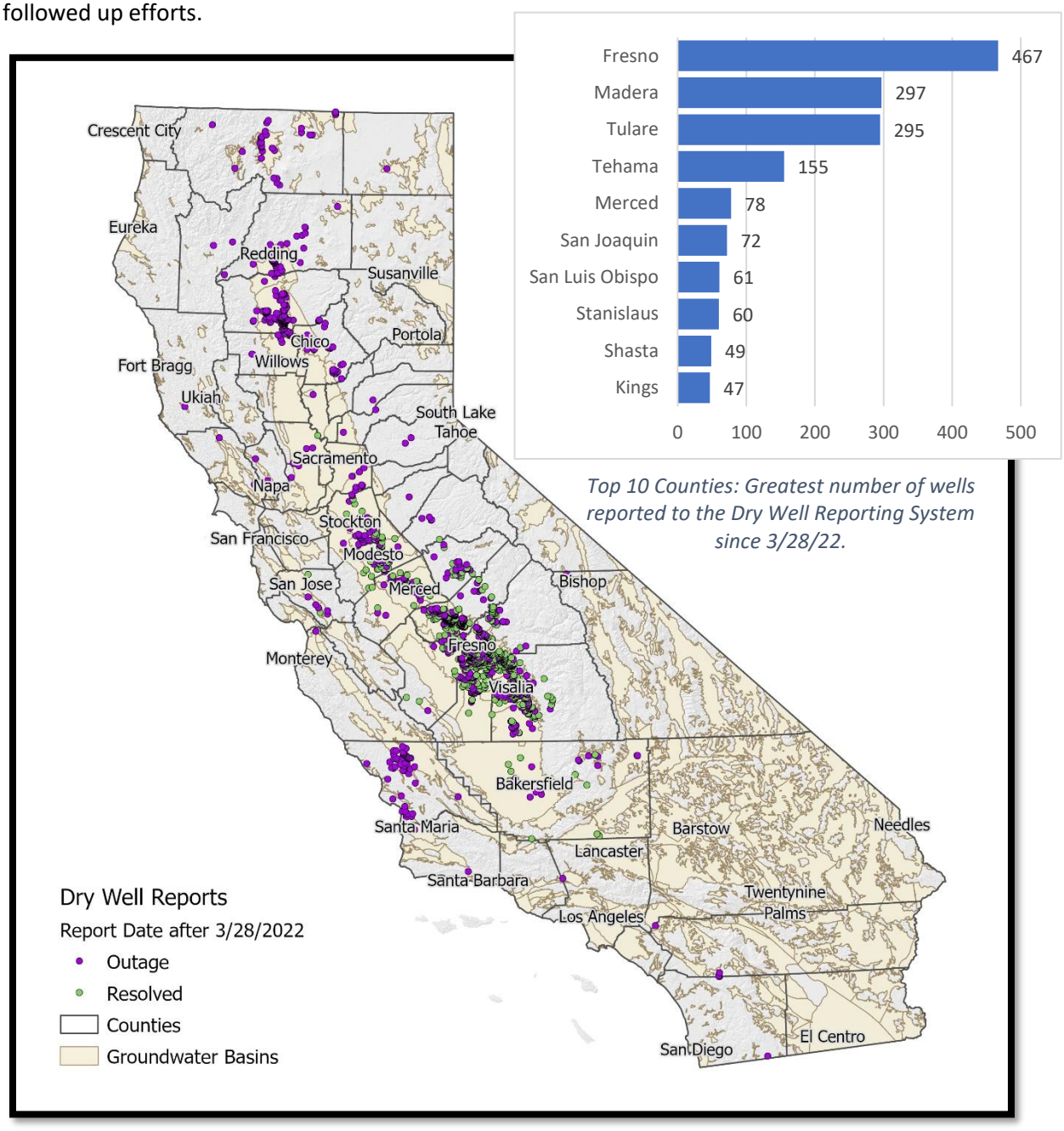


Figure C-1 – Statewide Voluntarily Reported Dry Well Locations – Outages and Resolved.

Figure C-2 shows the locations of new or modified irrigation, public supply (PS), or industrial wells permitted and completed statewide since 3/28/2022. Overlaid on the mapped well locations is a graph of the top 10 counties by total number of these three well types permitted and a table showing the total number of wells permitted for all well types since 3/28/2022. As noted above, blank (unspecified), monitoring, and domestic well types are not included in this observed data.

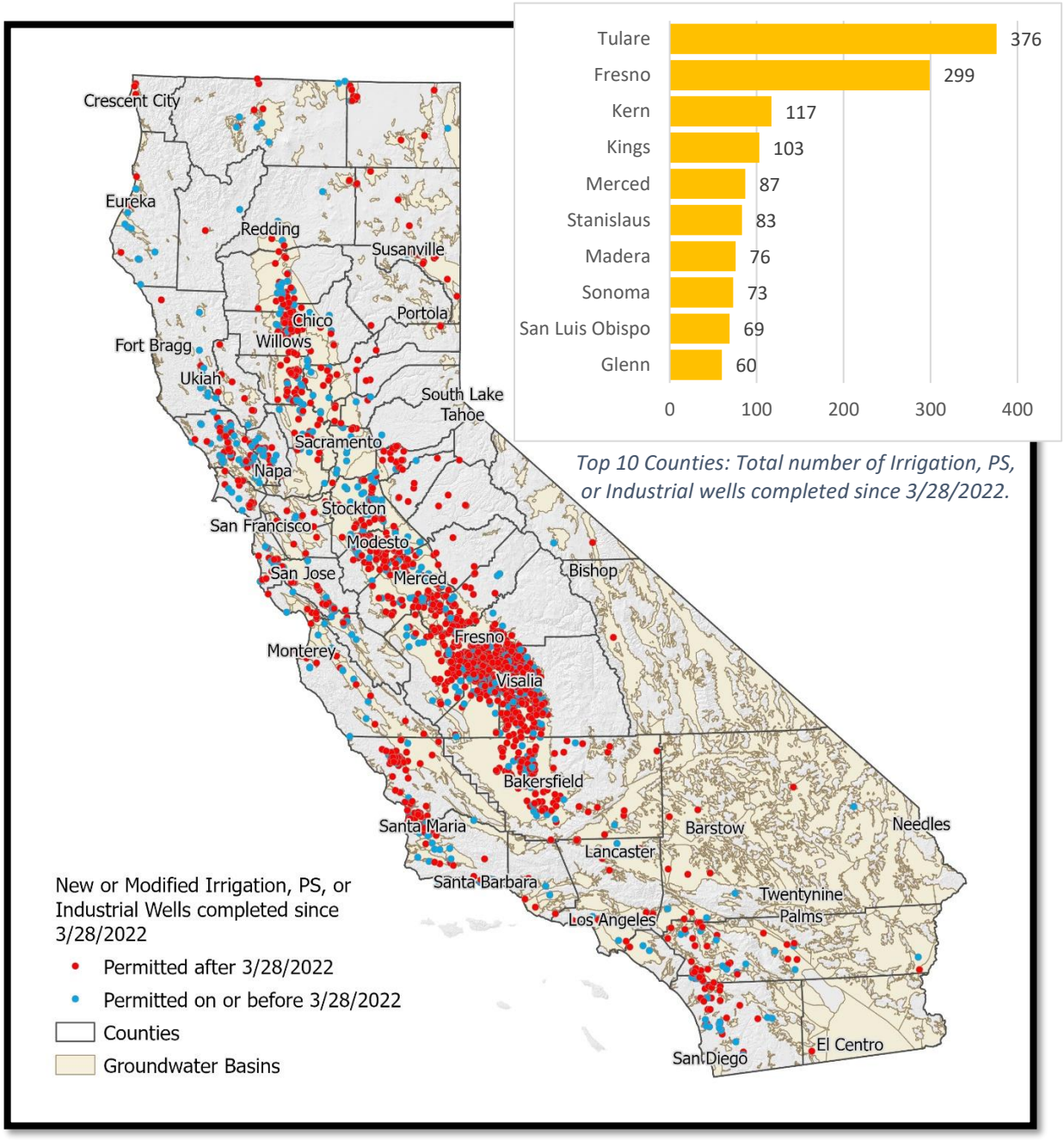


Figure C-2 - New or Modified Irrigation, Public Supply (PS), and Industrial Wells Permitted and Completed After 3/28/2022.

Figure C-3 is a graph of the top 10 counties by total number of irrigation and industrial combined (i.e., non-exempt well types) permitted and completed since 3/28/2022. Note for non-exempt wells: 1% of WCRs were for modification or repair and 99% were for new wells.

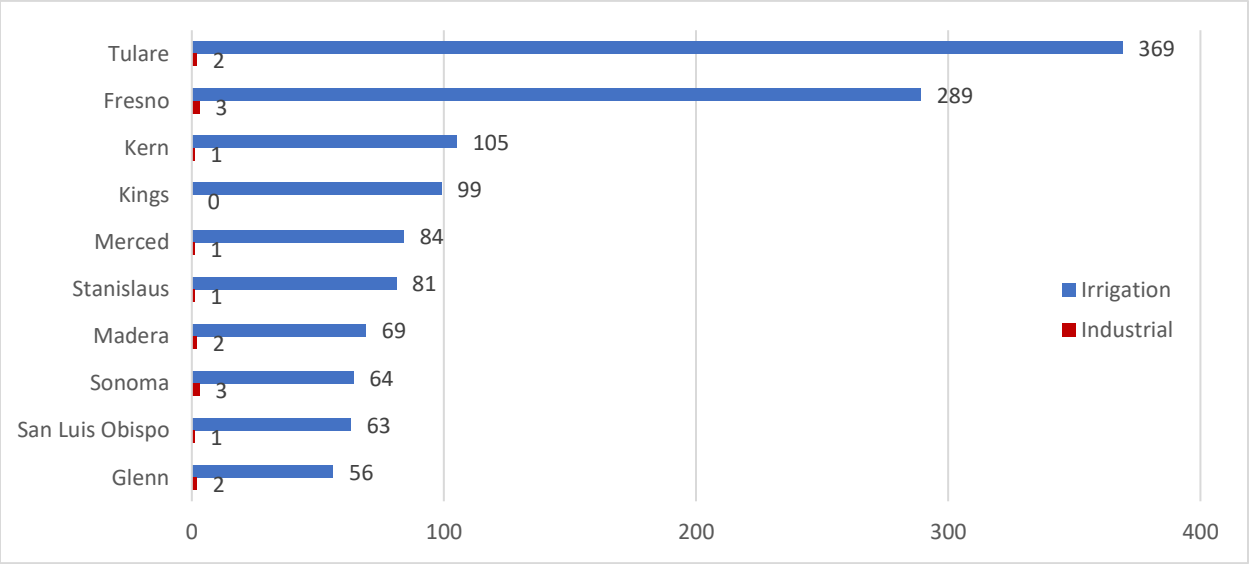


Figure C-3 - Top 10 Counties: Total Number of Non-Exempt Wells Permitted and Completed After 3/28/2022.

Figure C-4 is a graph of the top 10 counties by total number of domestic and public supply combined (i.e., exempt well types) permitted and completed since 3/28/2022. Note for exempt wells: 4% of WCRs were for modification or repair and 96% were for new wells.

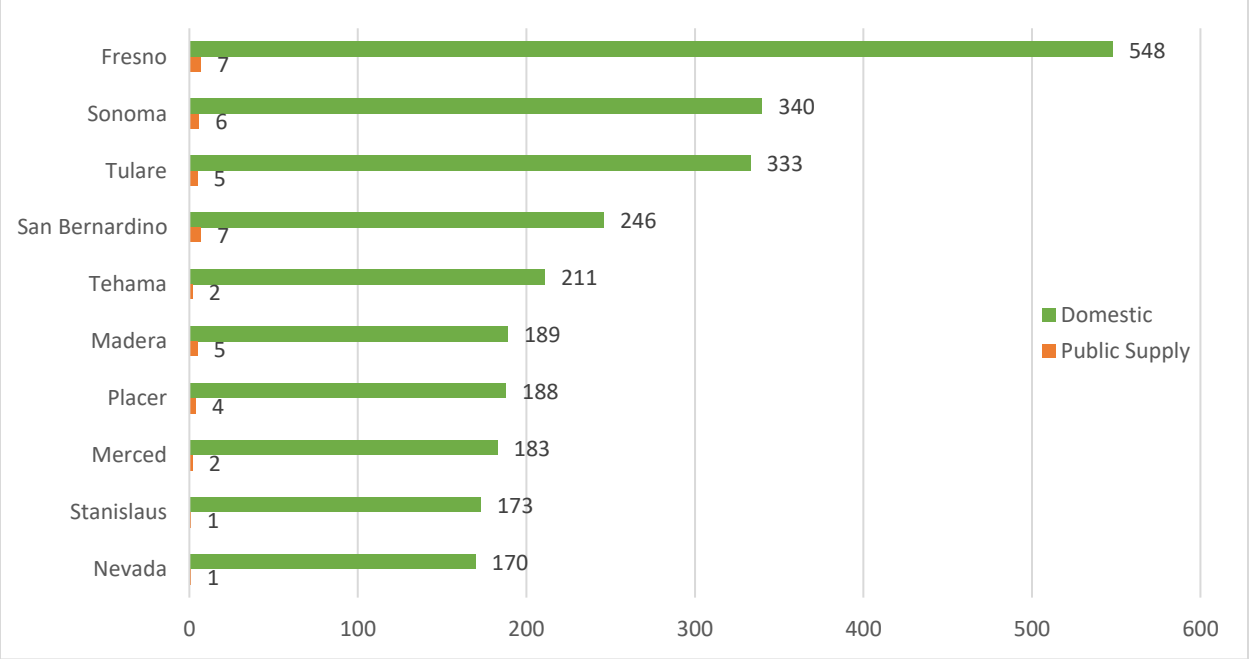


Figure C-4 - Top 10 Counties: Total Number of Exempt Wells Permitted and Completed After 3/28/2022.

Figure C-5 shows land subsidence conditions, primarily in California's Central Valley, that have occurred since the adoption of the Executive Order. Subsidence is represented as vertical ground surface displacement. Estimates of this displacement are derived from Interferometric Synthetic Aperture Radar (InSAR) data, a dataset DWR has maintained and reported on annually for areas of California since June of 2015 and began reporting quarterly in the Summer of 2022. Note: data are shown for 4/1/2022 to 7/1/2023.

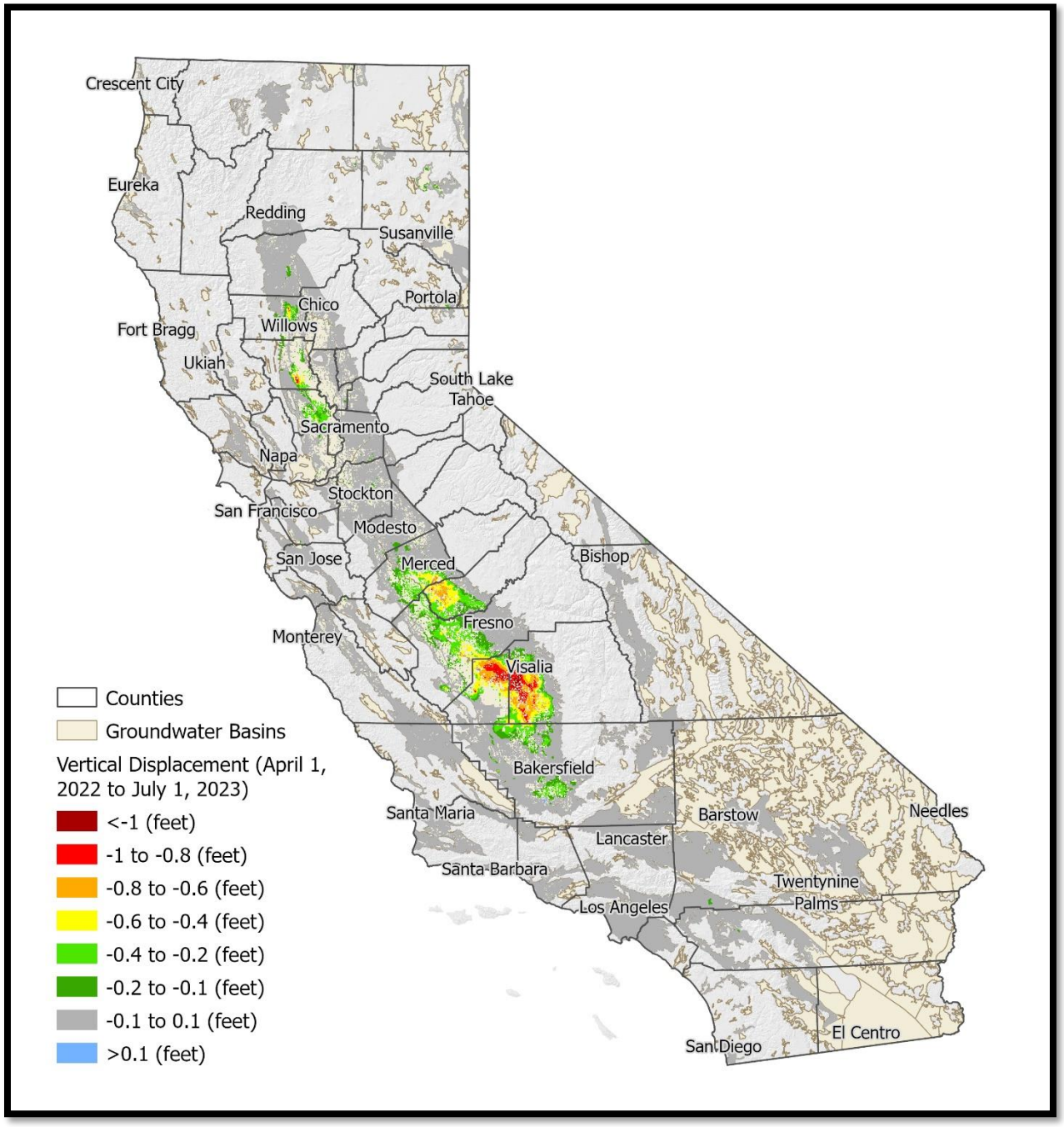


Figure C-5 - Land Subsidence Conditions – 4/1/2022 to 7/1/2023.

Figure C-6 shows wells that are 'Above' the Corcoran Clay, meaning they have a completion (bottom) depth above the top of the Corcoran Clay. Wells installed outside of the Corcoran Clay boundary or extent are also shown. Vertical ground surface displacements are also included that show subsidence conditions experienced since 3/28/2022 related to wells installed in that time.

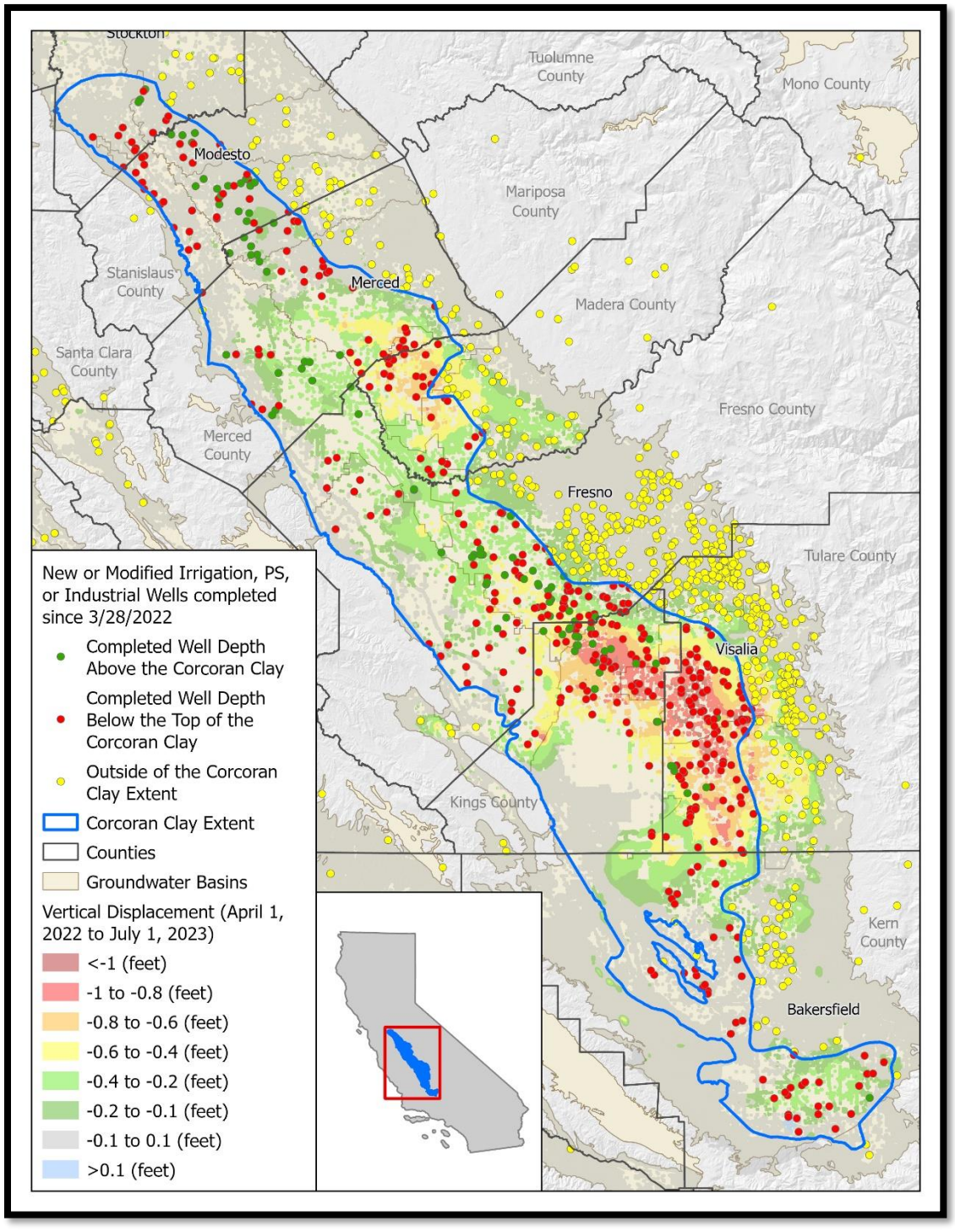


Figure C-6 - New or Modified Wells Completed Within and Outside the Extent of the Corcoran Clay and Land Subsidence Conditions Since Implementation of the Executive Order on 3/28/2022.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