



Annual Surveillance Report January 2023 to December 2023 for San Joaquin Dam DSOD Dam No. 1029

Newport Coast, California

Submitted to:
Irvine Water District
Dams & Storage
15600 Sand Canyon Avenue
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July 3, 2024
GEI Project No. 1901888

Consulting July 3, 2024
Engineers and GEI Project No. 1901888
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Ms. Danielle Drake,
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Irvine Ranch Water District
15600 Sand Canyon Avenue
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**Re: San Joaquin Dam, DSOD Dam No. 1029-000
Annual Surveillance Report from January 2023 to December 2023**

Dear Ms. Drake:

GEI Consultants, Inc. (GEI) is pleased to submit this Annual Surveillance Report for San Joaquin Dam covering the period from January 2023 to December 2023. This report is part of the scope of work described under our Professional Service Agreement between Irvine Ranch Water District (District) and GEI Consultants Inc. (GEI) dated February 11, 2019.

We appreciate this opportunity to provide the District with our services. Please contact Emerson Revolorio at erevolorio@geiconsultants.com or Rich Sanchez at rsanchez@geiconsultants.com with any questions.

Sincerely,

GEI CONSULTANTS, INC.



Richard Sanchez, P.E.
Principal Engineer



Emerson Revolorio, P.E.
Project Engineer

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Reservoir Dam Valve Exercising Table

CNC Survey Report

West Drain Sediment Gradation Test Results

Instrumentation Maintenance

Acronyms and Abbreviations

AC	asphalt concrete
CCTV	closed circuit television
CML&C	cement-mortar-lined and coated
CNC	CNC Engineering
District	Irvine Ranch Water District
DSOD	State of California, Department of Water Resources, Division of Safety of Dams
El, EL, Elev	elevation
ft	feet
GEI	GEI Consultants, Inc.
gpm	gallons per minute
gal/min	gallons per minute
H:V	Horizontal to Vertical
ID	identification
in.	inches
liter/min	liters per min
MWD	Metropolitan Water District
MW	monitoring well
NAVD 88	North American Vertical Datum of 1988
NGVD 29	National Geodetic Vertical Datum of 1929
No.	number
NOAA	National Oceanic and Atmospheric Administration
P.E.	Professional Engineer
P or Piez	Piezometer
RCP	reinforced concrete pipe
Res.	Reservoir
U/S	upstream
VW, VWP or VB	Vibrating Wire Piezometer

Annual Surveillance Report
January 2023 to December 2023
San Joaquin Dam, DSOD Dam No. 1029-000

W.S.	water surface
YR	year

1.0 Introduction and Background

1.1 General

This report presents the results of the dam safety monitoring and surveillance program for San Joaquin Dam (labeled as San Joaquin Reservoir Dam in the Division of Safety of Dams [DSOD] jurisdiction list) conducted by the Irvine Ranch Water District (District) and GEI Consultants, Inc. (GEI) for the period between January 2023 through December 2023. It includes a review of previous surveillance reports, a compilation of the field measurements, maintenance reports, observations, and conclusions related to the general condition and safety of the dam. In addition, recommendations are provided for continued operation, surveillance and monitoring of the dam. This report is submitted as part of the jurisdictional requirements of DSOD.

This report includes graphical summaries of the field measurements of water levels in the piezometers and monitoring wells, seepage flows, and dam movement measurements. It also contains tabulated data of the field measurements of water levels in the piezometers and monitoring wells, seepage flow rates, silt and field survey measurements.

Figure 1 is a plan view of the dam and reservoir with a representative cross section of San Joaquin Dam. Figure 2 is a site plan of the dam and reservoir. Figures 3 through 6 are plans showing locations of piezometers, monitoring wells, and survey monuments. As used in this report, the left and right designations are as viewed looking downstream.

The vertical datum indicated on the as-built plans and project documents for San Joaquin Dam and Reservoir is the National Geodetic Vertical Datum of 1929 (NGVD 29). The reservoir water surface elevation and instrumentation data are currently being read based on the vertical datum of North American Vertical Datum of 1988 (NAVD 88). The height difference between datums is 2.375 ft and this same amount is to be added to elevations in NGVD 29 to obtain elevations in NAVD 88 for the San Joaquin Dam and Reservoir.

1.2 Dam and Reservoir

San Joaquin Dam and Reservoir were constructed in 1966 by the Irvine Ranch Water District (District) as a potable water storage facility. The facility was owned by a consortium of nine local water agencies including the District and the Metropolitan Water District of Southern California (MWD). The District subsequently acquired complete ownership of the dam and reservoir and converted it in 2004 from a potable facility to a reclaimed water facility. The conversion project components are detailed in as-built drawings approved by DSOD.

San Joaquin Dam is a zoned earthfill embankment located in Orange County, California. As-built plans show the dam crest is at Elevation of 476.0 ft (NGVD 29), with a crest length of 873

ft and a crest width of 30 ft. The height of the dam is 224 ft excluding 3 ft of camber at the center of the dam. The dam crest and upstream face are lined with asphalt concrete (AC). The reservoir is lined with compacted impervious earthen material which is overlaid by the AC. The upstream face of the dam has a slope gradient of 3H:1V with a bench at Elevation 420.0 ft (NGVD 29). The downstream face has a slope gradient of 2.25H:1V with three benches at Elevations 420.0 ft, 360.0 ft, and 300.0 ft (NGVD 29).

The watershed contributing to the reservoir has a drainage area of only 0.3 square miles, with water mostly diverted into the reservoir. The reservoir area is 50 acres, and the reservoir storage capacity is 3,036 acre-feet.

1.3 Spillway

The spillway consists of two rectangular overpour drop inlets located near each abutment. The inlets are comprised of reinforced concrete structures with the control at Elevation 470.5 ft (NGVD 29), providing 5.5 ft of total freeboard. Each drop inlet is connected to a 48-inch reinforced concrete pipe. The reinforced concrete pipe transports the spillway flow of water which converge into a combined energy dissipation reinforced concrete box located in the stream channel downstream of the toe of the dam.

1.4 Outlet Works

The outlet works intake structure consists of an inclined 60-inch-diameter mortar-lined and coated, welded steel pipe located beneath the reservoir slope (northeast) near the right end of the dam. There are four multi-level screened intake valves: a 24-inch butterfly valve at Elevation 360 ft (Outlet Valve #4), and three 48-inch-diameter valves at Elevations 380, 415, and 450 ft (Outlet Valves #3, 2, and 1, respectively) (NGVD 29). A 60-inch butterfly valve (Outlet Valve #5) is also located at the transition from the 60-inch-diameter steel intake pipe to the 60-inch-diameter outlet conduit near the right upstream groin toe area of the dam. The outlet conduit is a mortar-lined and coated, welded steel pipe that is concrete-encased and extends under the dam to a concrete blowoff structure near the downstream toe of the dam. The blowoff structure contains two 12-inch-diameter emergency blowoff valves located in series to minimize water waste when exercised. Water released from the blowoff valves drains into the east storm drain.

All five outlet valves and the two downstream blowoff valves were exercised twice during the 2023 review period. The District provided a Reservoir Dam Valve Exercising summary table which states that the valves were exercised during the DSOD inspection on 4/18/2023 and 10/26/2023.

2.0 Instrumentation Measurements

2.1 General

The District normally operates the reservoir below Elevation 470.0 ft (NGVD 29) which is 0.5 foot below the spillways' crest. The reservoir is considered full by the District at this elevation. The crest of the dam is at Elevation 476.0 ft (NGVD 29) or 478.38 ft (NAVD 88), and the crest elevation of each of the two spillway inlets is at 470.5 ft (NGVD 29) or 472.88 ft (NAVD 88). An annual cycle of seasonal lowering of the reservoir during the spring and summer, and then refilling during the winter is the typical pattern of the District's operation at this reservoir.

Throughout this report, instrumentation measurements and readings that remained within historical limits and followed historical trends will be classified as normal. Historical limit is classified as the range between maximum and minimum water levels within the past ten years.

The elevation of the water surface in the reservoir is recorded each time a field visit is made to collect instrumentation data. Based on the ten-year historical data from January 2013 through December 2023, the reservoir water surface elevation varied from a minimum Elevation of 395 ft to a maximum Elevation of 472.0 ft. The exception was on July 5, 2019, where the reservoir level was recorded as 39.40 ft. This reading was an error and most likely should have been 394 ft. During this review period (2023), the reservoir water surface elevation varied from a minimum Elevation of 421.0 ft to a maximum Elevation of 471.2 ft. The reservoir elevations that were recorded on the same dates as instrumentation data was taken are shown in Tables 6 through 11 (NAVD 88). The reservoir water surface elevations during the 2023 review period remained within historical limits.

Starting in December 2022, there was a significant increase in rainfall compared to previous years. The largest rainfall occurred between January and March with readings ranging from 3.3 to 5.7 inches per month. A large rainfall event also occurred in August 2023, which recorded 2.3 inches of rain during the month. Based on historical data, August is typically a dry month with little to no rain. Rainfall data is included in Tables 6 through 9 and Figures 7 through 34.

2.2 Instrumentation

Several types of instrumentation are being monitored at the dam and reservoir, including vibrating wire piezometers (VWP), pneumatic piezometers, open-well piezometers/monitoring wells, seepage monitoring flow points, and survey monuments. Instrumentation measurements and readings are typically made by District personnel on a monthly basis except for surveys

which have been performed annually in past years. The District has been having problems with the data collection system associated with the VWP (VB-1 through VB-8) located on the upstream side of the dam starting in 2019. In addition, during several months in 2021 (Table 7) error digital readings of -9999.00 were recorded. During the 2022 review period the readings provided by the District were not resulting in reliable piezometers levels when applying the conversion formulas to estimate pressure head. The values provided were considered erroneous based on comparison to historical readings. During this review period, IRWD contracted GeoPentech to perform an inspection and maintenance of their VWP system to help address the data collection problem. Further details of the maintenance work are described below in section 2.3.5. Based on review of 2023 data, piezometers VB-1 through VB-4 appear to be functioning correctly since November 2022, except for VB-1 which started producing error readings after July 2023. Piezometers VB-5 through VB-8 appear to be functioning correctly since May 2023. Further evaluation details are provided in section 2.3.3.

The following is a summary of the instrumentation at San Joaquin Dam and Reservoir:

1. Eight VWP, identified as VB-1 through VB-8, were installed in 2004. The locations of these piezometers are on the upstream side of the dam and are shown in Figure 3. These VWPs were placed in the dam, drilled to depth, grouted to the surface, and covered with asphalt and are considered permanent installations. The cabling from the sensors extends in conduit up to the dam crest where it is gathered into two junction boxes and then directed to a single main collection box near the center of the dam.
2. Twenty pneumatic piezometers were installed in 1965. These pneumatic piezometers are located in the dam embankment and abutments. They are grouped into sets of piezometers, identified as the C, LA, LR, RA, and RR series. Their locations are also shown in Figure 3.
3. Six open-well piezometers, identified as CP-1A and-1B, CP-2A and-2B, and CP-3A and- 3B, were installed in 1977 on the upstream perimeter end of the reservoir. The locations of the piezometers are shown in Figure 4.
4. Eight monitoring wells, identified as MW-1 through MW-8, were installed also around the perimeter of the reservoir in 2004. The locations of these wells are shown in Figures 4 and 5.
5. Flow rates are obtained at eight seepage monitoring stations. The flow points, which consist of V-notch weirs, are located as shown in Figure 2. They are identified as the East Drain, West Drain, Filter Drain, Upstream (U/S) Collector Drain No. 1, U/S Collector Drain No. 2, Downstream Toe Drain, and Floor Drain. An eighth seepage monitoring location is noted as the right groin drain (6/16/08 drain).
6. There were originally 36 survey monuments installed at the dam in 2004 as

part of the reservoir conversion project. The original survey monuments are grouped into sets, identified as the SA, SB, SC, SD, SE, and SF sets. The SF series monuments (SF-1, SF-2 and SF-3) are located along the upstream toe of the dam and there is no data available for this series because they are submerged under the water. The SE series monuments (SE-1, SE-2, SE-3, SE-4, SE-5, SE-6 and SE-7) are located inside the reservoir and cannot be surveyed while the water surface elevation is above 423.0 ft (NAVD 88). SA-4, SE-1, and SE-4 are no longer being surveyed because they were destroyed. SA-4R was established on 11/25/2020 to replace SA-4. Because eight of the 33 active monuments are usually under water, there are currently 26 survey monuments being surveyed by the District typically on an annual basis. The locations of the survey monuments are shown in Figure 6.

2.3 Piezometers and Monitoring wells

Tabulated data since 2007 for piezometer and monitoring well measurements are presented in Table 6. Table 7 presents the VWP measurements since 2007. Table 8 contains the pneumatic piezometer measurements since 2007 as well.

Figures 7 through 11 present graphs of measured water levels in the reservoir, piezometers, monitoring wells, and rainfall during the 2-year period from January 2022 through December 2023. Figures 12 through 16 present graphs of historical measured water levels in the reservoir, piezometers, monitoring wells, and rainfall since 2013.

Based on review of 2023 data, piezometers VB-1 through VB-4 appear to be functioning correctly since November 2022, with the exception of VB-1 after July 2023. Piezometers VB-5 through VB-8 appear to be functioning correctly since May 2023. Since most of the VWPs appear to be functioning, we have included Figures 17 and 18, which present graphs of measured water levels in the reservoir, VWPs, and rainfall during the 2-year period from January 2022 through December 2023. Figures 19 and 20 are graphs of historical piezometer levels based on the readings obtained from the VWPs since 2013.

Figures 21 through 25 present graphs of piezometer levels based on the readings obtained from the pneumatic piezometers during the 2-year period from January 2022 through December 2023. Figures 26 through 30 present the historical levels based on readings obtained from the pneumatic piezometers since 2013.

2.3.1 Open-Well Piezometers (CP-1A & CP-1B Through CP-3A & CP-3B)

Data from the open-well piezometers (CP-1A, CP-1B, CP-2A, CP-2B, CP-3A and CP-3B) are collected monthly by the District. Table 6 presents the piezometer level data collected from these piezometers since 2007. Figures 7 and 12 are presentations of the piezometer levels in

Piezometers CP-1A, CP-1B, CP-3A, and CP-3B, while Figures 8 and 13 are presentations of the piezometer levels in Piezometers CP-2A and CP-2B.

Table 1 provides the maximum and minimum water levels recorded during the current review period, as well as the historical range for each piezometer (CP-1A, CP-1B, CP-2A, CP-2B, CP-3A and CP-3B). Readings with isolated spikes or drops were omitted and were not included in the maximum and minimum water level range.

Table 1. Open-Well Piezometers – Maximum and Minimum Water Level Ranges

Piezometer	Tip Elevation (ft)	2012-2022 10-Year Range (ft)	2023 Range (ft)	Comment
CP-1A	363.2	441.0 - 447.1	444.0 - 446.7	
CP-1B	447.1	447.1 - 447.7	447.1 - 447.5	Water levels have been reported below the record bottom of well elevation. The well is considered dry.
CP-2A	363.2	456.4 - 464.7	461.3 - 466.0	Reading on 1/26/2023 was 1.3 ft above historical max.
CP-2B	423.1	450.6 - 453.8	452.1 - 454.5	Reading on 3/28/2023 was 0.7 ft above historical max.
CP-3A	363.2	470.5 - 477.5	477.2 - 479.6	Reading on 8/29/2023 was 2.1 ft above historical max.
CP-3B	452.6	464.0 - 469.1	467.9 - 470.4	Reading on 12/21/2023 was 1.3 ft above historical max.

Piezometer levels in all six open-well piezometers continue to follow past historic trends throughout the 2023 review period with changes due to reservoir level changes. Piezometers CP-2A, CP-2B, CP3-A, and CP-3B responded to the reservoir changes due to the increase in rainfall which produced readings that went above the historical maximum reading. Piezometer levels in CP-3A and CP-3B continue to follow a gradual upward trend. All levels in the open-well piezometers remained within historical limits except for the ones identified in Table 1.

2.3.2 Monitoring Wells (MW-1 Through MW-8)

The water levels in the eight Monitoring Wells MW-1 through MW-8 were measured once per month throughout the 2023 review period. Table 6 presents the historical water-level data obtained for these monitoring wells since 2007. Graphs of the water levels for the 2-year period from January 2022 through December 2023 are shown in Figures 9, 10 and 11. The historical water levels since 2013 are presented in Figures 14, 15, and 16.

Table 2 provides the maximum and minimum water levels recorded during the current review period, as well as the historical range for each monitoring well (MW-1 through MW-8).

Readings with isolated spikes or drops were not included in the maximum and minimum monitoring well water level range.

Table 2. Monitoring Wells – Maximum and Minimum Water Level Ranges

Monitoring Well	Tip Elevation (ft)	2012-2022 10-Year Range (ft)	2023 Range (ft)	Comment
MW-1	363.2	403.1 - 406.7	404.1 - 405.3	
MW-2	409.9	420.5 - 424.7	421.7 - 422.9	
MW-3	423.0	423.0 - 424.8	423.0	Water levels have been reported below the record bottom of well elevation. The well is considered dry. Reading on 2/23/2023 was omitted due to isolated spike. The following reading continued to follow historical trend.
MW-4	444.5	444.5 - 445.5	444.5 - 444.9	Water levels have been reported below the record bottom of well elevation. The well is considered dry.
MW-5	406.5	413.9 - 432.5	422.3 - 432.2	
MW-6	404.9	404.9 - 405.4	404.9 - 405.1	Water levels have been reported below the record bottom of well elevation. The well is considered dry.
MW-7	397.3	437.5 - 445.8	441.2 - 445.1	
MW-8	419.8	483.9 - 494.6	489.6 - 492.9	

During this 2023 review period the water levels in all monitoring wells followed historic trends. It was observed that water levels reported at MW-3, MW-4 and MW-6 were either below the bottom of well elevation or near it. GEI considers the wells to be dry based on review of the data, conversations with IRWD staff, and measurements performed during previous annual inspections. Monitoring Well MW-5 was the most responsive to reservoir water level changes. Monitoring Well MW-8 levels continued to be above the reservoir water surface elevation because it is located in the subdivision above the reservoir and could be influenced by landscape runoff.

2.3.3 Vibrating Wire Piezometers (VB-1 Through VB-8)

There are eight VWP's within the upstream side of the dam embankment. Readings are taken at a main collection box which contains a datalogger/multiplexer located on the crest of the dam. Data from the VWP's is normally collected by the District approximately once per month. Graphs of piezometer level elevations based on readings obtained from VWP's VB-1, VB-2, VB-5, and VB-6 are shown in Figures 17 and 19 while graphs of piezometer levels in VWP's VB-3, VB-4, VB-7, and VB-8 are shown in Figures 18 and 20.

As noted in previous reports, all VWP's starting in 2019 were providing unreliable piezometer levels and not comparing well with previous levels. In addition, during several months in 2021 (Table 7) error digital readings were noted by the District. During the 2022 review period the

readings provided by the District were not resulting in reliable piezometers levels when applying the conversion formulas to estimate pressure head. The values provided were considered erroneous based on comparison to historical readings. During the current review period, maintenance work was performed at both junction boxes and appears to have temporarily fixed the data recording issues. Based on review of 2023 data, piezometers VB-1 through VB-4 appear to be functioning correctly since November 2022, except for VB-1 which started producing error readings after July 2023. Piezometers VB-5 through VB-8 appear to be functioning correctly since May 2023. All VWP, except for VB-1, are responding to the reservoir water level and are following the historical trends shown in the data before 2019, see Figures 19 and 20. Table 3 provides the maximum and minimum water levels recorded during the current review period, as well as the historical range for each VWP (VB-1 through VB-8). Readings with isolated spikes or drops were not included in the maximum and minimum piezometer water level range. Figures 19 and 20 are graphs of historical piezometer levels based on the readings obtained from the VWPs since 2013.

Table 3. Vibrating Wire Piezometers – Maximum and Minimum Water Level Ranges

Piezometer	Tip Elevation (ft)	2008-2018 10-Year Range (ft)	2023 Range (ft)	Comment
VB-1	357.0	374.7 - 404.5	372.9 - 406.0	Reading on 6/28/2023 was 1.5 ft above historical max. Error readings after July 2023.
VB-2	392.0	403.7 - 437.3	411.0 - 434.2	
VB-3	399.5	397.7 - 405.0	396.7 - 398.4	Water levels have been reported below the record piezometer tip elevation.
VB-4	441.0	430.4 - 467.8	436.9 - 464.0	Water levels have been reported below the record piezometer tip elevation.
VB-5	392.8	397.5 - 465.6	413.5 - 460.3	
VB-6	392.0	405.2 – 448.2	417.5 - 441.4	
VB-7	402.0	381.7 - 404.8	401.1 - 401.2	Water levels have been reported below the record piezometer tip elevation.
VB-8	441.0	423.1 - 457.1	448.6 - 457.2	Reading on 6/28/2023 was 0.1 ft above historical max.

2.3.3.1 Maintenance

GeoPentech inspected the VWPs, the two junction boxes, and the main datalogger/multiplexer on March 27, 2023. GeoPentech provided the following conclusions:

- All eight VWP sensors were still operational.
- Measured values at the datalogger terminal indicate potential problems with the connections to sensors VB-5 through VB-8.
- The transient protection modules in the two junction boxes may not be protecting the datalogger due to lack of grounding.
- There does not appear to be lightning protection or grounding rod for the datalogger box.

On May 31, 2023, GeoPentech replaced the transient protection modules at each junction box with Geokon 4999-12L/LE (LAB3) Surge Modules. All eight instruments were reconnected to the new surge modules and the surge modules were connected to earth ground. GeoPentech took readings from each sensor and concluded that they were functioning properly.

Details of the inspection and instrumentation system repair work are provided in the Memorandums in the Appendix.

2.3.4 Pneumatic Piezometers (C, LA, RA, and RR Series)

The pneumatic piezometers within the dam embankment and in the abutments are read at terminal stations located on the downstream face of the dam. Pneumatic piezometers are read by the District approximately once per month. The pneumatic piezometer levels are provided in Table 8 for the historical period since 2007. Plots representing the water-level elevations based on readings obtained from pneumatic piezometers C-1 through C-4 are shown in Figures 21 and 26, while plots representing the piezometer level elevations for pneumatic piezometers C-5 through C-8 are shown in Figures 22 and 27. Plots representing the piezometer level elevations based on readings obtained from pneumatic piezometers C-9, RR-2, LR-1, LR-2, LR-3, and LR-4 are shown in Figures 23 and 28, while plots representing the piezometer level elevations for pneumatic piezometers LA-1 and LA-2 are shown in Figures 24 and 29. Plots representing the piezometer level elevations based on readings obtained from pneumatic piezometers RA-1, RA-2, RA-3, and RA-4 are shown in Figures 25 and 30.

Table 4 provides the maximum and minimum water levels recorded during the current review period, as well as the historical range for each pneumatic piezometer. Readings with isolated spikes or drops were not included in the maximum and minimum piezometer level range.

Table 4. Pneumatic Piezometers – Maximum and Minimum Water Level Ranges

Pneumatic Piezometer	Tip Elevation (ft)	2012-2022 10-Year Range (ft)	2023 Range (ft)	Comment
C-1	357.1	327.1 - 355.1	338.1 - 342.1	Readings reported were below the record bottom of piezometer tip elevation.
C-2	339.8	341.5 - 348.5	347.5 - 349.5	Readings reported on 7/27/2023 and 8/29/2023 were 1.0 ft above the historical max.
C-3	363.3	355.5 - 364.5	344.5 - 356.5	Readings reported were below the record bottom of piezometer tip elevation.
C-4	392.8	394.1 - 468.1	417.1 - 467.1	
C-5	379.4	378.5 - 386.5	384.5 - 384.5	
C-6	392.0	399.5 - 421.5	407.5 - 424.5	Readings reported on 5/23/2023 and 6/28/2023 were 3.0 ft above the historical max.
C-7	324.9	321.9 - 325.9	321.9 - 323.9	Readings reported were below the record bottom of piezometer tip elevation.
C-8	440.6	441.1 - 461.1	446.1 - 461.1	Reading reported on 6/28/2023 was at the historical max.
C-9	357.0	333.9 - 360.9	351.9 - 353.9	Readings reported were below the record bottom of piezometer tip elevation.
RR-2	393.2	381.3 - 462.3	413.3 - 456.3	
LA-1	391.2	387.9 - 467.9	414.9 - 465.9	
LA-2	440.3	431.7 - 464.7	436.7 - 464.7	Readings reported between 10/26/2023 and 12/21/2023 were below the record bottom of piezometer tip elevation. Reading reported on 3/28/2023 was at the historical max.
RA-1	364.5	380.5 - 429.5	399.5 - 433.5	Readings reported on 5/23/2023 and 6/28/2023 were 4.0 ft above the historical max.
RA-2	354.3	382.3 - 410.3	393.3 - 410.3	Readings reported on 5/23/2023 and 6/28/2023 were at the historical max.
RA-3	390.8	390.9 - 456.9	413.9 - 456.9	Reading reported on 3/28/2023 was at the historical max.
RA-4	441.0	423.0 - 441.0	--	All readings were zero for 2023.
LR-1	356.3	362.7 - 370.7	366.7 - 370.7	Readings reported throughout 2023 were at or near the historical max.
LR-2	340.3	350.7 - 356.7	354.7 - 357.7	Readings reported on 6/28/2023, 7/27/2023, and 9/26/2023 were 1.0 ft above the historical max.
LR-3	390.1	387.3 - 471.3	417.3 - 470.3	
LR-4	440.0	423.0 - 467.0	433.0 - 467.0	Readings reported between 9/26/2023 and 12/21/2023 were below the record bottom of piezometer tip elevation. Reading reported on 3/28/2023 was at the historical max.

Multiple pneumatic piezometers were reporting piezometer levels below the bottom of piezometer tip elevations, and zero readings. During the 2023 inspection, GEI tried to exercise the control and relief valves at the pneumatic piezometer vault box at the lower bench of the dam. GEI was unable to exercise the valves because they were not functioning. During the inspection, IRWD said the gauge readings have not been fluctuating and the pneumatic piezometers have not been maintained. The IRWD staff also stated that the pneumatic piezometer pressure readings were being estimated by reading the pressure gauge on the valve box without connecting a pneumatic indicator to the tubing and sending compressed gas. GEI recommends that all pneumatic piezometers be maintained per manufacture's requirements and

re-calibrated. GEI also recommends the pneumatic piezometers be read correctly per manufacture’s requirements.

2.4 Subdrain Flow Rates

Subdrain flows are measured by the District at eight seepage monitoring stations. The flows from the East Drain, West Drain, and Filter Drain are measured at three separate V-notch weirs in the blow-off structure near the downstream toe of the dam. The flows from the U/S Collector Drain Nos. 1 and 2 are measured at two V-notch weirs at the downstream toe of the dam. The flows from the Downstream Toe Drain and the Floor Drain are measured in two separate V-notch weirs adjacent to the energy dissipator structure. An eighth seepage monitoring location is also measured near the outlet structure referred to as the right groin drain (6/16/08 drain). The locations of the seepage monitoring weirs are shown in Figure 2. The flow data from the weirs is collected monthly by the District.

Tabulated data for the historical period since 2007 is presented in Table 9. Figures 31 and 32 are graphs representing the seepage flow rates for the 2-year period from January 2022 through December 2023. Figures 33 and 34 are graphs representing the seepage flow rates for the historical ten years’ period from 2013 to 2023.

Table 5 provides maximum and minimum flow rates recorded during the current review period, as well as the historical range for each drain.

Table 5. Subdrain Flow Rates – Maximum and Minimum Flow Rate Ranges

Subdrain	2012-2022 10-Year Range (gpm)	2023 Range (gpm)	Comment
East Drain	8.2 - 63.9	15.2 - 42.2	
West Drain	13.7 - 67.7	19.5 - 44.8	
Filter Drain	3.0 - 9.9	6.6 - 10.0	Reading reported on 3/28/2023 was 0.1 gpm above historical max.
U/S Collector Drain #1	Dry	Dry - 0.02	First time recording flow since 2011.
U/S Collector Drain #2	Dry – 0.02	Dry to 1.1	First time recording flow since 2017.
Downstream Toe Drain	0.7 - 8.0	2.2 - 7.9	No readings were provided in November and December due to vault overflowing with water.
Floor Drain	1.2 - 10.6	3.7 - 6.3	No readings were provided in November and December due to vault overflowing with water.
Right Groin Drain	0.08 - 1.5	0.3 - 2.4	Reading reported on 3/28/2023 was 0.9 gpm above historical max.

During the 2023 report period, the flows discharged from the East Drain and the West Drain tracked the reservoir closely. The flows discharged from the Downstream Toe Drain and the Floor Drain also responded to the reservoir water level changes and rainfall. The Downstream Toe Drain had a peak flow of 7.9 gpm on 3/28/2023 which could have been in response to the large rainfall in March. GEI considers this an isolated reading since the flow rates returned to the historical trend. During November and December, IRWD reported that the vaults containing the Downstream Toe Drain and Floor drain were overflowing with water and could not take a seepage reading. During the review period seepage was recorded in the U/S Collector Drain #1 for the first time since 2011 and in the U/S Collector Drain #2 for the first time since 2017. The seepage in the U/S Collector Drains #1 and #2 could be in response to the higher reservoir level and increase rainfall during 2023. The seepage in both drains began to decrease as the reservoir water level lowered towards the end of the year. In addition, the Filter and Right Groin Drains showed slight responses to the reservoir water level changes.

Based on GEI's review of the seepage flow data, the seepage patterns in the U/S Collector Drains changed during the 2023 review period. Seepage should continue to be monitored and compared to fluctuations in reservoir water level and rainfall.

2.4.1 Sediment Collection (East and West Drains)

The East and West Drains are 6-inch mortar lined steel pipes are concrete encased and underneath the 60-inch outlet pipe. Both pipes are concrete encased through the dam foundation and connect to 4-inch Vitrified Clay Pipe (VCP) reservoir slope underdrain lines near the sloping intake structure (Sheet M-4). During the 2023 review period, the District provided sediment accumulation data for the West Drain for January, February, April, and July. The sediment weight ranged between 4.1 to 11.2 lbs. Monthly readings are required to provide a more thorough review of the impact of sedimentation accumulation at the West drain. During the 2023 inspection, the District reported that samples are typically thrown away or stored in their storage yard. Table 10 provides the recorded sedimentation measurements. The measurements are not being taken on a consistent interval and gaps exist. The last set of sedimentation measurements during 2023 was on July 26, 2023.

Ninyo & Moore performed a hydrometer analysis on the sediment material collected in January 2023. The sediment material is a low plasticity sandy silt and is within the gradation limits of the compacted impervious earth lining Zone 1 material (Reservoir liner material) shown in the project as-built plans (Sheet C-17). The original reservoir liner was built using Zone 1 impervious material. Based on review of the as-built plans and hydrometer analysis, it is unlikely that the sedimentation is coming from the dam embankment since the east and west drain pipes are encased in concrete across the embankment. The sedimentation could be coming from the reservoir liner Zone 1 material where the drains are not concrete encased and are 4-inch diameter perforated VCP underdrains. The results of the hydrometer analysis are shown in the appendix of

this report. See conclusions and recommendations for further discussion on observed sedimentation.

2.5 Movement Surveys

The District performed an initial survey of the horizontal and vertical movements at the dam in 2004 using the NGVD 29 vertical datum. Beginning in 2005, all surveys were referenced to the NAVD 88 vertical datum. Surveys are normally performed annually with the exceptions in 2017 and 2021. No surveys were conducted in calendar year 2017 and 2021. A survey was conducted during December 2024 that has been included in this report. The survey report is provided in the Appendix of this report.

Tabulated data for the surveying of horizontal and vertical movement since 2004 are presented in Table 11. Figures 35 and 39 are graphs representing the horizontal and vertical movements for survey monuments SA-1 through SA-4R. Figures 36 and 40 are graphs representing the horizontal and vertical movements for survey monuments SB-1 through SB-7. Figures 37 and 41 are graphs representing the horizontal and vertical movements for survey monuments SC-1 through SC-8. Figures 38 and 42 are graphs representing the horizontal and vertical movements for survey monuments SD-1 through SD-7. The SE-series and SF-series survey monuments are not shown in the tables or graphs because these monuments are located on the lower upstream face of the dam and are normally submerged under the water in the reservoir.

As noted above, a survey was performed in December 2023 that has been included in this report. The survey monuments at the crest (SD-1 to SD-7) showed downstream horizontal movement and settlement. The horizontal movement varied from 0.12 to 0.24 inches. Settlement along the crest was approximately 0.5 inches. The survey monuments at the first downstream bench (SC-1 to SC-8) showed upstream horizontal movement and settlement. The horizontal movement varied from 0.06 to 0.12 inches. Settlement varied from 0.16 to 0.32 inches. These small measure amount of movement have been observed in the past and appear to be within historical changes due to accuracy survey, reservoir water level changes and temperature changes. Based on GEI's review of the historical data and the inspection, there was no significant or unusual movement occurring at the dam.

3.0 Field Evaluations

3.1 Field Evaluation of July 10, 2023

A field evaluation and inspection were performed by Emerson Revolorio and Kody Vandervort of GEI, Cristina Rodriguez, Ryan Tran, and Steve Habiger of the District on July 10, 2023. The reservoir level was reported at Elevation 464.8 ft (NAVD 88). Construction activities for a recycled water pipeline replacement project were ongoing along the access road in the northeast and southeast corners of the San Joaquin reservoir. There were also ongoing construction activities for a new water filter station north of the toe of the dam. Weather conditions were overcast to sunny, with temperature in the mid-60s. Photos taken by GEI are included in the Appendix of this report.

3.1.1 Dam

The upstream slope asphalt concrete lining above the reservoir water level was unchanged from the conditions observed during the December 2023 inspection, see Photos 1-2. The left upstream slope asphalt concrete lining above the reservoir water level showed signs of minor deterioration along with localized areas with fatigue cracking and large potholes, see Photo 15. The condition of the crest appeared to be in similar conditions to what was observed during the December 2022 inspection. The crest of the dam was walked and based on the inspection observations; the asphalt concrete crest surface, curbs, and guard rail had no unusual signs of movement or distress, see Photos 3 and 4. The AC pavement did have some areas where there is noticeable shrinkage-expansion temperature type cracking that was longstanding based on previous inspections of the dam, see Photos 4 and 5. The curbs on the upstream side of the crest had some areas with minor cracks and spalling at joints due to expansion/contraction, see Photo 6. These areas will need to be repaired but not considered a problem to the safety of the dam. No signs of slope instability were seen on the dam surfaces or abutment areas.

The downstream embankment slope, abutments, and groin areas were inspected, and no unusual conditions related to instability, seepage, or movement were found, see Photos 7-10. Minor rill erosion was observed at the left groin, see Photo 10. The pneumatic piezometers control and relief valves were in similar conditions that were observed during the December 2022 inspection, see Photos 11 and 12. According to the District, the gauge readings have not been fluctuating and need to be re-calibrated. The District also mentioned that the pneumatic piezometers have not been maintained.

During the inspection, GEI discovered little to no poison in the rodent control feeder boxes throughout the dam. IRWD reported that they are limited to the amount of poison they can add to the environment. Currently, IRWD is utilizing carbon monoxide as an effective treatment for

ground squirrel control. IRWD still has black feeder control stations for rats and mice near the dam caretaker houses and other IRWD facilities. No active rodent activity was seen on the dam. Minor rill erosion was observed at the downstream toe area of the dam, see Photo 13. Significant corrosion was observed on the safety handrails and ladders at energy dissipator structure, see Photo 14. During the inspection, IRWD mentioned that the junction boxes for the VWP systems were recently repaired. More details on the maintenance work performed on the VWP system is provided in section 2.3.3.1. Overall, the condition of the dam remains largely unchanged from the conditions observed during the December 13, 2022, inspection. Overall, the dam was well maintained with no signs of instability or distress.

3.1.2 Reservoir Liner

GEI inspected the reservoir liner cracking and movement at the left south end of the reservoir. The reservoir liner cracking and movement continues to increase. GEI observed 2 to 4 inches of transverse separation cracking along the south liner, approximately 1 inch increase from last year's inspection. GEI also observed ~2-inches of longitudinal cracking along the liner, see Photos 16-18. GEI did not observe any cracking in the soil below the AC liner. It is recommended the cracks be sealed to prevent any rainfall water infiltration that might exacerbate the cracks. The District should also continue assessing and implementing repairs as needed to the cracking and liner movement. Since the reservoir liner cracking and movement is at the left south end of the reservoir, GEI does not consider this to be an immediate dam safety issue but could impact the reservoir slope and continue maintenance/repair (sealing of cracks) and monitoring of these cracks is recommended.

3.1.3 Spillway

The District informed GEI the reservoir did not spill into the spillways during the review period. The two drop box inlet spillways were inspected on each end of the upstream slope of the dam and were clear of debris and fully functional, see Photo 19 and 21. The concrete surfaces were examined and found in good condition. The entrances to the two 48-inch reinforced concrete pipe (RCP) conduits were clear. The right spillway box inlet had a small stream of water flowing near the bottom of the south-east corner, which was indicative of minor seepage, see Photo 20. The exit at the dissipator structure was clear, see Photo 14. During the inspection, GEI observed overgrown vegetation downstream of the dissipator structure at the exit channel. The dissipator concrete structure had no visual signs of structural deficiencies and was clear for water flow. Overall, the condition of the spillway and dissipator structure remains largely unchanged from the conditions observed during the December 13, 2022, inspection.

3.1.4 Outlet Works

The upstream outlet controls a 24-inch, 60-inch, and three 48-inch butterfly valves located on the slope of the reservoir at various levels, with hydraulic controls that were not exercised during the

inspection. According to the District, outlet valve #4 is not working, #3 and #2 are leaking but working, #1 and #5 are blown out and not working, and Outlet valve #5 is always open. The District stated the outlet valves have not been repaired since the last inspection. The District stated that a work ticket to contract a dive team to repair the valves was submitted a few years ago, however work has not yet been cleared to be performed. During the inspection, the electrical power in the inlet and outlet works control house was not working. The District indicated that this may be due to nearby construction activities. The power should be restored in the outlet works control house.

The downstream blowoff valves were not exercised during the inspection but the District reported they were fully exercised on 4/18/2023.

Overall, the condition of the outlet works remain largely unchanged from the conditions observed during the 12/13/2022 inspection.

3.1.5 Seepage

There were no signs of abnormal seepage observed on the downstream slope, along the groins, or along the toe of the dam. The following seepage conditions were observed and noted during the inspection, see Photos 22-23:

East = 33.94 gpm U/S Collector Drain #1 = Trickling Floor Drain = 4.82 gpm

West = 43.50 gpm U/S Collector Drain #2 = 0.59 gpm Right Groin Drain = 0.73 gpm

Filter = 8.70 gpm D/S Toe = 2.79 gpm

Aside from the U/S Collector Drains, the above seepage amounts are considered within historic levels. The U/S Collector Drains were flowing after not having any recorded seepage since April 2017, see Photo 22. The exposed steel of the U/S Collector Drains was corroded, and the concrete liner of U/S Collector Drain #2 had recently fractured off the steel pipe. The U/S Collector Drain #2 had a recently made U-shaped cut on its elbow, see Photo 22. A leak was observed within the U/S Collector Drain weir box which prevented water from filling up to the V-notch weirs, see Photo 22.

During the inspection, the West Drain sedimentation samples taken in July were drying. The samples had an organic odor and were primarily low plasticity silt. The observed sedimentation samples were similar to the material tested for gradation analysis by Ninyo & Moore (Ninyo & Moore, 2023).

The seepage water observed at the Floor, Toe, Right Groin (6/16/08 drain), and U/S Collector Drains was clear.

4.0 Conclusions and Recommendations

4.1 Conclusions

- 1) Based on the review of available instrumentation data and the field inspection, the dam does not appear to have signs of structural deficiencies, seepage, or instability.
- 2) Spillway approaches, control structures and entrances and exit were clear with no structural deficiencies seen.
- 3) Starting in December 2022, there was a significant increase in rainfall compared to previous years. The largest rainfall occurred between January and March with readings ranging from 3.3 to 5.7 inches per month. A large rainfall event also occurred in August 2023, which recorded 2.3 inches of rain during the month.
- 4) GEI inspected the reservoir liner cracking and movement at the left south end of the reservoir. The cracking and separation cracking has increased since the December 2022 inspection. GEI observed 2 to 4 inches of transverse separation cracking along the south liner. GEI also observed ~2-inches of longitudinal wide cracking along the liner. GEI did not observe any cracking in the soil below the AC liner.
- 5) The right spillway box inlet had a small water leak near the bottom of the south-east corner, which was indicative of seepage.
- 6) The maintenance work performed on the VWP system appears to have fixed the datalogging issue. Piezometers VB-1 through VB-4 appear to be functioning correctly since November 2022, except for VB-1 which started producing error readings after July 2023. Piezometers VB-5 through VB-8 appear to be functioning correctly since May 2023.
- 7) There does not appear to be any lightning protection or grounding rod for the datalogger box.
- 8) Multiple pneumatic piezometers were reporting piezometer levels below the bottom of piezometer tip elevations, and zero readings.
- 9) The pneumatic piezometers' readings could not be checked during the inspection due to poor maintenance of the piezometer read-out equipment. The control valves and relief valves could not be turned because they have not been maintained. The gauge readings have not been fluctuating.

- 10) The pneumatic piezometers are not being read correctly.
- 11) The pneumatic piezometer gauge boxes are heavily corroded.
- 12) Based on inspection discussions, the outlet valves have not been repaired since the December 2022 inspection. The conditions of the outlet valves are similar to what was observed during the December inspection. Outlet valves #1, #4, and #5 continue to not work, and #2 and #3 still have leaks in their hydraulic lines but are working. Outlet valve #5 is always open. The District stated that a work ticket to fix the valves and hydraulic lines was submitted a few years back.
- 13) During the inspection, electrical power to the inlet and outlet works control house was not working.
- 14) The 2023 survey data was reviewed, and the horizontal and vertical survey movement measurements were found normal within historical values and trends except for a minor increase in settlement (0.5-inches) along the crest. These small measure amounts of movement have been observed in the past and appear to be within historical changes due to accuracy survey, reservoir water level changes and temperature changes.
- 15) The AC pavement on the dam crest looked similar to what was observed during the inspection in December 2022.
- 16) The concrete curbs on the upstream crest looked similar to what was observed during the inspection in December 2022.
- 17) The overgrown vegetation downstream and adjacent to the energy dissipator structure appeared unchanged since the December 2022 inspection.
- 18) IRWD is continuing with rodent control measures. IRWD is currently utilizing carbon monoxide as an effective treatment for ground squirrel control. IRWD still has black feeder control stations for rats and mice near the dam caretaker houses and other IRWD facilities.
- 19) Sedimentation samples from the West Drain were observed during the inspection. The samples had an organic odor and were primarily low plasticity silt. Ninyo & Moore performed a hydrometer analysis on the sediment material collected in January 2023. The sediment material was a low plasticity sandy silt and is within the gradation limits of the Zone 1 impervious material based on the project as-built plans. The observed samples during the inspection were similar to the material tested for gradation analysis by Ninyo & Moore.

- 20) Based on review of the as-built plans and hydrometer analysis, it is unlikely that the sedimentation is coming from the dam embankment since the west drain pipe is encased in concrete along the embankment.
- 21) The handrails and ladders at the energy dissipation structure are heavily corroded and need to be replaced.
- 22) Minor rill erosion was observed at the left groin and downstream toe area.
- 23) Seepage was recorded in the U/S Collector Drain #1 for the first time since 2011 and in the U/S Collector Drain #2 for the first time since 2017. The concrete liner to the steel pipes was cracked, and the exposed steel was corroded. The elbow of the U/S Collector Drain #2 also had a U-shaped cut.
- 24) A leak was observed within the U/S collector drains weir box which prevented water from filling up to the V-notch weirs.
- 25) GEI recorded seepage readings at all seepage drains and the seepage water was clear. Aside from the U/S Collector Drains, the seepage amounts were within past historical levels.
- 26) According to IRWD, during November and December 2023, the vault containing the Downstream Toe and Floor drain was overflowing with water. Seepage readings were not taken during this time.
- 27) According to IRWD, the seepage return line near the access road on the right abutment of the dam failed and water started coming up out of the ground. IRWD turned off the seepage return pump station until the seepage return pipeline is replaced. The line break was not repaired and is pending abandonment of pipeline. IRWD is moving forward with an improvement project to replace the seepage return pipeline.

4.2 Recommendations

- 1) The District should start planning in the near future on abandoning the pneumatic piezometers and consider installing new piezometers to monitor the saturation level in embankment zones 3 and 4.
- 2) The District should take a monthly reading of VB-1 at the junction box instead of at the main control box to determine if the sensor is working correctly.
- 3) Install a ground rod for the main datalogger for lightning protection.
- 4) The District should continue monitoring of the liner cracking and movement at the south left end of the reservoir. AC liner cracks should be filled with flexible joint sealant to

prevent any rainfall water infiltration that might exacerbate the cracks and impact the reservoir slope.

- 5) The District should make a comment in their piezometer data report indicating when a well or piezometer is dry.
- 6) The four upstream outlet valves and two blowoff valves need to be repaired.
- 7) A detailed inspection should be conducted for both spillway box inlets. The District should monitor the seepage within the south-east corner of the right spillway concrete box inlet.
- 8) GEI recommends a camera inspection of both spillway conduits be performed at 10-year intervals.
- 9) Repair the minor concrete spalling observed at concrete curb joints.
- 10) The District should continue to measure and record sedimentation being removed from the drains monthly. The reservoir liner should be inspected during low reservoir water levels for signs of settlement and depression along the reservoir underdrains.
- 11) Perform next annual survey during the summer when reservoir water levels are higher, and temperatures are greater to compare changes in movements to surveys conducted during the winter.
- 12) Continue exercising the outlet control valves and emergency blowoffs annually and keep a log showing dates of exercising that can be reviewed during inspections.
- 13) The District should continue collaborating with pest management companies to determine most effective treatment options in controlling rodent activity. In addition, the District should continue collapsing, backfilling, and compacting rodent holes with surrounding material as an ongoing maintenance item throughout the dam.
- 14) Backfill and compact erosion rills as they appear.
- 15) Repair corroded metal equipment, for example piezometer gauge boxes, ladders, and safety handrails near outlet facilities.
- 16) Repair broken and corroded collector drains and the leakage within the collector drain weir box.
- 17) During normal operations at the reservoir, District personnel should continue observing the condition of the dam and appurtenances, looking for signs of distress or movement, increased seepage, or other unusual conditions. Any unusual observations should be

reported immediately to the Dam Safety Engineer.

- 18) GEI recommends continuing following IRWD's Dam Safety Program Guidelines after a 4.0 earthquake.

San Joaquin Dam Action Item Summary

Item	Location	Maintenance	Measures
Pneumatic Piezometers	Dam upstream face	Unreliable readings	The District should start planning in the near future on abandoning the pneumatic piezometers and consider installing new piezometers to monitor the saturation level in embankment zones 3 and 4.
Vibrating Wire Piezometer (VWP)	Junction Box containing VB-1	Erroneous readings	The District should take a monthly reading of VB-1 at the junction box instead of at the main control box to determine if the sensor is working correctly.
VWP Datalogger	Dam Crest	Does not have lightning protection	Install grounding rod.
Movement Surveys	Throughout dam	N/A	Perform next annual survey during the summer when reservoir water levels are higher, and temperatures are greater.
Reservoir Liner Cracking	Left south end of the reservoir	Reservoir liner cracking and movement	The District should continue monitoring the liner cracking and movement. Liner cracks should be filled with flexible joint sealant.
Piezometer Data	Throughout dam and reservoir	N/A	Make a comment in the piezometer data report indicating when a well or piezometer is dry.
Outlet valves	Control house	Outlet valves are not working and leaking at hydraulic control lines	Repair valves.
Inlet and outlet-works control house	Control House	Loss of power	The District should have an emergency plan to restore power to the inlet and outlet works control house when power is lost.
AC pavement	Dam crest	Shrinkage-expansion temperature cracking	Repair AC pavement by filling in cracks and creating a smooth surface.
Spillway Conduits	Right and Left Spillway Inlets	General inspection and seepage in the right inlet	Conduct a detailed inspection of spillway box inlet structure and conduits and continue to monitor seepage point in the right inlet.
Rodent control feeder boxes	Throughout dam	Lack of poison in rodent control feeder boxes	The District should continue collaborating with pest management companies to determine most effective treatment options in controlling rodent activity. In addition, the District should continue collapsing, backfilling, and compacting rodent holes with surrounding material as an ongoing maintenance item throughout the dam.
West Drain	V-notch weirs at blowoff structure and reservoir liner	Minor sedimentation has been measured in the past	Monitor and record amount of sedimentation monthly and evaluate collected information. The reservoir liner should be inspected during low reservoir water level for signs of settlement and depression along the reservoir underdrains.
Concrete curbs	Upstream side of crest	Curbs have minor cracks and spalling at joints	Repair concrete spalling at curbs.
Erosion	Left groin and downstream toe area	Erosion rill	Backfill and compact erosion rills as they appear.
Handrails, ladders, and vault boxes for pneumatic piezometers	Above the energy dissipation structure and along benches	Significant corrosion was observed along safety handrails and ladder near the dissipation structure and at	Repair corroded handrails, ladders, and equipment boxes.

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Item	Location	Maintenance	Measures
		vault boxes for the pneumatic piezometers	
U/S Collector drains	Lower bench at the downstream toe of the dam	The drains are heavily corroded and dry, and the weir box is leaking	Repair corroded drains and weir box leakage areas.

5.0 Limitations

This report presents observations made, conclusions drawn, and opinions formed from (1) a visual inspection of the San Joaquin Dam and its appurtenant structures, and (2) a review of instrumentation data, including piezometer levels, survey data and seepage rates, collected by the District. The purpose of the inspection and review is to assess the safety of the structure for continuing operation. Reuse of this report for any other purposes, in part or in whole, is at the sole risk of the user.

In the context intended above, the term “safety” is interpreted to be restricted specifically to major structural and control features of the project in regard to their adequacy against possible catastrophic failure due to natural or operational events. No consideration is given herein to those public safety aspects related to voluntary occupancy or use of project features in such manner as to result in personal mishaps.

The undersigned who performed the inspection and reviewed the instrumentation data and prepared this report, desire that it be clearly understood that the conclusions regarding the condition and safety of the dam and related facilities are not guaranteed but do represent our best judgment. Inevitably, such judgment must be recognized to be affected to an uncertain degree by the practical limitations that affect all dam evaluations, relative principally to approximate knowledge of the existing properties of the structures and their foundations, the potential for storm or seismic damage, and the uncertainties that are known to exist in estimating margins of this report represents the results of our surveillance program for San Joaquin Dam, covering safety.

The conclusions and professional opinions presented herein were developed by GEI Consultants, Inc. for the Irvine Ranch Water District in accordance with generally accepted engineering principles and practices. We make no other warranty, either expressed or implied.

6.0 References

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V&A Consulting Engineers, 2022, Irvine Ranch Water District San Joaquin Dam Toe Drain CCTV Assessment, Newport Beach, CA, by V&A Consulting Engineers, January 16, 2023.

Tables

TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-1			MW-2		
Top of Well Elevation -->			487.80			489.00		
Bottom of Well Elevation -->			363.20			409.90		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/31/2007	405.80		88.70	399.10		66.20	422.80	
2/27/2007	426.80		88.70	399.10		63.00	426.00	
3/28/2007	438.80		88.80	399.00		66.80	422.20	
4/26/2007	450.90		88.20	399.60		66.60	422.40	
5/23/2007	461.40		88.00	399.80		66.90	422.10	
6/27/2007	457.20		87.10	400.70		66.10	422.90	
7/26/2007	445.50		87.30	400.50		65.80	423.20	
8/28/2007	434.60		86.90	400.90		65.50	423.50	
9/25/2007	416.80		86.90	400.90		65.40	423.60	
10/24/2007	404.50		86.70	401.10		65.00	424.00	
11/27/2007	422.20		86.70	401.10		65.60	423.40	
1/3/2008	443.20		86.40	401.40		65.40	423.60	
1/29/2008	452.20		86.50	401.30		65.04	423.96	
2/27/2008	460.80		85.90	401.90		64.70	424.30	
3/26/2008	468.00		85.70	402.10		63.90	425.10	
4/29/2008	468.60		83.70	404.10		62.90	426.10	
5/29/2008	464.70		84.70	403.10		62.60	426.40	
6/26/2008	455.70		84.20	403.60		61.90	427.10	
7/29/2008	447.30	0.00	84.00	403.80		61.20	427.80	
8/28/2008	438.80	0.00	83.50	404.30		58.20	430.80	
9/26/2008	430.70	0.00	83.30	404.50		60.90	428.10	
10/29/2008	412.50	0.00	83.40	404.40		61.10	427.90	
11/25/2008	404.70	2.60	83.30	404.50		60.70	428.30	
12/30/2008	440.90	3.42	83.40	404.40		61.00	428.00	
1/28/2009	463.70	0.17	83.00	404.80		61.00	428.00	
2/25/2009	470.10	3.35	82.60	405.20		60.80	428.20	
3/26/2009	469.40	0.19	82.20	405.60		60.60	428.40	
4/29/2009	466.90	0.07	82.20	405.60		60.70	428.30	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-1			MW-2		
Top of Well Elevation -->			487.80			489.00		
Bottom of Well Elevation -->			363.20			409.90		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
5/18/2009	466.70	0.00	81.90	405.90		60.70	428.30	
5/29/2009	465.00	0.00	81.80	406.00		60.60	428.40	
6/30/2009	460.20	0.00	81.30	406.50		60.60	428.40	
7/30/2009	451.10	0.00	81.20	406.60		60.10	428.90	
8/25/2009	440.10	0.00	81.00	406.80		59.90	429.10	
9/30/2009	432.20	0.00	81.10	406.70		59.85	429.15	
10/29/2009	431.40	0.53	81.20	406.60		60.30	428.70	
12/1/2009	427.40	0.00	81.10	406.70		60.90	428.10	
12/29/2009	448.10	2.06	81.36	406.40		61.30	427.70	
1/27/2010	465.60	4.62	80.90	406.90		61.50	427.50	
2/25/2010	470.20	2.51	81.40	406.40		61.50	427.50	
3/29/2010	465.70	0.99	80.60	407.20		61.40	427.60	
4/4/2010	465.00		80.50	407.30		61.40	427.60	
4/27/2010	468.40	1.23	80.50	407.30		61.20	427.80	
5/27/2010	463.30	0.05	80.70	407.10		61.60	427.40	
6/30/2010	454.70	0.00	80.50	407.30		61.60	427.40	
7/28/2010	445.60	0.00	80.60	407.20		61.60	427.40	
8/31/2010	437.10	0.00	80.80	407.00		62.20	426.80	
9/29/2010	422.70	0.00	80.60	407.20		62.30	426.70	
10/27/2010	426.40	2.38	81.00	406.80		62.80	426.20	
11/29/2010	439.80	0.97	81.50	406.30		63.40	425.60	
12/30/2010	456.60	8.62	80.90	406.90		63.10	425.90	
2/1/2011	468.90	0.92	80.60	407.20		62.90	426.10	
2/23/2011	469.00	0.99	80.60	407.20		62.80	426.20	
3/29/2011	470.30	2.93	80.50	407.30		62.50	426.50	
4/27/2011	464.80	0.19	80.25	407.60		62.55	426.45	
5/26/2011	457.30	0.48	80.10	407.70		62.60	426.40	
6/28/2011	443.50	0.05	79.90	407.90		62.70	426.30	

Notes:

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-1			MW-2		
Top of Well Elevation -->			487.80			489.00		
Bottom of Well Elevation -->			363.20			409.90		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
7/29/2011	425.10	0.00	80.25	407.60		62.80	426.20	
8/24/2011	418.00	0.00	80.40	407.40		62.90	426.10	
9/27/2011	400.90	0.12	80.60	407.20		63.30	425.70	
10/26/2011	402.20	1.25	81.20	406.60		63.90	425.10	
11/30/2011	425.10	1.38	81.30	406.50		63.80	425.20	
12/21/2011	435.70	0.32	81.50	406.30		64.20	424.80	
1/24/2012	441.40	0.53	81.70	406.10		64.70	424.30	
2/28/2012	448.40	0.42	82.10	405.70		65.20	423.80	
3/26/2012	452.70	1.06	81.80	406.00		64.90	424.10	
4/23/2012	463.40	1.32	81.40	406.40		64.80	424.20	
5/30/2012	457.30	0.02	81.50	406.30		64.70	424.30	
6/13/2012	452.90	0.02	81.30	406.50		64.70	424.30	
6/26/2012	450.20	0.00	81.40	406.40		64.90	424.10	
7/24/2012	439.80	0.00	81.60	406.20		65.10	423.90	
8/8/2012	437.60	0.12	81.50	406.30		64.30	424.70	
8/22/2012	433.40	0.00	81.55	406.30		65.20	423.80	
8/29/2012	431.30	0.00	81.50	406.30		65.10	423.90	
9/25/2012	420.80	0.00	81.75	406.10		65.30	423.70	
10/31/2012	412.30	0.26	82.30	405.50		65.50	423.50	
11/27/2012	420.80	0.58	82.90	404.90		65.70	423.30	
12/18/2012	448.00	1.44	82.30	405.50		65.30	423.70	
1/29/2013	468.60	1.18	82.40	405.40		65.50	423.50	
2/28/2013	469.20	0.30	81.90	405.90		64.80	424.20	
3/27/2013	468.30	0.50	81.35	406.50		64.70	424.30	
4/25/2013	462.70	0.00	81.20	406.60		64.60	424.40	
5/21/2013	454.20	0.00	81.10	406.70		64.60	424.40	
6/25/2013	439.30	0.00	81.20	406.60		64.75	424.25	
7/23/2013	431.50	0.00	81.40	406.40		64.80	424.20	

Notes:

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-1			MW-2		
Top of Well Elevation -->			487.80			489.00		
Bottom of Well Elevation -->			363.20			409.90		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
8/21/2013	418.00	0.00	81.70	406.10		64.90	424.10	
9/24/2013	404.00	0.00	82.00	405.80		65.00	424.00	
10/29/2013	400.60	0.00	82.50	405.30		65.40	423.60	
11/26/2013	407.90	0.44	83.00	404.80		69.70	419.30	Omitted
12/19/2013	425.80	0.54	82.50	405.30		66.40	422.60	
1/28/2014	439.70	0.00	83.20	404.60		66.50	422.50	
2/25/2014	449.70	0.83	83.20	404.60		66.70	422.30	
3/26/2014	465.10		83.00	404.80		66.80	422.20	
3/28/2014	465.70	1.15	83.20	404.60		66.90	422.10	
4/29/2014	465.30	0.43	82.90	404.90		66.90	422.10	
5/28/2014	450.60	0.00	82.90	404.90		66.90	422.10	
6/25/2014	440.10	0.00	82.80	405.00		67.90	421.10	
7/29/2014	431.20	0.00	83.00	404.80		67.00	422.00	
8/26/2014	419.50	0.02	83.20	404.60		67.20	421.80	
9/23/2014	405.30	0.00	83.30	404.50		67.00	422.00	
10/29/2014	400.90	0.00	83.60	404.20		66.80	422.20	
11/25/2014	410.90	0.25	84.20	403.60		67.30	421.70	
12/30/2014	430.60	2.94	83.80	404.00		66.90	422.10	
1/27/2015	466.70	0.83	83.70	404.10		67.10	421.90	
2/25/2015	468.90	0.69	83.40	404.40		67.10	421.90	
3/26/2015	465.90	0.61	83.10	404.70		66.80	422.20	
4/28/2015	465.70	0.20	82.50	405.30		66.50	422.50	
5/28/2015	466.40	1.08	82.50	405.30		66.30	422.70	
6/30/2015	454.50	0.00	82.00	405.80		66.10	422.90	
7/28/2015	445.60	0.00	82.20	405.60		65.90	423.10	
8/28/2015	437.60	0.00	82.20	405.60		66.00	423.00	
9/24/2015	426.90	1.51	82.40	405.40		65.80	423.20	
10/27/2015	415.40	0.49	82.70	405.10		66.00	423.00	

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PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-1			MW-2		
Top of Well Elevation -->			487.80			489.00		
Bottom of Well Elevation -->			363.20			409.90		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
11/19/2015	412.90	0.09	83.00	404.80		66.70	422.30	
12/22/2015	425.50	0.69	83.10	404.70		66.90	422.10	
1/27/2016	463.60	2.86	83.10	404.70		67.50	421.50	
2/25/2016	468.90	0.25	83.50	404.30		67.30	421.70	
3/30/2016	468.00	1.44	82.80	405.00		62.20	426.80	Omitted
4/28/2016	461.30	0.30	82.70	405.10		67.20	421.80	
5/25/2016	451.30	0.18	82.85	405.00		67.30	421.70	
6/28/2016	414.10	0.00	82.80	405.00		67.30	421.70	
7/27/2016	434.20	0.00	82.80	405.00		67.40	421.60	
8/23/2016	418.60	0.00	83.30	404.50		67.50	421.50	
9/27/2016	406.40	0.00	83.40	404.40		67.30	421.70	
10/26/2016	404.00	0.48	84.00	403.80		67.40	421.60	
11/22/2016	413.60	1.13	84.40	403.40		67.70	421.30	
12/20/2016	441.10	3.48	84.60	403.20		67.65	421.35	
1/26/2017	471.60	5.67	84.50	403.30		67.70	421.30	
2/24/2017	472.05	3.95	84.10	403.70		67.50	421.50	
2/25/2017	472.00		84.05	403.80		67.45	421.55	
2/26/2017	472.00		84.10	403.70		67.40	421.60	
2/27/2017	472.00		83.90	403.90		67.50	421.50	
2/28/2017	471.90		83.90	403.90		68.21	420.79	
3/1/2017	471.90		84.20	403.60		67.60	421.40	
3/2/2017	471.90		84.00	403.80		67.36	421.64	
3/29/2017	467.90	0.10	83.70	404.10		67.30	421.70	
4/27/2017	457.60	0.04	83.30	404.50		67.10	421.90	
5/23/2017	453.50	0.43	83.40	404.40		67.10	421.90	
6/21/2017	447.40	0.00	83.20	404.60		66.80	422.20	
7/26/2017	435.10	0.00	83.40	404.40		66.80	422.20	
8/25/2017	420.10	0.00	83.40	404.40		66.10	422.90	

Notes:

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SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-1			MW-2		
Top of Well Elevation -->			487.80			489.00		
Bottom of Well Elevation -->			363.20			409.90		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
9/27/2017	407.10	0.00	83.60	404.20		65.60	423.40	
10/26/2017	395.00	0.00	83.80	404.00		66.30	422.70	
11/28/2017	409.00	0.09	84.00	403.80		66.20	422.80	
12/20/2017	416.80	0.00	84.50	403.30		66.60	422.40	
1/24/2018	434.50	1.31	84.40	403.40		65.90	423.10	
2/21/2018	443.10	0.29	84.20	403.60		67.10	421.90	
3/29/2018	453.00	1.28	84.10	403.70		67.40	421.60	
4/26/2018	449.10	0.05	84.00	403.80		67.30	421.70	
5/31/2018	453.10	0.20	83.80	404.00		67.40	421.60	
6/28/2018	448.20	0.00	83.70	404.10		67.30	421.70	
7/25/2018	440.40	0.00	83.60	404.20		66.00	423.00	
8/22/2018	427.10	0.00	83.70	404.10		66.90	422.10	
9/27/2018	439.60	0.00	84.30	403.50		67.10	421.90	
10/18/2018	405.30	0.90	84.20	403.60		67.30	421.70	
11/28/2018	408.60	1.19	84.50	403.30		67.80	421.20	
12/19/2018	436.00	1.99	84.70	403.10		67.50	421.50	
1/30/2019	463.80	4.71	84.40	403.40		67.40	421.60	
2/27/2019	466.20	6.55	84.30	403.50		67.30	421.70	
3/27/2019	463.30	1.34	84.00	403.80		66.60	422.40	
4/29/2019	453.00	0.13	83.40	404.40		66.80	422.20	
5/30/2019	451.80	0.64	83.40	404.40		66.50	422.50	
6/26/2019	446.20	0.01	83.30	404.50		66.30	422.70	
7/5/2019	39.40	0.00	83.40	404.40		66.30	422.70	
7/30/2019	434.80	0.00	82.80	405.00		66.10	422.90	
8/27/2019	424.40	0.00	82.60	405.20		66.20	422.80	
9/26/2019	405.60	0.00	82.80	405.00		66.50	422.50	
10/22/2019	400.50	0.00	83.00	404.80		66.40	422.60	
11/26/2019	412.80	3.13	83.00	404.80		66.70	422.30	

Notes:

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SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-1			MW-2		
Top of Well Elevation -->			487.80			489.00		
Bottom of Well Elevation -->			363.20			409.90		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
12/18/2019	447.40	4.44	83.30	404.50		66.80	422.20	
1/28/2020	465.40	0.20	82.90	404.90		66.80	422.20	
2/26/2020	459.60	0.14	82.70	405.10		66.40	422.60	
3/24/2020	470.70	3.49	82.60	405.20		66.70	422.30	
4/29/2020	467.60	3.65	81.80	406.00		66.10	422.90	
5/27/2020	459.10	0.02	81.60	406.20		65.80	423.20	
6/23/2020	447.00	0.00	81.70	406.10		65.30	423.70	
7/30/2020	434.00	0.00	81.70	406.10		68.50	420.50	
8/26/2020	417.70	0.00	81.70	406.10		66.00	423.00	
9/29/2020	403.60	0.00	82.40	405.40		66.40	422.60	
10/28/2020	404.50	0.00	82.50	405.30		67.60	421.40	
11/24/2020	413.50	0.42	82.80	405.00		67.00	422.00	
12/22/2020	408.00	1.13	83.00	404.80		67.00	422.00	
1/27/2021	435.60	2.25	83.30	404.50		67.20	421.80	
2/25/2021	457.30	0.05	82.90	404.90		66.70	422.30	
3/23/2021	465.90	1.36	82.70	405.10		67.60	421.40	
4/27/2021	462.10	0.04	82.50	405.30		67.00	422.00	
5/26/2021	455.00	0.03	82.50	405.30		66.80	422.20	
6/30/2021	437.90	0.00	82.20	405.60		66.60	422.40	
7/29/2021	423.60	0.07	62.50	425.30	Omitted	66.90	422.10	
8/24/2021	408.00	0.00	82.30	405.50		67.00	422.00	
9/29/2021	398.00	0.04	82.90	404.90		67.10	421.90	
10/26/2021	417.00	0.87	83.40	404.40		67.20	421.80	
11/25/2021	427.90	0.00	83.20	404.60		67.20	421.80	
12/21/2021	427.90	4.77	83.50	404.30		67.20	421.80	
1/27/2022	467.80	0.07	83.20	404.60		67.10	421.90	
2/23/2022	464.80	0.29	82.90	404.90		67.20	421.80	
3/23/2022	464.40	1.08	82.70	405.10		67.10	421.90	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-1			MW-2		
Top of Well Elevation -->			487.80			489.00		
Bottom of Well Elevation -->			363.20			409.90		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
4/26/2022	467.10	0.03	82.40	405.40		67.00	422.00	
5/26/2022	464.80	0.08	82.30	405.50		66.90	422.10	
6/28/2022	457.30	0.00	82.40	405.40		67.00	422.00	
7/26/2022	440.70	0.00	82.50	405.30		67.10	421.90	
8/25/2022	429.50	0.05	82.50	405.30		67.10	421.90	
9/28/2022	410.80	0.35	82.70	405.10		67.20	421.80	
10/25/2022	407.30	0.35	83.30	404.50		67.30	421.70	
11/23/2022	427.00	0.80	83.10	404.70		67.40	421.60	
12/20/2022	441.90	2.14	83.90	403.90		67.50	421.50	
1/26/2023	470.30	5.64	83.70	404.10		67.30	421.70	
2/23/2023	471.00	3.33	59.10	428.70	Omitted	67.30	421.70	
3/28/2023	471.20	5.72	83.30	404.50		67.20	421.80	
4/25/2023	469.40	0.16	83.00	404.80		67.00	422.00	
5/23/2023	471.00	1.35	82.80	405.00		66.90	422.10	
6/28/2023	468.80	0.10	82.59	405.21		66.71	422.29	
7/27/2023	455.90	0.00	82.60	405.20		66.60	422.40	
8/29/2023	453.80	2.28	82.50	405.30		66.80	422.20	
9/26/2023	445.00	0.00	82.70	405.10		66.80	422.20	
10/26/2023	437.40	0.21	82.60	405.20		66.80	422.20	
11/29/2023	425.00	0.78	82.50	405.30		66.10	422.90	
12/21/2023	421.00	1.60	82.50	405.30		67.00	422.00	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-3			MW-4		
Top of Well Elevation -->			509.00			489.90		
Bottom of Well Elevation -->			423.00			444.50		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/31/2007	405.80		86.50	422.50		43.40	446.50	Dry
2/27/2007	426.80		87.50	421.50		45.50	444.40	Dry
3/28/2007	438.80		86.90	422.10				Dry
4/26/2007	450.90		87.60	421.40		45.30	444.60	
5/23/2007	461.40		86.90	422.10		45.70	444.20	Dry
6/27/2007	457.20		86.90	422.10		45.70	444.20	Dry
7/26/2007	445.50		86.60	422.40		45.70	444.20	Dry
8/28/2007	434.60		86.90	422.10		45.20	444.70	Dry
9/25/2007	416.80		87.00	422.00		45.30	444.60	Dry
10/24/2007	404.50		86.90	422.10		45.70	444.20	
11/27/2007	422.20		86.90	422.10		45.20	444.70	Dry
1/3/2008	443.20		86.90	422.10		45.20	444.50	Dry
1/29/2008	452.20		86.90	422.10		45.25	444.70	Dry
2/27/2008	460.80		86.60	422.40		45.40	444.40	Dry
3/26/2008	468.00		86.90	422.10		45.20	444.60	Dry
4/29/2008	468.60		88.00	421.00		45.50	444.70	Dry
5/29/2008	464.70		87.00	422.00		45.30	444.50	Dry
6/26/2008	455.70		86.30	422.70		45.20	444.70	Dry
7/29/2008	447.30	0.00	87.00	422.00		45.40	444.70	Dry
8/28/2008	438.80	0.00	89.30	419.70		45.20	444.70	Dry
9/26/2008	430.70	0.00	89.60	419.40		45.20	444.70	Dry
10/29/2008	412.50	0.00	87.50	421.50		45.20	444.70	Dry
11/25/2008	404.70	2.60	86.90	422.10		45.20	444.70	Dry
12/30/2008	440.90	3.42	86.90	422.10		45.20	444.70	Dry
1/28/2009	463.70	0.17	86.70	422.30		45.20	444.70	Dry
2/25/2009	470.10	3.35	85.40	423.60		45.10	444.80	Dry
3/26/2009	469.40	0.19	86.50	422.50		45.20	444.70	Dry
4/29/2009	466.90	0.07	86.80	422.20		45.40	444.50	Dry

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-3			MW-4		
Top of Well Elevation -->			509.00			489.90		
Bottom of Well Elevation -->			423.00			444.50		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
5/18/2009	466.70	0.00	87.20	421.80		45.20	444.70	Dry
5/29/2009	465.00	0.00	85.30	423.70		45.30	444.60	Dry
6/30/2009	460.20	0.00	87.00	422.00		45.40	444.50	Dry
7/30/2009	451.10	0.00	87.00	422.00		45.20	444.70	Dry
8/25/2009	440.10	0.00	86.40	422.60		45.20	444.70	Dry
9/30/2009	432.20	0.00	87.00	422.00		45.20	444.70	Dry
10/29/2009	431.40	0.53	87.04	421.96		45.25	444.70	Dry
12/1/2009	427.40	0.00	88.60	420.40		45.70	444.20	Dry
12/29/2009	448.10	2.06	87.00	422.00		45.25	444.70	Dry
1/27/2010	465.60	4.62	88.60	420.40		45.00	444.90	Dry
2/25/2010	470.20	2.51	87.00	422.00		45.20	444.70	Dry
3/29/2010	465.70	0.99	87.20	421.80		45.20	444.70	Dry
4/4/2010	465.00		87.10	421.90		45.30	444.60	Dry
4/27/2010	468.40	1.23	88.60	420.40		45.30	444.60	Dry
5/27/2010	463.30	0.05	86.90	422.10		45.30	444.60	Dry
6/30/2010	454.70	0.00	87.00	422.00		45.00	444.90	Dry
7/28/2010	445.60	0.00	87.10	421.90		45.20	444.70	Dry
8/31/2010	437.10	0.00	87.10	421.90		45.30	444.60	Dry
9/29/2010	422.70	0.00	87.00	422.00		45.30	444.60	Dry
10/27/2010	426.40	2.38	86.90	422.10		45.30	444.60	Dry
11/29/2010	439.80	0.97	88.50	420.50		45.20	444.70	Dry
12/30/2010	456.60	8.62	87.40	421.60		45.40	444.50	Dry
2/1/2011	468.90	0.92	87.00	422.00		45.20	444.70	
2/23/2011	469.00	0.99	87.10	421.90		45.25	444.70	Dry
3/29/2011	470.30	2.93	87.30	421.70		45.20	444.70	Dry
4/27/2011	464.80	0.19	87.00	422.00		45.25	444.70	Dry
5/26/2011	457.30	0.48	88.20	420.80		45.30	444.60	Dry
6/28/2011	443.50	0.05	88.00	421.00		45.30	444.60	Dry

Notes:

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-3			MW-4		
Top of Well Elevation -->			509.00			489.90		
Bottom of Well Elevation -->			423.00			444.50		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
7/29/2011	425.10	0.00	88.30	420.70		45.25	444.70	Dry
8/24/2011	418.00	0.00	87.00	422.00		45.20	444.70	Dry
9/27/2011	400.90	0.12	87.30	421.70		45.25	444.70	Dry
10/26/2011	402.20	1.25	88.50	420.50		45.80	444.10	
11/30/2011	425.10	1.38	87.00	422.00		45.20	444.70	
12/21/2011	435.70	0.32	88.30	420.70		45.60	444.30	
1/24/2012	441.40	0.53	87.00	422.00		45.20	444.70	
2/28/2012	448.40	0.42	88.20	420.80		45.60	444.30	
3/26/2012	452.70	1.06	86.90	422.10		45.20	444.70	
4/23/2012	463.40	1.32	86.30	422.70		45.80	444.10	
5/30/2012	457.30	0.02	86.60	422.40		46.40	443.50	
6/13/2012	452.90	0.02	86.60	422.40		45.25	444.70	
6/26/2012	450.20	0.00	89.50	419.50		45.30	444.60	
7/24/2012	439.80	0.00	88.80	420.20		46.50	443.40	
8/8/2012	437.60	0.12	88.80	420.20		46.20	443.70	
8/22/2012	433.40	0.00	86.90	422.10		45.20	444.70	
8/29/2012	431.30	0.00	86.10	422.90		45.30	444.60	
9/25/2012	420.80	0.00	87.00	422.00		45.20	444.70	
10/31/2012	412.30	0.26	89.40	419.60		46.40	443.50	
11/27/2012	420.80	0.58	86.90	422.10		45.10	444.80	
12/18/2012	448.00	1.44	86.80	422.20		45.30	444.60	
1/29/2013	468.60	1.18	88.80	420.20		46.50	443.40	
2/28/2013	469.20	0.30	86.90	422.10		46.70	443.20	
3/27/2013	468.30	0.50	87.10	421.90		45.20	444.70	
4/25/2013	462.70	0.00	87.00	422.00		45.25	444.70	
5/21/2013	454.20	0.00	86.90	422.10		45.20	444.70	
6/25/2013	439.30	0.00	87.00	422.00		45.20	444.70	
7/23/2013	431.50	0.00	87.10	421.90		45.30	444.60	Dry

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-3			MW-4		
Top of Well Elevation -->			509.00			489.90		
Bottom of Well Elevation -->			423.00			444.50		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
8/21/2013	418.00	0.00	86.90	422.10		45.20	444.70	Dry
9/24/2013	404.00	0.00	86.90	422.10		45.00	444.90	Dry
10/29/2013	400.60	0.00	87.30	421.70		45.30	444.60	Dry
11/26/2013	407.90	0.44	87.30	421.70		45.20	444.70	Dry
12/19/2013	425.80	0.54	86.70	422.30		45.20	444.70	Dry
1/28/2014	439.70	0.00	86.70	422.30		45.20	444.70	Dry
2/25/2014	449.70	0.83	86.70	422.30		45.30	444.60	
3/26/2014	465.10		88.70	420.30		45.40	444.50	Dry
3/28/2014	465.70	1.15	87.00	422.00		45.20	444.70	
4/29/2014	465.30	0.43	89.10	419.90		45.10	444.80	Dry
5/28/2014	450.60	0.00	86.80	422.20		45.20	444.70	Dry
6/25/2014	440.10	0.00	86.90	422.10		45.10	444.80	
7/29/2014	431.20	0.00	88.30	420.70		45.30	444.60	Dry
8/26/2014	419.50	0.02	86.90	422.10		45.20	444.70	Dry
9/23/2014	405.30	0.00	86.80	422.20		44.60	445.30	Dry
10/29/2014	400.90	0.00	88.10	420.90		45.30	444.60	Dry
11/25/2014	410.90	0.25	86.80	422.20		45.20	444.70	Dry
12/30/2014	430.60	2.94	86.80	422.20		45.20	444.70	Dry
1/27/2015	466.70	0.83	88.30	420.70		45.30	444.60	Dry
2/25/2015	468.90	0.69	86.80	422.20		45.20	444.70	Dry
3/26/2015	465.90	0.61	86.90	422.10		45.10	444.80	
4/28/2015	465.70	0.20	87.00	422.00		45.20	444.70	Dry
5/28/2015	466.40	1.08	88.30	420.70		45.50	444.40	Dry
6/30/2015	454.50	0.00	87.00	422.00		45.20	444.70	Dry
7/28/2015	445.60	0.00	86.90	422.10		45.20	444.70	Dry
8/28/2015	437.60	0.00	86.90	422.10		45.00	444.90	
9/24/2015	426.90	1.51	86.90	422.10		45.20	444.70	Dry
10/27/2015	415.40	0.49	87.30	421.70		45.30	444.60	Dry

Notes:

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-3			MW-4		
Top of Well Elevation -->			509.00			489.90		
Bottom of Well Elevation -->			423.00			444.50		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
11/19/2015	412.90	0.09	87.00	422.00		45.20	444.70	
12/22/2015	425.50	0.69	87.80	421.20		45.50	444.40	Dry
1/27/2016	463.60	2.86	87.00	422.00		45.30	444.60	Dry
2/25/2016	468.90	0.25	87.20	421.80		44.80	445.10	
3/30/2016	468.00	1.44	87.10	421.90		45.30	444.60	Dry
4/28/2016	461.30	0.30	88.30	420.70		44.40	445.50	Dry
5/25/2016	451.30	0.18	87.00	422.00		45.30	444.60	Dry
6/28/2016	414.10	0.00	87.10	421.90		45.20	444.70	Dry
7/27/2016	434.20	0.00	87.20	421.80		45.40	444.50	Dry
8/23/2016	418.60	0.00	86.80	422.20		45.20	444.70	Dry
9/27/2016	406.40	0.00	87.20	421.80		45.40	444.50	Dry
10/26/2016	404.00	0.48	86.30	422.70		45.30	444.60	Dry
11/22/2016	413.60	1.13	88.30	420.70		45.40	444.50	Dry
12/20/2016	441.10	3.48	88.30	420.70		45.30	444.60	Dry
1/26/2017	471.60	5.67	84.40	424.60		45.20	444.70	Dry
2/24/2017	472.05	3.95	88.30	420.70		45.30	444.60	Dry
2/25/2017	472.00		88.30	420.70		45.20	444.70	Dry
2/26/2017	472.00		88.30	420.70		45.20	444.70	Dry
2/27/2017	472.00		88.30	420.70		45.20	444.70	Dry
2/28/2017	471.90		88.00	421.00		45.30	444.60	Dry
3/1/2017	471.90		87.00	422.00		45.20	444.70	Dry
3/2/2017	471.90		86.90	422.10		45.30	444.60	Dry
3/29/2017	467.90	0.10	87.20	421.80		45.10	444.80	Dry
4/27/2017	457.60	0.04	86.90	422.10		45.10	444.80	Dry
5/23/2017	453.50	0.43	88.30	420.70		45.30	444.60	Dry
6/21/2017	447.40	0.00	87.10	421.90		45.20	444.70	Dry
7/26/2017	435.10	0.00	87.70	421.30		45.30	444.60	Dry
8/25/2017	420.10	0.00	86.90	422.10		45.20	444.70	Dry

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-3			MW-4		
Top of Well Elevation -->			509.00			489.90		
Bottom of Well Elevation -->			423.00			444.50		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
9/27/2017	407.10	0.00	86.70	422.30		45.30	444.60	Dry
10/26/2017	395.00	0.00	86.80	422.20		45.40	444.50	Dry
11/28/2017	409.00	0.09	86.90	422.10		45.30	444.60	Dry
12/20/2017	416.80	0.00	87.20	421.80		45.00	444.90	Dry
1/24/2018	434.50	1.31	88.50	420.50		45.70	444.20	Dry
2/21/2018	443.10	0.29	84.20	424.80		45.50	444.40	
3/29/2018	453.00	1.28	86.50	422.50		45.00	444.90	Dry
4/26/2018	449.10	0.05	88.30	420.70		45.30	444.60	Dry
5/31/2018	453.10	0.20	87.20	421.80		45.20	444.70	Dry
6/28/2018	448.20	0.00	86.90	422.10		45.10	444.80	Dry
7/25/2018	440.40	0.00	70.60	438.40	Omitted	45.40	444.50	Dry
8/22/2018	427.10	0.00	87.00	422.00		45.30	444.60	Dry
9/27/2018	439.60	0.00	87.00	422.00		45.30	444.60	Dry
10/18/2018	405.30	0.90	87.00	422.00		45.30	444.60	Dry
11/28/2018	408.60	1.19	86.90	422.10		45.50	444.40	Dry
12/19/2018	436.00	1.99	88.30	420.70		45.20	444.70	
1/30/2019	463.80	4.71	88.7	420.30	Dry	45.3	444.60	Dry
2/27/2019	466.20	6.55	87.8	421.20	Dry	45.5	444.40	Dry
3/27/2019	463.30	1.34	86.9	422.10	Dry	45.2	444.70	Dry
4/29/2019	453.00	0.13	88.7	420.30	Dry	45.3	444.60	Dry
5/30/2019	451.80	0.64	87.8	421.20	Dry	45.4	444.50	Dry
6/26/2019	446.20	0.01	88	421.00	Dry	45.4	444.50	Dry
7/5/2019	39.40	0.00	87.1	421.90	Dry	45.3	444.60	Dry
7/30/2019	434.80	0.00	87.2	421.80		45.3	444.60	Dry
8/27/2019	424.40	0.00	88.70	420.30		45.30	444.60	Dry
9/26/2019	405.60	0.00	87.00	422.00	Dry	45.30	444.60	Dry
10/22/2019	400.50	0.00	88.30	420.70	Dry	45.20	444.70	Dry
11/26/2019	412.80	3.13	87.90	421.10	Dry	45.40	444.50	Dry

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-3			MW-4		
Top of Well Elevation -->			509.00			489.90		
Bottom of Well Elevation -->			423.00			444.50		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
12/18/2019	447.40	4.44	86.70	422.30		45.40	444.50	Dry
1/28/2020	465.40	0.20	88.70	420.30	Dry	45.10	444.80	Dry
2/26/2020	459.60	0.14	87.00	422.00		46.02	443.88	
3/24/2020	470.70	3.49	86.90	422.10		45.30	444.60	
4/29/2020	467.60	3.65	88.20	420.80		45.70	444.20	
5/27/2020	459.10	0.02	88.60	420.40		45.20	444.70	
6/23/2020	447.00	0.00	87.10	421.90		45.30	444.60	
7/30/2020	434.00	0.00	88.50	420.50		45.60	444.30	
8/26/2020	417.70	0.00	86.70	422.30		45.10	444.80	
9/29/2020	403.60	0.00	88.30	420.70		45.30	444.60	
10/28/2020	404.50	0.00	87.70	421.30		45.50	444.40	
11/24/2020	413.50	0.42	87.00	422.00		45.10	444.80	
12/22/2020	408.00	1.13	87.00	422.00		45.40	444.50	
1/27/2021	435.60	2.25	88.30	420.70		45.60	444.30	
2/25/2021	457.30	0.05	88.30	420.70		45.70	444.20	
3/23/2021	465.90	1.36	86.90	422.10		45.20	444.70	
4/27/2021	462.10	0.04	89.10	419.90		45.60	444.30	
5/26/2021	455.00	0.03	88.20	420.80		45.30	444.60	
6/30/2021	437.90	0.00	86.80	422.20		45.40	444.50	
7/29/2021	423.60	0.07	87.10	421.90		44.90	445.00	
8/24/2021	408.00	0.00	87.10	421.90		45.70	444.20	
9/29/2021	398.00	0.04	87.00	422.00		45.40	444.50	
10/26/2021	417.00	0.87	86.90	422.10		45.30	444.60	
11/25/2021	427.90	0.00	87.50	421.50		45.10	444.80	
12/21/2021	427.90	4.77	88.90	420.10		44.90	445.00	
1/27/2022	467.80	0.07	86.90	422.10	Dry	45.10	444.80	
2/23/2022	464.80	0.29	88.30	420.70	Dry	45.30	444.60	
3/23/2022	464.40	1.08	86.90	422.10	Dry	45.10	444.80	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-3			MW-4		
Top of Well Elevation -->			509.00			489.90		
Bottom of Well Elevation -->			423.00			444.50		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
4/26/2022	467.10	0.03	87.30	421.70	Dry	45.30	444.60	
5/26/2022	464.80	0.08	87.80	421.20	Dry	45.70	444.20	Dry
6/28/2022	457.30	0.00	86.70	422.30	Dry	45.20	444.70	
7/26/2022	440.70	0.00	88.70	420.30	Dry	45.30	444.60	
8/25/2022	429.50	0.05	88.70	420.30	Dry	45.30	444.60	
9/28/2022	410.80	0.35	88.80	420.20	Dry	46.20	443.70	Dry
10/25/2022	407.30	0.35	86.90	422.10	Dry	45.20	444.70	
11/23/2022	427.00	0.80	87.30	421.70	Dry	45.20	444.70	
12/20/2022	441.90	2.14	88.40	420.60	Dry	45.40	444.50	Dry
1/26/2023	470.30	5.64	87.20	421.80	Dry	45.30	444.60	
2/23/2023	471.00	3.33	87.30	421.70	Dry	45.10	444.80	
3/28/2023	471.20	5.72	80.00	429.00	Omitted	45.60	444.30	Dry
4/25/2023	469.40	0.16	86.90	422.10	Dry	45.10	444.80	
5/23/2023	471.00	1.35	87.10	421.90	Dry	45.10	444.80	
6/28/2023	468.80	0.10	86.95	422.05	Dry	45.15	444.75	
7/27/2023	455.90	0.00	88.50	420.50	Dry	45.30	444.60	
8/29/2023	453.80	2.28	88.70	420.30	Dry	45.00	444.90	
9/26/2023	445.00	0.00	89.20	419.80	Dry	46.10	443.80	
10/26/2023	437.40	0.21	88.40	420.60	Dry	45.80	444.10	Dry
11/29/2023	425.00	0.78	87.20	421.80	Dry	45.00	444.90	
12/21/2023	421.00	1.60	87.30	421.70	Dry	45.20	444.70	

Notes:

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-5			MW-6		
Top of Well Elevation -->			489.40			481.40		
Bottom of Well Elevation -->			406.50			404.90		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/31/2007	405.80		74.50	414.90		78.60	402.80	
2/27/2007	426.80		75.00	414.40		82.50	398.90	
3/28/2007	438.80		73.50	415.90				
4/26/2007	450.90		71.20	418.20		83.20	398.20	
5/23/2007	461.40		67.50	421.90		84.00	397.40	
6/27/2007	457.20		64.80	424.60		76.40	405.00	
7/26/2007	445.50		66.20	423.20		79.80	401.60	
8/28/2007	434.60		68.80	420.60		76.20	405.20	
9/25/2007	416.80		71.10	418.30		76.40	405.00	
10/24/2007	404.50		73.50	415.90		78.00	403.40	
11/27/2007	422.20		75.00	414.40		76.33	405.07	
1/3/2008	443.20		73.60	415.80		76.33	398.90	
1/29/2008	452.20		70.71	418.70		76.33	404.90	
2/27/2008	460.80		67.40	422.00		76.33	404.70	
3/26/2008	468.00		64.40	425.00		76.33	404.90	
4/29/2008	468.60		60.50	428.90		76.33	400.00	
5/29/2008	464.70		61.60	427.80		76.33	404.40	
6/26/2008	455.70		62.50	426.90		76.33	404.90	
7/29/2008	447.30	0.00	65.40	424.00		76.33	398.10	
8/28/2008	438.80	0.00	66.90	422.50		76.33	394.90	
9/26/2008	430.70	0.00	68.50	420.90		76.33	396.80	
10/29/2008	412.50	0.00	70.70	418.70		76.33	405.00	
11/25/2008	404.70	2.60	71.50	417.90		76.33	405.00	
12/30/2008	440.90	3.42	73.70	415.70		76.33	405.00	
1/28/2009	463.70	0.17	67.80	420.00		76.33	405.00	
2/25/2009	470.10	3.35	63.40	421.60		76.33	405.00	
3/26/2009	469.40	0.19	60.90	426.00		76.33	405.00	
4/29/2009	466.90	0.07	60.50	428.50		76.33	405.00	

Notes:

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-5			MW-6		
Top of Well Elevation -->			489.40			481.40		
Bottom of Well Elevation -->			406.50			404.90		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
5/18/2009	466.70	0.00	60.70	428.90		76.33	404.90	
5/29/2009	465.00	0.00	60.80	428.70		76.33	405.10	
6/30/2009	460.20	0.00	62.20	428.60		76.33	405.00	
7/30/2009	451.10	0.00	63.70	427.20		76.33	405.10	
8/25/2009	440.10	0.00	65.80	425.70		76.33	405.10	
9/30/2009	432.20	0.00	68.00	423.60		76.33	405.10	
10/29/2009	431.40	0.53	69.62	421.40		76.33	404.90	
12/1/2009	427.40	0.00	71.00	429.80		76.33	405.00	
12/29/2009	448.10	2.06	71.36	428.40		76.33	405.00	
1/27/2010	465.60	4.62	67.20	427.00		76.33	405.00	
2/25/2010	470.20	2.51	62.60	428.00		76.33	405.10	
3/29/2010	465.70	0.99	61.50	426.80		76.33	405.10	
4/4/2010	465.00		61.50	427.90		76.33	405.10	
4/27/2010	468.40	1.23	61.70	427.90		76.33	405.10	
5/27/2010	463.30	0.05	61.40	427.70		76.33	405.10	
6/30/2010	454.70	0.00	62.80	428.00		76.33	405.10	
7/28/2010	445.60	0.00	64.90	426.60		76.33	405.10	
8/31/2010	437.10	0.00	67.20	424.50		76.33	405.10	
9/29/2010	422.70	0.00	68.60	422.20		76.33	405.10	
10/27/2010	426.40	2.38	70.50	418.90		76.33	405.10	
11/29/2010	439.80	0.97	71.70	417.70		76.33	405.10	
12/30/2010	456.60	8.62	68.80	420.60		76.33	397.50	
2/1/2011	468.90	0.92	63.40	426.00		76.33	405.00	
2/23/2011	469.00	0.99	62.18	427.20		76.33	405.10	
3/29/2011	470.30	2.93	60.90	428.50		76.30	405.10	
4/27/2011	464.80	0.19	60.95	428.50		76.30	405.10	
5/26/2011	457.30	0.48	62.50	426.90		76.30	405.10	
6/28/2011	443.50	0.05	64.60	424.80		76.30	405.10	

Notes:

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-5			MW-6		
Top of Well Elevation -->			489.40			481.40		
Bottom of Well Elevation -->			406.50			404.90		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
7/29/2011	425.10	0.00	67.20	422.20		76.20	405.20	
8/24/2011	418.00	0.00	69.00	420.40		76.30	405.10	
9/27/2011	400.90	0.12	71.45	418.00		76.30	405.10	
10/26/2011	402.20	1.25	73.20	416.20		76.30	404.90	
11/30/2011	425.10	1.38	73.00	416.40		76.30	405.10	
12/21/2011	435.70	0.32	73.60	415.80		76.30	405.10	
1/24/2012	441.40	0.53	70.10	419.30		76.30	405.10	
2/28/2012	448.40	0.42	68.40	421.00		76.30	405.10	
3/26/2012	452.70	1.06	67.50	421.90		76.30	405.10	
4/23/2012	463.40	1.32	64.40	425.00		76.30	405.10	
5/30/2012	457.30	0.02	62.70	426.70		76.30	405.10	
6/13/2012	452.90	0.02	63.00	426.40		76.30	405.10	
6/26/2012	450.20	0.00	63.80	425.60		76.30	405.10	
7/24/2012	439.80	0.00	65.90	423.50		76.30	405.10	
8/8/2012	437.60	0.12	66.80	422.60		76.30	405.10	
8/22/2012	433.40	0.00	67.70	421.70		76.30	405.10	
8/29/2012	431.30	0.00	67.90	421.50		76.30	405.10	
9/25/2012	420.80	0.00	68.00	421.40		76.30	405.10	
10/31/2012	412.30	0.26	72.10	417.30		76.30	405.10	
11/27/2012	420.80	0.58	73.40	416.00		76.30	405.10	
12/18/2012	448.00	1.44	72.40	417.00		76.30	405.10	
1/29/2013	468.60	1.18	63.20	426.20		76.30	405.10	
2/28/2013	469.20	0.30	60.70	428.70		76.30	405.10	
3/27/2013	468.30	0.50	59.85	429.60		76.30	405.10	
4/25/2013	462.70	0.00	60.00	429.40		76.60	404.80	
5/21/2013	454.20	0.00	61.40	428.00		76.60	404.80	
6/25/2013	439.30	0.00	64.50	424.90		76.6	404.80	
7/23/2013	431.50	0.00	66.80	422.60		76.60	404.80	

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-5			MW-6		
Top of Well Elevation -->			489.40			481.40		
Bottom of Well Elevation -->			406.50			404.90		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
8/21/2013	418.00	0.00	68.50	420.90		76.30	405.10	
9/24/2013	404.00	0.00	71.20	418.20		76.50	404.90	
10/29/2013	400.60	0.00	72.90	416.50		76.60	404.80	
11/26/2013	407.90	0.44	74.80	414.60		76.30	405.10	
12/19/2013	425.80	0.54	73.20	416.20		76.30	405.10	
1/28/2014	439.70	0.00	71.60	417.80		76.30	405.10	
2/25/2014	449.70	0.83	69.10	420.30		76.60	404.80	
3/26/2014	465.10		64.20	425.20		76.60	404.80	
3/28/2014	465.70	1.15	64.00	425.40		76.30	405.10	
4/29/2014	465.30	0.43	61.30	428.10		76.40	405.00	
5/28/2014	450.60	0.00	62.60	426.80		76.50	404.90	
6/25/2014	440.10	0.00	65.00	424.40		76.30	405.10	
7/29/2014	431.20	0.00	67.40	422.00		76.50	404.90	
8/26/2014	419.50	0.02	69.10	420.30		76.30	405.10	
9/23/2014	405.30	0.00	71.20	418.20		76.30	405.10	
10/29/2014	400.90	0.00	73.30	416.10		76.60	404.80	
11/25/2014	410.90	0.25	75.50	413.90		76.40	405.00	
12/30/2014	430.60	2.94	74.50	414.90		76.30	405.10	
1/27/2015	466.70	0.83	64.80	424.60		76.60	404.80	
2/25/2015	468.90	0.69	60.50	428.90		76.50	404.90	
3/26/2015	465.90	0.61	59.10	430.30		76.30	405.10	
4/28/2015	465.70	0.20	59.00	430.40		76.30	405.10	
5/28/2015	466.40	1.08	58.50	430.90		76.60	404.80	
6/30/2015	454.50	0.00	59.70	429.70		76.30	405.10	
7/28/2015	445.60	0.00	62.60	426.80		76.40	405.00	
8/28/2015	437.60	0.00	64.90	424.50		76.30	405.10	
9/24/2015	426.90	1.51	66.90	422.50		76.20	405.20	
10/27/2015	415.40	0.49	69.10	420.30		76.30	405.10	

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-5			MW-6		
Top of Well Elevation -->			489.40			481.40		
Bottom of Well Elevation -->			406.50			404.90		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
11/19/2015	412.90	0.09	70.60	418.80		76.30	405.10	
12/22/2015	425.50	0.69	71.60	417.80		76.50	404.90	
1/27/2016	463.60	2.86	67.60	421.80		76.20	405.20	
2/25/2016	468.90	0.25	61.10	428.30		76.60	404.80	
3/30/2016	468.00	1.44	58.80	430.60		76.30	405.10	
4/28/2016	461.30	0.30	58.90	430.50		76.60	404.80	
5/25/2016	451.30	0.18	61.30	428.10		76.30	405.10	
6/28/2016	414.10	0.00	63.40	426.00		76.40	405.00	
7/27/2016	434.20	0.00	65.50	423.90		76.20	405.20	
8/23/2016	418.60	0.00	67.90	421.50		76.20	405.20	
9/27/2016	406.40	0.00	69.80	419.60		76.50	404.90	
10/26/2016	404.00	0.48	72.00	417.40		76.30	405.10	
11/22/2016	413.60	1.13	73.20	416.20		76.60	404.80	
12/20/2016	441.10	3.48	72.40	417.00		76.60	404.80	
1/26/2017	471.60	5.67	61.80	427.60		76.30	405.10	
2/24/2017	472.05	3.95	57.60	431.80		76.60	404.80	
2/25/2017	472.00		57.50	431.90		76.60	404.80	
2/26/2017	472.00		57.25	432.20		76.60	404.80	
2/27/2017	472.00		57.10	432.30		76.40	405.00	
2/28/2017	471.90		57.25	432.20		76.70	404.70	
3/1/2017	471.90		57.30	432.10		76.50	404.90	
3/2/2017	471.90		57.20	432.20		76.30	405.10	
3/29/2017	467.90	0.10	56.90	432.50		76.30	405.10	
4/27/2017	457.60	0.04	58.30	431.10		76.30	405.10	
5/23/2017	453.50	0.43	60.50	428.90		76.60	404.80	
6/21/2017	447.40	0.00	61.60	427.80		76.30	405.10	
7/26/2017	435.10	0.00	64.50	424.90		76.30	405.10	
8/25/2017	420.10	0.00	66.70	422.70		76.30	405.10	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-5			MW-6		
Top of Well Elevation -->			489.40			481.40		
Bottom of Well Elevation -->			406.50			404.90		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
9/27/2017	407.10	0.00	69.20	420.20		76.40	405.00	
10/26/2017	395.00	0.00	71.00	418.40		76.30	405.10	
11/28/2017	409.00	0.09	72.50	416.90		76.60	404.80	
12/20/2017	416.80	0.00	73.40	416.00		76.20	405.20	
1/24/2018	434.50	1.31	72.30	417.60		78.50	402.90	
2/21/2018	443.10	0.29	69.60	420.30		76.30	405.10	
3/29/2018	453.00	1.28	66.10	423.30		76.60	404.80	
4/26/2018	449.10	0.05	65.30	424.10		76.60	404.80	
5/31/2018	453.10	0.20	64.80	424.60		76.30	405.10	
6/28/2018	448.20	0.00	64.60	424.80		76.10	405.30	
7/25/2018	440.40	0.00	65.60	423.80		77.70	403.70	
8/22/2018	427.10	0.00	67.70	421.70		76.60	404.80	
9/27/2018	439.60	0.00	70.70	418.70		76.30	405.10	
10/18/2018	405.30	0.90	72.50	416.90		76.30	405.10	
11/28/2018	408.60	1.19	73.90	415.50		76.40	405.00	
12/19/2018	436.00	1.99	74.60	414.80		76.30	405.10	
1/30/2019	463.80	4.71	66.20	423.20		76.60	404.80	Dry
2/27/2019	466.20	6.55	61.80	427.60		78.60	402.80	Dry
3/27/2019	463.30	1.34	60.60	428.80		76.30	405.10	Dry
4/29/2019	453.00	0.13	61.65	427.75		76.60	404.80	Dry
5/30/2019	451.80	0.64	62.90	426.50		76.40	405.00	Dry
6/26/2019	446.20	0.01	63.80	425.60		76.30	405.10	Dry
7/5/2019	39.40	0.00	64.30	425.10		76.00	405.40	Dry
7/30/2019	434.80	0.00	65.80	423.60		79.00	402.40	Dry
8/27/2019	424.40	0.00	67.70	421.70		76.60	404.80	Dry
9/26/2019	405.60	0.00	69.90	419.50		76.30	405.10	Dry
10/22/2019	400.50	0.00	72.20	417.20		78.60	402.80	Dry
11/26/2019	412.80	3.13	72.70	416.70		78.50	402.90	Dry

Notes:

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-5			MW-6		
Top of Well Elevation -->			489.40			481.40		
Bottom of Well Elevation -->			406.50			404.90		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
12/18/2019	447.40	4.44	72.30	417.10		76.40	405.00	
1/28/2020	465.40	0.20	62.90	426.50		79.60	401.80	Dry
2/26/2020	459.60	0.14	61.70	427.70		81.20	400.20	
3/24/2020	470.70	3.49	60.60	428.80		76.50	404.90	
4/29/2020	467.60	3.65	58.10	431.30		82.00	399.40	
5/27/2020	459.10	0.02	59.20	430.20		80.20	401.20	
6/23/2020	447.00	0.00	61.70	427.70		76.40	405.00	
7/30/2020	434.00	0.00	64.70	424.70		79.30	402.10	
8/26/2020	417.70	0.00	66.70	422.70		76.30	405.10	
9/29/2020	403.60	0.00	69.40	420.00		76.60	404.80	
10/28/2020	404.50	0.00	71.20	418.20		77.00	404.40	
11/24/2020	413.50	0.42	72.00	417.40		76.00	405.40	
12/22/2020	408.00	1.13	72.40	417.00		76.30	405.10	
1/27/2021	435.60	2.25	72.80	416.60		81.20	400.20	
2/25/2021	457.30	0.05	66.60	422.80		79.80	401.60	
3/23/2021	465.90	1.36	63.90	425.50		76.40	405.00	
4/27/2021	462.10	0.04	62.00	427.40		76.30	405.10	
5/26/2021	455.00	0.03	62.80	426.60		82.30	399.10	
6/30/2021	437.90	0.00	64.70	424.70		76.40	405.00	
7/29/2021	423.60	0.07	67.30	422.10		76.30	405.10	
8/24/2021	408.00	0.00	69.00	420.40		78.60	402.80	
9/29/2021	398.00	0.04	71.40	418.00		76.30	405.10	
10/26/2021	417.00	0.87	73.20	416.20		76.50	404.90	
11/25/2021	427.90	0.00	71.60	417.80		78.40	403.00	
12/21/2021	427.90	4.77	71.20	418.20		76.20	405.20	
1/27/2022	467.80	0.07	62.60	426.80		76.30	405.10	
2/23/2022	464.80	0.29	61.85	427.55		76.60	404.80	Dry
3/23/2022	464.40	1.08	62.10	427.30		76.30	405.10	

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-5			MW-6		
Top of Well Elevation -->			489.40			481.40		
Bottom of Well Elevation -->			406.50			404.90		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
4/26/2022	467.10	0.03	60.60	428.80		76.30	405.10	
5/26/2022	464.80	0.08	60.30	429.10		76.00	405.40	
6/28/2022	457.30	0.00	60.60	428.80		79.30	402.10	Dry
7/26/2022	440.70	0.00	62.70	426.70		76.60	404.80	Dry
8/25/2022	429.50	0.05	65.30	424.10		76.60	404.80	Dry
9/28/2022	410.80	0.35	67.80	421.60		76.90	404.50	Dry
10/25/2022	407.30	0.35	69.80	419.60		76.30	405.10	
11/23/2022	427.00	0.80	66.10	423.30		76.10	405.30	
12/20/2022	441.90	2.14	69.70	419.70		81.00	400.40	Dry
1/26/2023	470.30	5.64	63.20	426.20		76.30	405.10	
2/23/2023	471.00	3.33	59.40	430.00		76.30	405.10	
3/28/2023	471.20	5.72	58.90	430.50		84.50	396.90	Dry
4/25/2023	469.40	0.16	58.60	430.80		76.30	405.10	
5/23/2023	471.00	1.35	58.20	431.20		76.70	404.70	Dry
6/28/2023	468.80	0.10	57.18	432.22		76.50	404.90	Dry
7/27/2023	455.90	0.00	58.50	430.90		81.00	400.40	Dry
8/29/2023	453.80	2.28	61.40	428.00		76.30	405.10	
9/26/2023	445.00	0.00	62.10	427.30		76.30	405.10	
10/26/2023	437.40	0.21	64.20	425.20		79.00	402.40	Dry
11/29/2023	425.00	0.78	66.20	423.20		77.20	404.20	Dry
12/21/2023	421.00	1.60	67.10	422.30		78.60	402.80	Dry

Notes:

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-7			MW-8		
Top of Well Elevation -->			463.30			512.80		
Bottom of Well Elevation -->			397.30			419.80		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/31/2007	405.80		20.00	443.30		17.80	495.00	
2/27/2007	426.80		21.10	442.20		19.20	493.60	
3/28/2007	438.80		20.30	443.00		20.40	492.40	
4/26/2007	450.90		20.20	443.10		19.90	492.90	
5/23/2007	461.40		20.50	442.80		20.00	492.80	
6/27/2007	457.20		20.80	442.50		19.80	493.00	
7/26/2007	445.50		20.60	442.70		19.00	493.80	
8/28/2007	434.60		20.20	443.10		18.60	494.20	
9/25/2007	416.80		20.40	442.90		18.40	494.40	
10/24/2007	404.50		20.20	443.10		18.70	494.10	
11/27/2007	422.20		20.40	442.90		18.90	493.90	
1/3/2008	443.20		19.20	444.10		18.60	494.20	
1/29/2008	452.20		19.87	443.40		18.46	494.30	
2/27/2008	460.80		19.00	444.30		18.10	494.70	
3/26/2008	468.00		18.40	444.90		18.00	494.80	
4/29/2008	468.60		17.90	445.40		18.00	494.80	
5/29/2008	464.70		18.30	445.00		19.00	493.80	
6/26/2008	455.70		18.10	445.20		18.70	494.10	
7/29/2008	447.30	0.00	18.40	444.90		18.40	494.40	
8/28/2008	438.80	0.00	18.40	444.90		18.70	494.10	
9/26/2008	430.70	0.00	18.60	444.70		18.30	494.50	
10/29/2008	412.50	0.00	18.50	444.80		19.20	493.60	
11/25/2008	404.70	2.60	18.70	444.60		19.10	493.70	
12/30/2008	440.90	3.42	18.40	444.90		18.50	494.30	
1/28/2009	463.70	0.17	17.50	445.80		18.20	494.60	
2/25/2009	470.10	3.35	17.00	446.30		17.80	495.00	
3/26/2009	469.40	0.19	16.40	446.90		17.80	495.00	
4/29/2009	466.90	0.07	17.20	446.10		18.30	494.50	

Notes:

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-7			MW-8		
Top of Well Elevation -->			463.30			512.80		
Bottom of Well Elevation -->			397.30			419.80		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
5/18/2009	466.70	0.00	17.50	445.80		18.50	494.30	
5/29/2009	465.00	0.00	17.70	445.60		18.60	494.20	
6/30/2009	460.20	0.00	17.90	445.40		18.60	494.20	
7/30/2009	451.10	0.00	18.10	445.20		19.50	493.30	
8/25/2009	440.10	0.00	18.00	445.30		19.80	493.00	
9/30/2009	432.20	0.00	18.50	444.80		19.80	493.00	
10/29/2009	431.40	0.53	19.20	444.10		19.50	493.30	
12/1/2009	427.40	0.00	19.40	443.90		19.80	493.00	
12/29/2009	448.10	2.06	19.80	443.50		19.81	493.00	
1/27/2010	465.60	4.62	19.80	443.50		19.80	493.00	
2/25/2010	470.20	2.51	19.70	443.60		18.30	494.50	
3/29/2010	465.70	0.99	19.00	444.30		18.30	494.50	
4/4/2010	465.00		18.80	444.50		17.90	494.90	
4/27/2010	468.40	1.23	18.80	444.50		18.00	494.80	
5/27/2010	463.30	0.05	18.90	444.40		19.40	493.40	
6/30/2010	454.70	0.00	19.00	444.30		18.80	494.00	
7/28/2010	445.60	0.00	19.50	443.80		19.10	493.70	
8/31/2010	437.10	0.00	19.60	443.70		19.40	493.40	
9/29/2010	422.70	0.00	19.70	443.60		20.00	492.80	
10/27/2010	426.40	2.38	20.00	443.30		20.10	492.70	
11/29/2010	439.80	0.97	20.70	442.60		20.10	492.70	
12/30/2010	456.60	8.62	19.00	444.30		19.40	493.40	
2/1/2011	468.90	0.92	18.30	445.00		18.30	494.50	
2/23/2011	469.00	0.99	17.55	445.80		18.18	494.60	
3/29/2011	470.30	2.93	17.10	446.20		17.60	495.20	
4/27/2011	464.80	0.19	16.65	446.70		17.72	495.10	
5/26/2011	457.30	0.48	16.70	446.60		18.10	494.70	
6/28/2011	443.50	0.05	16.90	446.40		18.40	494.40	

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-7			MW-8		
Top of Well Elevation -->			463.30			512.80		
Bottom of Well Elevation -->			397.30			419.80		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
7/29/2011	425.10	0.00	17.40	445.90		18.60	494.20	
8/24/2011	418.00	0.00	17.70	445.60		19.20	493.60	
9/27/2011	400.90	0.12	17.90	445.40		19.65	493.20	
10/26/2011	402.20	1.25	18.30	445.00		19.90	492.90	
11/30/2011	425.10	1.38	17.70	445.60		19.30	493.50	
12/21/2011	435.70	0.32	18.00	445.30		19.40	493.40	
1/24/2012	441.40	0.53	18.70	444.60		19.50	493.30	
2/28/2012	448.40	0.42	19.40	443.90		20.00	492.80	
3/26/2012	452.70	1.06	19.40	443.90		19.90	492.90	
4/23/2012	463.40	1.32	19.20	444.10		19.70	493.10	
5/30/2012	457.30	0.02	19.30	444.00		19.50	493.30	
6/13/2012	452.90	0.02	19.20	444.10		19.30	493.50	
6/26/2012	450.20	0.00	19.20	444.10		19.30	493.50	
7/24/2012	439.80	0.00	19.40	443.90		19.70	493.10	
8/8/2012	437.60	0.12	19.30	444.00		19.60	493.20	
8/22/2012	433.40	0.00	19.30	444.00		19.40	493.40	
8/29/2012	431.30	0.00	19.10	444.20		19.20	493.60	
9/25/2012	420.80	0.00	19.10	444.20		19.30	493.50	
10/31/2012	412.30	0.26	19.40	443.90		20.10	492.70	
11/27/2012	420.80	0.58	19.40	443.90		20.40	492.40	
12/18/2012	448.00	1.44	19.20	444.10		20.45	492.40	
1/29/2013	468.60	1.18	19.80	443.50		21.10	491.70	
2/28/2013	469.20	0.30	19.80	443.50		21.40	491.40	
3/27/2013	468.30	0.50	19.75	443.60		21.55	491.30	
4/25/2013	462.70	0.00	19.60	443.70		21.60	491.20	
5/21/2013	454.20	0.00	19.80	443.50		21.70	491.10	
6/25/2013	439.30	0.00	20.00	443.30		22.25	490.60	
7/23/2013	431.50	0.00	20.10	443.20		22.35	490.50	

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-7			MW-8		
Top of Well Elevation -->			463.30			512.80		
Bottom of Well Elevation -->			397.30			419.80		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
8/21/2013	418.00	0.00	20.10	443.20		22.40	490.40	
9/24/2013	404.00	0.00	20.20	443.10		22.40	490.40	
10/29/2013	400.60	0.00	20.40	442.90		22.65	490.20	
11/26/2013	407.90	0.44	20.50	442.80		23.40	489.40	
12/19/2013	425.80	0.54	20.30	443.00		23.60	489.20	
1/28/2014	439.70	0.00	20.60	442.70		23.60	489.20	
2/25/2014	449.70	0.83	20.60	442.70		23.50	489.30	
3/26/2014	465.10		20.55	442.80		22.95	489.90	
3/28/2014	465.70	1.15	20.70	442.60		23.20	489.60	
4/29/2014	465.30	0.43	20.50	442.80		22.90	489.90	
5/28/2014	450.60	0.00	20.70	442.60		23.30	489.50	
6/25/2014	440.10	0.00	20.80	442.50		23.80	489.00	
7/29/2014	431.20	0.00	21.00	442.30		23.50	489.30	
8/26/2014	419.50	0.02	20.90	442.40		24.20	488.60	
9/23/2014	405.30	0.00	20.90	442.40		24.50	488.30	
10/29/2014	400.90	0.00	21.30	442.00		24.85	488.00	
11/25/2014	410.90	0.25	21.50	441.80		25.20	487.60	
12/30/2014	430.60	2.94	21.35	442.00		24.10	488.70	
1/27/2015	466.70	0.83	21.55	441.80		25.00	487.80	
2/25/2015	468.90	0.69	21.30	442.00		25.20	487.60	
3/26/2015	465.90	0.61	21.40	441.90		25.60	487.20	
4/28/2015	465.70	0.20	21.00	442.30		26.00	486.80	
5/28/2015	466.40	1.08	21.10	442.20		25.80	487.00	
6/30/2015	454.50	0.00	21.90	441.40		26.30	486.50	
7/28/2015	445.60	0.00	22.30	441.00		26.70	486.10	
8/28/2015	437.60	0.00	22.80	440.50		27.20	485.60	
9/24/2015	426.90	1.51	23.60	439.70		27.40	485.40	
10/27/2015	415.40	0.49	23.90	439.40		27.60	485.20	

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-7			MW-8		
Top of Well Elevation -->			463.30			512.80		
Bottom of Well Elevation -->			397.30			419.80		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
11/19/2015	412.90	0.09	24.20	439.10		27.90	484.90	
12/22/2015	425.50	0.69	24.80	438.50		28.30	484.50	
1/27/2016	463.60	2.86	25.80	437.50		28.50	484.30	
2/25/2016	468.90	0.25	25.10	438.20		25.90	486.90	
3/30/2016	468.00	1.44	24.90	438.40		27.60	485.20	
4/28/2016	461.30	0.30	25.00	438.30		28.00	484.80	
5/25/2016	451.30	0.18	24.80	438.50		28.35	484.50	
6/28/2016	414.10	0.00	24.40	438.90		28.50	484.30	
7/27/2016	434.20	0.00	24.30	439.00		28.90	483.90	
8/23/2016	418.60	0.00	24.50	438.80		28.20	484.60	
9/27/2016	406.40	0.00	24.80	438.50		27.20	485.60	
10/26/2016	404.00	0.48	25.40	437.90		28.20	484.60	
11/22/2016	413.60	1.13	25.70	437.60		28.05	484.80	
12/20/2016	441.10	3.48	25.65	437.70		27.20	485.60	
1/26/2017	471.60	5.67	25.20	438.10		25.10	487.70	
2/24/2017	472.05	3.95	24.20	439.10		24.10	488.70	
2/25/2017	472.00		24.05	439.30		24.15	488.70	
2/26/2017	472.00		23.85	439.50		24.20	488.60	
2/27/2017	472.00		23.90	439.40		24.30	488.50	
2/28/2017	471.90		23.90	439.40		24.10	488.70	
3/1/2017	471.90		23.90	439.40		24.10	488.70	
3/2/2017	471.90		23.90	439.40		24.00	488.80	
3/29/2017	467.90	0.10	22.70	440.60		23.10	489.70	
4/27/2017	457.60	0.04	22.00	441.30		23.10	489.70	
5/23/2017	453.50	0.43	22.00	441.30		23.30	489.50	
6/21/2017	447.40	0.00	21.70	441.60		23.30	489.50	
7/26/2017	435.10	0.00	21.80	441.50		23.30	489.50	
8/25/2017	420.10	0.00	21.70	441.60		23.10	489.70	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-7			MW-8		
Top of Well Elevation -->			463.30			512.80		
Bottom of Well Elevation -->			397.30			419.80		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
9/27/2017	407.10	0.00	21.90	441.40		23.30	489.50	
10/26/2017	395.00	0.00	21.70	441.60		23.50	489.30	
11/28/2017	409.00	0.09	22.00	441.30		23.30	489.50	
12/20/2017	416.80	0.00	22.30	441.00		23.40	489.40	
1/24/2018	434.50	1.31	22.10	441.20		22.50	490.30	
2/21/2018	443.10	0.29	22.20	441.10		22.40	490.40	
3/29/2018	453.00	1.28	22.20	441.10		22.60	490.20	
4/26/2018	449.10	0.05	22.20	441.10		22.80	490.00	
5/31/2018	453.10	0.20	22.10	441.20		22.70	490.10	
6/28/2018	448.20	0.00	22.20	441.10		22.90	489.90	
7/25/2018	440.40	0.00	22.00	441.30		22.60	490.20	
8/22/2018	427.10	0.00	22.20	441.10		22.50	490.30	
9/27/2018	439.60	0.00	22.20	441.10		22.10	490.70	
10/18/2018	405.30	0.90	22.20	441.10		21.40	491.40	
11/28/2018	408.60	1.19	22.30	441.00		21.30	491.50	
12/19/2018	436.00	1.99	22.30	441.00		20.80	492.00	
1/30/2019	463.80	4.71	21.60	441.70		20.40	492.40	
2/27/2019	466.20	6.55	20.80	442.50		19.40	493.40	
3/27/2019	463.30	1.34	18.10	445.20		19.40	493.40	
4/29/2019	453.00	0.13	17.70	445.60		18.25	494.55	
5/30/2019	451.80	0.64	17.60	445.70		18.40	494.40	
6/26/2019	446.20	0.01	17.80	445.50		18.80	494.00	
7/5/2019	39.40	0.00	18.00	445.30		19.10	493.70	
7/30/2019	434.80	0.00	18.20	445.10		18.90	493.90	
8/27/2019	424.40	0.00	18.50	444.80		18.90	493.90	
9/26/2019	405.60	0.00	19.10	444.20		19.60	493.20	
10/22/2019	400.50	0.00	19.80	443.50		20.30	492.50	
11/26/2019	412.80	3.13	19.70	443.60		21.30	491.50	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-7			MW-8		
Top of Well Elevation -->			463.30			512.80		
Bottom of Well Elevation -->			397.30			419.80		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
12/18/2019	447.40	4.44	20.20	443.10		21.20	491.60	
1/28/2020	465.40	0.20	20.80	442.50		19.20	493.60	
2/26/2020	459.60	0.14	19.00	444.30		20.60	492.20	
3/24/2020	470.70	3.49	19.10	444.20		20.20	492.60	
4/29/2020	467.60	3.65	19.30	444.00		19.20	493.60	
5/27/2020	459.10	0.02	17.50	445.80		19.00	493.80	
6/23/2020	447.00	0.00	17.50	445.80		19.50	493.30	
7/30/2020	434.00	0.00	17.90	445.40		19.30	493.50	
8/26/2020	417.70	0.00	18.20	445.10		19.40	493.40	
9/29/2020	403.60	0.00	19.00	444.30		20.50	492.30	
10/28/2020	404.50	0.00	19.50	443.80		21.30	491.50	
11/24/2020	413.50	0.42	19.80	443.50		21.20	491.60	
12/22/2020	408.00	1.13	20.20	443.10		21.90	490.90	
1/27/2021	435.60	2.25	20.60	442.70		21.70	491.10	
2/25/2021	457.30	0.05	20.20	443.10		22.00	490.80	
3/23/2021	465.90	1.36	20.30	443.00		22.00	490.80	
4/27/2021	462.10	0.04	20.50	442.80		22.00	490.80	
5/26/2021	455.00	0.03	20.80	442.50		21.90	490.90	
6/30/2021	437.90	0.00	20.80	442.50		21.60	491.20	
7/29/2021	423.60	0.07	21.00	442.30		21.20	491.60	
8/24/2021	408.00	0.00	20.50	442.80		21.10	491.70	
9/29/2021	398.00	0.04	20.60	442.70		21.50	491.30	
10/26/2021	417.00	0.87	20.90	442.40		21.80	491.00	
11/25/2021	427.90	0.00	20.90	442.40		22.20	490.60	
12/21/2021	427.90	4.77	21.20	442.10		22.60	490.20	
1/27/2022	467.80	0.07	20.80	442.50		22.50	490.30	
2/23/2022	464.80	0.29	20.60	442.70		22.80	490.00	
3/23/2022	464.40	1.08	20.90	442.40		23.00	489.80	

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			MW-7			MW-8		
Top of Well Elevation -->			463.30			512.80		
Bottom of Well Elevation -->			397.30			419.80		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
4/26/2022	467.10	0.03	20.30	443.00		22.80	490.00	
5/26/2022	464.80	0.08	20.60	442.70		22.60	490.20	
6/28/2022	457.30	0.00	21.10	442.20		22.50	490.30	
7/26/2022	440.70	0.00	21.30	442.00		22.90	489.90	
8/25/2022	429.50	0.05	21.50	441.80		23.20	489.60	
9/28/2022	410.80	0.35	21.70	441.60		23.60	489.20	
10/25/2022	407.30	0.35	22.00	441.30		24.10	488.70	
11/23/2022	427.00	0.80	22.00	441.30		24.20	488.60	
12/20/2022	441.90	2.14	22.30	441.00		24.30	488.50	
1/26/2023	470.30	5.64	22.10	441.20		23.20	489.60	
2/23/2023	471.00	3.33	21.00	442.30		22.40	490.40	
3/28/2023	471.20	5.72	20.00	443.30		20.50	492.30	
4/25/2023	469.40	0.16	18.50	444.80		19.90	492.90	
5/23/2023	471.00	1.35	18.20	445.10		20.10	492.70	
6/28/2023	468.80	0.10	18.18	445.12		20.33	492.47	
7/27/2023	455.90	0.00	18.60	444.70		21.10	491.70	
8/29/2023	453.80	2.28	19.00	444.30		21.10	491.70	
9/26/2023	445.00	0.00	19.20	444.10		21.00	491.80	
10/26/2023	437.40	0.21	19.50	443.80		21.30	491.50	
11/29/2023	425.00	0.78	20.20	443.10		22.10	490.70	
12/21/2023	421.00	1.60	20.30	443.00		22.10	490.70	

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-1A			CP-1B		
Top of Well Elevation -->			484.40			484.30		
Bottom of Well Elevation -->			363.20			447.10		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/31/2007	405.80		38.40	446.00		37.30	447.00	
2/27/2007	426.80		38.30	446.10		37.50	446.80	
3/28/2007	438.80		38.30	446.10				
4/26/2007	450.90		38.00	446.40		37.00	447.30	
5/23/2007	461.40		37.90	446.50		37.30	447.00	
6/27/2007	457.20		38.00	446.40		37.30	447.00	
7/26/2007	445.50		38.20	446.20		37.30	447.00	
8/28/2007	434.60		38.50	445.90		37.30	447.00	
9/25/2007	416.80		38.90	445.50		37.30	447.00	
10/24/2007	404.50		39.20	445.20		37.20	447.10	
11/27/2007	422.20		39.40	445.00		37.20	447.10	
1/3/2008	443.20		39.30	445.10		37.40	446.90	
1/29/2008	452.20		39.00	445.40		37.24	447.10	
2/27/2008	460.80		38.50	445.90		37.30	447.00	
3/26/2008	468.00		38.20	446.20		37.20	447.10	
4/29/2008	468.60		37.70	446.70		37.30	447.00	
5/29/2008	464.70		37.90	446.50		37.00	447.30	
6/26/2008	455.70		37.90	446.50		37.10	447.20	
7/29/2008	447.30	0.00	38.20	446.20		37.30	447.00	
8/28/2008	438.80	0.00	38.30	446.10		33.50	450.80	
9/26/2008	430.70	0.00	38.50	445.90		37.60	446.70	
10/29/2008	412.50	0.00	38.90	445.50		37.20	447.10	
11/25/2008	404.70	2.60	39.00	445.40		37.30	447.00	
12/30/2008	440.90	3.42	39.00	445.40		37.20	447.10	
1/28/2009	463.70	0.17	38.20	446.20		37.30	447.00	
2/25/2009	470.10	3.35	38.00	446.40		37.00	447.30	
3/26/2009	469.40	0.19	38.00	446.40		37.30	447.00	
4/29/2009	466.90	0.07	38.10	446.30		37.30	447.00	

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-1A			CP-1B		
Top of Well Elevation -->			484.40			484.30		
Bottom of Well Elevation -->			363.20			447.10		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
5/18/2009	466.70	0.00	37.90	446.50		37.20	447.10	
5/29/2009	465.00	0.00	37.90	446.50		37.20	447.10	
6/30/2009	460.20	0.00	37.90	446.50		37.40	446.90	
7/30/2009	451.10	0.00	38.00	446.40		37.20	447.10	
8/25/2009	440.10	0.00	38.10	446.30		37.20	447.10	
9/30/2009	432.20	0.00	38.60	445.80		37.20	447.10	
10/29/2009	431.40	0.53	38.95	445.50		37.25	447.10	
12/1/2009	427.40	0.00	39.20	445.20		37.30	447.00	
12/29/2009	448.10	2.06	39.21	445.20		37.25	447.10	
1/27/2010	465.60	4.62	38.70	445.70		37.20	447.10	
2/25/2010	470.20	2.51	38.20	446.20		37.30	447.00	
3/29/2010	465.70	0.99	38.30	446.10		37.10	447.20	
4/4/2010	465.00		38.10	446.30		37.30	447.00	
4/27/2010	468.40	1.23	38.00	446.40		37.30	447.00	
5/27/2010	463.30	0.05	38.00	446.40		37.20	447.10	
6/30/2010	454.70	0.00	38.10	446.30		37.30	447.00	
7/28/2010	445.60	0.00	38.50	445.90		37.30	447.00	
8/31/2010	437.10	0.00	38.90	445.50		37.30	447.00	
9/29/2010	422.70	0.00	39.20	445.20		37.40	446.90	
10/27/2010	426.40	2.38	39.50	444.90		37.30	447.00	
11/29/2010	439.80	0.97	39.70	444.70		37.20	447.10	
12/30/2010	456.60	8.62	38.80	445.60		35.70	448.60	
2/1/2011	468.90	0.92	38.30	446.10		37.20	447.10	
2/23/2011	469.00	0.99	38.00	446.40		37.25	447.10	
3/29/2011	470.30	2.93	37.70	446.70		36.80	447.50	
4/27/2011	464.80	0.19	37.52	446.90		37.23	447.10	
5/26/2011	457.30	0.48	37.60	446.80		37.30	447.00	
6/28/2011	443.50	0.05	37.80	446.60		37.20	447.10	

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-1A			CP-1B		
Top of Well Elevation -->			484.40			484.30		
Bottom of Well Elevation -->			363.20			447.10		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
7/29/2011	425.10	0.00	38.15	446.30		36.60	447.10	
8/24/2011	418.00	0.00	38.40	446.00		37.20	447.10	
9/27/2011	400.90	0.12	38.80	445.60		37.30	447.00	
10/26/2011	402.20	1.25	38.80	445.60		36.80	447.50	
11/30/2011	425.10	1.38	39.10	445.30		36.60	447.70	
12/21/2011	435.70	0.32	39.50	444.90		37.20	447.10	
1/24/2012	441.40	0.53	39.00	445.40		37.20	447.10	
2/28/2012	448.40	0.42	39.20	445.20		37.30	447.00	
3/26/2012	452.70	1.06	39.00	445.40		37.20	447.10	
4/23/2012	463.40	1.32	38.60	445.80		37.50	446.80	
5/30/2012	457.30	0.02	38.50	445.90		37.30	447.00	
6/13/2012	452.90	0.02	38.40	446.00		37.30	447.00	
6/26/2012	450.20	0.00	38.50	445.90		37.40	446.90	
7/24/2012	439.80	0.00	38.90	445.50		37.40	446.90	
8/8/2012	437.60	0.12	38.90	445.30		37.40	446.90	
8/22/2012	433.40	0.00	39.10	445.50		36.70	447.60	
8/29/2012	431.30	0.00	39.00	445.40		37.20	447.10	
9/25/2012	420.80	0.00	39.10	445.30		37.20	447.10	
10/31/2012	412.30	0.26	39.60	444.80		37.40	446.90	
11/27/2012	420.80	0.58	39.90	444.50		37.30	447.00	
12/18/2012	448.00	1.44	39.35	445.10		37.00	447.30	
1/29/2013	468.60	1.18	38.40	446.00		37.40	446.90	
2/28/2013	469.20	0.30	38.00	446.40		37.40	446.90	
3/27/2013	468.30	0.50	38.10	446.30		37.25	447.10	
4/25/2013	462.70	0.00	38.40	446.00		37.30	447.00	
5/21/2013	454.20	0.00	38.80	445.60		37.30	447.00	
6/25/2013	439.30	0.00	39.30	445.10		37.10	447.20	
7/23/2013	431.50	0.00	39.80	444.60		36.60	447.70	

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SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-1A			CP-1B		
Top of Well Elevation -->			484.40			484.30		
Bottom of Well Elevation -->			363.20			447.10		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
8/21/2013	418.00	0.00	64.10	420.30	Omitted	37.50	446.80	
9/24/2013	404.00	0.00	40.70	443.70		37.20	447.10	
10/29/2013	400.60	0.00	41.00	443.40		37.20	447.10	
11/26/2013	407.90	0.44	41.30	443.10		37.20	447.10	
12/19/2013	425.80	0.54	41.00	443.40		37.40	446.90	
1/28/2014	439.70	0.00	40.90	443.50		37.40	446.90	
2/25/2014	449.70	0.83	40.60	443.80		37.25	447.10	
3/26/2014	465.10		39.90	444.50		37.30	447.00	
3/28/2014	465.70	1.15	39.90	444.50		37.20	447.10	
4/29/2014	465.30	0.43	39.70	444.70		37.30	447.00	
5/28/2014	450.60	0.00	39.80	444.60		37.20	447.10	
6/25/2014	440.10	0.00	39.90	444.50		37.10	447.20	
7/29/2014	431.20	0.00	40.30	444.10		37.20	447.10	
8/26/2014	419.50	0.02	40.50	443.90		37.30	447.00	
9/23/2014	405.30	0.00	40.60	443.80		37.20	447.10	
10/29/2014	400.90	0.00	41.30	443.10		37.30	447.10	
11/25/2014	410.90	0.25	41.60	442.80		37.20	447.20	
12/30/2014	430.60	2.94	41.10	443.30		37.10	447.10	
1/27/2015	466.70	0.83	39.55	444.90		37.20	447.00	
2/25/2015	468.90	0.69	39.10	445.30		37.30	447.00	
3/26/2015	465.90	0.61	39.20	445.20		37.30	447.10	
4/28/2015	465.70	0.20	39.00	445.40		34.20	447.00	
5/28/2015	466.40	1.08	39.20	445.20		37.30	447.00	
6/30/2015	454.50	0.00	39.30	445.10		37.20	447.00	
7/28/2015	445.60	0.00	39.70	444.70		37.30	447.10	
8/28/2015	437.60	0.00	40.20	444.20		37.30	447.00	
9/24/2015	426.90	1.51	40.70	443.70		37.20	447.00	
10/27/2015	415.40	0.49	41.30	443.10		37.20	447.10	

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-1A			CP-1B		
Top of Well Elevation -->			484.40			484.30		
Bottom of Well Elevation -->			363.20			447.10		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
11/19/2015	412.90	0.09	41.50	442.90		37.30	447.10	
12/22/2015	425.50	0.69	41.65	442.80		37.30	447.00	
1/27/2016	463.60	2.86	40.50	443.90		37.30	447.00	
2/25/2016	468.90	0.25	39.80	444.60		37.30	447.00	
3/30/2016	468.00	1.44	39.70	444.70		37.20	447.00	
4/28/2016	461.30	0.30	39.90	444.50		37.30	447.10	
5/25/2016	451.30	0.18	40.28	444.10		37.25	447.00	
6/28/2016	414.10	0.00	40.60	443.80		37.20	447.10	
7/27/2016	434.20	0.00	41.20	443.20		37.30	447.10	
8/23/2016	418.60	0.00	41.80	442.60		37.30	447.00	
9/27/2016	406.40	0.00	42.50	441.90		37.20	447.00	
10/26/2016	404.00	0.48	42.80	441.60		37.20	447.10	
11/22/2016	413.60	1.13	43.40	441.00		37.20	447.10	
12/20/2016	441.10	3.48	42.95	441.50		37.30	447.10	
1/26/2017	471.60	5.67	40.80	443.60		37.20	447.10	
2/24/2017	472.05	3.95	40.20	444.20		37.20	447.10	
2/25/2017	472.00		40.15	444.30		37.20	447.10	
2/26/2017	472.00		40.10	444.30		37.20	447.10	
2/27/2017	472.00		40.10	444.30		37.30	447.00	
2/28/2017	471.90		40.20	444.20		37.30	447.00	
3/1/2017	471.90		40.20	444.20		37.30	447.00	
3/2/2017	471.90		40.10	444.30		37.20	447.10	
3/29/2017	467.90	0.10	40.00	444.40		37.20	447.10	
4/27/2017	457.60	0.04	40.10	444.30		37.20	447.10	
5/23/2017	453.50	0.43	40.30	444.10		37.20	447.10	
6/21/2017	447.40	0.00	40.50	443.90		37.20	447.10	
7/26/2017	435.10	0.00	40.70	443.70		37.20	447.10	
8/25/2017	420.10	0.00	40.90	443.50		37.10	447.20	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-1A			CP-1B		
Top of Well Elevation -->			484.40			484.30		
Bottom of Well Elevation -->			363.20			447.10		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
9/27/2017	407.10	0.00	41.50	442.90		37.30	447.00	
10/26/2017	395.00	0.00	42.20	442.20		37.20	447.10	
11/28/2017	409.00	0.09	42.30	442.10		37.20	447.10	
12/20/2017	416.80	0.00	42.10	442.30		37.30	447.00	
1/24/2018	434.50	1.31	41.70	442.70		37.80	446.50	
2/21/2018	443.10	0.29	41.00	443.40		37.20	447.10	
3/29/2018	453.00	1.28	40.40	444.00		37.20	447.10	
4/26/2018	449.10	0.05	40.60	443.80		37.30	447.00	
5/31/2018	453.10	0.20	40.70	443.70		37.20	447.10	
6/28/2018	448.20	0.00	40.70	443.70		37.30	447.00	
7/25/2018	440.40	0.00	40.60	443.80		37.40	446.90	
8/22/2018	427.10	0.00	41.60	442.80		37.30	447.00	
9/27/2018	439.60	0.00	42.50	441.90		37.20	447.10	
10/18/2018	405.30	0.90	43.00	441.40		37.30	447.00	
11/28/2018	408.60	1.19	43.20	441.20		37.40	446.90	
12/19/2018	436.00	1.99	43.10	441.30		37.10	447.20	
1/30/2019	463.80	4.71	40.75	443.65		37.30	447.00	Dry
2/27/2019	466.20	6.55	39.90	444.50		37.20	447.10	Dry
3/27/2019	463.30	1.34	39.50	444.90		37.40	446.90	Dry
4/29/2019	453.00	0.13	39.40	445.00		37.20	447.10	Dry
5/30/2019	451.80	0.64	39.20	445.20		37.20	447.10	Dry
6/26/2019	446.20	0.01	39.20	445.20		37.20	447.10	Dry
7/5/2019	39.40	0.00	37.30	447.10		26.50	457.80	Omitted
7/30/2019	434.80	0.00	39.20	445.20		37.20	447.10	Dry
8/27/2019	424.40	0.00	39.40	445.00		34.20	450.10	Dry, Omitted
9/26/2019	405.60	0.00	39.90	444.50		37.10	447.20	Dry
10/22/2019	400.50	0.00	40.40	444.00		37.20	447.10	Dry
11/26/2019	412.80	3.13	46.00	438.40	Omitted	37.20	447.10	Dry

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-1A			CP-1B		
Top of Well Elevation -->			484.40			484.30		
Bottom of Well Elevation -->			363.20			447.10		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
12/18/2019	447.40	4.44	40.00	444.40		37.20	447.10	Dry
1/28/2020	465.40	0.20	38.60	445.80		37.10	447.20	
2/26/2020	459.60	0.14	38.60	445.80		37.20	447.10	
3/24/2020	470.70	3.49	38.40	446.00		37.10	447.20	
4/29/2020	467.60	3.65	37.90	446.50		37.20	447.10	
5/27/2020	459.10	0.02	38.20	446.20		37.20	447.10	
6/23/2020	447.00	0.00	38.70	445.70		37.40	446.90	
7/30/2020	434.00	0.00	39.20	445.20		37.30	447.00	
8/26/2020	417.70	0.00	39.50	444.90		37.10	447.20	
9/29/2020	403.60	0.00	40.10	444.30		37.30	447.00	
10/28/2020	404.50	0.00	40.50	443.90		37.20	447.10	
11/24/2020	413.50	0.42	40.40	444.00		37.00	447.30	
12/22/2020	408.00	1.13	40.40	444.00		37.10	447.20	
1/27/2021	435.60	2.25	40.10	444.30		37.20	447.10	
2/25/2021	457.30	0.05	39.00	445.40		37.10	447.20	
3/23/2021	465.90	1.36	38.90	445.50		37.30	447.00	
4/27/2021	462.10	0.04	38.50	445.90		37.20	447.10	
5/26/2021	455.00	0.03	38.80	445.60		37.20	447.10	
6/30/2021	437.90	0.00	39.30	445.10		37.30	447.00	
7/29/2021	423.60	0.07	39.80	444.60		37.40	446.90	
8/24/2021	408.00	0.00	40.20	444.20		37.30	447.00	
9/29/2021	398.00	0.04	40.90	443.50		37.10	447.20	
10/26/2021	417.00	0.87	41.60	442.80		37.30	447.00	
11/25/2021	427.90	0.00	40.60	443.80		37.20	447.10	
12/21/2021	427.90	4.77	40.30	444.10		37.20	447.10	
1/27/2022	467.80	0.07	39.00	445.40		31.10	453.20	Omitted
2/23/2022	464.80	0.29	39.00	445.40		37.20	447.10	Dry
3/23/2022	464.40	1.08	39.30	445.10		37.20	447.10	Dry

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-1A			CP-1B		
Top of Well Elevation -->			484.40			484.30		
Bottom of Well Elevation -->			363.20			447.10		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
4/26/2022	467.10	0.03	39.30	445.10		37.00	447.30	
5/26/2022	464.80	0.08	39.50	444.90		37.20	447.10	Dry
6/28/2022	457.30	0.00	39.90	444.50		37.30	447.00	Dry
7/26/2022	440.70	0.00	40.40	444.00		37.20	447.10	Dry
8/25/2022	429.50	0.05	40.95	443.45		37.20	447.10	Dry
9/28/2022	410.80	0.35	41.70	442.70		37.30	447.00	Dry
10/25/2022	407.30	0.35	42.20	442.20		37.10	447.20	Dry
11/23/2022	427.00	0.80	42.30	442.10		37.20	447.10	Dry
12/20/2022	441.90	2.14	42.00	442.40		37.30	447.00	Dry
1/26/2023	470.30	5.64	40.40	444.00		37.20	447.10	Dry
2/23/2023	471.00	3.33	37.70	446.70		36.80	447.50	
3/28/2023	471.20	5.72	39.40	445.00		36.80	447.50	
4/25/2023	469.40	0.16	39.00	445.40		37.00	447.30	
5/23/2023	471.00	1.35	38.70	445.70		37.00	447.30	
6/28/2023	468.80	0.10	38.42	445.98		37.05	447.25	
7/27/2023	455.90	0.00	38.60	445.80		37.20	447.10	Dry
8/29/2023	453.80	2.28	38.20	446.20		37.00	447.30	
9/26/2023	445.00	0.00	38.00	446.40		37.30	447.00	Dry
10/26/2023	437.40	0.21	38.30	446.10		37.30	447.00	Dry
11/29/2023	425.00	0.78	38.80	445.60		37.10	447.20	
12/21/2023	421.00	1.60	38.80	445.60		37.10	447.20	

Notes:

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-2A			CP-2B		
Top of Well Elevation -->			487.70			487.70		
Bottom of Well Elevation -->			363.20			423.10		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/31/2007	405.80		38.20	449.50		39.70	448.00	
2/27/2007	426.80		37.40	450.30		39.70	448.00	
3/28/2007	438.80		36.40	451.30		39.40	448.30	
4/26/2007	450.90		35.10	452.60		38.90	448.80	
5/23/2007	461.40		34.20	453.50		38.50	449.20	
6/27/2007	457.20		35.30	452.40		38.50	449.20	
7/26/2007	445.50		36.60	451.10		38.80	448.90	
8/28/2007	434.60		37.00	450.70		39.00	448.70	
9/25/2007	416.80		37.80	449.90		39.40	448.30	
10/24/2007	404.50		38.00	449.70		39.30	448.40	
11/27/2007	422.20		37.40	450.30		39.20	448.50	
1/3/2008	443.20		35.40	452.30		38.60	449.10	
1/29/2008	452.20		34.25	453.50		38.42	449.20	
2/27/2008	460.80		33.10	454.60		37.90	449.80	
3/26/2008	468.00		32.30	455.40		37.50	450.20	
4/29/2008	468.60		32.20	455.50		37.00	450.70	
5/29/2008	464.70		33.90	453.80		37.40	450.30	
6/26/2008	455.70		34.70	453.00		37.60	450.10	
7/29/2008	447.30	0.00	35.40	452.30		38.20	449.50	
8/28/2008	438.80	0.00	35.80	451.90		38.40	449.30	
9/26/2008	430.70	0.00	36.00	451.70		38.30	449.40	
10/29/2008	412.50	0.00	36.30	451.40		38.30	449.40	
11/25/2008	404.70	2.60	36.00	451.70		38.30	449.40	
12/30/2008	440.90	3.42	33.60	454.10		37.90	449.80	
1/28/2009	463.70	0.17	30.80	456.90		37.00	450.70	
2/25/2009	470.10	3.35	30.20	457.50		36.00	451.70	
3/26/2009	469.40	0.19	30.70	457.00		36.20	451.50	
4/29/2009	466.90	0.07	31.30	456.40		36.60	451.10	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-2A			CP-2B		
Top of Well Elevation -->			487.70			487.70		
Bottom of Well Elevation -->			363.20			423.10		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
5/18/2009	466.70	0.00	31.20	456.50		36.60	451.10	
5/29/2009	465.00	0.00	31.50	456.20		36.60	451.10	
6/30/2009	460.20	0.00	32.10	455.60		37.10	450.60	
7/30/2009	451.10	0.00	32.70	455.00		37.30	450.40	
8/25/2009	440.10	0.00	33.20	454.50		37.40	450.30	
9/30/2009	432.20	0.00	33.15	454.60		37.60	450.10	
10/29/2009	431.40	0.53	32.74	455.00		37.62	450.00	
12/1/2009	427.40	0.00	32.60	455.10		37.70	450.00	
12/29/2009	448.10	2.06	30.66	457.00		37.31	450.30	
1/27/2010	465.60	4.62	27.40	460.30		36.60	451.10	
2/25/2010	470.20	2.51	27.70	460.00		36.10	451.60	
3/29/2010	465.70	0.99	29.40	458.30		36.50	451.20	
4/4/2010	465.00		29.20	458.50		36.40	451.30	
4/27/2010	468.40	1.23	28.60	459.10		36.20	451.50	
5/27/2010	463.30	0.05	29.80	457.90		36.40	451.30	
6/30/2010	454.70	0.00	30.50	457.20		36.70	451.00	
7/28/2010	445.60	0.00	31.00	456.70		37.00	450.70	
8/31/2010	437.10	0.00	31.30	456.40		37.20	450.50	
9/29/2010	422.70	0.00	31.30	456.40		37.20	450.50	
10/27/2010	426.40	2.38	31.20	456.50		37.20	450.50	
11/29/2010	439.80	0.97	30.00	457.70		37.10	450.60	
12/30/2010	456.60	8.62	25.70	462.00		35.50	452.20	
2/1/2011	468.90	0.92	26.00	461.70		35.30	452.40	
2/23/2011	469.00	0.99	26.48	461.20		35.58	452.10	
3/29/2011	470.30	2.93	26.50	461.20		35.40	452.30	
4/27/2011	464.80	0.19	27.87	459.80		35.67	452.00	
5/26/2011	457.30	0.48	28.60	459.10		36.00	451.70	
6/28/2011	443.50	0.05	29.80	457.90		36.30	451.40	

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-2A			CP-2B		
Top of Well Elevation -->			487.70			487.70		
Bottom of Well Elevation -->			363.20			423.10		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
7/29/2011	425.10	0.00	30.35	457.40		36.60	451.10	
8/24/2011	418.00	0.00	30.60	457.10		36.70	451.00	
9/27/2011	400.90	0.12	30.60	457.10		36.70	451.00	
10/26/2011	402.20	1.25	30.80	456.90		36.90	450.80	
11/30/2011	425.10	1.38	29.50	458.20		36.40	451.30	
12/21/2011	435.70	0.32	29.10	458.60		36.60	451.10	
1/24/2012	441.40	0.53	28.50	459.20		36.40	451.30	
2/28/2012	448.40	0.42	28.50	459.20		36.60	451.10	
3/26/2012	452.70	1.06	27.80	459.90		36.60	451.10	
4/23/2012	463.40	1.32	26.70	461.00		35.70	452.00	
5/30/2012	457.30	0.02	28.30	459.40		36.00	451.70	
6/13/2012	452.90	0.02	28.80	458.90		36.00	451.70	
6/26/2012	450.20	0.00	29.10	458.60		36.10	451.60	
7/24/2012	439.80	0.00	30.00	457.70		36.70	451.00	
8/8/2012	437.60	0.12	29.80	457.90		36.60	451.10	
8/22/2012	433.40	0.00	29.95	457.80		36.50	451.20	
8/29/2012	431.30	0.00	30.00	457.70		36.40	451.30	
9/25/2012	420.80	0.00	30.10	457.60		36.40	451.30	
10/31/2012	412.30	0.26	30.60	457.10		36.80	450.90	
11/27/2012	420.80	0.58	30.30	457.40		36.80	450.90	
12/18/2012	448.00	1.44	27.90	459.80		36.00	451.70	
1/29/2013	468.60	1.18	26.20	461.50		35.80	451.90	
2/28/2013	469.20	0.30	26.90	460.80		35.50	452.20	
3/27/2013	468.30	0.50	27.50	460.20		35.40	452.30	
4/25/2013	462.70	0.00	28.90	458.80		35.80	451.90	
5/21/2013	454.20	0.00	29.70	458.00		36.20	451.50	
6/25/2013	439.30	0.00	30.60	457.10		36.50	451.20	
7/23/2013	431.50	0.00	30.70	457.00		36.70	451.00	

Notes:

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-2A			CP-2B		
Top of Well Elevation -->			487.70			487.70		
Bottom of Well Elevation -->			363.20			423.10		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
8/21/2013	418.00	0.00	31.30	456.40		36.80	450.90	
9/24/2013	404.00	0.00	31.20	456.50		36.90	450.80	
10/29/2013	400.60	0.00	31.00	456.70		36.70	451.00	
11/26/2013	407.90	0.44	30.90	456.80		37.00	450.70	
12/19/2013	425.80	0.54	29.90	457.80		36.50	451.20	
1/28/2014	439.70	0.00	29.00	458.70		36.50	451.20	
2/25/2014	449.70	0.83	28.25	459.50		36.20	451.50	
3/26/2014	465.10		26.75	461.00		35.70	452.00	
3/28/2014	465.70	1.15	26.80	460.90		35.80	451.90	
4/29/2014	465.30	0.43	27.60	460.10		35.80	451.90	
5/28/2014	450.60	0.00	29.80	457.90		36.30	451.40	
6/25/2014	440.10	0.00	30.40	457.30		36.50	451.20	
7/29/2014	431.20	0.00	30.70	457.00		36.70	451.00	
8/26/2014	419.50	0.02	31.10	456.60		36.80	450.90	
9/23/2014	405.30	0.00	31.30	456.40		36.80	450.90	
10/29/2014	400.90	0.00	31.30	456.40		36.90	450.80	
11/25/2014	410.90	0.25	31.20	456.50		37.10	450.60	
12/30/2014	430.60	2.94	26.20	461.50		36.65	451.00	
1/27/2015	466.70	0.83	26.50	461.20		35.70	452.00	
2/25/2015	468.90	0.69	27.00	460.70		35.50	452.20	
3/26/2015	465.90	0.61	28.10	459.60		35.60	452.10	
4/28/2015	465.70	0.20	28.00	459.70		35.70	452.00	
5/28/2015	466.40	1.08	20.10	457.60		35.70	452.00	
6/30/2015	454.50	0.00	29.80	457.90		36.10	451.60	
7/28/2015	445.60	0.00	30.20	457.50		36.30	451.40	
8/28/2015	437.60	0.00	30.50	457.20		36.60	451.10	
9/24/2015	426.90	1.51	30.80	456.90		36.70	451.00	
10/27/2015	415.40	0.49	30.90	456.80		36.80	450.90	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-2A			CP-2B		
Top of Well Elevation -->			487.70			487.70		
Bottom of Well Elevation -->			363.20			423.10		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
11/19/2015	412.90	0.09	30.80	456.90		36.80	450.90	
12/22/2015	425.50	0.69	29.90	457.80		36.50	451.20	
1/27/2016	463.60	2.86	26.25	461.50		36.15	451.50	
2/25/2016	468.90	0.25	26.70	461.00		35.50	452.20	
3/30/2016	468.00	1.44	26.75	461.00		35.10	452.60	
4/28/2016	461.30	0.30	28.20	459.50		35.70	452.00	
5/25/2016	451.30	0.18	29.05	458.70		36.20	451.50	
6/28/2016	414.10	0.00	29.30	458.40		36.20	451.50	
7/27/2016	434.20	0.00	29.70	458.00		36.40	451.30	
8/23/2016	418.60	0.00	30.30	457.40		36.65	451.00	
9/27/2016	406.40	0.00	30.40	457.30		36.70	451.00	
10/26/2016	404.00	0.48	30.30	457.40		36.70	451.00	
11/22/2016	413.60	1.13	29.95	457.80		36.80	450.90	
12/20/2016	441.10	3.48	28.10	459.60		36.45	451.20	
1/26/2017	471.60	5.67	24.10	463.60		35.20	452.50	
2/24/2017	472.05	3.95	24.80	462.90		34.60	453.10	
2/25/2017	472.00		24.80	462.90		34.45	453.20	
2/26/2017	472.00		24.85	462.90		34.40	453.30	
2/27/2017	472.00		25.40	462.30		34.40	453.30	
2/28/2017	471.90		24.90	462.80		34.50	453.20	
3/1/2017	471.90		24.90	462.80		34.40	453.30	
3/2/2017	471.90		25.14	462.60		34.70	453.00	
3/29/2017	467.90	0.10	26.30	461.40		35.00	452.70	
4/27/2017	457.60	0.04	27.60	460.10		35.70	452.00	
5/23/2017	453.50	0.43	27.80	459.90		35.90	451.80	
6/21/2017	447.40	0.00	28.10	459.60		35.90	451.80	
7/26/2017	435.10	0.00	28.70	459.00		36.20	451.50	
8/25/2017	420.10	0.00	28.00	459.70		36.20	451.50	

Notes:

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SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-2A			CP-2B		
Top of Well Elevation -->			487.70			487.70		
Bottom of Well Elevation -->			363.20			423.10		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
9/27/2017	407.10	0.00	29.10	458.60		36.40	451.30	
10/26/2017	395.00	0.00	29.20	458.50		36.30	451.40	
11/28/2017	409.00	0.09	28.60	459.10		36.30	451.40	
12/20/2017	416.80	0.00	28.50	459.20		36.40	451.30	
1/24/2018	434.50	1.31	27.10	460.60		36.00	451.70	
2/21/2018	443.10	0.29	26.50	461.20		35.90	451.80	
3/29/2018	453.00	1.28	25.90	461.80		35.60	452.10	
4/26/2018	449.10	0.05	26.20	461.50		35.80	451.90	
5/31/2018	453.10	0.20	26.40	461.30		35.80	451.90	
6/28/2018	448.20	0.00	27.40	460.30		35.90	451.80	
7/25/2018	440.40	0.00	28.00	459.70		35.90	451.80	
8/22/2018	427.10	0.00	28.80	458.90		36.20	451.50	
9/27/2018	439.60	0.00	29.40	458.30		36.40	451.30	
10/18/2018	405.30	0.90	29.50	458.20		36.40	451.30	
11/28/2018	408.60	1.19	29.30	458.40		36.50	451.20	
12/19/2018	436.00	1.99	37.80	449.90	Omitted	36.10	451.60	
1/30/2019	463.80	4.71	24.10	463.60		37.00	450.70	
2/27/2019	466.20	6.55	24.00	463.70		24.30	463.40	Omitted
3/27/2019	463.30	1.34	25.10	462.60		35.30	452.40	
4/29/2019	453.00	0.13	26.10	461.60		35.40	452.30	
5/30/2019	451.80	0.64	25.70	462.00		35.40	452.30	
6/26/2019	446.20	0.01	25.90	461.80		35.50	452.20	
7/5/2019	39.40	0.00	36.00	451.70	Omitted	11.10	476.60	Omitted
7/30/2019	434.80	0.00	26.50	461.20		35.60	452.10	
8/27/2019	424.40	0.00	26.80	460.90		35.60	452.10	
9/26/2019	405.60	0.00	27.30	460.40		36.10	451.60	
10/22/2019	400.50	0.00	27.40	460.30		35.90	451.80	
11/26/2019	412.80	3.13	27.20	460.50		35.60	452.10	

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JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-2A			CP-2B		
Top of Well Elevation -->			487.70			487.70		
Bottom of Well Elevation -->			363.20			423.10		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
12/18/2019	447.40	4.44	24.80	462.90		35.20	452.50	
1/28/2020	465.40	0.20	23.30	464.40		34.70	453.00	
2/26/2020	459.60	0.14	24.90	462.80		35.00	452.70	
3/24/2020	470.70	3.49	23.00	464.70		34.90	452.80	
4/29/2020	467.60	3.65	23.40	464.30		33.90	453.80	
5/27/2020	459.10	0.02	25.10	462.60		34.60	453.10	
6/23/2020	447.00	0.00	26.20	461.50		35.20	452.50	
7/30/2020	434.00	0.00	26.80	460.90		35.30	452.40	
8/26/2020	417.70	0.00	27.30	460.40		35.30	452.40	
9/29/2020	403.60	0.00	27.60	460.10		35.60	452.10	
10/28/2020	404.50	0.00	27.50	460.20		35.80	451.90	
11/24/2020	413.50	0.42	27.10	460.60		35.50	452.20	
12/22/2020	408.00	1.13	27.20	460.50		35.50	452.20	
1/27/2021	435.60	2.25	25.80	461.90		35.50	452.20	
2/25/2021	457.30	0.05	24.00	463.70		34.80	452.90	
3/23/2021	465.90	1.36	23.40	464.30		35.70	452.00	
4/27/2021	462.10	0.04	24.80	462.90		34.80	452.90	
5/26/2021	455.00	0.03	25.90	461.80		35.10	452.60	
6/30/2021	437.90	0.00	27.40	460.30		35.50	452.20	
7/29/2021	423.60	0.07	28.20	459.50		35.70	452.00	
8/24/2021	408.00	0.00	28.30	459.40		35.80	451.90	
9/29/2021	398.00	0.04	28.50	459.20		35.80	451.90	
10/26/2021	417.00	0.87	28.30	459.40		36.70	451.00	
11/25/2021	427.90	0.00	27.30	460.40		35.80	451.90	
12/21/2021	427.90	4.77	25.70	462.00		35.50	452.20	
1/27/2022	467.80	0.07	24.20	463.50		34.70	453.00	
2/23/2022	464.80	0.29	25.30	462.40		35.00	452.70	
3/23/2022	464.40	1.08	25.30	462.40		35.20	452.50	

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JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-2A			CP-2B		
Top of Well Elevation -->			487.70			487.70		
Bottom of Well Elevation -->			363.20			423.10		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
4/26/2022	467.10	0.03	25.30	462.40		34.90	452.80	
5/26/2022	464.80	0.08	35.10	452.60	Omitted	25.80	461.90	Omitted
6/28/2022	457.30	0.00	26.90	460.80		35.50	452.20	
7/26/2022	440.70	0.00	28.20	459.50		35.90	451.80	
8/25/2022	429.50	0.05	28.40	459.30		36.00	451.70	
9/28/2022	410.80	0.35	28.80	458.90		36.10	451.60	
10/25/2022	407.30	0.35	28.70	459.00		36.20	451.50	
11/23/2022	427.00	0.80	27.50	460.20		36.00	451.70	
12/20/2022	441.90	2.14	26.40	461.30		36.00	451.70	
1/26/2023	470.30	5.64	21.70	466.00	New hist. max	34.60	453.10	
2/23/2023	471.00	3.33	23.30	464.40		34.50	453.20	
3/28/2023	471.20	5.72	21.80	465.90		33.20	454.50	New hist. max
4/25/2023	469.40	0.16	22.80	464.90		33.90	453.80	
5/23/2023	471.00	1.35	22.60	465.10		33.90	453.80	
6/28/2023	468.80	0.10	23.24	464.46		33.98	453.72	
7/27/2023	455.90	0.00	25.00	462.70		34.90	452.80	
8/29/2023	453.80	2.28	24.20	463.50		34.90	452.80	
9/26/2023	445.00	0.00	25.20	462.50		35.20	452.50	
10/26/2023	437.40	0.21	25.70	462.00		35.30	452.40	
11/29/2023	425.00	0.78	26.40	461.30		35.60	452.10	
12/21/2023	421.00	1.60	26.30	461.40		35.40	452.30	

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-3A			CP-3B		
Top of Well Elevation -->			486.00			486.00		
Bottom of Well Elevation -->			363.20			452.60		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/31/2007	405.80		15.50	470.50		19.90	466.10	
2/27/2007	426.80		15.50	470.50		20.30	465.70	
3/28/2007	438.80		15.60	470.40		20.30	465.70	
4/26/2007	450.90		15.10	470.90		20.20	465.80	
5/23/2007	461.40		15.20	470.80		20.40	465.60	
6/27/2007	457.20		15.50	470.50		20.50	465.50	
7/26/2007	445.50		15.90	470.10		20.50	465.50	
8/28/2007	434.60		16.00	470.00		20.60	465.40	
9/25/2007	416.80		16.40	469.60		20.80	465.20	
10/24/2007	404.50		16.70	469.30		20.80	465.20	
11/27/2007	422.20		16.70	469.30		21.10	464.90	
1/3/2008	443.20		16.60	469.40		20.90	465.10	
1/29/2008	452.20		16.21	469.80		21.11	464.90	
2/27/2008	460.80		15.90	470.10		20.60	465.40	
3/26/2008	468.00		15.60	470.40		20.60	465.40	
4/29/2008	468.60		15.40	470.60		20.00	466.00	
5/29/2008	464.70		15.50	470.50		20.30	465.70	
6/26/2008	455.70		15.40	470.60		20.20	465.80	
7/29/2008	447.30	0.00	15.60	470.40		20.20	465.80	
8/28/2008	438.80	0.00	15.90	470.10		20.30	465.70	
9/26/2008	430.70	0.00	15.90	470.10		20.30	465.70	
10/29/2008	412.50	0.00	16.00	470.00		20.20	465.80	
11/25/2008	404.70	2.60	16.10	469.90		20.20	465.80	
12/30/2008	440.90	3.42	15.90	470.10		20.40	465.60	
1/28/2009	463.70	0.17	15.30	470.70		20.10	465.90	
2/25/2009	470.10	3.35	14.90	471.10		19.00	467.00	
3/26/2009	469.40	0.19	14.60	471.40		19.50	466.50	
4/29/2009	466.90	0.07	14.60	471.40		19.70	466.30	

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JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-3A			CP-3B		
Top of Well Elevation -->			486.00			486.00		
Bottom of Well Elevation -->			363.20			452.60		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
5/18/2009	466.70	0.00	14.40	471.60		19.40	466.60	
5/29/2009	465.00	0.00	14.40	471.60		19.40	466.60	
6/30/2009	460.20	0.00	14.50	471.50		19.30	466.70	
7/30/2009	451.10	0.00	14.50	471.50		19.30	466.70	
8/25/2009	440.10	0.00	14.50	471.50		19.20	466.80	
9/30/2009	432.20	0.00	14.60	471.40		19.30	466.70	
10/29/2009	431.40	0.53	14.69	471.30		19.48	466.50	
12/1/2009	427.40	0.00	14.90	471.10		19.80	466.20	
12/29/2009	448.10	2.06	14.72	471.30		19.65	466.40	
1/27/2010	465.60	4.62	14.20	471.80		19.40	466.60	
2/25/2010	470.20	2.51	13.80	472.20		19.20	466.80	
3/29/2010	465.70	0.99	13.70	472.30		18.00	468.00	
4/4/2010	465.00		13.70	472.30		18.40	467.60	
4/27/2010	468.40	1.23	13.60	472.40		18.90	467.10	
5/27/2010	463.30	0.05	13.60	472.40		18.80	467.20	
6/30/2010	454.70	0.00	13.60	472.40		18.70	467.30	
7/28/2010	445.60	0.00	13.70	472.30		18.90	467.10	
8/31/2010	437.10	0.00	14.00	472.00		19.00	467.00	
9/29/2010	422.70	0.00	13.80	472.20		18.90	467.10	
10/27/2010	426.40	2.38	13.90	472.10		19.00	467.00	
11/29/2010	439.80	0.97	13.70	472.30		19.20	466.80	
12/30/2010	456.60	8.62	12.60	473.40		18.20	467.80	
2/1/2011	468.90	0.92	11.90	474.10		17.90	468.10	
2/23/2011	469.00	0.99	11.64	474.40		17.81	468.20	
3/29/2011	470.30	2.93	11.10	474.90		17.40	468.60	
4/27/2011	464.80	0.19	10.85	475.20		17.00	469.00	
5/26/2011	457.30	0.48	10.80	475.20		16.90	469.10	
6/28/2011	443.50	0.05	10.70	475.30		16.70	469.30	

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JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-3A			CP-3B		
Top of Well Elevation -->			486.00			486.00		
Bottom of Well Elevation -->			363.20			452.60		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
7/29/2011	425.10	0.00	10.80	475.20		16.70	469.30	
8/24/2011	418.00	0.00	10.80	475.20		16.70	469.30	
9/27/2011	400.90	0.12	11.00	475.00		16.70	469.30	
10/26/2011	402.20	1.25	11.10	474.90		17.20	468.80	
11/30/2011	425.10	1.38	10.80	475.20		16.70	469.30	
12/21/2011	435.70	0.32	10.90	475.10		16.90	469.10	
1/24/2012	441.40	0.53	10.50	475.50		17.00	469.00	
2/28/2012	448.40	0.42	10.60	475.40		17.40	468.60	
3/26/2012	452.70	1.06	10.50	475.50		17.30	468.70	
4/23/2012	463.40	1.32	10.50	475.50		17.40	468.60	
5/30/2012	457.30	0.02	10.40	475.60		17.10	468.90	
6/13/2012	452.90	0.02	10.50	475.50		17.00	469.00	
6/26/2012	450.20	0.00	10.60	475.40		17.10	468.90	
7/24/2012	439.80	0.00	11.00	475.00		17.80	468.20	
8/8/2012	437.60	0.12	11.10	474.90		17.50	468.50	
8/22/2012	433.40	0.00	11.15	474.90		17.55	468.50	
8/29/2012	431.30	0.00	11.20	474.80		17.50	468.50	
9/25/2012	420.80	0.00	11.30	474.70		17.60	468.40	
10/31/2012	412.30	0.26	11.80	474.20		18.10	467.90	
11/27/2012	420.80	0.58	11.80	474.20		18.20	467.80	
12/18/2012	448.00	1.44	11.65	474.40		18.00	468.00	
1/29/2013	468.60	1.18	11.30	474.70		18.30	467.70	
2/28/2013	469.20	0.30	11.20	474.80		18.20	467.80	
3/27/2013	468.30	0.50	11.20	474.80		18.00	468.00	
4/25/2013	462.70	0.00	11.40	474.60		18.20	467.80	
5/21/2013	454.20	0.00	11.90	474.10		18.40	467.60	
6/25/2013	439.30	0.00	12.00	474.00		18.65	467.40	
7/23/2013	431.50	0.00	12.40	473.60		18.80	467.20	

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JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-3A			CP-3B		
Top of Well Elevation -->			486.00			486.00		
Bottom of Well Elevation -->			363.20			452.60		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
8/21/2013	418.00	0.00	13.00	473.00		19.10	466.90	
9/24/2013	404.00	0.00	13.00	473.00		19.20	466.80	
10/29/2013	400.60	0.00	13.10	472.90		19.40	466.60	
11/26/2013	407.90	0.44	13.20	472.80		19.50	466.50	
12/19/2013	425.80	0.54	12.90	473.10		19.20	466.80	
1/28/2014	439.70	0.00	12.70	473.30		19.50	466.50	
2/25/2014	449.70	0.83	12.70	473.30		19.60	466.40	
3/26/2014	465.10		12.55	473.50		19.60	466.40	
3/28/2014	465.70	1.15	12.60	473.40		19.70	466.30	
4/29/2014	465.30	0.43	12.80	473.20		19.60	466.40	
5/28/2014	450.60	0.00	13.10	472.90		19.60	466.40	
6/25/2014	440.10	0.00	13.20	472.80		19.80	466.20	
7/29/2014	431.20	0.00	13.50	472.50		20.10	465.90	
8/26/2014	419.50	0.02	13.70	472.30		20.30	465.70	
9/23/2014	405.30	0.00	13.80	472.20		20.20	465.80	
10/29/2014	400.90	0.00	14.10	471.90		20.50	465.50	
11/25/2014	410.90	0.25	14.30	471.70		20.90	465.10	
12/30/2014	430.60	2.94	14.00	472.00		20.50	465.50	
1/27/2015	466.70	0.83	13.10	472.90		20.30	465.70	
2/25/2015	468.90	0.69	12.70	473.30		20.10	465.90	
3/26/2015	465.90	0.61	12.70	473.30		19.90	466.10	
4/28/2015	465.70	0.20	12.80	473.20		19.80	466.20	
5/28/2015	466.40	1.08	12.90	473.10		20.00	466.00	
6/30/2015	454.50	0.00	13.10	472.90		20.00	466.00	
7/28/2015	445.60	0.00	13.30	472.70		20.10	465.90	
8/28/2015	437.60	0.00	13.60	472.40		20.20	465.80	
9/24/2015	426.90	1.51	13.80	472.20		20.50	465.50	
10/27/2015	415.40	0.49	14.10	471.90		20.70	465.30	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-3A			CP-3B		
Top of Well Elevation -->			486.00			486.00		
Bottom of Well Elevation -->			363.20			452.60		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
11/19/2015	412.90	0.09	14.20	471.80		20.80	465.20	
12/22/2015	425.50	0.69	14.40	471.60		20.80	465.20	
1/27/2016	463.60	2.86	14.10	471.90		21.10	464.90	
2/25/2016	468.90	0.25	14.20	471.80		20.90	465.10	
3/30/2016	468.00	1.44	13.60	472.40		20.80	465.20	
4/28/2016	461.30	0.30	13.80	472.20		20.80	465.20	
5/25/2016	451.30	0.18	14.15	471.90		21.05	465.00	
6/28/2016	414.10	0.00	14.40	471.60		21.10	464.90	
7/27/2016	434.20	0.00	14.60	471.40		21.30	464.70	
8/23/2016	418.60	0.00	14.90	471.10		21.40	464.60	
9/27/2016	406.40	0.00	15.20	470.80		21.50	464.50	
10/26/2016	404.00	0.48	15.50	470.50		21.80	464.20	
11/22/2016	413.60	1.13	15.45	470.60		21.95	464.10	
12/20/2016	441.10	3.48	15.35	470.70		22.05	464.00	
1/26/2017	471.60	5.67	14.20	471.80		21.70	464.30	
2/24/2017	472.05	3.95	13.65	472.40		21.10	464.90	
2/25/2017	472.00		13.55	472.50		21.00	465.00	
2/26/2017	472.00		13.50	472.50		20.90	465.10	
2/27/2017	472.00		20.40	472.10		13.90	465.60	
2/28/2017	471.90		13.50	472.50		21.00	465.00	
3/1/2017	471.90		13.60	472.40		21.20	464.80	
3/2/2017	471.90		13.60	472.40		21.10	464.90	
3/29/2017	467.90	0.10	13.40	472.60		20.70	465.30	
4/27/2017	457.60	0.04	13.30	472.70		20.30	465.70	
5/23/2017	453.50	0.43	13.40	472.60		20.50	465.50	
6/21/2017	447.40	0.00	13.30	472.70		20.40	465.60	
7/26/2017	435.10	0.00	13.50	472.50		20.50	465.50	
8/25/2017	420.10	0.00	13.60	472.40		20.40	465.60	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-3A			CP-3B		
Top of Well Elevation -->			486.00			486.00		
Bottom of Well Elevation -->			363.20			452.60		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
9/27/2017	407.10	0.00	13.80	472.20		20.60	465.40	
10/26/2017	395.00	0.00	14.10	471.90		20.60	465.40	
11/28/2017	409.00	0.09	13.70	472.30		20.70	465.30	
12/20/2017	416.80	0.00	13.80	472.20		20.90	465.10	
1/24/2018	434.50	1.31	13.30	472.70		20.50	465.50	
2/21/2018	443.10	0.29	13.00	473.00		20.40	465.60	
3/29/2018	453.00	1.28	12.50	473.50		20.20	465.80	
4/26/2018	449.10	0.05	12.50	473.50		20.10	465.90	
5/31/2018	453.10	0.20	12.30	473.70		20.00	466.00	
6/28/2018	448.20	0.00	12.50	473.50		20.00	466.00	
7/25/2018	440.40	0.00	12.60	473.40		19.20	466.80	
8/22/2018	427.10	0.00	13.10	472.90		20.10	465.90	
9/27/2018	439.60	0.00	13.40	472.60		20.50	465.50	
10/18/2018	405.30	0.90	13.50	472.50		20.70	465.30	
11/28/2018	408.60	1.19	13.80	472.20		21.40	464.60	
12/19/2018	436.00	1.99	13.60	472.40		21.00	465.00	
1/30/2019	463.80	4.71	22.30	463.70	Omitted	12.40	473.60	Omitted
2/27/2019	466.20	6.55	11.50	474.50		19.40	466.60	
3/27/2019	463.30	1.34	11.20	474.80		19.50	466.50	
4/29/2019	453.00	0.13	11.10	474.90		18.90	467.10	
5/30/2019	451.80	0.64	11.00	475.00		19.60	466.40	
6/26/2019	446.20	0.01	10.80	475.20		18.70	467.30	
7/5/2019	39.40	0.00	18.80	467.20	Omitted	83.40	402.60	Omitted
7/30/2019	434.80	0.00	10.90	475.10		18.60	467.40	
8/27/2019	424.40	0.00	10.90	475.10		18.50	467.50	
9/26/2019	405.60	0.00	11.10	474.90		18.50	467.50	
10/22/2019	400.50	0.00	11.00	475.00		18.60	467.40	
11/26/2019	412.80	3.13	11.00	475.00		18.50	467.50	

Notes:

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TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-3A			CP-3B		
Top of Well Elevation -->			486.00			486.00		
Bottom of Well Elevation -->			363.20			452.60		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
12/18/2019	447.40	4.44	10.70	475.30		18.70	467.30	
1/28/2020	465.40	0.20	9.80	476.20		18.20	467.80	
2/26/2020	459.60	0.14	9.60	476.40		17.80	468.20	
3/24/2020	470.70	3.49	9.50	476.50		18.20	467.80	
4/29/2020	467.60	3.65	8.60	477.40		17.00	469.00	
5/27/2020	459.10	0.02	8.60	477.40		16.90	469.10	
6/23/2020	447.00	0.00	8.90	477.10		17.20	468.80	
7/30/2020	434.00	0.00	8.90	477.10		17.10	468.90	
8/26/2020	417.70	0.00	9.00	477.00		17.10	468.90	
9/29/2020	403.60	0.00	9.35	476.65		17.40	468.60	
10/28/2020	404.50	0.00	9.50	476.50		17.70	468.30	
11/24/2020	413.50	0.42	9.30	476.70		17.60	468.40	
12/22/2020	408.00	1.13	9.40	476.60		17.70	468.30	
1/27/2021	435.60	2.25	9.20	476.80		17.80	468.20	
2/25/2021	457.30	0.05	8.80	477.20		17.40	468.60	
3/23/2021	465.90	1.36	8.70	477.30		17.70	468.30	
4/27/2021	462.10	0.04	8.50	477.50		17.20	468.80	
5/26/2021	455.00	0.03	8.80	477.20		17.40	468.60	
6/30/2021	437.90	0.00	9.20	476.80		17.70	468.30	
7/29/2021	423.60	0.07	9.50	476.50		17.80	468.20	
8/24/2021	408.00	0.00	9.70	476.30		17.90	468.10	
9/29/2021	398.00	0.04	10.10	475.90		18.10	467.90	
10/26/2021	417.00	0.87	10.80	475.20		18.60	467.40	
11/25/2021	427.90	0.00	9.70	476.30		18.40	467.60	
12/21/2021	427.90	4.77	10.00	476.00		18.40	467.60	
1/27/2022	467.80	0.07	9.20	476.80		18.10	467.90	
2/23/2022	464.80	0.29	9.20	476.80		18.00	468.00	
3/23/2022	464.40	1.08	9.20	476.80		18.00	468.00	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 6
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Monitoring Well -->			CP-3A			CP-3B		
Top of Well Elevation -->			486.00			486.00		
Bottom of Well Elevation -->			363.20			452.60		
Depth of Well								
Date	Reservoir Elevation (ft)	Monthly Rainfall (in.)	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
4/26/2022	467.10	0.03	9.20	476.80		17.90	468.10	
5/26/2022	464.80	0.08	9.20	476.80		18.00	468.00	
6/28/2022	457.30	0.00	9.40	476.60		18.10	467.90	
7/26/2022	440.70	0.00	9.80	476.20		18.30	467.70	
8/25/2022	429.50	0.05	10.00	476.00		18.50	467.50	
9/28/2022	410.80	0.35	10.40	475.60		18.60	467.40	
10/25/2022	407.30	0.35	10.60	475.40		10.80	475.20	Omitted
11/23/2022	427.00	0.80	10.50	475.50		18.80	467.20	
12/20/2022	441.90	2.14	10.30	475.70		19.00	467.00	
1/26/2023	470.30	5.64	8.80	477.20		18.10	467.90	
2/23/2023	471.00	3.33	8.40	477.60		17.80	468.20	
3/28/2023	471.20	5.72	7.10	478.90		16.70	469.30	
4/25/2023	469.40	0.16	6.80	479.20		16.40	469.60	
5/23/2023	471.00	1.35	6.70	479.30		16.20	469.80	
6/28/2023	468.80	0.10	6.46	479.54		15.94	470.06	
7/27/2023	455.90	0.00	6.50	479.50		15.90	470.10	
8/29/2023	453.80	2.28	6.40	479.60	New hist. max	15.70	470.30	
9/26/2023	445.00	0.00	6.40	479.60	New hist. max	15.70	470.30	
10/26/2023	437.40	0.21	6.60	479.40		15.70	470.30	
11/29/2023	425.00	0.78	6.70	479.30		15.80	470.20	
12/21/2023	421.00	1.60	6.50	479.50		15.60	470.40	New hist. max

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-1				VB-2			
Top of AC Elevation -->			371.00				407.00			
Piezo. Tip Elevation -->			357.00				392.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
1/31/2007	405.80		3067.70	20.60			3050.60			
2/27/2007	426.80		3059.10	20.20			3041.10			
3/28/2007	438.80		3050.60	19.70			3019.50			
4/26/2007	450.90		3040.70	19.60			2984.20			
5/23/2007	461.40		3029.00	19.60			2946.80			
6/27/2007	457.20		3024.40	19.90			2946.90			
7/26/2007	445.50		3025.30	20.00			2951.10			
8/28/2007	434.60		3031.40	20.30			2972.40			
9/25/2007	416.80		3043.10	20.70			3001.00			
10/24/2007	404.50		3055.70	20.90			3076.40			
11/27/2007	422.20		3052.20	21.00			3027.40			
1/3/2008	443.20		3004.50	22.30	392.04		2994.10	23.00	430.26	
1/29/2008	452.20		3032.10	20.80	385.04		2967.30	23.00	431.79	
2/27/2008	460.80		3016.60	22.30	389.00		2941.00	23.00	432.68	
3/26/2008	468.00		3083.50	22.30	371.98		2918.80	23.00	431.40	
4/29/2008	468.60		3005.20	22.30	391.87		2908.00	23.00	428.35	
5/29/2008	464.70		3003.80	22.30	392.22		2910.90	23.00	423.03	
6/26/2008	455.70		3007.50	19.80	391.20		2924.80	23.00	416.38	
7/29/2008	447.30	0.00	3013.80	19.00	389.59		2943.30	23.00	409.55	
8/28/2008	438.80	0.00	3020.30	22.30	388.07		2960.80	23.00	417.52	
9/26/2008	430.70	0.00	3026.00	22.30	386.64		2975.90	23.00	414.16	
10/29/2008	412.50	0.00	3041.50	22.30	382.71		3007.20	23.00	407.15	
11/25/2008	404.70	2.60	3051.80	22.30	380.10		3024.60	23.00	403.22	
12/30/2008	440.90	3.42	3037.00	22.30	383.86		3008.40	23.00	406.88	
1/28/2009	463.70	0.17	3010.10	22.30	390.64		2951.70	23.00	419.54	
2/25/2009	470.10	3.35	2988.80	22.30	395.96		2912.40	23.00	428.20	
3/26/2009	469.40	0.19	2973.50	22.30	399.76		2903.20	23.00	430.21	
4/29/2009	466.90	0.07	2938.80	22.30	408.30		2903.10	23.00	430.24	
5/18/2009	466.70	0.00	2938.00	19.90	408.41		2904.00	23.00	430.04	
5/29/2009	465.00	0.00	2941.80	22.30	407.57		2907.10	23.00	429.36	
6/30/2009	460.20	0.00	2947.30	22.30	406.22		2914.70	23.00	427.70	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-1				VB-2			
Top of AC Elevation -->			371.00				407.00			
Piezo. Tip Elevation -->			357.00				392.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
7/30/2009	451.10	0.00	2960.50	20.00	402.89		2929.70	23.00	424.40	
8/25/2009	440.10	0.00	2979.90	19.80	398.08		2950.40	23.00	419.83	
9/30/2009	432.20	0.00	2996.20	22.30	394.12		2970.30	23.00	415.41	
10/29/2009	431.40	0.53	3003.20	20.10	392.29		2979.70	23.00	413.31	
12/1/2009	427.40	0.00	3014.10	20.90	389.58		2990.70	23.00	410.85	
12/29/2009	448.10	2.06	3000.70	22.30	392.99		2971.40	23.00	415.16	
1/27/2010	465.60	4.62	2978.90	22.30	398.42		2927.90	23.00	424.79	
2/25/2010	470.20	2.51	2957.30	22.30	403.76		2899.70	23.00	430.98	
3/29/2010	465.70	0.99	2963.60	20.10	402.13		2901.20	23.00	430.65	
4/4/2010	465.00		2965.40	22.30	401.76		2902.50	23.00	430.37	
4/27/2010	468.40	1.23	2964.60	22.30	401.96		2899.00	23.00	431.13	
5/27/2010	463.30	0.05	2972.00	22.30	400.13		2903.00	23.00	430.26	
6/30/2010	454.70	0.00	2988.10	22.30	396.14		2923.60	23.00	425.74	
7/28/2010	445.60	0.00	2996.90	20.00	393.86		2936.90	23.00	422.81	
8/31/2010	437.10	0.00	3008.70	22.30	390.99		2957.90	23.00	418.16	
9/29/2010	422.70	0.00	3024.50	22.30	387.01		2983.40	23.00	412.48	
10/27/2010	426.40	2.38	3027.60	22.30	386.23		2995.00	23.00	409.89	
11/29/2010	439.80	0.97	3021.40	22.30	387.80		2982.50	23.00	412.68	
12/30/2010	456.60	8.62	3003.30	22.30	392.34		2948.30	23.00	420.29	
2/1/2011	468.90	0.92	2964.00	22.30	402.11		2903.00	23.00	430.26	
2/23/2011	469.00	0.99	2960.70	22.30	402.92		2896.00	23.00	431.79	
3/29/2011	470.30	2.93	2956.90	22.30	403.12		2891.90	23.00	432.68	
4/27/2011	464.80	0.19	2967.20	19.60	401.22		2897.80	23.00	431.40	
5/26/2011	457.30	0.48	2983.40	19.60	397.21		2911.70	23.00	428.35	
6/28/2011	443.50	0.05	3003.20	22.30	392.37		2935.90	23.00	423.03	
7/29/2011	425.10	0.00	3020.90	22.30	387.92		2965.90	23.00	416.38	
8/24/2011	418.00	0.00	3037.00	19.90	383.77		2996.50	23.00	409.55	
9/27/2011	400.90	0.12	3051.40	20.10	380.22		3021.30	23.00	403.97	
10/26/2011	402.20	1.25	3054.30	22.30	379.46		3031.70	23.00	401.62	
11/30/2011	425.10	1.38	3044.00	22.30	382.08		3023.20	23.00	403.54	
12/21/2011	435.70	0.32	3037.90	22.30	383.63		3009.50	23.00	406.63	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-1				VB-2			
Top of AC Elevation -->			371.00				407.00			
Piezo. Tip Elevation -->			357.00				392.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
1/24/2012	441.40	0.53	3033.00	22.30	384.87		2985.60	23.00	411.99	
2/28/2012	448.40	0.42	3024.00	22.30	387.14		2957.40	23.00	418.27	
3/26/2012	452.70	1.06	3020.60	22.30	388.00		2947.20	23.00	420.53	
4/23/2012	463.40	1.32	2997.40	22.30	393.82		2919.70	23.00	426.60	
5/30/2012	457.30	0.02	2993.10	22.30	394.89		2915.50	23.00	427.52	
6/13/2012	452.90	0.02	2990.80	22.30	395.46		2934.00	23.00	410.36	
6/26/2012	450.20	0.00	3001.00	22.30	392.92		2928.70	23.00	424.62	
7/24/2012	439.80	0.00	3013.40	22.30	389.81		2947.10	23.00	420.56	
8/8/2012	437.60	0.12	3016.90	22.30	388.93		2954.90	23.00	418.83	
8/22/2012	433.40	0.00	3021.00	22.30	387.90		2963.10	23.00	417.01	
8/29/2012	431.30	0.00	3023.40	22.30	387.29		2967.60	23.00	416.01	
9/25/2012	420.80	0.00	3025.20	22.30	386.84		2971.50	23.00	415.14	
10/31/2012	412.30	0.26	3042.30	22.30	382.51		3006.10	23.00	407.39	
11/27/2012	420.80	0.58	3041.20	22.30	382.79		3010.60	23.00	406.38	
12/18/2012	448.00	1.44	3025.00	22.30	386.89		2985.80	23.00	411.95	
1/29/2013	468.60	1.18	2956.00	-51.10	401.40		2909.30	-50.80	427.96	
2/28/2013	469.20	0.30	2943.50	-51.10	404.47		2893.60	-50.80	431.39	
3/27/2013	468.30	0.50	2944.50	-51.20	404.22		2891.40	-50.90	431.87	
4/25/2013	462.70	0.00	2960.30	-51.20	400.34		2894.70	-50.60	431.15	
5/21/2013	454.20	0.00	2982.70	-50.70	394.82		2909.30	-50.50	427.96	
6/25/2013	439.30	0.00	3008.30	-51.00	388.42		2936.10	-50.50	422.07	
7/23/2013	431.50	0.00	3018.50	-51.30	385.84		2951.40	-51.00	418.86	
8/21/2013	418.00	0.00	3032.20	-51.00	382.40		2973.60	-50.90	413.75	
9/24/2013	404.00	0.00	3047.20	-51.00	378.59		2997.00	-50.90	408.52	
10/29/2013	400.60	0.00	3052.30	-51.10	377.29		3005.50	-50.80	406.61	
11/26/2013	407.90	0.44				Wires unplugged	3010.30	-50.40	405.53	
12/19/2013	425.80	0.54				Wires unplugged	3007.70	-51.00	406.11	
1/28/2014	439.70	0.00	3035.60	20.50	384.14		2970.70	20.80	415.29	
2/25/2014	449.70	0.83	3027.90	20.30	386.08		2944.10	20.40	421.19	
3/26/2014	465.10		2989.60	20.10	395.68		2898.30	20.30	431.25	
3/28/2014	465.70	1.15	2985.70	20.30	396.66		2894.60	20.30	432.06	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-1				VB-2			
Top of AC Elevation -->			371.00				407.00			
Piezo. Tip Elevation -->			357.00				392.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
4/29/2014	465.30	0.43	2972.90	20.00	399.83		2878.70	20.10	435.52	
5/28/2014	450.60	0.00	3001.50	20.00	392.71		2900.40	20.10	430.79	
6/25/2014	440.10	0.00	3015.30	20.10	389.25		2921.90	20.20	426.08	
7/29/2014	431.20	0.00	3024.20	20.30	387.02		2942.30	20.50	421.59	
8/26/2014	419.50	0.02	3034.00	20.70	384.56		2964.10	20.80	416.76	
9/23/2014	405.30	0.00	3046.60	20.80	381.36		2988.60	21.60	411.30	
10/29/2014	400.90	0.00	3052.40	21.30	379.91		3001.90	21.50	408.32	
11/25/2014	410.90	0.25	3050.00	21.50	380.52		3007.00	21.70	407.18	
12/30/2014	430.60	2.94	3039.70	22.60	383.18		2997.90	22.90	409.23	
1/27/2015	466.70	0.83	3006.70	21.30	391.45		2913.00	21.50	428.05	
2/25/2015	468.90	0.69	2998.80	21.10	393.42		2878.80	21.20	435.51	
3/26/2015	465.90	0.61	2988.70	21.00	395.94		2874.00	21.10	436.55	
4/28/2015	465.70	0.20	2995.50	20.70	394.23		2874.30	21.10	436.49	
5/28/2015	466.40	1.08	2996.10	21.30	394.11		2871.30	21.50	437.14	
6/30/2015	454.50	0.00	3005.00	20.70	391.86		2889.10	21.10	433.27	
7/28/2015	445.60	0.00	3012.70	20.80	389.93		2910.80	21.00	428.53	
8/28/2015	437.60	0.00	3018.60	21.80	388.48		2928.90	21.70	424.56	
9/24/2015	426.90	1.51	3027.00	22.80	386.40		2951.00	23.20	419.69	
10/27/2015	415.40	0.49	3036.60	21.70	383.93		2974.20	21.80	414.52	
11/19/2015	412.90	0.09	3040.70	21.90	382.90		2986.30	22.00	411.82	
12/22/2015	425.50	0.69	3038.60	21.80	383.43		2987.07	22.80	411.66	
1/27/2016	463.60	2.86	3017.96	21.40	388.63		2931.15	21.80	424.06	
2/25/2016	468.90	0.25	3009.78	21.10	390.67		2885.40	21.40	434.08	
3/30/2016	468.00	1.44	3005.78	20.80	391.67		2870.78	21.00	437.25	
4/28/2016	461.30	0.30	3007.99	20.70	391.11		2878.68	20.90	435.53	
5/25/2016	451.30	0.18	3013.12	20.60	389.82		2898.47	20.80	431.22	
6/28/2016	414.10	0.00	3017.70	20.60	388.67		2917.70	20.80	427.01	
7/27/2016	434.20	0.00	3024.70	20.70	386.91		2936.50	21.00	422.87	
8/23/2016	418.60	0.00	3035.41	20.80	384.20		2964.24	21.30	416.73	
9/27/2016	406.40	0.00	3047.11	21.10	381.25		2990.48	21.80	410.88	
10/26/2016	404.00	0.48	3051.02	21.40	380.26		3003.23	22.10	408.03	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-1				VB-2			
Top of AC Elevation -->			371.00				407.00			
Piezo. Tip Elevation -->			357.00				392.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
11/22/2016	413.60	1.13	3048.07	21.50	381.02		3006.57	22.30	407.28	
12/20/2016	441.10	3.48	3033.41	21.50	384.73		2981.77	22.30	412.84	
1/26/2017	471.60	5.67	3011.61	21.30	390.22		2900.67	22.00	430.76	
2/24/2017	472.05	3.95	3007.20	21.10	391.32		2872.81	21.60	436.82	
2/25/2017	472.00		3007.04	21.10	391.36		2872.45	21.70	436.90	
2/26/2017	472.00		3007.17	21.10	391.33		2872.02	21.60	436.99	
2/27/2017	472.00		3007.06	21.10	391.36		2872.13	21.60	436.96	
2/28/2017	471.90		3007.02	21.10	391.37		2871.54	21.60	437.09	
3/1/2017	471.90		3007.11	21.10	391.34		2871.54	21.60	437.09	
3/2/2017	471.90		3006.69	21.10	391.45		2870.57	21.60	437.30	
3/29/2017	467.90	0.10	3007.03	20.80	391.35		2871.74	21.20	437.04	
4/27/2017	457.60	0.04	3011.00	20.60	390.35		2888.70	20.90	433.35	
5/23/2017	453.50	0.43	3013.77	20.50	389.65		2901.51	20.80	430.56	
6/21/2017	447.40	0.00	3016.94	20.50	388.85		2913.05	20.80	428.03	
7/26/2017	435.10	0.00	3024.22	20.60	387.02		2937.66	21.00	422.62	
8/25/2017	420.10	0.00	3035.09	20.70	384.28		2966.31	21.30	416.27	
9/27/2017	407.10	0.00	3044.81	21.00	381.83		2988.98	21.70	411.22	
10/26/2017	395.00	0.00	3058.99	21.30	378.23		3004.20	22.00	407.81	
11/28/2017	409.00	0.09	3053.41	21.50	379.66		3013.87	22.50	405.64	
12/20/2017	416.80	0.00	3046.72	21.40	381.36		3010.17	22.50	406.47	
1/24/2018	434.50	1.31	3039.95	21.30	383.10		2997.62	22.20	409.30	
2/21/2018	443.10	0.29	3034.97	21.00	384.35		2971.51	21.80	415.14	
3/29/2018	453.00	1.28	3027.73	20.80	386.17		2943.47	21.30	421.36	
4/26/2018	449.10	0.05	3027.18	20.60	386.31		2931.40	21.10	424.03	
5/31/2018	453.10	0.20	3072.64	20.50	374.72		2922.64	20.90	425.95	
6/28/2018	448.20	0.00	3022.94	20.50	387.37		2922.72	21.00	425.94	
7/25/2018	440.40	0.00	3025.51	20.70	386.73		2934.39	21.10	423.37	
8/22/2018	427.10	0.00	3031.31	20.80	385.27		2953.63	21.40	419.11	
9/27/2018	439.60	0.00	3044.77	21.10	381.86		2986.66	21.90	411.75	
10/18/2018	405.30	0.90	3049.15	21.40	380.76		3003.92	22.20	407.88	
11/28/2018	408.60	1.19	3049.77	21.60	380.61		3010.53	22.40	406.40	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-1				VB-2			
Top of AC Elevation -->			371.00				407.00			
Piezo. Tip Elevation -->			357.00				392.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
12/19/2018	436.00	1.99	3036.44	21.60	384.00		2997.81	22.40	409.26	
1/30/2019	463.80	4.71	3019.03	21.30	388.39		2933.26	22.00	423.63	
2/27/2019	466.20	6.55	3013.81	21.10	389.69		2898.84	21.70	431.18	
3/27/2019	463.30	1.34	3013.30	20.80	389.81		2894.43	21.10	432.14	
4/29/2019	453.00	0.13	3016.61	20.60	388.97		2909.16	20.80	428.91	
5/30/2019	451.80	0.64	3015.23	20.50	389.32		2917.35	21.10	427.12	
6/26/2019	446.20	0.01	3019.03	21.30	388.39		2933.26	22.00	423.63	
7/5/2019	39.40	0.00	3020.90	20.40	387.88					VWP data logger is crashing. Repairs are in planning.
7/30/2019	434.80	0.00	3025.58	20.50	386.71					
8/27/2019	424.40	0.00	3032.59	20.70	384.94					
9/26/2019	405.60	0.00	3046.87	21.98	381.36					
10/22/2019	400.50	0.00	3052.86	21.30	379.81					
11/26/2019	412.80	3.13	3049.20	21.40	380.75					
12/18/2019	447.40	4.44	336.44	21.60			2997.81	22.40	409.26	
1/28/2020	465.40	0.20	3019.02	21.30	388.39		2933.24	22.00	423.63	
2/26/2020	459.60	0.14	3015.40	21.30	389.30		2908.90	22.00	428.99	
3/24/2020	470.70	3.49	3009.80	20.80	390.69		2891.30	21.20	432.83	
4/29/2020	467.60	3.65	3007.33	20.50	391.30		2882.64	20.80	434.71	
5/27/2020	459.10	0.02	3009.61	20.40	390.72		2896.45	20.70	431.70	
6/23/2020	447.00	0.00	3015.28	20.30	389.29		2918.67	20.70	426.82	
7/30/2020	434.00	0.00	3023.85	20.40	387.14		2947.81	21.00	420.40	
8/26/2020	417.70	0.00	3036.09	20.50	384.05		2977.84	21.30	413.72	
9/29/2020	403.60	0.00	3049.41	20.70	380.67		3004.49	21.60	407.75	
10/28/2020	404.50	0.00	3052.71	21.00	379.84		3015.75	22.10	405.22	
11/24/2020	413.50	0.42	3047.38	21.10	381.20		3017.40	22.50	404.85	
12/22/2020	408.00	1.13	3051.32	21.20	380.20		3022.66	22.50	403.66	
1/27/2021	435.60	2.25	3037.99	21.00	383.58		3011.14	21.90	406.25	
2/25/2021	457.30	0.05	3024.04	20.70	387.10		2916.15	21.40	427.39	
3/23/2021	465.90	1.36	3016.72	20.50	388.94		2925.72	21.10	425.28	
4/27/2021	462.10	0.04	3014.33	20.40	389.54		2908.33	20.80	429.10	
5/26/2021	455.00	0.03	3016.59	20.30	388.97		2919.42	20.70	426.66	
6/30/2021	437.90	0.00	3024.05	20.30	387.09		2948.87	20.80	420.16	

Notes:

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TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-1				VB-2			
Top of AC Elevation -->			371.00				407.00			
Piezo. Tip Elevation -->			357.00				392.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
7/29/2021	423.60	0.07	3032.39	20.40	384.98		2969.69	20.90	415.53	
8/24/2021	408.00	0.00	3044.82	20.50	381.83		2997.61	21.10	409.29	
9/29/2021	398.00	0.04	3054.47	20.90	379.39		3015.75	21.70	405.21	
10/26/2021	417.00	0.87	3053.11	15.20	379.52		3017.21	15.60	404.81	
11/25/2021	427.90	0.00	-9999.00	16.60		VB wire data logger malfunction.	-9999.00			VB wire data logger malfunction.
12/21/2021	427.90	4.77	-9999.00	16.80		VB wire data logger parts on order.	-9999.00			VB wire data logger parts on order.
1/27/2022	467.80	0.07	4488.51	16.90			4101.78	17.30		
2/23/2022	464.80	0.29	4350.72	17.50			4228.05	17.80		
3/23/2022	464.40	1.08	4329.53	12.60			4632.68	13.60		
4/26/2022	467.10	0.03	4718.21	12.90			4717.12	13.10		
5/26/2022	464.80	0.08	4762.81	12.50			4756.93	12.90		
6/28/2022	457.30	0.00	4797.74	12.80			4801.47	13.00		
7/26/2022	440.70	0.00	4908.53	12.10			4909.66	12.30		
8/25/2022	429.50	0.05	5138.78	10.30			5117.02	10.80		
9/28/2022	410.80	0.35	4185.80	30.40			4522.47	32.30		
10/25/2022	407.30	0.35	4167.43	29.80			4212.84	30.20		
11/23/2022	427.30	0.80	3033.54	16.10	384.53		3004.46	16.30	407.69	
12/20/2022	441.90	2.14	3025.24	12.10	386.49		2984.25	12.20	412.17	
1/26/2023	470.30	5.64	3002.23	3.40	391.96		2924.53	3.45	425.32	
2/23/2023	471.00	3.33	2985.57	1.77	396.06		2895.42	1.94	431.69	
3/28/2023	471.20	5.72	2971.92	2.69	399.48		2887.20	2.89	433.49	
4/25/2023	469.40	0.16	2967.73	11.40	400.83		2887.91	11.70	433.45	
5/23/2023	471.00	1.35	2951.51	4.05	404.57		2884.89	4.21	434.01	
6/28/2023	468.80	0.1	2945.44	2.89	406.02		2884.18	3.15	434.15	
7/27/2023	455.90	0	3031.53	1.86	384.52		2906.25	2.11	429.32	
8/29/2023	453.80	2.28	-9999.00	2.13		Omitted	2924.00	2.30	425.42	
9/26/2023	445.00	0	-9999.00	2.55		Omitted	2936.23	2.67	422.73	
10/26/2023	437.40	0.21	-9999.00	1.28		Omitted	2952.88	1.21	419.02	
11/29/2023	425.00	0.78	3077.17	1.77	372.87		2975.74	1.99	413.95	
12/21/2023	421.00	1.60	3028.10	1.96	385.39		2989.10	2.35	410.96	

Notes:

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TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-3				VB-4			
Top of AC Elevation -->			421.50				448.00			
Piezo. Tip Elevation -->			399.50				441.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
1/31/2007	405.80		3162.20				3081.10			
2/27/2007	426.80		3163.00				3079.90			
3/28/2007	438.80		3162.80				3078.60			
4/26/2007	450.90		3163.60				3036.60			
5/23/2007	461.40		3163.40				3014.00			
6/27/2007	457.20		3163.80				3049.40			
7/26/2007	445.50		3163.60				3054.40			
8/28/2007	434.60		3163.90				3067.20			
9/25/2007	416.80		3163.20				3073.10			
10/24/2007	404.50		3163.00				3077.00			
11/27/2007	422.20		3163.00				3078.60			
1/3/2008	443.20		3163.00	21.60	398.37		3083.30	21.70	438.77	
1/29/2008	452.20		3162.70	21.60	398.45		3058.40	21.00	444.72	
2/27/2008	460.80		3163.10	21.40	398.34		3016.10	20.90	454.77	
3/26/2008	468.00		3163.10	21.20	398.34		2480.10	20.80	569.87	
4/29/2008	468.60		3163.90	21.00	398.11		2974.80	20.40	464.42	
5/29/2008	464.70		3163.30	19.70	398.24		2990.00	19.50	460.84	
6/26/2008	455.70		3163.60	20.60	398.18		3022.60	20.70	453.23	
7/29/2008	447.30	0.00	3163.20	20.60	398.29		3051.20	21.20	446.45	
8/28/2008	438.80	0.00	3164.20	20.60	398.02		3062.90	24.50	443.81	
9/26/2008	430.70	0.00	3163.50	20.90	398.22		3067.40	22.80	442.65	
10/29/2008	412.50	0.00	3163.20	21.10	398.31		3071.10	23.30	441.78	
11/25/2008	404.70	2.60	3163.10	21.20	398.34		3073.50	22.80	441.18	
12/30/2008	440.90	3.42	3163.30	21.40	398.29		3078.50	21.50	439.92	
1/28/2009	463.70	0.17	3162.40	21.40	398.53		3003.20	21.20	457.82	
2/25/2009	470.10	3.35	3162.90	21.30	398.39		2965.70	20.30	466.56	
3/26/2009	469.40	0.19	3163.70	21.10	398.17		2967.20	20.50	466.19	
4/29/2009	466.90	0.07	3163.10	20.90	398.33		2975.50	20.60	464.27	
5/18/2009	466.70	0.00	3163.00	20.80	398.35		2977.00	20.60	463.92	
5/29/2009	465.00	0.00	3163.60	20.80	398.19		2987.80	20.70	461.41	
6/30/2009	460.20	0.00	3163.80	20.70	398.13		3004.30	20.80	457.54	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-3				VB-4			
Top of AC Elevation -->			421.50				448.00			
Piezo. Tip Elevation -->			399.50				441.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
7/30/2009	451.10	0.00	3163.60	20.60	398.18		3034.00	21.30	450.55	
8/25/2009	440.10	0.00	3163.50	20.70	398.21		3056.30	21.60	445.25	
9/30/2009	432.20	0.00	3163.80	20.80	398.14		3063.20	22.70	443.65	
10/29/2009	431.40	0.53	3163.40	21.00	398.25		3067.90	22.70	442.52	
12/1/2009	427.40	0.00	3163.60	21.20	398.20		3072.10	23.90	441.57	
12/29/2009	448.10	2.06	3163.30	21.30	398.28		3069.10	21.50	442.18	
1/27/2010	465.60	4.62	3163.90	21.30	398.12		2989.70	21.00	460.98	
2/25/2010	470.20	2.51	3162.80	21.20	398.42		2961.30	20.60	467.57	
3/29/2010	465.70	0.99	3163.50	21.00	398.22		2977.80	20.40	463.73	
4/4/2010	465.00		3163.40	20.90	398.25		2980.60	20.40	463.07	
4/27/2010	468.40	1.23	3163.50	22.60	398.27		2968.40	22.20	465.99	
5/27/2010	463.30	0.05	3163.00	20.60	398.35		2986.00	20.30	461.81	
6/30/2010	454.70	0.00	3163.50	20.50	398.21		3028.10	20.60	451.92	
7/28/2010	445.60	0.00	3163.30	20.50	398.26		3045.70	21.00	447.76	
8/31/2010	437.10	0.00	3163.50	20.60	398.21		3057.70	21.80	444.93	
9/29/2010	422.70	0.00	3163.80	20.70	398.13		3062.10	21.80	443.87	
10/27/2010	426.40	2.38	3163.40	20.80	398.24		3067.00	21.80	442.70	
11/29/2010	439.80	0.97	3162.20	20.90	398.57		3068.60	21.70	442.31	
12/30/2010	456.60	8.62	3164.10	21.00	398.06		3032.30	21.00	450.94	
2/1/2011	468.90	0.92	3163.00	21.00	398.36		2968.00	20.50	466.01	
2/23/2011	469.00	0.99	3162.80	20.90	398.41		2964.10	20.10	466.90	
3/29/2011	470.30	2.93	3162.90	20.70	398.37		2957.70	20.60	468.40	
4/27/2011	464.80	0.19	3163.10	20.50	398.32		2979.30	19.80	463.35	
5/26/2011	457.30	0.48	3162.80	20.30	398.39		3007.40	20.20	456.79	
6/28/2011	443.50	0.05	3163.60	20.20	398.17		3045.90	20.40	447.68	
7/29/2011	425.10	0.00	3163.10	20.20	398.31		3055.70	21.30	445.38	
8/24/2011	418.00	0.00	3163.40	20.30	398.23		3059.30	22.30	444.57	
9/27/2011	400.90	0.12	3163.10	20.50	398.32		3064.10	23.60	443.48	
10/26/2011	402.20	1.25	3163.40	20.80	398.24		3066.60	21.10	442.76	
11/30/2011	425.10	1.38	3163.60	20.90	398.19		3068.80	21.60	442.26	
12/21/2011	435.70	0.32	3163.00	21.00	398.36		3071.70	21.20	441.54	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-3				VB-4			
Top of AC Elevation -->			421.50				448.00			
Piezo. Tip Elevation -->			399.50				441.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
1/24/2012	441.40	0.53	3162.70	21.10	398.44		3071.10	21.00	441.68	
2/28/2012	448.40	0.42	3162.70	20.80	398.43		3053.20	20.60	445.95	
3/26/2012	452.70	1.06	3162.50	20.70	398.48		3042.10	20.40	448.59	
4/23/2012	463.40	1.32	3162.80	20.40	398.39		2991.30	20.00	460.56	
5/30/2012	457.30	0.02	3162.60	20.30	398.44		3009.00	20.40	456.42	
6/13/2012	452.90	0.02	3163.40	20.30	398.23		3022.80	20.40	453.16	
6/26/2012	450.20	0.00	3163.10	20.20	398.31		3031.80	20.60	451.04	
7/24/2012	439.80	0.00	3162.60	21.10	398.47		3050.90	21.10	446.52	
8/8/2012	437.60	0.12	3163.10	21.10	398.33		3051.90	21.90	446.32	
8/22/2012	433.40	0.00	3162.90	20.30	398.36		3056.50	24.10	445.32	
8/29/2012	431.30	0.00	3163.30	20.30	398.26		3058.20	24.20	444.92	
9/25/2012	420.80	0.00	3163.60	20.90	398.19		3062.20	21.60	443.84	
10/31/2012	412.30	0.26	3162.30	20.70	398.54		3066.70	25.90	442.96	
11/27/2012	420.80	0.58	3161.80	22.70	398.73		3070.00	22.80	442.02	
12/18/2012	448.00	1.44	3162.70	21.10	398.44		3068.10	20.40	442.37	
1/29/2013	468.60	1.18	3161.70	21.10	398.71		2966.90	20.70	466.27	
2/28/2013	469.20	0.30	3162.30	21.10	398.55		2960.20	19.90	467.79	
3/27/2013	468.30	0.50	3162.40	21.00	398.52		2963.50	19.90	467.03	
4/25/2013	462.70	0.00	3162.20	20.80	398.57		2981.10	19.60	462.92	
5/21/2013	454.20	0.00	3162.40	20.30	398.50		3016.70	20.20	454.60	
6/25/2013	439.30	0.00	3162.20	20.40	398.55		3053.00	21.10	446.02	
7/23/2013	431.50	0.00	3162.00	20.40	398.61		3057.70	21.80	444.93	
8/21/2013	418.00	0.00	3162.30	20.50	398.53		3060.90	22.90	444.21	
9/24/2013	404.00	0.00	3162.50	20.70	398.48		3064.50	23.60	443.38	
10/29/2013	400.60	0.00	3162.10	21.00	398.60		3069.00	25.10	442.37	
11/26/2013	407.90	0.44	3161.50	21.20	398.77		3072.60	22.20	441.37	
12/19/2013	425.80	0.54	3162.90	22.30	398.42		3075.30	22.40	440.73	
1/28/2014	439.70	0.00	3161.80	20.80	398.67		3074.00	21.10	440.99	
2/25/2014	449.70	0.83	3162.00	20.70	398.62		3058.30	20.80	444.74	
3/26/2014	465.10		3161.80	20.40	398.66		2984.10	20.50	462.26	
3/28/2014	465.70	1.15	3161.20	20.40	398.82		2980.00	20.50	463.22	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-3				VB-4			
Top of AC Elevation -->			421.50				448.00			
Piezo. Tip Elevation -->			399.50				441.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
4/29/2014	465.30	0.43	3161.90	20.30	398.63		2977.00	20.50	463.92	
5/28/2014	450.60	0.00	3162.00	20.20	398.60		3030.60	20.40	451.32	
6/25/2014	440.10	0.00	3162.00	20.30	398.61		3052.60	20.70	446.10	
7/29/2014	431.20	0.00	3161.50	20.50	398.75		3058.40	21.60	444.75	
8/26/2014	419.50	0.02	3161.80	20.90	398.68		3061.80	26.40	444.16	
9/23/2014	405.30	0.00	3161.60	21.00	398.73		3064.50	27.60	443.56	
10/29/2014	400.90	0.00	3161.50	21.50	398.77		3070.50	27.30	442.11	
11/25/2014	410.90	0.25	3160.20	21.80	399.13		3074.80	22.40	440.85	
12/30/2014	430.60	2.94	3161.60	23.40	398.80		3078.60	24.50	440.03	
1/27/2015	466.70	0.83	3161.10	21.60	398.88		2978.20	21.70	463.69	
2/25/2015	468.90	0.69	3160.90	21.40	398.93		2963.50	21.40	467.09	
3/26/2015	465.90	0.61	3161.10	21.30	398.88		2974.10	21.30	464.63	
4/28/2015	465.70	0.20	3161.60	21.50	398.75		2976.20	21.40	464.14	
5/28/2015	466.40	1.08	3161.40	21.50	398.80		2973.70	21.50	464.73	
6/30/2015	454.50	0.00	3161.60	21.30	398.74		3017.10	22.20	454.59	
7/28/2015	445.60	0.00	3161.40	21.10	398.79		3047.50	21.70	447.36	
8/28/2015	437.60	0.00	3161.10	21.60	398.88		3057.60	21.90	444.96	
9/24/2015	426.90	1.51	3161.00	23.50	398.96		3061.00	25.60	444.31	
10/27/2015	415.40	0.49	3161.30	21.80	398.84		3086.60	27.60	438.24	
11/19/2015	412.90	0.09	3160.50	22.00	399.06		3090.70	22.50	437.02	
12/22/2015	425.50	0.69	3161.68	21.90	398.74		3094.29	23.70	436.21	
1/27/2016	463.60	2.86	3160.29	21.90	399.11		3018.88	21.50	454.14	
2/25/2016	468.90	0.25	3160.87	21.90	398.95		2985.15	20.80	462.03	
3/30/2016	468.00	1.44	3161.26	21.60	398.84		2984.84	20.70	462.10	
4/28/2016	461.30	0.30	3161.56	21.50	398.76		3012.59	20.80	455.59	
5/25/2016	451.30	0.18	3160.43	21.30	399.06		3049.04	21.20	446.97	
6/28/2016	414.10	0.00	3161.03	21.20	398.89		3070.88	22.30	441.79	
7/27/2016	434.20	0.00	3160.80	21.20	398.95		3078.30	24.90	440.12	
8/23/2016	418.60	0.00	3160.65	21.20	398.99		3082.53	26.40	439.17	
9/27/2016	406.40	0.00	3160.63	21.40	399.00		3087.44	26.50	437.99	
10/26/2016	404.00	0.48	3160.50	21.60	399.05		3090.40	26.40	437.27	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-3				VB-4			
Top of AC Elevation -->			421.50				448.00			
Piezo. Tip Elevation -->			399.50				441.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
11/22/2016	413.60	1.13	3160.67	21.80	399.01		3092.04	25.70	436.84	
12/20/2016	441.10	3.48	3159.80	22.00	399.24		3093.59	23.50	436.37	
1/26/2017	471.60	5.67	3159.30	22.00	399.38		2976.99	21.80	463.98	
2/24/2017	472.05	3.95	3160.02	22.00	399.19		2971.88	20.70	465.12	
2/25/2017	472.00		3159.68	21.90	399.27		2971.58	20.70	465.19	
2/26/2017	472.00		3160.09	21.90	399.16		2971.99	20.70	465.09	
2/27/2017	472.00		3160.10	21.90	399.16		2971.99	20.07	465.06	
2/28/2017	471.90		3160.84	21.90	398.96		2972.98	20.60	464.86	
3/1/2017	471.90		3160.24	21.90	399.12		2971.86	20.07	465.09	
3/2/2017	471.90		3159.45	21.90	399.34		2971.67	20.50	465.16	
3/29/2017	467.90	0.10	3160.28	21.80	399.11		2987.31	20.10	461.49	
4/27/2017	457.60	0.04	3160.50	21.50	399.04		3026.10	20.30	452.38	
5/23/2017	453.50	0.43	3160.48	21.40	399.04		3117.73	20.90	430.38	
6/21/2017	447.40	0.00	3161.03	21.30	398.89		3063.65	21.60	443.49	
7/26/2017	435.10	0.00	3159.94	21.20	399.18		3078.88	24.30	439.96	
8/25/2017	420.10	0.00	3160.80	21.20	398.95		3083.07	25.80	439.01	
9/27/2017	407.10	0.00	3161.46	21.40	398.78		3088.29	26.60	437.79	
10/26/2017	395.00	0.00	3161.31	21.60	398.83		3090.24	26.30	437.31	
11/28/2017	409.00	0.09	3161.01	21.90	398.92		3096.24	25.10	435.80	
12/20/2017	416.80	0.00	3160.51	22.10	399.06		3099.02	23.80	435.07	
1/24/2018	434.50	1.31	3160.37	22.10	398.47		3099.64	22.70	433.82	
2/21/2018	443.10	0.29	3160.56	22.10	398.42		3096.22	22.90	434.65	
3/29/2018	453.00	1.28	3160.64	21.90	398.40		3066.36	22.10	441.85	
4/26/2018	449.10	0.05	3160.65	21.70	398.40		3066.28	21.60	441.87	
5/31/2018	453.10	0.20	3161.37	21.50	398.21		3055.75	21.90	444.40	
6/28/2018	448.20	0.00	3136.14	21.40	404.96		3066.57	22.50	441.80	
7/25/2018	440.40	0.00	3160.88	24.40	398.34		3076.99	21.30	439.30	
8/22/2018	427.10	0.00	3160.67	21.40	398.39		3082.41	26.40	437.99	
9/27/2018	439.60	0.00	3161.01	21.50	398.30		3087.28	27.00	436.81	
10/18/2018	405.30	0.90	3161.04	21.80	398.29		3092.63	26.20	435.52	
11/28/2018	408.60	1.19	3160.58	21.90	398.42		3096.07	25.20	434.68	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-3				VB-4			
Top of AC Elevation -->			421.50				448.00			
Piezo. Tip Elevation -->			399.50				441.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
12/19/2018	436.00	1.99	3160.04	22.10	398.56		3097.94	23.60	434.23	
1/30/2019	463.80	4.71	3161.13	22.10	398.27		3016.30	21.50	453.77	
2/27/2019	466.20	6.55	3160.52	22.00	398.43		2990.35	20.60	459.88	
3/27/2019	463.30	1.34	3161.04	21.80	398.29		3013.16	19.80	454.52	
4/29/2019	453.00	0.13	3161.38	21.60	398.20		3046.09	20.10	446.70	
5/30/2019	451.80	0.64	3161.42	21.40	398.19		3034.07	20.30	449.57	
6/26/2019	446.20	0.01	3161.13	22.10	398.27		3016.30	21.50	453.77	
7/5/2019	39.40	0.00				VWP data logger is crashing. Repairs are in planning.				VWP data logger is crashing. Repairs are in planning.
7/30/2019	434.80	0.00								
8/27/2019	424.40	0.00								
9/26/2019	405.60	0.00								
10/22/2019	400.50	0.00								
11/26/2019	412.80	3.13								
12/18/2019	447.40	4.44	3160.04	22.10	398.56		3097.94	23.60	434.23	
1/28/2020	465.40	0.20	3161.12	21.10	398.27		3016.29	21.50	453.78	
2/26/2020	459.60	0.14	3161.80	22.10	398.09		3024.40	21.50	451.86	
3/24/2020	470.70	3.49	3162.40	21.70	397.93		2978.40	19.90	462.67	
4/29/2020	467.60	3.65	3162.43	21.50	397.92		2987.75	20.00	460.49	
5/27/2020	459.10	0.02	3162.77	21.30	397.83		3021.61	20.80	452.52	
6/23/2020	447.00	0.00	3162.53	21.20	397.89		3061.70	21.70	442.97	
7/30/2020	434.00	0.00	3162.58	21.10	397.88		3079.59	24.20	438.67	
8/26/2020	417.70	0.00	3163.26	21.20	397.70		3081.89	25.60	438.11	
9/29/2020	403.60	0.00	3162.43	21.40	397.92		3086.43	26.40	437.02	
10/28/2020	404.50	0.00	3162.21	21.60	397.98		3089.52	26.60	436.27	
11/24/2020	413.50	0.42	3162.43	21.80	397.92		3093.25	24.80	435.37	
12/22/2020	408.00	1.13	3162.34	22.00	397.94		3096.11	23.00	434.67	
1/27/2021	435.60	2.25	3162.44	22.00	397.92		3096.57	22.00	434.56	
2/25/2021	457.30	0.05	3162.81	21.90	397.82		3043.00	20.90	447.44	
3/23/2021	465.90	1.36	3163.02	21.70	397.76		3000.12	20.40	457.59	
4/27/2021	462.10	0.04	3162.85	21.50	397.81		3012.43	20.40	454.69	
5/26/2021	455.00	0.03	3162.31	21.30	397.95		3046.19	21.00	446.68	
6/30/2021	437.90	0.00	3162.96	21.20	397.78		3076.31	22.90	439.46	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-3				VB-4			
Top of AC Elevation -->			421.50				448.00			
Piezo. Tip Elevation -->			399.50				441.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
7/29/2021	423.60	0.07	3162.28	21.20	397.96		3079.16	24.30	438.77	
8/24/2021	408.00	0.00	3162.40	21.20	397.93		3083.40	25.20	437.75	
9/29/2021	398.00	0.04	3162.23	21.40	397.97		3087.10	26.10	436.86	
10/26/2021	417.00	0.87	3162.31	15.80	397.95		3087.71	15.80	436.71	
11/25/2021	427.90	0.00	-9999.00				-9999.00			VB wire data logger malfunction.
12/21/2021	427.90	4.77	-9999.00				-9999.00			VB wire data logger parts on order.
1/27/2022	467.80	0.07	3982.00	17.70			4019.21	17.70		
2/23/2022	464.80	0.29	4052.62	18.00			4047.55	18.10		
3/23/2022	464.40	1.08	4634.63	13.30			4619.47	13.70		
4/26/2022	467.10	0.03	4720.41	12.70			4719.51	13.20		
5/26/2022	464.80	0.08	4758.99	13.10			4748.99	13.20		
6/28/2022	457.30	0.00	4798.77	13.20			4790.42	13.30		
7/26/2022	440.70	0.00	4933.42	11.70			5003.15	11.80		
8/25/2022	429.50	0.05	5123.76	11.10			3080.27	11.10	439.01	
9/28/2022	410.80	0.35	4421.30	32.70			4846.71	32.20		
10/25/2022	407.30	0.35	4223.26	30.30			4216.24	30.40		
11/23/2022	427.30	0.80	3161.78	15.80	398.53		3089.30	16.00	437.05	
12/20/2022	441.90	2.14	3161.13	12.20	398.61		3090.44	12.20	436.60	
1/26/2023	470.30	5.64	3161.13	3.59	398.37		2984.76	3.66	461.35	
2/23/2023	471.00	3.33	3162.80	2.13	397.88		2976.47	2.47	463.23	
3/28/2023	471.20	5.72	3162.26	3.13	398.05		2973.45	3.20	463.97	
4/25/2023	469.40	0.16	3162.82	11.80	398.14		2981.00	11.80	462.60	
5/23/2023	471.00	1.35	3166.90	4.47	396.84		2974.31	4.52	463.83	
6/28/2023	468.80	0.1	3166.81	3.25	396.83		2982.09	3.35	461.96	
7/27/2023	455.90	0	3166.86	2.18	396.79		3031.32	2.30	450.32	
8/29/2023	453.80	2.28	3167.03	2.37	396.75		3049.57	2.50	445.99	
9/26/2023	445.00	0	3166.27	2.74	396.96		3072.61	2.76	440.48	
10/26/2023	437.40	0.21	3167.08	1.55	396.71		3081.97	1.45	438.16	
11/29/2023	425.00	0.78	3165.91	2.18	397.04		3085.77	2.25	437.28	
12/21/2023	421.00	1.60	3166.93	2.45	396.78		3087.47	2.52	436.88	

Notes:

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TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-5				VB-6			
Top of AC Elevation -->			402.00				408.00			
Piezo. Tip Elevation -->			392.80				392.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
1/31/2007	405.80		3052.90							
2/27/2007	426.80		2975.00							
3/28/2007	438.80		2916.50							
4/26/2007	450.90		2864.50							
5/23/2007	461.40		2817.40							
6/27/2007	457.20		2866.60							
7/26/2007	445.50		2875.60							
8/28/2007	434.60		2919.20							
9/25/2007	416.80		2986.00							
10/24/2007	404.50		3036.40							
11/27/2007	422.20		2992.00							
1/3/2008	443.20		2894.90	21.40	438.34					
1/29/2008	452.20		2854.10	20.90	447.17		3005.00	22.40	420.64	
2/27/2008	460.80		2818.20	20.40	454.82		2976.70	22.40	427.06	
3/26/2008	468.00		2784.90	20.20	461.83					
4/29/2008	468.60		2780.60	20.00	462.73					
5/29/2008	464.70		2795.90	19.50	459.50		2944.40	22.40	434.31	
6/26/2008	455.70		2831.80	20.50	451.93		2960.10	22.40	430.80	
7/29/2008	447.30	0.00	2866.80	21.30	444.44		2980.50	22.40	426.21	
8/28/2008	438.80	0.00	2904.30	22.80	436.34		2999.10	22.40	421.99	
9/26/2008	430.70	0.00	2935.00	23.10	429.58		3014.60	22.60	418.45	
10/29/2008	412.50	0.00	3002.50	23.30	414.43		3044.50	22.40	411.56	
11/25/2008	404.70	2.60	3035.00	22.90	406.98		3060.70	22.40	407.80	
12/30/2008	440.90	3.42	2916.70	21.40	433.55		3047.30	22.40	410.91	
1/28/2009	463.70	0.17	2807.60	20.90	457.09		2990.00	22.40	424.05	
2/25/2009	470.10	3.35	2774.50	20.50	464.02		2946.10	22.40	433.93	
3/26/2009	469.40	0.19	2776.20	19.50	463.63		2936.10	22.40	436.16	
4/29/2009	466.90	0.07	2784.60	20.20	461.90		2936.30	22.40	436.12	
5/18/2009	466.70	0.00	2786.00	20.40	461.61		2937.00	22.40	435.96	
5/29/2009	465.00	0.00	2797.20	20.50	459.26		2941.10	22.40	435.05	
6/30/2009	460.20	0.00	2814.40	20.70	455.64		2949.90	22.40	433.09	

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TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-5				VB-6			
Top of AC Elevation -->			402.00				408.00			
Piezo. Tip Elevation -->			392.80				392.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
7/30/2009	451.10	0.00	2851.00	21.20	447.85		2966.50	22.40	429.36	
8/25/2009	440.10	0.00	2895.60	22.00	438.21		2988.20	21.80	424.46	
9/30/2009	432.20	0.00	2929.20	23.00	430.86		3008.60	22.70	419.82	
10/29/2009	431.40	0.53	2935.00	23.00	429.57		3018.70	21.50	417.50	
12/1/2009	427.40	0.00	2953.90	21.80	425.32		3029.40	21.70	415.04	
12/29/2009	448.10	2.06	2873.30	21.50	443.04		3012.70	22.40	418.88	
1/27/2010	465.60	4.62	2796.20	20.80	459.49		2966.40	22.40	429.39	
2/25/2010	470.20	2.51	2772.60	20.40	464.41		2936.00	20.50	436.16	
3/29/2010	465.70	0.99	2790.40	19.40	460.65		2938.20	20.00	435.67	
4/4/2010	465.00		2792.60	19.30	460.18		2939.80	22.40	435.34	
4/27/2010	468.40	1.23	2779.20	22.10	463.11		2936.10	20.00	436.13	
5/27/2010	463.30	0.05	2800.00	20.10	458.66		2940.00	20.10	435.27	
6/30/2010	454.70	0.00	2847.10	20.50	448.65		2963.10	20.30	430.10	
7/28/2010	445.60	0.00	2873.20	21.00	443.04		2977.10	20.80	426.96	
8/31/2010	437.10	0.00	2910.10	22.20	435.04		2998.30	21.80	422.16	
9/29/2010	422.70	0.00	2967.70	23.10	422.28		3023.70	22.70	416.36	
10/27/2010	426.40	2.38	2962.60	22.10	423.38		3035.00	21.80	413.75	
11/29/2010	439.80	0.97	2908.50	21.80	435.37		3025.20	21.70	416.01	
12/30/2010	456.60	8.62	2836.60	20.90	450.92		2991.90	21.00	423.61	
2/1/2011	468.90	0.92	2782.00	20.30	462.45		2942.50	20.40	434.71	
2/23/2011	469.00	0.99	2776.70	19.90	463.54		2936.80	20.00	435.98	
3/29/2011	470.30	2.93	2770.70	19.80	464.79		2931.60	19.80	437.13	
4/27/2011	464.80	0.19	2794.60	19.50	459.77		2938.10	19.50	435.68	
5/26/2011	457.30	0.48	2824.80	20.00	453.40		2953.30	20.00	432.30	
6/28/2011	443.50	0.05	2881.70	20.20	441.17		2977.90	20.00	426.77	
7/29/2011	425.10	0.00	2941.90	21.40	427.98		3008.30	21.10	419.87	
8/24/2011	418.00	0.00	3001.00	22.00	414.71		3037.90	21.60	413.08	
9/27/2011	400.90	0.12	3048.20	23.70	403.97		3060.70	23.30	407.81	
10/26/2011	402.20	1.25	3053.40	22.20	402.70		3069.60	22.00	405.72	
11/30/2011	425.10	1.38	2982.10	21.60	418.98		3064.70	21.60	406.86	
12/21/2011	435.70	0.32	2933.30	20.90	429.86		3056.20	21.00	408.83	

Notes:

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TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-5				VB-6			
Top of AC Elevation -->			402.00				408.00			
Piezo. Tip Elevation -->			392.80				392.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
1/24/2012	441.40	0.53	2900.60	20.80	437.07		3030.10	20.70	414.87	
2/28/2012	448.40	0.42	2866.20	20.20	444.53		2999.00	20.10	421.98	
3/26/2012	452.70	1.06	2849.60	20.00	448.10		2988.80	19.90	424.30	
4/23/2012	463.40	1.32	2804.70	19.70	457.65		2959.30	19.60	430.95	
5/30/2012	457.30	0.02	2825.80	20.20	453.20		2955.20	20.10	431.87	
6/13/2012	452.90	0.02	2845.10	20.30	449.08		2963.40	20.10	430.03	
6/26/2012	450.20	0.00	2856.30	20.40	446.67		2969.40	20.20	428.68	
7/24/2012	439.80	0.00	2898.30	21.00	437.58		2988.60	21.10	424.36	
8/8/2012	437.60	0.12	2909.30	21.70	435.19		2996.40	21.30	422.59	
8/22/2012	433.40	0.00	2925.70	22.40	431.61		3004.60	22.10	420.73	
8/29/2012	431.30	0.00	2934.70	22.90	429.64		3009.00	22.10	419.72	
9/25/2012	420.80	0.00	2982.10	21.60	418.98		3021.40	21.60	416.88	
10/31/2012	412.30	0.26	3008.40	23.20	413.08		3046.60	22.50	411.08	
11/27/2012	420.80	0.58	2991.70	21.90	416.82		3051.30	23.40	410.00	
12/18/2012	448.00	1.44	2883.10	21.40	440.91		3030.40	21.40	414.81	
1/29/2013	468.60	1.18	2781.70	20.80	462.53		2949.20	20.90	433.22	
2/28/2013	469.20	0.30	2777.10	20.10	463.46		2933.30	20.30	436.76	
3/27/2013	468.30	0.50	2780.30	19.30	462.76		2931.00	19.30	437.26	
4/25/2013	462.70	0.00	2798.30	19.40	458.99		2938.70	19.60	435.55	
5/21/2013	454.20	0.00	2836.60	20.30	450.90		2954.90	20.50	431.94	
6/25/2013	439.30	0.00	2894.60	20.00	438.35		2986.00	20.00	424.93	
7/23/2013	431.50	0.00	2926.20	21.70	431.47		3004.70	21.40	420.70	
8/21/2013	418.00	0.00	2978.40	22.60	419.85		3029.70	22.30	414.98	
9/24/2013	404.00	0.00	3033.80	23.10	407.26		3055.10	22.70	409.11	
10/29/2013	400.60	0.00	3047.90	23.70	404.04		3066.20	23.30	406.53	
11/26/2013	407.90	0.44	3036.10	22.40	406.70		3071.80	22.20	405.21	
12/19/2013	425.80	0.54	2973.50	22.40	420.95		3063.50	22.60	407.15	
1/28/2014	439.70	0.00	2904.80	21.10	436.16		3039.50	21.10	412.70	
2/25/2014	449.70	0.83	2860.40	20.70	445.80		3009.40	20.70	419.62	
3/26/2014	465.10		2793.50	20.50	460.04		2960.10	20.40	430.78	
3/28/2014	465.70	1.15	2789.00	20.50	460.99		2956.20	20.50	431.65	

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TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-5				VB-6			
Top of AC Elevation -->			402.00				408.00			
Piezo. Tip Elevation -->			392.80				392.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
4/29/2014	465.30	0.43	2788.40	20.30	461.10		2939.20	20.30	435.45	
5/28/2014	450.60	0.00	2850.30	20.50	447.97		2962.10	20.50	430.33	
6/25/2014	440.10	0.00	2893.50	20.80	438.62		2983.70	20.80	425.46	
7/29/2014	431.20	0.00	2929.30	21.80	430.79		3003.60	21.70	420.95	
8/26/2014	419.50	0.02	2974.50	24.60	420.81		3024.40	23.40	416.21	
9/23/2014	405.30	0.00	3028.00	27.70	408.78		3048.00	21.40	410.74	
10/29/2014	400.90	0.00	3049.10	23.70	403.76		3060.90	23.40	407.76	
11/25/2014	410.90	0.25	3027.90	22.70	408.60		3065.70	22.60	406.64	
12/30/2014	430.60	2.94	2960.20	23.20	423.97		3055.70	23.50	408.98	
1/27/2015	466.70	0.83	2789.20	21.70	460.99		2971.80	21.70	428.16	
2/25/2015	468.90	0.69	2775.60	21.40	463.83		2937.10	21.40	435.93	
3/26/2015	465.90	0.61	2787.40	21.20	461.35		2932.70	21.20	436.90	
4/28/2015	465.70	0.20	2788.70	20.40	461.05		2932.70	21.30	436.90	
5/28/2015	466.40	1.08	2786.70	21.50	461.51		2929.00	21.70	437.73	
6/30/2015	454.50	0.00	2836.10	22.00	451.07		2947.30	21.10	433.65	
7/28/2015	445.60	0.00	2873.70	21.70	442.97		2969.60	21.70	428.66	
8/28/2015	437.60	0.00	2905.10	22.10	436.13		2987.30	22.10	424.66	
9/24/2015	426.90	1.51	2950.00	22.90	426.23		3009.00	22.20	419.72	
10/27/2015	415.40	0.49	2995.10	26.30	416.23		3030.80	24.80	414.75	
11/19/2015	412.90	0.09	3012.80	22.90	412.06		3043.80	22.80	411.73	
12/22/2015	425.50	0.69	2973.77	21.80	420.86		3043.85	22.20	411.71	
1/27/2016	463.60	2.86	2810.16	20.80	456.54		2992.70	21.90	423.44	
2/25/2016	468.90	0.25	2778.86	20.30	463.10		2941.28	21.60	435.00	
3/30/2016	468.00	1.44	2778.46	20.10	463.18		2925.94	21.60	438.41	
4/28/2016	461.30	0.30	2809.03	20.10	456.75		2934.25	21.00	436.56	
5/25/2016	451.30	0.18	2850.06	20.30	448.01		2954.44	20.90	432.05	
6/28/2016	414.10	0.00	2884.16	20.70	440.65		2973.70	20.90	427.72	
7/27/2016	434.20	0.00	2922.10	21.30	432.36		2992.17	21.00	423.55	
8/23/2016	418.60	0.00	2980.42	22.10	419.38		3018.64	21.20	417.51	
9/27/2016	406.40	0.00	3033.58	22.70	407.30		3044.78	21.60	411.49	
10/26/2016	404.00	0.48	3048.70	22.70	403.81		3055.10	21.90	409.10	

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TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-5				VB-6			
Top of AC Elevation -->			402.00				408.00			
Piezo. Tip Elevation -->			392.80				392.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
11/22/2016	413.60	1.13	3023.53	22.50	409.59		3058.41	26.20	408.38	
12/20/2016	441.10	3.48	2918.66	22.00	433.15		3040.23	22.30	412.55	
1/26/2017	471.60	5.67	2771.84	21.10	464.60		2953.45	22.00	432.29	
2/24/2017	472.05	3.95	2767.24	20.50	465.54		2925.06	21.70	438.60	
2/25/2017	472.00		2767.01	20.50	465.58		2924.57	21.80	438.71	
2/26/2017	472.00		2767.46	20.40	465.49		2924.16	21.70	438.80	
2/27/2017	472.00		2767.31	20.40	465.52		2924.02	21.80	438.83	
2/28/2017	471.90		2768.30	20.40	465.31		2923.73	21.70	438.90	
3/1/2017	471.90		2767.52	20.40	465.47		2924.67	21.80	438.69	
3/2/2017	471.90		2767.23	20.40	465.53		2922.65	21.70	439.14	
3/29/2017	467.90	0.10	2784.31	19.90	461.95		2924.16	21.40	438.80	
4/27/2017	457.60	0.04	2826.30	19.80	453.07		2941.70	21.10	434.90	
5/23/2017	453.50	0.43	2846.14	20.10	448.84		2954.91	20.90	431.95	
6/21/2017	447.40	0.00	2872.23	20.50	443.23		2966.15	20.80	429.42	
7/26/2017	435.10	0.00	2922.05	21.20	432.37		2990.05	20.90	424.03	
8/25/2017	420.10	0.00	2981.67	22.10	419.09		3012.74	21.20	418.86	
9/27/2017	407.10	0.00	3027.11	22.70	408.78		3040.78	21.50	412.41	
10/26/2017	395.00	0.00	3063.05	22.80	400.49		3054.84	21.90	409.16	
11/28/2017	409.00	0.09	2828.52	22.80	452.72		3060.62	22.20	407.81	
12/20/2017	416.80	0.00	2998.56	22.10	415.27		3055.46	22.40	409.02	
1/24/2018	434.50	1.31	2943.98	21.10	427.54		3046.11	22.20	411.19	
2/21/2018	443.10	0.29	2901.14	20.60	436.99		3030.22	21.90	414.87	
3/29/2018	453.00	1.28	2855.13	20.10	446.97		2995.99	21.50	422.70	
4/26/2018	449.10	0.05	2828.01	20.10	452.79		2881.36	21.20	448.24	
5/31/2018	453.10	0.20	2852.89	20.40	447.47		2973.27	21.00	427.85	
6/28/2018	448.20	0.00	2872.28	20.00	443.26		2972.82	21.90	427.96	
7/25/2018	440.40	0.00	2904.83	21.10	436.20		2983.70	21.10	425.49	
8/22/2018	427.10	0.00	2950.76	22.10	426.07		3002.00	21.30	421.33	
9/27/2018	439.60	0.00	3023.87	22.90	409.56		3035.05	21.70	413.75	
10/18/2018	405.30	0.90	3046.04	22.90	404.45		3051.05	22.00	410.05	
11/28/2018	408.60	1.19	3039.88	22.50	405.86		3055.58	22.30	409.00	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-5				VB-6			
Top of AC Elevation -->			402.00				408.00			
Piezo. Tip Elevation -->			392.80				392.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
12/19/2018	436.00	1.99	2951.35	21.90	425.93		3042.36	22.30	412.06	
1/30/2019	463.80	4.71	2815.04	21.00	455.58		2982.42	22.00	425.79	
2/27/2019	466.20	6.55	2797.92	20.40	459.18		2945.39	21.70	434.12	
3/27/2019	463.30	1.34	2816.66	19.70	455.19		2940.82	21.30	435.13	
4/29/2019	453.00	0.13	2953.17	19.60	425.43		2955.81	21.00	431.78	
5/30/2019	451.80	0.64	2928.10	20.70	431.05		2952.61	21.20	432.50	
6/26/2019	446.20	0.01	2815.13	21.00	455.56		2982.42	22.00	425.79	
7/5/2019	39.40	0.00				VWP data logger is crashing. Repairs are in planning.				VWP data logger is crashing. Repairs are in planning.
7/30/2019	434.80	0.00								
8/27/2019	424.40	0.00								
9/26/2019	405.60	0.00								
10/22/2019	400.50	0.00								
11/26/2019	412.80	3.13								
12/18/2019	447.40	4.44	2951.35	21.90	425.93		3042.46	22.30	412.04	
1/28/2020	465.40	0.20	2815.12	21.00	455.57		2982.40	22.00	425.80	
2/26/2020	459.60	0.14	2830.70	21.00	452.25		2951.70	22.00	432.71	
3/24/2020	470.70	3.49	2782.80	19.80	462.33		2934.80	21.30	436.47	
4/29/2020	467.60	3.65	2792.97	19.70	460.19		2923.33	21.00	439.01	
5/27/2020	459.10	0.02	2829.34	20.00	452.50		2937.04	20.80	435.97	
6/23/2020	447.00	0.00	2878.14	20.50	442.01		2959.04	20.70	431.05	
7/30/2020	434.00	0.00	2934.11	21.20	429.74		2987.26	20.90	424.68	
8/26/2020	417.70	0.00	2997.42	21.90	415.55		3016.35	21.10	418.05	
9/29/2020	403.60	0.00	3054.08	22.50	402.57		3042.87	21.40	411.94	
10/28/2020	404.50	0.00	3067.82	23.00	399.40		3051.49	21.80	409.94	
11/24/2020	413.50	0.42	3030.96	22.80	407.92		3055.34	22.20	409.05	
12/22/2020	408.00	1.13	3045.74	21.80	404.48		3060.14	22.30	407.93	
1/27/2021	435.60	2.25	2952.21	20.50	425.68		3050.64	21.90	410.14	
2/25/2021	457.30	0.05	2849.80	20.10	448.12		3009.37	21.50	419.65	
3/23/2021	465.90	1.36	2808.74	19.80	456.87		2968.95	21.20	428.82	
4/27/2021	462.10	0.04	2822.62	19.80	453.92		2948.82	20.90	433.34	
5/26/2021	455.00	0.03	2861.60	20.00	445.57		2957.07	20.70	431.49	
6/30/2021	437.90	0.00	2926.26	20.60	431.46		2985.40	20.70	425.10	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-5				VB-6			
Top of AC Elevation -->			402.00				408.00			
Piezo. Tip Elevation -->			392.80				392.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
7/29/2021	423.60	0.07	2974.84	21.10	420.63		3005.63	20.80	420.50	
8/24/2021	408.00	0.00	3036.59	21.80	406.59		3034.54	21.00	413.86	
9/29/2021	398.00	0.04	3076.13	22.60	397.45		3051.09	21.50	410.03	
10/26/2021	417.00	0.87	3072.10	16.00	398.12		3052.24	15.98	409.70	
11/25/2021	427.90	0.00	-9999.00			VB wire data logger malfunction.	-9999.00			VB wire data logger malfunction.
12/21/2021	427.90	4.77	-9999.00			VB wire data logger parts on order.	-9999.00			VB wire data logger parts on order.
1/27/2022	467.80	0.07	-9999.00	17.80			3804.51	17.80		
2/23/2022	464.80	0.29	3918.35	18.10			3940.32	18.20		
3/23/2022	464.40	1.08	4847.81	13.60			4625.22	13.00		
4/26/2022	467.10	0.03	4848.72	13.20			4711.65	13.70		
5/26/2022	464.80	0.08	4853.04	13.00			4742.93	13.40		
6/28/2022	457.30	0.00	4884.42	13.40			4789.00	13.30		
7/26/2022	440.70	0.00	5104.71	11.50			5010.67	11.40		
8/25/2022	429.50	0.05	4962.90	11.50			5104.14	11.30		
9/28/2022	410.80	0.35	4183.48	32.60			3785.33	32.60		
10/25/2022	407.30	0.35	-999999	30.30			4212.16	30.40		
11/23/2022	427.30	0.80	5405.46	16.10			5262.61	15.90		
12/20/2022	441.90	2.14	5395.47	12.10			5295.36	12.30		
1/26/2023	470.30	5.64	5873.66	3.25			-999999.00	3.54		
2/23/2023	471.00	3.33	5839.17	2.35			-999999.00	2.35		
3/28/2023	471.20	5.72	5938.91	3.10			-999999.00	3.25		
4/25/2023	469.40	0.16	5685.45	11.80			5472.85	12.00		
5/23/2023	471.00	1.35	2789.64	4.45	460.27		2912.61	4.59	441.19	
6/28/2023	468.80	0.1	2799.42	3.49	458.17		2911.65	3.49	441.39	
7/27/2023	455.90	0	2853.30	2.40	446.64		2933.72	2.50	436.49	
8/29/2023	453.80	2.28	2869.22	2.57	443.21		2953.98	2.57	431.97	
9/26/2023	445.00	0	2903.68	2.79	435.70		2964.22	2.79	429.67	
10/26/2023	437.40	0.21	2932.68	1.52	429.25		2981.07	1.67	425.86	
11/29/2023	425.00	0.78	2982.45	2.25	418.14		3004.50	2.30	420.54	
12/21/2023	421.00	1.60	3002.98	2.55	413.49		3017.83	2.57	417.49	

Notes:

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TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-7				VB-8			
Top of AC Elevation -->			422.00				452.50			
Piezo. Tip Elevation -->			402.00				441.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
1/31/2007	405.80		3083.20				3060.10			
2/27/2007	426.80		3083.20				3062.20			
3/28/2007	438.80						3062.80			
4/26/2007	450.90		3083.30				3062.40			
5/23/2007	461.40		3083.40				3057.40			
6/27/2007	457.20		3083.80				3048.30			
7/26/2007	445.50		3083.60				3048.50			
8/28/2007	434.60						3049.70			
9/25/2007	416.80		3083.80				3050.30			
10/24/2007	404.50						3053.40			
11/27/2007	422.20		3083.90				3056.80			
1/3/2008	443.20		3083.60	22.40	400.84		3061.00	23.30	440.94	
1/29/2008	452.20		3083.40	22.40	400.88		3063.40	22.40	440.32	
2/27/2008	460.80		3083.60	22.40	400.84		3060.50	21.50	440.96	
3/26/2008	468.00		3083.60	22.40	400.84		3043.50	20.80	444.94	
4/29/2008	468.60		3083.70	22.40	400.81		3026.80	20.50	448.86	
5/29/2008	464.70		3083.90	22.40	400.76		3024.30	20.50	449.44	
6/26/2008	455.70		3084.00	22.40	400.74		3031.20	20.80	447.84	
7/29/2008	447.30	0.00	3084.10	22.40	400.72		3038.50	21.50	446.16	
8/28/2008	438.80	0.00	3084.20	22.40	400.69		3042.10	22.70	445.38	
9/26/2008	430.70	0.00	3084.20	22.40	400.69		3044.90	23.70	444.78	
10/29/2008	412.50	0.00	3084.00	22.40	400.74		3048.20	24.40	444.04	
11/25/2008	404.70	2.60	3083.90	21.30	400.75		3051.30	22.40	443.19	
12/30/2008	440.90	3.42	3083.40	22.40	400.88		3056.10	23.70	442.13	
1/28/2009	463.70	0.17	3083.20	22.40	400.93		3055.40	22.50	442.22	
2/25/2009	470.10	3.35	3083.30	22.40	400.91		3035.40	21.80	446.91	
3/26/2009	469.40	0.19	3083.50	22.40	400.86		3024.60	21.20	449.41	
4/29/2009	466.90	0.07	3083.50	22.40	400.86		3020.60	20.80	450.33	
5/18/2009	466.70	0.00	3082.00	22.40	401.22		3021.00	20.70	450.23	
5/29/2009	465.00	0.00	3083.70	22.40	400.81		3022.20	20.80	449.95	
6/30/2009	460.20	0.00	3083.90	20.70	400.74		3027.00	20.80	448.83	

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TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-7				VB-8			
Top of AC Elevation -->			422.00				452.50			
Piezo. Tip Elevation -->			402.00				441.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
7/30/2009	451.10	0.00	3083.90	20.70	400.74		3034.20	20.90	447.14	
8/25/2009	440.10	0.00	3084.00	21.60	400.73		3038.40	21.60	446.19	
9/30/2009	432.20	0.00	3084.10	22.30	400.72		3042.30	22.40	445.32	
10/29/2009	431.40	0.53	3083.90	21.40	400.75		3045.90	22.00	444.44	
12/1/2009	427.40	0.00	3083.70	21.60	400.80		3050.20	23.90	443.54	
12/29/2009	448.10	2.06	3083.40	21.60	400.87		3054.20	22.40	442.50	
1/27/2010	465.60	4.62	3083.40	21.50	400.87		3050.60	21.80	443.32	
2/25/2010	470.20	2.51	3083.30	20.70	400.89		3029.40	21.60	448.31	
3/29/2010	465.70	0.99	3083.40	20.30	400.86		3023.50	20.50	449.63	
4/4/2010	465.00		3083.40	21.00	400.87		3023.80	20.90	449.58	
4/27/2010	468.40	1.23	3083.30	20.10	400.88		3021.30	20.20	450.13	
5/27/2010	463.30	0.05	3083.00	20.20	400.95		3021.00	20.20	450.20	
6/30/2010	454.70	0.00	3083.60	20.40	400.81		3031.70	20.50	447.71	
7/28/2010	445.60	0.00	3083.60	20.60	400.82		3036.30	20.80	446.64	
8/31/2010	437.10	0.00	3083.70	21.60	400.80		3040.50	21.60	445.70	
9/29/2010	422.70	0.00	3083.90	22.40	400.76		3043.30	22.40	445.08	
10/27/2010	426.40	2.38	3083.70	21.70	400.80		3045.80	21.80	444.46	
11/29/2010	439.80	0.97	3083.10	21.60	400.95		3049.00	21.70	443.70	
12/30/2010	456.60	8.62	3083.10	21.00	400.94		3050.30	21.20	443.36	
2/1/2011	468.90	0.92	3083.00	20.50	400.96		3032.00	20.60	447.64	
2/23/2011	469.00	0.99	3082.80	20.20	401.00		3023.60	20.30	449.60	
3/29/2011	470.30	2.93	3082.90	19.80	400.97		3014.70	19.90	451.66	
4/27/2011	464.80	0.19	3088.20	19.60	399.69		3014.30	19.70	451.74	
5/26/2011	457.30	0.48	3083.10	19.90	400.92		3020.80	19.90	450.23	
6/28/2011	443.50	0.05	3083.40	20.10	400.85		3027.90	20.10	448.58	
7/29/2011	425.10	0.00	3083.70	20.90	400.79		3029.60	20.90	448.22	
8/24/2011	418.00	0.00	3083.60	21.40	400.82		3029.10	21.40	448.37	
9/27/2011	400.90	0.12	3083.40	22.90	400.89		3027.20	22.80	448.89	
10/26/2011	402.20	1.25	3083.10	21.80	400.95		3028.20	22.00	448.61	
11/30/2011	425.10	1.38	3082.70	21.50	401.04		3031.00	21.70	447.94	
12/21/2011	435.70	0.32	3082.60	21.20	401.06		3033.70	21.20	447.28	

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TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-7				VB-8			
Top of AC Elevation -->			422.00				452.50			
Piezo. Tip Elevation -->			402.00				441.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
1/24/2012	441.40	0.53	3083.20	20.80	400.91		3036.90	21.00	446.51	
2/28/2012	448.40	0.42	3083.30	20.30	400.81		3038.60	20.40	446.08	
3/26/2012	452.70	1.06	3083.70	20.90	400.79		3038.20	21.00	446.21	
4/23/2012	463.40	1.32	3083.80	19.80	400.75		3030.70	19.90	447.91	
5/30/2012	457.30	0.02	3083.90	20.10	400.73		3020.20	20.20	450.39	
6/13/2012	452.90	0.02	3084.10	20.10	400.69		3021.50	20.30	450.09	
6/26/2012	450.20	0.00	3084.20	20.10	400.66		3022.40	20.20	449.87	
7/24/2012	439.80	0.00	3084.10	21.50	400.70		3024.10	21.80	449.57	
8/8/2012	437.60	0.12	3084.20	20.40	400.67		3025.00	21.40	449.33	
8/22/2012	433.40	0.00	3084.30	22.00	400.66		3025.40	22.00	449.27	
8/29/2012	431.30	0.00	3084.40	21.90	400.64		3025.50	22.00	449.25	
9/25/2012	420.80	0.00	3084.00	21.50	400.73		3027.00	22.40	448.92	
10/31/2012	412.30	0.26	3084.10	22.30	400.72		3028.30	22.40	448.61	
11/27/2012	420.80	0.58	3083.60	23.80	400.86		3031.10	24.50	448.08	
12/18/2012	448.00	1.44	3083.40	21.40	400.87		3033.90	21.50	447.25	
1/29/2013	468.60	1.18	3083.00	20.90	400.96		3018.10	21.00	450.93	
2/28/2013	469.20	0.30	3093.10	20.40	398.52		3004.30	20.50	454.12	
3/27/2013	468.30	0.50	3083.40	19.40	400.85		2998.80	19.50	455.34	
4/25/2013	462.70	0.00	3083.60	19.80	400.80		2699.30	19.90		Omit
5/21/2013	454.20	0.00	3083.60	20.50	400.81		3007.80	20.40	453.30	
6/25/2013	439.30	0.00	3084.10	20.10	400.69		3015.90	20.30	451.40	
7/23/2013	431.50	0.00	3084.10	21.20	400.70		3019.20	21.30	450.69	
8/21/2013	418.00	0.00	3084.10	20.60	400.69		3021.60	21.70	450.15	
9/24/2013	404.00	0.00	3084.00	21.40	400.73		3023.50	22.20	449.73	
10/29/2013	400.60	0.00	3083.80	22.90	400.80		3026.40	23.00	449.09	
11/26/2013	407.90	0.44	3083.30	22.10	400.90		3029.70	22.20	448.27	
12/19/2013	425.80	0.54	3083.30	23.10	400.92		3032.80	23.50	447.62	
1/28/2014	439.70	0.00	3083.10	21.10	400.94		3036.90	21.20	446.52	
2/25/2014	449.70	0.83	3083.10	20.80	400.94		3038.00	20.90	446.25	
3/26/2014	465.10		3082.90	20.50	400.98		3027.30	20.60	448.75	
3/28/2014	465.70	1.15	3083.00	20.50	400.96		3024.90	20.60	449.31	

Notes:

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TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-7				VB-8			
Top of AC Elevation -->			422.00				452.50			
Piezo. Tip Elevation -->			402.00				441.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
4/29/2014	465.30	0.43	3083.20	20.40	400.91		3010.20	20.50	452.74	
5/28/2014	450.60	0.00	3083.20	20.50	400.91		3016.20	20.60	451.35	
6/25/2014	440.10	0.00	3083.40	20.80	400.86		3019.70	20.80	450.54	
7/29/2014	431.20	0.00	3083.40	21.60	400.87		3022.20	21.70	450.01	
8/26/2014	419.50	0.02	3083.40	22.70	400.89		3023.40	22.70	449.78	
9/23/2014	405.30	0.00	3083.40	21.10	400.87		3024.50	25.00	449.65	
10/29/2014	400.90	0.00	3083.10	23.10	400.97		3026.50	23.20	449.08	
11/25/2014	410.90	0.25	3082.70	22.50	401.05		3029.40	22.70	448.37	
12/30/2014	430.60	2.94	3082.70	24.10	401.08		3032.20	25.10	447.85	
1/27/2015	466.70	0.83	3082.20	21.80	401.17		3025.20	22.00	449.32	
2/25/2015	468.90	0.69	3082.40	21.50	401.11		3008.20	21.70	453.28	
3/26/2015	465.90	0.61	3082.50	21.20	401.09		3001.40	21.30	454.84	
4/28/2015	465.70	0.20	3082.70	21.50	401.04		2999.60	21.60	455.28	
5/28/2015	466.40	1.08	3082.70	21.80	401.05		2996.90	21.90	455.92	
6/30/2015	454.50	0.00	3082.70	21.50	401.04		3005.20	22.00	453.99	
7/28/2015	445.60	0.00	3082.00	21.70	401.21		3012.30	21.70	452.32	
8/28/2015	437.60	0.00	3082.70	22.00	401.05		3015.80	22.10	451.53	
9/24/2015	426.90	1.51	3082.00	22.70	401.23		3018.00	24.70	451.16	
10/27/2015	415.40	0.49	3082.70	23.90	401.07		3021.20	23.90	450.36	
11/19/2015	412.90	0.09	3082.70	22.70	401.06		3023.70	22.80	449.72	
12/22/2015	425.50	0.69	3082.21	22.20	401.17		3029.19	24.60	448.53	
1/27/2016	463.60	2.86	3081.63	22.20	401.31		3030.50	23.20	448.14	
2/25/2016	468.90	0.25	3081.70	22.00	401.29		3012.31	22.40	452.36	
3/30/2016	468.00	1.44	3081.96	21.70	401.22		2999.64	21.80	455.28	
4/28/2016	461.30	0.30	3082.13	21.50	401.18		3001.02	21.50	454.94	
5/25/2016	451.30	0.18	3082.16	21.40	401.17		3009.91	21.50	452.87	
6/28/2016	414.10	0.00	3081.49	21.30	401.33		3016.37	21.90	451.38	
7/27/2016	434.20	0.00	3082.40	21.30	401.11		3018.40	23.00	450.97	
8/23/2016	418.60	0.00	3082.90	21.30	400.99		3019.75	24.10	450.72	
9/27/2016	406.40	0.00	3082.08	21.60	401.19		3022.43	25.00	450.14	
10/26/2016	404.00	0.48	3081.90	21.90	401.24		3025.10	26.20	449.52	

Notes:

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TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-7				VB-8			
Top of AC Elevation -->			422.00				452.50			
Piezo. Tip Elevation -->			402.00				441.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
11/22/2016	413.60	1.13	3081.70	22.10	401.29		3028.17	25.10	448.80	
12/20/2016	441.10	3.48	3081.55	22.30	401.33		3031.56	24.50	447.97	
1/26/2017	471.60	5.67	3081.10	22.30	401.44		3014.56	23.20	451.88	
2/24/2017	472.05	3.95	3081.04	22.10	401.45		2999.46	22.40	455.35	
2/25/2017	472.00		3081.08	22.10	401.44		2998.95	22.40	455.47	
2/26/2017	472.00		3081.09	22.10	401.44		2992.11	22.30	457.05	
2/27/2017	472.00		3081.09	22.10	401.44		2992.67	22.30	456.92	
2/28/2017	471.90		3081.21	22.10	401.41		2998.07	22.30	455.67	
3/1/2017	471.90		3081.14	22.10	401.42		2996.94	22.40	455.94	
3/2/2017	471.90		3080.93	22.10	401.47		2997.18	22.20	455.87	
3/29/2017	467.90	0.10	3080.93	21.80	401.47		2995.28	21.60	456.28	
4/27/2017	457.60	0.04	3081.00	21.60	401.45		3003.50	21.20	454.35	
5/23/2017	453.50	0.43	3081.02	21.40	401.44		3010.76	21.20	452.65	
6/21/2017	447.40	0.00	3081.04	21.30	401.44		3015.40	21.50	451.59	
7/26/2017	435.10	0.00	3080.91	21.20	401.47		3018.38	22.70	450.96	
8/25/2017	420.10	0.00	3080.63	21.30	401.54		3019.85	23.80	450.68	
9/27/2017	407.10	0.00	3081.57	21.50	401.31		3019.85	24.70	450.73	
10/26/2017	395.00	0.00	3080.57	21.80	401.56		3025.12	25.00	449.51	
11/28/2017	409.00	0.09	3080.87	22.20	401.49		3028.84	24.90	448.63	
12/20/2017	416.80	0.00	3079.92	22.30	401.72		3031.95	24.40	447.87	
1/24/2018	434.50	1.31	3079.20	22.40	401.90		3035.62	23.60	446.95	
2/21/2018	443.10	0.29	3079.49	22.30	401.83		3037.59	23.20	446.46	
3/29/2018	453.00	1.28	3079.41	22.00	401.85		3038.89	22.80	446.13	
4/26/2018	449.10	0.05	3079.56	21.80	401.81		3039.02	22.50	446.08	
5/31/2018	453.10	0.20	3079.88	21.50	401.73		3036.50	22.70	446.69	
6/28/2018	448.20	0.00	3066.95	21.40	404.83		3036.75	22.00	446.59	
7/25/2018	440.40	0.00	3080.05	21.40	401.69		3033.11	23.40	447.53	
8/22/2018	427.10	0.00	3080.07	21.50	401.68		3031.48	24.40	447.97	
9/27/2018	439.60	0.00	3080.05	21.70	401.69		3031.53	25.30	448.01	
10/18/2018	405.30	0.90	3162.28	22.00	381.68		3033.61	22.50	447.36	
11/28/2018	408.60	1.19	3162.26	22.20	381.69		3036.07	25.20	446.93	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-7				VB-8			
Top of AC Elevation -->			422.00				452.50			
Piezo. Tip Elevation -->			402.00				441.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
12/19/2018	436.00	1.99	3162.26	22.30	381.69		3037.87	24.70	446.48	
1/30/2019	463.80	4.71	3162.28	22.30	381.68		3037.78	23.20	446.42	
2/27/2019	466.20	6.55	3162.28	22.10	381.68		3021.12	22.40	450.29	
3/27/2019	463.30	1.34	3162.28	21.18	381.67		3114.76	21.50	427.92	
4/29/2019	453.00	0.13	-999999.0				3019.45	21.10	450.61	
5/30/2019	451.80	0.64	-999999.0				3134.62	21.20	423.08	
6/26/2019	446.20	0.01	-999999.0				3037.78	23.20	446.42	
7/5/2019	39.40	0.00				VWP data logger is crashing. Repairs are in planning.				VWP data logger is crashing. Repairs are in planning.
7/30/2019	434.80	0.00								
8/27/2019	424.40	0.00								
9/26/2019	405.60	0.00								
10/22/2019	400.50	0.00								
11/26/2019	412.80	3.13								
12/18/2019	447.40	4.44	-999999.0				3037.88	24.70	446.48	
1/28/2020	465.40	0.20	-999999.0				3037.76	23.20	446.42	
2/26/2020	459.60	0.14	-999999.0				3021.00	23.20	450.36	
3/24/2020	470.70	3.49	-999999.0				3009.90	21.30	452.85	
4/29/2020	467.60	3.65	0.00				2998.05	21.00	455.60	
5/27/2020	459.10	0.02	0.00				3004.15	21.00	454.18	
6/23/2020	447.00	0.00	0.00				3012.75	21.30	452.19	
7/30/2020	434.00	0.00	0.00				3018.14	22.40	450.99	
8/26/2020	417.70	0.00	0.00				3020.66	23.30	450.45	
9/29/2020	403.60	0.00	0.00				3023.01	24.30	449.95	
10/28/2020	404.50	0.00	0.00				3025.18	24.90	449.48	
11/24/2020	413.50	0.42	0.00				3028.78	24.70	448.62	
12/22/2020	408.00	1.13	0.00				3032.10	24.00	447.80	
1/27/2021	435.60	2.25	-999999.00				3036.57	22.90	446.68	
2/25/2021	457.30	0.05	-999999.00				3037.04	22.20	446.53	
3/23/2021	465.90	1.36	-999999.00				3027.79	21.80	448.69	
4/27/2021	462.10	0.04	-999999.00				3017.07	21.30	451.18	
5/26/2021	455.00	0.03	3082.56				3019.55	21.30	450.59	
6/30/2021	437.90	0.00	-999999.00				3023.19	21.80	449.77	

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TABLE 7
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Vibrating Wire Piezo. -->			VB-7				VB-8			
Top of AC Elevation -->			422.00				452.50			
Piezo. Tip Elevation -->			402.00				441.00			
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment	Reading (Hz)	Temp (C°)	Elevation (ft)	Comment
7/29/2021	423.60	0.07	3082.78				3024.28	22.50	449.55	
8/24/2021	408.00	0.00	-999999.00				3025.29	23.40	449.37	
9/29/2021	398.00	0.04	3082.63				3027.93	24.20	448.79	
10/26/2021	417.00	0.87	3740.84	17.40			3027.63	16.00	448.40	
11/25/2021	427.90	0.00	3740.84			VB wire data logger malfunction.	-9999.00			VB wire data logger malfunction.
12/21/2021	427.90	4.77	3804.40			VB wire data logger parts on order.	3552.86			VB wire data logger parts on order.
1/27/2022	467.80	0.07	3964.17	18.80			3826.72	17.90		
2/23/2022	464.80	0.29	4040.18	19.10			3920.62	18.20		
3/23/2022	464.40	1.08	4627.66	13.10			4634.76	13.00		
4/26/2022	467.10	0.03	4705.83	13.40			4726.53	12.90		
5/26/2022	464.80	0.08	4752.22	13.10			4769.15	13.10		
6/28/2022	457.30	0.00	4796.95	13.10			4769.14	13.40		
7/26/2022	440.70	0.00	4983.95	11.90			5003.18	12.00		
8/25/2022	429.50	0.05	5103.58	11.20			5116.59	11.30		
9/28/2022	410.80	0.35	3941.89	34.10			3801.66	32.70		
10/25/2022	407.30	0.35	4230.67	31.10			4224.50	30.50		
11/23/2022	427.30	0.80	5265.90	16.90			-999999.00	17.30		
12/20/2022	441.90	2.14	5294.72	12.40			-999999.00	12.60		
1/26/2023	470.30	5.64	-999999.00	3.42			-999999.00	3.40		
2/23/2023	471.00	3.33	-999999.00	2.33			-999999.00	2.50		
3/28/2023	471.20	5.72	-999999.00	3.13			-999999.00	3.15		
4/25/2023	469.40	0.16	5473.69	11.90			5478.46	12.00		
5/23/2023	471.00	1.35	3081.58	4.45	401.09		2987.62	4.52	457.08	
6/28/2023	468.80	0.1	3081.55	3.37	401.09		2987.06	3.45	457.15	New hist. max
7/27/2023	455.90	0	3081.64	2.20	401.05		2998.92	2.30	454.33	
8/29/2023	453.80	2.28	3081.62	2.40	401.06		3008.06	2.64	452.22	
9/26/2023	445.00	0	3081.51	2.79	401.09		3011.96	2.96	451.33	
10/26/2023	437.40	0.21	3081.62	1.55	401.05		3016.21	1.74	450.27	
11/29/2023	425.00	0.78	3081.23	2.20	401.15		3020.76	2.30	449.23	
12/21/2023	421.00	1.60	3081.28	2.47	401.14		3023.67	2.64	448.57	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-1			C-2		
Piezo. Tip Elevation -->			357.10			339.80		
Zero Gage Reading -->			52.00			35.30		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/31/2007	405.80		48.00	353.10		34.00	338.50	
2/27/2007	426.80		48.00	353.10		32.00	336.50	
3/28/2007	438.80		48.00	353.10		34.00	338.50	
4/26/2007	450.90		48.00	353.10		34.00	338.50	
5/23/2007	461.40		50.00	355.10		36.00	340.50	
6/27/2007	457.20		50.00	355.10		35.00	339.50	
7/26/2007	445.50		52.00	357.10		36.00	340.50	
8/28/2007	434.60		52.00	357.10		36.00	340.50	
9/25/2007	416.80		50.00	355.10		35.00	339.50	
10/24/2007	404.50		50.00	355.10		36.00	340.50	
11/27/2007	422.20		48.00	353.10		35.00	339.50	
1/3/2008	443.20		50.00	355.10		37.00	341.50	
1/29/2008	452.20		51.00	356.10		36.00	340.50	
2/27/2008	460.80		52.00	357.10		38.00	342.50	
3/26/2008	468.00		52.00	357.10		38.00	342.50	
4/29/2008	468.60		52.00	357.10		38.00	342.50	
5/29/2008	464.70		52.00	357.10		36.00	340.50	
6/26/2008	455.70		52.00	357.10		37.00	341.50	
7/29/2008	447.30	0.00	53.00	358.10		38.00	342.50	
8/28/2008	438.80	0.00	54.00	359.10		38.00	342.50	
9/26/2008	430.70	0.00	53.00	358.10		36.00	340.50	
10/29/2008	412.50	0.00	52.00	357.10		38.00	342.50	
11/25/2008	404.70	2.60	50.50	355.60		36.00	340.50	
12/30/2008	440.90	3.42	51.00	356.10		38.00	342.50	
1/28/2009	463.70	0.17	52.00	357.10		38.00	342.50	
2/25/2009	470.10	3.35	52.00	357.10		37.00	341.50	
3/26/2009	469.40	0.19	54.00	359.10		40.00	344.50	
4/29/2009	466.90	0.07	54.00	359.10		40.00	344.50	
5/18/2009	466.70	0.00	54.00	359.10		40.00	344.50	
5/29/2009	465.00	0.00	52.00	357.10		36.00	340.50	
6/30/2009	460.20	0.00	54.00	359.10		40.00	344.50	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-1			C-2		
Piezo. Tip Elevation -->			357.10			339.80		
Zero Gage Reading -->			52.00			35.30		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
7/30/2009	451.10	0.00	55.00	360.10		40.00	344.50	
8/25/2009	440.10	0.00	54.00	359.10		40.00	344.50	
9/30/2009	432.20	0.00	54.00	359.10		38.00	342.50	
10/29/2009	431.40	0.53	52.00	357.10		40.00	344.50	
12/1/2009	427.40	0.00	53.00	358.10		39.00	343.50	
12/29/2009	448.10	2.06	54.00	359.10		39.00	343.50	
1/27/2010	465.60	4.62	52.00	357.10		39.00	343.50	
2/25/2010	470.20	2.51	56.00	361.10		40.00	344.50	
3/29/2010	465.70	0.99	54.00	359.10		40.00	344.50	
4/4/2010	465.00		55.00	360.10		40.00	344.50	
4/27/2010	468.40	1.23	55.00	360.10		40.00	344.50	
5/27/2010	463.30	0.05	56.00	361.10		40.00	344.50	
6/30/2010	454.70	0.00	56.00	361.10		40.00	344.50	
7/28/2010	445.60	0.00	56.00	361.10		40.00	344.50	
8/31/2010	437.10	0.00	56.00	361.10		41.00	345.50	
9/29/2010	422.70	0.00	55.00	360.10		40.00	344.50	
10/27/2010	426.40	2.38	56.00	361.10		40.00	344.50	
11/29/2010	439.80	0.97	55.00	360.10		41.00	345.50	
12/30/2010	456.60	8.62	56.00	361.10		40.00	344.50	
2/1/2011	468.90	0.92	56.00	361.10		41.00	345.50	
2/23/2011	469.00	0.99	56.00	361.10		41.00	345.50	
3/29/2011	470.30	2.93	55.00	360.10		40.00	344.50	
4/27/2011	464.80	0.19	56.00	361.10		41.00	345.50	
5/26/2011	457.30	0.48	54.00	359.10		42.00	346.50	
6/28/2011	443.50	0.05	54.00	359.10		41.00	345.50	
7/29/2011	425.10	0.00	54.00	359.10		40.00	344.50	
8/24/2011	418.00	0.00	52.00	357.10		41.00	345.50	
9/27/2011	400.90	0.12	51.00	356.10		40.00	344.50	
10/26/2011	402.20	1.25	50.00	355.10		38.00	342.50	
11/30/2011	425.10	1.38	51.00	356.10		40.00	344.50	
12/21/2011	435.70	0.32	51.00	356.10		40.00	344.50	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-1			C-2		
Piezo. Tip Elevation -->			357.10			339.80		
Zero Gage Reading -->			52.00			35.30		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/24/2012	441.40	0.53	50.00	355.10		39.00	343.50	
2/28/2012	448.40	0.42	44.00	349.10		39.00	343.50	
3/26/2012	452.70	1.06	49.00	354.10		40.00	344.50	
4/23/2012	463.40	1.32	48.00	353.10		40.00	344.50	
5/30/2012	457.30	0.02	49.00	354.10		40.00	344.50	
6/13/2012	452.90	0.02	48.00	353.10		40.00	344.50	
6/26/2012	450.20	0.00	50.00	355.10		40.00	344.50	
7/24/2012	439.80	0.00	48.00	353.10		40.00	344.50	
8/8/2012	437.60	0.12	48.00	353.10		40.00	344.50	
8/22/2012	433.40	0.00	48.00	353.10		40.00	344.50	
8/29/2012	431.30	0.00	49.00	354.10		40.00	344.50	
9/25/2012	420.80	0.00	49.00	354.10		40.00	344.50	
10/31/2012	412.30	0.26	47.00	352.10		40.00	344.50	
11/27/2012	420.80	0.58	48.00	353.10		40.00	344.50	
12/18/2012	448.00	1.44	48.00	353.10		40.00	344.50	
1/29/2013	468.60	1.18	49.00	354.10		40.00	344.50	
2/28/2013	469.20	0.30	50.00	355.10		40.00	344.50	
3/27/2013	468.30	0.50	50.00	355.10		41.00	345.50	
4/25/2013	462.70	0.00	49.00	354.10		38.00	342.50	
5/21/2013	454.20	0.00	49.00	354.10		40.00	344.50	
6/25/2013	439.30	0.00	49.00	354.10		40.00	344.50	
7/23/2013	431.50	0.00	49.00	354.10		40.00	344.50	
8/21/2013	418.00	0.00	49.00	354.10		40.00	344.50	
9/24/2013	404.00	0.00	48.00	353.10		41.00	345.50	
10/29/2013	400.60	0.00	45.00	350.10		40.00	344.50	
11/26/2013	407.90	0.44	44.00	349.10		39.00	343.50	
12/19/2013	425.80	0.54	45.00	350.10		40.00	344.50	
1/28/2014	439.70	0.00	45.00	350.10		39.00	343.50	
2/25/2014	449.70	0.83	45.00	350.10		40.00	344.50	
3/26/2014	465.10		46.00	351.10		40.00	344.50	
3/28/2014	465.70	1.15	45.00	350.10		40.00	344.50	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-1			C-2		
Piezo. Tip Elevation -->			357.10			339.80		
Zero Gage Reading -->			52.00			35.30		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
4/29/2014	465.30	0.43	46.00	351.10		40.00	344.50	
5/28/2014	450.60	0.00	44.00	349.10		40.00	344.50	
6/25/2014	440.10	0.00	45.00	350.10		41.00	345.50	
7/29/2014	431.20	0.00	44.00	349.10		40.00	344.50	
8/26/2014	419.50	0.02	44.00	349.10		40.00	344.50	
9/23/2014	405.30	0.00	42.00	347.10		37.00	341.50	
10/29/2014	400.90	0.00	42.00	347.10		40.00	344.50	
11/25/2014	410.90	0.25	41.00	346.10		39.00	343.50	
12/30/2014	430.60	2.94	41.00	346.10		38.00	342.50	
1/27/2015	466.70	0.83	43.00	348.10		40.00	344.50	
2/25/2015	468.90	0.69	43.00	348.10		40.00	344.50	
3/26/2015	465.90	0.61	44.00	349.10		42.00	346.50	
4/28/2015	465.70	0.20	43.00	348.10		41.00	345.50	
5/28/2015	466.40	1.08	42.00	347.10		41.00	345.50	
6/30/2015	454.50	0.00	43.00	348.10		42.00	346.50	
7/28/2015	445.60	0.00	42.00	347.10		41.00	345.50	
8/28/2015	437.60	0.00	43.00	348.10		42.00	346.50	
9/24/2015	426.90	1.51	42.00	347.10		41.00	345.50	
10/27/2015	415.40	0.49	42.00	347.10		41.00	345.50	
11/19/2015	412.90	0.09	39.00	344.10		40.00	344.50	
12/22/2015	425.50	0.69	37.00	342.10		41.00	345.50	
1/27/2016	463.60	2.86	39.00	344.10		41.00	345.50	
2/25/2016	468.90	0.25	39.00	344.10		42.00	346.50	
3/30/2016	468.00	1.44	38.00	343.10		43.00	347.50	
4/28/2016	461.30	0.30	39.00	344.10		42.00	346.50	
5/25/2016	451.30	0.18	38.00	343.10		42.00	346.50	
6/28/2016	414.10	0.00	38.00	343.10		42.00	346.50	
7/27/2016	434.20	0.00	38.00	343.10		42.00	346.50	
8/23/2016	418.60	0.00	36.00	341.10		42.00	346.50	
9/27/2016	406.40	0.00	36.00	341.10		42.00	346.50	
10/26/2016	404.00	0.48	34.00	339.10		41.00	345.50	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-1			C-2		
Piezo. Tip Elevation -->			357.10			339.80		
Zero Gage Reading -->			52.00			35.30		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
11/22/2016	413.60	1.13	32.00	337.10		41.00	345.50	
12/20/2016	441.10	3.48	35.00	340.10		40.00	344.50	
1/26/2017	471.60	5.67	38.00	343.10		41.00	345.50	
2/24/2017	472.05	3.95	37.00	342.10		42.00	346.50	
2/25/2017	472.00							
2/26/2017	472.00							
2/27/2017	472.00		37.00	342.10		42.00	346.50	
2/28/2017	471.90		39.00	344.10		43.00	347.50	
3/1/2017	471.90		37.00	342.10		42.00	346.50	
3/2/2017	471.90		37.00	342.10		43.00	347.50	
3/29/2017	467.90	0.10	38.00	343.10		44.00	348.50	
4/27/2017	457.60	0.04	37.00	342.10		43.00	347.50	
5/23/2017	453.50	0.43	36.00	341.10		42.00	346.50	
6/21/2017	447.40	0.00	38.00	343.10		44.00	348.50	
7/26/2017	435.10	0.00	36.00	341.10		43.00	347.50	
8/25/2017	420.10	0.00	35.00	340.10		42.00	346.50	
9/27/2017	407.10	0.00	34.00	339.10		42.00	346.50	
10/26/2017	395.00	0.00	33.00	338.10		41.00	345.50	
11/28/2017	409.00	0.09	32.00	337.10		41.00	345.50	
12/20/2017	416.80	0.00	32.00	337.10		40.00	344.50	
1/24/2018	434.50	1.31	36.00	341.10		42.00	346.50	
2/21/2018	443.10	0.29	22.00	327.10		42.00	346.50	
3/29/2018	453.00	1.28	34.00	339.10		42.00	346.50	
4/26/2018	449.10	0.05	31.00	336.10		42.00	346.50	
5/31/2018	453.10	0.20	32.00	337.10		42.00	346.50	
6/28/2018	448.20	0.00	32.00	337.10		42.00	346.50	
7/25/2018	440.40	0.00	32.00	337.10		42.00	346.50	
8/22/2018	427.10	0.00	32.00	337.10		41.00	345.50	
9/27/2018	439.60	0.00	32.00	337.10		42.00	346.50	
10/18/2018	405.30	0.90	30.00	335.10		42.00	346.50	
11/28/2018	408.60	1.19	30.00	335.10		42.00	346.50	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-1			C-2		
Piezo. Tip Elevation -->			357.10			339.80		
Zero Gage Reading -->			52.00			35.30		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
12/19/2018	436.00	1.99	33.00	338.10		44.00	348.50	
1/30/2019	463.80	4.71	34.00	339.10		44.00	348.50	
2/27/2019	466.20	6.55	31.00	336.10		41.00	345.50	
3/27/2019	463.30	1.34	32.00	337.10		42.00	346.50	
4/29/2019	453.00	0.13	34.00	339.10		43.00	347.50	
5/30/2019	451.80	0.64	33.00	338.10		43.00	347.50	
6/26/2019	446.20	0.01	34.00	339.10		43.00	347.50	
7/5/2019	39.40	0.00	32.00	337.10		42.00	346.50	
7/30/2019	434.80	0.00	23.00	328.10		44.00	348.50	
8/27/2019	424.40	0.00	32.00	337.10		43.00	347.50	
9/26/2019	405.60	0.00	30.00	335.10		42.00	346.50	
10/22/2019	400.50	0.00	30.00	335.10		40.00	344.50	
11/26/2019	412.80	3.13	31.00	336.10		42.00	346.50	
12/18/2019	447.40	4.44	31.00	336.10		42.00	346.50	
1/28/2020	465.40	0.20	34.00	339.10		42.00	346.50	
2/26/2020	459.60	0.14	34.00	339.10		44.00	348.50	
3/24/2020	470.70	3.49	34.00	339.10		44.00	348.50	
4/29/2020	467.60	3.65	33.00	338.10		44.00	348.50	
5/27/2020	459.10	0.02	34.00	339.10		44.00	348.50	
6/23/2020	447.00	0.00	34.00	339.10		44.00	348.50	
7/30/2020	434.00	0.00	23.00	328.10		44.00	348.50	
8/26/2020	417.70	0.00	33.00	338.10		44.00	348.50	
9/29/2020	403.60	0.00	30.00	335.10		42.00	346.50	
10/28/2020	404.50	0.00	30.00	335.10		42.00	346.50	
11/24/2020	413.50	0.42	31.00	336.10		42.00	346.50	
12/22/2020	408.00	1.13	30.00	335.10		42.00	346.50	
1/27/2021	435.60	2.25	30.00	335.10		42.00	346.50	
2/25/2021	457.30	0.05	32.00	337.10		42.00	346.50	
3/23/2021	465.90	1.36	33.00	338.10		44.00	348.50	
4/27/2021	462.10	0.04	36.00	341.10		43.00	347.50	
5/26/2021	455.00	0.03	32.00	337.10		44.00	348.50	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-1			C-2		
Piezo. Tip Elevation -->			357.10			339.80		
Zero Gage Reading -->			52.00			35.30		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
6/30/2021	437.90	0.00	32.00	337.10		42.00	346.50	
7/29/2021	423.60	0.07	31.00	336.10		43.00	347.50	
8/24/2021	408.00	0.00	30.00	335.10		42.00	346.50	
9/29/2021	398.00	0.04	30.00	335.10		42.00	346.50	
10/26/2021	417.00	0.87	29.00	334.10		42.00	346.50	
11/25/2021	427.90	0.00	30.00	335.10		42.00	346.50	
12/21/2021	427.90	4.77	32.00	337.10		42.00	346.50	
1/27/2022	467.80	0.07	36.00	341.10	Below Tip	44.00	348.50	At hist max
2/23/2022	464.80	0.29	34.00	339.10	Below Tip	43.00	347.50	
3/23/2022	464.40	1.08	35.00	340.10	Below Tip	43.00	347.50	
4/26/2022	467.10	0.03	34.00	339.10	Below Tip	44.00	348.50	At hist max
5/26/2022	464.80	0.08	34.00	339.10	Below Tip	44.00	348.50	At hist max
6/28/2022	457.30	0.00	34.00	339.10	Below Tip	44.00	348.50	At hist max
7/26/2022	440.70	0.00	34.00	339.10	Below Tip	43.00	347.50	
8/25/2022	429.50	0.05	34.00	339.10	Below Tip	43.00	347.50	
9/28/2022	410.80	0.35	33.00	338.10	Below Tip	44.00	348.50	At hist max
10/25/2022	407.30	0.35	32.00	337.10	Below Tip	42.00	346.50	
11/23/2022	427.30	0.80	31.00	336.10	Below Tip	42.00	346.50	
12/20/2022	441.90	2.14	35.00	340.10	Below Tip	42.00	346.50	
1/26/2023	470.30	5.64	37.00	342.10	Below Tip	43.00	347.50	
2/23/2023	471.00	3.33	34.00	339.10	Below Tip	44.00	348.50	At hist max
3/28/2023	471.20	5.72	35.00	340.10	Below Tip	44.00	348.50	At hist max
4/25/2023	469.40	0.16	37.00	342.10	Below Tip	44.00	348.50	At hist max
5/23/2023	471.00	1.35	36.00	341.10	Below Tip	44.00	348.50	At hist max
6/28/2023	468.80	0.1	34.00	339.10	Below Tip	44.00	348.50	
7/27/2023	455.90	0	35.00	340.10	Below Tip	45.00	349.50	New hist max
8/29/2023	453.80	2.28	36.00	341.10	Below Tip	45.00	349.50	New hist max
9/26/2023	445.00	0	34.00	339.10	Below Tip	44.00	348.50	
10/26/2023	437.40	0.21	34.00	339.10	Below Tip	44.00	348.50	
11/29/2023	425.00	0.78	33.00	338.10	Below Tip	43.00	347.50	
12/21/2023	421.00	1.60	33.00	338.10	Below Tip	44.00	348.50	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-3			C-4		
Piezo. Tip Elevation -->			363.30			392.80		
Zero Gage Reading -->			58.80			27.70		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/31/2007	405.80		57.00	361.50		34.00	399.10	
2/27/2007	426.80		56.00	360.50		58.60	423.70	
3/28/2007	438.80		57.00	361.50		68.00	433.10	
4/26/2007	450.90		58.00	362.50		80.00	445.10	
5/23/2007	461.40		58.00	362.50		92.00	457.10	
6/27/2007	457.20		58.00	362.50		88.00	453.10	
7/26/2007	445.50		59.00	363.50		77.00	442.10	
8/28/2007	434.60		59.00	363.50		67.00	432.10	
9/25/2007	416.80		58.00	362.50		50.00	415.10	
10/24/2007	404.50		58.00	362.50		38.00	403.10	
11/27/2007	422.20		56.00	360.50		50.00	415.10	
1/3/2008	443.20		57.00	361.50		73.00	438.10	
1/29/2008	452.20		58.00	362.50		82.00	447.10	
2/27/2008	460.80		59.00	363.50		91.00	456.10	
3/26/2008	468.00		59.00	363.50		98.00	463.10	
4/29/2008	468.60		58.20	362.70		99.90	465.00	
5/29/2008	464.70		58.00	362.50		95.00	460.10	
6/26/2008	455.70		59.00	363.50		87.00	452.10	
7/29/2008	447.30	0.00	59.50	364.00		79.00	444.10	
8/28/2008	438.80	0.00	60.00	364.50		72.00	437.10	
9/26/2008	430.70	0.00	59.00	363.50		64.00	429.10	
10/29/2008	412.50	0.00	58.00	362.50		44.00	409.10	
11/25/2008	404.70	2.60	58.00	362.50		37.00	402.10	
12/30/2008	440.90	3.42	58.00	362.50		70.00	435.10	
1/28/2009	463.70	0.17	58.00	362.50		93.00	458.10	
2/25/2009	470.10	3.35	58.00	362.50		100.00	465.10	
3/26/2009	469.40	0.19	60.00	364.50		100.00	465.10	
4/29/2009	466.90	0.07	60.00	364.50		98.00	463.10	
5/18/2009	466.70	0.00	59.00	363.50		97.00	462.10	
5/29/2009	465.00	0.00	59.00	363.50		95.00	460.10	
6/30/2009	460.20	0.00	59.00	363.50		90.00	455.10	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-3			C-4		
Piezo. Tip Elevation -->			363.30			392.80		
Zero Gage Reading -->			58.80			27.70		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
7/30/2009	451.10	0.00	60.00	364.50		82.00	447.10	
8/25/2009	440.10	0.00	59.00	363.50		71.00	436.10	
9/30/2009	432.20	0.00	58.00	362.50		63.00	428.10	
10/29/2009	431.40	0.53	59.00	363.50		63.00	428.10	
12/1/2009	427.40	0.00	58.00	362.50		59.00	424.10	
12/29/2009	448.10	2.06	58.00	362.50		78.00	443.10	
1/27/2010	465.60	4.62	58.00	362.50		95.00	460.10	
2/25/2010	470.20	2.51	59.00	363.50		100.00	465.10	
3/29/2010	465.70	0.99	58.00	362.50		96.00	461.10	
4/4/2010	465.00		60.00	364.50		96.00	461.10	
4/27/2010	468.40	1.23	59.00	363.50		99.00	464.10	
5/27/2010	463.30	0.05	60.00	364.50		94.00	459.10	
6/30/2010	454.70	0.00	59.00	363.50		86.00	451.10	
7/28/2010	445.60	0.00	60.00	364.50		78.00	443.10	
8/31/2010	437.10	0.00	59.00	363.50		68.00	433.10	
9/29/2010	422.70	0.00	58.00	362.50		56.00	421.10	
10/27/2010	426.40	2.38	60.00	364.50		56.00	421.10	
11/29/2010	439.80	0.97	59.00	363.50		70.00	435.10	
12/30/2010	456.60	8.62	59.00	363.50		85.00	450.10	
2/1/2011	468.90	0.92	60.00	364.50		99.00	464.10	
2/23/2011	469.00	0.99	60.00	364.50		100.00	465.10	
3/29/2011	470.30	2.93	60.00	364.50		100.00	465.10	
4/27/2011	464.80	0.19	60.00	364.50		96.00	461.10	
5/26/2011	457.30	0.48	60.00	364.50		89.00	454.10	
6/28/2011	443.50	0.05	60.00	364.50		75.00	440.10	
7/29/2011	425.10	0.00	60.00	364.50		60.00	425.10	
8/24/2011	418.00	0.00	59.00	363.50		46.00	411.10	
9/27/2011	400.90	0.12	58.00	362.50		34.00	399.10	
10/26/2011	402.20	1.25	59.00	363.50		32.00	397.10	
11/30/2011	425.10	1.38	58.00	362.50		55.00	420.10	
12/21/2011	435.70	0.32	58.00	362.50		66.00	431.10	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-3			C-4		
Piezo. Tip Elevation -->			363.30			392.80		
Zero Gage Reading -->			58.80			27.70		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/24/2012	441.40	0.53	58.00	362.50		51.00	416.10	
2/28/2012	448.40	0.42	59.00	363.50		80.00	445.10	
3/26/2012	452.70	1.06	58.00	362.50		82.00	447.10	
4/23/2012	463.40	1.32	58.00	362.50		92.00	457.10	
5/30/2012	457.30	0.02	59.00	363.50		88.00	453.10	
6/13/2012	452.90	0.02	58.00	362.50		84.00	449.10	
6/26/2012	450.20	0.00	60.00	364.50		80.00	445.10	
7/24/2012	439.80	0.00	59.00	363.50		70.00	435.10	
8/8/2012	437.60	0.12	58.00	362.50		70.00	435.10	
8/22/2012	433.40	0.00	59.00	363.50		66.00	431.10	
8/29/2012	431.30	0.00	60.00	364.50		63.00	428.10	
9/25/2012	420.80	0.00	58.00	362.50		55.00	420.10	
10/31/2012	412.30	0.26	58.00	362.50		44.00	409.10	
11/27/2012	420.80	0.58	59.00	363.50		50.00	415.10	
12/18/2012	448.00	1.44	60.00	364.50		76.00	441.10	
1/29/2013	468.60	1.18	59.00	363.50		98.00	463.10	
2/28/2013	469.20	0.30	60.00	364.50		100.00	465.10	
3/27/2013	468.30	0.50	60.00	364.50		99.00	464.10	
4/25/2013	462.70	0.00	58.00	362.50		94.00	459.10	
5/21/2013	454.20	0.00	59.00	363.50		86.00	451.10	
6/25/2013	439.30	0.00	59.00	363.50		70.00	435.10	
7/23/2013	431.50	0.00	60.00	364.50		62.00	427.10	
8/21/2013	418.00	0.00	59.00	363.50		50.00	415.10	
9/24/2013	404.00	0.00	59.00	363.50		37.00	402.10	
10/29/2013	400.60	0.00	57.00	361.50		33.00	398.10	
11/26/2013	407.90	0.44	56.00	360.50		36.00	401.10	
12/19/2013	425.80	0.54	56.00	360.50		55.00	420.10	
1/28/2014	439.70	0.00	57.00	361.50		70.00	435.10	
2/25/2014	449.70	0.83	57.00	361.50		80.00	445.10	
3/26/2014	465.10		58.00	362.50		95.00	460.10	
3/28/2014	465.70	1.15	58.00	362.50		96.00	461.10	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-3			C-4		
Piezo. Tip Elevation -->			363.30			392.80		
Zero Gage Reading -->			58.80			27.70		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
4/29/2014	465.30	0.43	58.00	362.50		96.00	461.10	
5/28/2014	450.60	0.00	57.00	361.50		82.00	447.10	
6/25/2014	440.10	0.00	58.00	362.50		72.00	437.10	
7/29/2014	431.20	0.00	57.00	361.50		63.00	428.10	
8/26/2014	419.50	0.02	58.00	362.50		52.00	417.10	
9/23/2014	405.30	0.00	56.00	360.50		38.00	403.10	
10/29/2014	400.90	0.00	56.00	360.50		33.00	398.10	
11/25/2014	410.90	0.25	56.00	360.50		40.00	405.10	
12/30/2014	430.60	2.94	57.00	361.50		59.00	424.10	
1/27/2015	466.70	0.83	57.00	361.50		96.00	461.10	
2/25/2015	468.90	0.69	57.00	361.50		99.00	464.10	
3/26/2015	465.90	0.61	58.00	362.50		97.00	462.10	
4/28/2015	465.70	0.20	57.00	361.50		97.00	462.10	
5/28/2015	466.40	1.08	57.00	361.50		97.00	462.10	
6/30/2015	454.50	0.00	58.00	362.50		86.00	451.10	
7/28/2015	445.60	0.00	57.00	361.50		78.00	443.10	
8/28/2015	437.60	0.00	57.00	361.50		70.00	435.10	
9/24/2015	426.90	1.51	57.00	361.50		59.00	424.10	
10/27/2015	415.40	0.49	57.00	361.50		48.00	413.10	
11/19/2015	412.90	0.09	56.00	360.50		43.00	408.10	
12/22/2015	425.50	0.69	57.00	361.50		55.00	420.10	
1/27/2016	463.60	2.86	57.00	361.50		93.00	458.10	
2/25/2016	468.90	0.25	57.00	361.50		100.00	465.10	
3/30/2016	468.00	1.44	58.00	362.50		100.00	465.10	
4/28/2016	461.30	0.30	58.00	362.50		92.00	457.10	
5/25/2016	451.30	0.18	58.00	362.50		84.00	449.10	
6/28/2016	414.10	0.00	57.00	361.50		76.00	441.10	
7/27/2016	434.20	0.00	57.00	361.50		66.00	431.10	
8/23/2016	418.60	0.00	57.00	361.50		51.00	416.10	
9/27/2016	406.40	0.00	57.00	361.50		40.00	405.10	
10/26/2016	404.00	0.48	57.00	361.50		36.00	401.10	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-3			C-4		
Piezo. Tip Elevation -->			363.30			392.80		
Zero Gage Reading -->			58.80			27.70		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
11/22/2016	413.60	1.13	56.00	360.50		42.00	407.10	
12/20/2016	441.10	3.48	56.00	360.50		70.00	435.10	
1/26/2017	471.60	5.67	57.00	361.50		101.00	466.10	
2/24/2017	472.05	3.95	58.00	362.50		103.00	468.10	
2/25/2017	472.00							
2/26/2017	472.00							
2/27/2017	472.00		58.00	362.50		102.00	467.10	
2/28/2017	471.90		58.00	362.50		103.00	468.10	
3/1/2017	471.90		58.00	362.50		103.00	468.10	
3/2/2017	471.90		58.00	362.50		102.00	467.10	
3/29/2017	467.90	0.10	58.00	362.50		100.00	465.10	
4/27/2017	457.60	0.04	58.00	362.50		89.00	454.10	
5/23/2017	453.50	0.43	58.00	362.50		85.00	450.10	
6/21/2017	447.40	0.00	58.00	362.50		80.00	445.10	
7/26/2017	435.10	0.00	58.00	362.50		67.00	432.10	
8/25/2017	420.10	0.00	57.00	361.50		51.00	416.10	
9/27/2017	407.10	0.00	57.00	361.50		40.00	405.10	
10/26/2017	395.00	0.00	56.00	360.50		29.00	394.10	
11/28/2017	409.00	0.09	57.00	361.50		39.00	404.10	
12/20/2017	416.80	0.00	55.00	359.50		46.00	411.10	
1/24/2018	434.50	1.31	58.00	362.50		64.00	429.10	
2/21/2018	443.10	0.29	56.00	360.50		73.00	438.10	
3/29/2018	453.00	1.28	56.00	360.50		84.00	449.10	
4/26/2018	449.10	0.05	57.00	361.50		80.00	445.10	
5/31/2018	453.10	0.20	57.00	361.50		84.00	449.10	
6/28/2018	448.20	0.00	57.00	361.50		80.00	445.10	
7/25/2018	440.40	0.00	57.00	361.50		71.00	436.10	
8/22/2018	427.10	0.00	57.00	361.50		60.00	425.10	
9/27/2018	439.60	0.00	57.00	361.50		42.00	407.10	
10/18/2018	405.30	0.90	57.00	361.50		37.00	402.10	
11/28/2018	408.60	1.19	56.00	360.50		40.00	405.10	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-3			C-4		
Piezo. Tip Elevation -->			363.30			392.80		
Zero Gage Reading -->			58.80			27.70		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
12/19/2018	436.00	1.99	57.00	361.50		66.00	431.10	
1/30/2019	463.80	4.71	58.00	362.50		94.00	459.10	
2/27/2019	466.20	6.55	59.00	363.50		98.00	463.10	
3/27/2019	463.30	1.34	58.00	362.50		94.00	459.10	
4/29/2019	453.00	0.13	58.00	362.50		88.00	453.10	
5/30/2019	451.80	0.64	58.00	362.50		82.00	447.10	
6/26/2019	446.20	0.01	58.00	362.50		78.00	443.10	
7/5/2019	39.40	0.00	57.00	361.50		75.00	440.10	
7/30/2019	434.80	0.00	58.00	362.50		67.00	432.10	
8/27/2019	424.40	0.00	58.00	362.50		57.00	422.10	
9/26/2019	405.60	0.00	57.00	361.50		38.00	403.10	
10/22/2019	400.50	0.00	56.00	360.50		34.00	399.10	
11/26/2019	412.80	3.13	56.00	360.50		42.00	407.10	
12/18/2019	447.40	4.44	58.00	362.50		95.00	460.10	
1/28/2020	465.40	0.20	58.00	362.50		94.00	459.10	
2/26/2020	459.60	0.14	58.00	362.50		91.00	456.10	
3/24/2020	470.70	3.49	58.00	362.50		100.00	465.10	
4/29/2020	467.60	3.65	59.00	363.50		98.00	463.10	
5/27/2020	459.10	0.02	59.00	363.50		90.00	455.10	
6/23/2020	447.00	0.00	58.00	362.50		80.00	445.10	
7/30/2020	434.00	0.00	58.00	362.50		66.00	431.10	
8/26/2020	417.70	0.00	58.00	362.50		52.00	417.10	
9/29/2020	403.60	0.00	57.00	361.50		36.00	401.10	
10/28/2020	404.50	0.00	57.00	361.50		34.00	399.10	
11/24/2020	413.50	0.42	57.00	361.50		46.00	411.10	
12/22/2020	408.00	1.13	56.00	360.50		41.00	406.10	
1/27/2021	435.60	2.25	58.00	362.50		66.00	431.10	
2/25/2021	457.30	0.05	58.00	362.50		88.00	453.10	
3/23/2021	465.90	1.36	58.00	362.50		96.00	461.10	
4/27/2021	462.10	0.04	59.00	363.50		92.00	457.10	
5/26/2021	455.00	0.03	59.00	363.50		85.00	450.10	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-3			C-4		
Piezo. Tip Elevation -->			363.30			392.80		
Zero Gage Reading -->			58.80			27.70		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
6/30/2021	437.90	0.00	58.00	362.50		70.00	435.10	
7/29/2021	423.60	0.07	58.00	362.50		55.00	420.10	
8/24/2021	408.00	0.00	58.00	362.50		40.00	405.10	
9/29/2021	398.00	0.04	67.00	371.50	Omitted	34.00	399.10	
10/26/2021	417.00	0.87	56.00	360.50		46.00	411.10	
11/25/2021	427.90	0.00	58.00	362.50		59.00	424.10	
12/21/2021	427.90	4.77	58.00	362.50		78.00	443.10	
1/27/2022	467.80	0.07	60.00	364.50	At hist max	98.00	463.10	
2/23/2022	464.80	0.29	59.00	363.50		96.00	461.10	
3/23/2022	464.40	1.08	60.00	364.50	At hist max	94.00	459.10	
4/26/2022	467.10	0.03	60.00	364.50	At hist max	98.00	463.10	
5/26/2022	464.80	0.08	59.00	363.50		96.00	461.10	
6/28/2022	457.30	0.00	60.00	364.50	At hist max	89.00	454.10	
7/26/2022	440.70	0.00	60.00	364.50	At hist max	73.00	438.10	
8/25/2022	429.50	0.05	59.00	363.50		62.00	427.10	
9/28/2022	410.80	0.35	58.00	362.50	Below Tip	44.00	409.10	
10/25/2022	407.30	0.35	58.00	362.50	Below Tip	40.00	405.10	
11/23/2022	427.30	0.80	59.00	363.50	Almost Dry	57.00	422.10	
12/20/2022	441.90	2.14	51.00	355.50	Below Tip	72.00	437.10	
1/26/2023	470.30	5.64	46.00	350.50	Below Tip	100.00	465.10	
2/23/2023	471.00	3.33	52.00	356.50	Below Tip	100.00	465.10	
3/28/2023	471.20	5.72	52.00	356.50	Below Tip	102.00	467.10	
4/25/2023	469.40	0.16	52.00	356.50	Below Tip	100.00	465.10	
5/23/2023	471.00	1.35	52.00	356.50	Below Tip	102.00	467.10	
6/28/2023	468.80	0.1	40.00	344.50	Below Tip	100.00	465.10	
7/27/2023	455.90	0	45.00	349.50	Below Tip	89.00	454.10	
8/29/2023	453.80	2.28	45.00	349.50	Below Tip	86.00	451.10	
9/26/2023	445.00	0	44.00	348.50	Below Tip	78.00	443.10	
10/26/2023	437.40	0.21	45.00	349.50	Below Tip	70.00	435.10	
11/29/2023	425.00	0.78	44.00	348.50	Below Tip	56.00	421.10	
12/21/2023	421.00	1.60	44.00	348.50	Below Tip	52.00	417.10	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-5			C-6		
Piezo. Tip Elevation -->			379.40			392.00		
Zero Gage Reading -->			14.90			27.50		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/31/2007	405.80		11.00	375.50		32.00	396.50	
2/27/2007	426.80		12.00	376.50		34.00	398.50	
3/28/2007	438.80		12.00	376.50		34.00	398.50	
4/26/2007	450.90		12.00	376.50		37.00	401.50	
5/23/2007	461.40		12.00	376.50		42.00	406.50	
6/27/2007	457.20		12.00	376.50		48.00	412.50	
7/26/2007	445.50		12.00	376.50		48.00	412.50	
8/28/2007	434.60		13.00	377.50		46.00	410.50	
9/25/2007	416.80		12.00	376.50		40.00	404.50	
10/24/2007	404.50		11.00	375.50		37.00	401.50	
11/27/2007	422.20		11.00	375.50		36.00	400.50	
1/3/2008	443.20		12.00	376.50		39.00	403.50	
1/29/2008	452.20		12.00	376.50		42.00	406.50	
2/27/2008	460.80		12.00	376.50		46.00	410.50	
3/26/2008	468.00		12.00	376.50		51.00	415.50	
4/29/2008	468.60		12.50	377.00		55.00	419.50	
5/29/2008	464.70		12.00	376.50		55.00	419.50	
6/26/2008	455.70		12.00	376.50		54.00	418.50	
7/29/2008	447.30	0.00	16.00	380.50		50.00	414.50	
8/28/2008	438.80	0.00	12.00	376.50		48.00	412.50	
9/26/2008	430.70	0.00	12.00	376.50		46.00	410.50	
10/29/2008	412.50	0.00	14.00	378.50		40.00	404.50	
11/25/2008	404.70	2.60	12.00	376.50		38.00	402.50	
12/30/2008	440.90	3.42	12.00	376.50		40.00	404.50	
1/28/2009	463.70	0.17	12.00	376.50		43.00	407.50	
2/25/2009	470.10	3.35	12.00	376.50		50.00	414.50	
3/26/2009	469.40	0.19	12.50	377.00		55.00	419.50	
4/29/2009	466.90	0.07	12.00	376.50		56.00	420.50	
5/18/2009	466.70	0.00	13.00	377.50		56.00	420.50	
5/29/2009	465.00	0.00	12.00	376.50		55.00	419.50	
6/30/2009	460.20	0.00	13.00	377.50		55.00	419.50	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-5			C-6		
Piezo. Tip Elevation -->			379.40			392.00		
Zero Gage Reading -->			14.90			27.50		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
7/30/2009	451.10	0.00	14.00	378.50		53.00	417.50	
8/25/2009	440.10	0.00	12.00	376.50		48.00	412.50	
9/30/2009	432.20	0.00	12.00	376.50		45.00	409.50	
10/29/2009	431.40	0.53	13.00	377.50		44.00	408.50	
12/1/2009	427.40	0.00	13.00	377.50		41.00	405.50	
12/29/2009	448.10	2.06	13.00	377.50		43.00	407.50	
1/27/2010	465.60	4.62	14.00	378.50		47.00	411.50	
2/25/2010	470.20	2.51	14.00	378.50		54.00	418.50	
3/29/2010	465.70	0.99	13.00	377.50		55.00	419.50	
4/4/2010	465.00		14.00	378.50		56.00	420.50	
4/27/2010	468.40	1.23	14.00	378.50		55.00	419.50	
5/27/2010	463.30	0.05	15.00	379.50		56.00	420.50	
6/30/2010	454.70	0.00	14.00	378.50		53.00	417.50	
7/28/2010	445.60	0.00	14.00	378.50		51.00	415.50	
8/31/2010	437.10	0.00	14.00	378.50		47.00	411.50	
9/29/2010	422.70	0.00	14.00	378.50		42.00	406.50	
10/27/2010	426.40	2.38	14.00	378.50		42.00	406.50	
11/29/2010	439.80	0.97	14.00	378.50		42.00	406.50	
12/30/2010	456.60	8.62	16.00	380.50		45.00	409.50	
2/1/2011	468.90	0.92	15.00	379.50		51.00	415.50	
2/23/2011	469.00	0.99	17.00	381.50		55.00	419.50	
3/29/2011	470.30	2.93	16.00	380.50		56.00	420.50	
4/27/2011	464.80	0.19	17.00	381.50		56.00	420.50	
5/26/2011	457.30	0.48	17.00	381.50		54.00	418.50	
6/28/2011	443.50	0.05	17.00	381.50		51.00	415.50	
7/29/2011	425.10	0.00	16.00	380.50		46.00	410.50	
8/24/2011	418.00	0.00	16.00	380.50		42.00	406.50	
9/27/2011	400.90	0.12	16.00	380.50		38.00	402.50	
10/26/2011	402.20	1.25	14.00	378.50		36.00	400.50	
11/30/2011	425.10	1.38	16.00	380.50		36.00	400.50	
12/21/2011	435.70	0.32	18.00	382.50		38.00	402.50	

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-5			C-6		
Piezo. Tip Elevation -->			379.40			392.00		
Zero Gage Reading -->			14.90			27.50		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/24/2012	441.40	0.53	17.00	381.50		39.00	403.50	
2/28/2012	448.40	0.42	14.00	378.50		40.00	404.50	
3/26/2012	452.70	1.06	17.00	381.50		44.00	408.50	
4/23/2012	463.40	1.32	18.00	382.50		50.00	414.50	
5/30/2012	457.30	0.02	18.00	382.50		52.00	416.50	
6/13/2012	452.90	0.02	17.00	381.50		51.00	415.50	
6/26/2012	450.20	0.00	18.00	382.50		52.00	416.50	
7/24/2012	439.80	0.00	18.00	382.50		50.00	414.50	
8/8/2012	437.60	0.12	18.00	382.50		48.00	412.50	
8/22/2012	433.40	0.00	18.00	382.50		47.00	411.50	
8/29/2012	431.30	0.00	18.00	382.50		46.00	410.50	
9/25/2012	420.80	0.00	17.00	381.50		46.00	410.50	
10/31/2012	412.30	0.26	17.00	381.50		40.00	404.50	
11/27/2012	420.80	0.58	17.00	381.50		39.00	403.50	
12/18/2012	448.00	1.44	17.00	381.50		42.00	406.50	
1/29/2013	468.60	1.18	18.00	382.50		50.00	414.50	
2/28/2013	469.20	0.30	19.00	383.50		55.00	419.50	
3/27/2013	468.30	0.50	18.00	382.50		57.00	421.50	
4/25/2013	462.70	0.00	18.00	382.50		56.00	420.50	
5/21/2013	454.20	0.00	18.00	382.50		55.00	419.50	
6/25/2013	439.30	0.00	18.00	382.50		50.00	414.50	
7/23/2013	431.50	0.00	18.00	382.50		46.00	410.50	
8/21/2013	418.00	0.00	18.00	382.50		42.00	406.50	
9/24/2013	404.00	0.00	18.00	382.50		39.00	403.50	
10/29/2013	400.60	0.00	18.00	382.50		36.00	400.50	
11/26/2013	407.90	0.44	18.00	382.50		35.00	399.50	
12/19/2013	425.80	0.54	18.00	382.50		36.00	400.50	
1/28/2014	439.70	0.00	18.00	382.50		38.00	402.50	
2/25/2014	449.70	0.83	18.00	382.50		40.00	404.50	
3/26/2014	465.10		19.00	383.50		47.00	411.50	
3/28/2014	465.70	1.15	19.00	383.50		47.00	411.50	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-5			C-6		
Piezo. Tip Elevation -->			379.40			392.00		
Zero Gage Reading -->			14.90			27.50		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
4/29/2014	465.30	0.43	20.00	384.50		54.00	418.50	
5/28/2014	450.60	0.00	19.00	383.50		52.00	416.50	
6/25/2014	440.10	0.00	19.00	383.50		50.00	414.50	
7/29/2014	431.20	0.00	19.00	383.50		46.00	410.50	
8/26/2014	419.50	0.02	18.00	382.50		43.00	407.50	
9/23/2014	405.30	0.00	18.00	382.50		39.00	403.50	
10/29/2014	400.90	0.00	18.00	382.50		37.00	401.50	
11/25/2014	410.90	0.25	18.00	382.50		36.00	400.50	
12/30/2014	430.60	2.94	18.00	382.50		37.00	401.50	
1/27/2015	466.70	0.83	20.00	384.50		44.00	408.50	
2/25/2015	468.90	0.69	19.00	383.50		52.00	416.50	
3/26/2015	465.90	0.61	20.00	384.50		55.00	419.50	
4/28/2015	465.70	0.20	20.00	384.50		57.00	421.50	
5/28/2015	466.40	1.08	19.00	383.50		56.00	420.50	
6/30/2015	454.50	0.00	19.00	383.50		55.00	419.50	
7/28/2015	445.60	0.00	19.00	383.50		51.00	415.50	
8/28/2015	437.60	0.00	18.00	382.50		48.00	412.50	
9/24/2015	426.90	1.51	19.00	383.50		44.00	408.50	
10/27/2015	415.40	0.49	19.00	383.50		42.00	406.50	
11/19/2015	412.90	0.09	18.00	382.50		39.00	403.50	
12/22/2015	425.50	0.69	18.00	382.50		39.00	403.50	
1/27/2016	463.60	2.86	19.00	383.50		44.00	408.50	
2/25/2016	468.90	0.25	20.00	384.50		50.00	414.50	
3/30/2016	468.00	1.44	20.00	384.50		55.00	419.50	
4/28/2016	461.30	0.30	20.00	384.50		56.00	420.50	
5/25/2016	451.30	0.18	20.00	384.50		54.00	418.50	
6/28/2016	414.10	0.00	18.00	382.50		50.00	414.50	
7/27/2016	434.20	0.00	20.00	384.50		48.00	412.50	
8/23/2016	418.60	0.00	20.00	384.50		44.00	408.50	
9/27/2016	406.40	0.00	20.00	384.50		40.00	404.50	
10/26/2016	404.00	0.48	19.00	383.50		37.00	401.50	

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SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-5			C-6		
Piezo. Tip Elevation -->			379.40			392.00		
Zero Gage Reading -->			14.90			27.50		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
11/22/2016	413.60	1.13	19.00	383.50		36.00	400.50	
12/20/2016	441.10	3.48	19.00	383.50		39.00	403.50	
1/26/2017	471.60	5.67	20.00	384.50		45.00	409.50	
2/24/2017	472.05	3.95	20.00	384.50		54.00	418.50	
2/25/2017	472.00							
2/26/2017	472.00							
2/27/2017	472.00		20.00	384.50		54.00	418.50	
2/28/2017	471.90		20.00	384.50		55.00	419.50	
3/1/2017	471.90		20.00	384.50		55.00	419.50	
3/2/2017	471.90		20.00	384.50		55.00	419.50	
3/29/2017	467.90	0.10	20.00	384.50		57.00	421.50	
4/27/2017	457.60	0.04	20.00	384.50		56.00	420.50	
5/23/2017	453.50	0.43	20.00	384.50		53.00	417.50	
6/21/2017	447.40	0.00	20.00	384.50		53.00	417.50	
7/26/2017	435.10	0.00	20.00	384.50		49.00	413.50	
8/25/2017	420.10	0.00	19.00	383.50		43.00	407.50	
9/27/2017	407.10	0.00	20.00	384.50		42.00	406.50	
10/26/2017	395.00	0.00	19.00	383.50		36.00	400.50	
11/28/2017	409.00	0.09	19.00	383.50		36.00	400.50	
12/20/2017	416.80	0.00	18.00	382.50		35.00	399.50	
1/24/2018	434.50	1.31	18.00	382.50		36.00	400.50	
2/21/2018	443.10	0.29	20.00	384.50		38.00	402.50	
3/29/2018	453.00	1.28	20.00	384.50		42.00	406.50	
4/26/2018	449.10	0.05	20.00	384.50		44.00	408.50	
5/31/2018	453.10	0.20	20.00	384.50		48.00	412.50	
6/28/2018	448.20	0.00	20.00	384.50		48.00	412.50	
7/25/2018	440.40	0.00	20.00	384.50		48.00	412.50	
8/22/2018	427.10	0.00	20.00	384.50		45.00	409.50	
9/27/2018	439.60	0.00	20.00	384.50		40.00	404.50	
10/18/2018	405.30	0.90	19.00	383.50		38.00	402.50	
11/28/2018	408.60	1.19	19.00	383.50		38.00	402.50	

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SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-5			C-6		
Piezo. Tip Elevation -->			379.40			392.00		
Zero Gage Reading -->			14.90			27.50		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
12/19/2018	436.00	1.99	20.00	384.50		38.00	402.50	
1/30/2019	463.80	4.71	20.00	384.50		44.00	408.50	
2/27/2019	466.20	6.55	21.00	385.50		50.00	414.50	
3/27/2019	463.30	1.34	20.00	384.50		52.00	416.50	
4/29/2019	453.00	0.13	20.00	384.50		53.00	417.50	
5/30/2019	451.80	0.64	20.00	384.50		52.00	416.50	
6/26/2019	446.20	0.01	20.00	384.50		50.00	414.50	
7/5/2019	39.40	0.00	19.00	383.50		49.00	413.50	
7/30/2019	434.80	0.00	20.00	384.50		48.00	412.50	
8/27/2019	424.40	0.00	20.00	384.50		44.00	408.50	
9/26/2019	405.60	0.00	18.00	382.50		39.00	403.50	
10/22/2019	400.50	0.00	18.00	382.50		38.00	402.50	
11/26/2019	412.80	3.13	19.00	383.50		36.00	400.50	
12/18/2019	447.40	4.44	20.00	384.50		40.00	404.50	
1/28/2020	465.40	0.20	20.00	384.50		47.00	411.50	
2/26/2020	459.60	0.14	20.00	384.50		50.00	414.50	
3/24/2020	470.70	3.49	20.00	384.50		54.00	418.50	
4/29/2020	467.60	3.65	20.00	384.50		57.00	421.50	
5/27/2020	459.10	0.02	20.00	384.50		56.00	420.50	
6/23/2020	447.00	0.00	20.00	384.50		52.00	416.50	
7/30/2020	434.00	0.00	20.00	384.50		48.00	412.50	
8/26/2020	417.70	0.00	20.00	384.50		44.00	408.50	
9/29/2020	403.60	0.00	19.00	383.50		39.00	403.50	
10/28/2020	404.50	0.00	19.00	383.50		37.00	401.50	
11/24/2020	413.50	0.42	20.00	384.50		37.00	401.50	
12/22/2020	408.00	1.13	22.00	386.50		35.00	399.50	
1/27/2021	435.60	2.25	18.00	382.50		37.00	401.50	
2/25/2021	457.30	0.05	20.00	384.50		41.00	405.50	
3/23/2021	465.90	1.36	20.00	384.50		45.00	409.50	
4/27/2021	462.10	0.04	20.00	384.50		51.00	415.50	
5/26/2021	455.00	0.03	20.00	384.50		52.00	416.50	

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SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-5			C-6		
Piezo. Tip Elevation -->			379.40			392.00		
Zero Gage Reading -->			14.90			27.50		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
6/30/2021	437.90	0.00	20.00	384.50		49.00	413.50	
7/29/2021	423.60	0.07	19.00	383.50		45.00	409.50	
8/24/2021	408.00	0.00	19.00	383.50		40.00	404.50	
9/29/2021	398.00	0.04	20.00	384.50		38.00	402.50	
10/26/2021	417.00	0.87	19.00	383.50		37.00	401.50	
11/25/2021	427.90	0.00	19.00	383.50		38.00	402.50	
12/21/2021	427.90	4.77	20.00	384.50		40.00	404.50	
1/27/2022	467.80	0.07	20.00	384.50		48.00	412.50	
2/23/2022	464.80	0.29	20.00	384.50		52.00	416.50	
3/23/2022	464.40	1.08	20.00	384.50		55.00	419.50	
4/26/2022	467.10	0.03	20.00	384.50		57.00	421.50	At hist max
5/26/2022	464.80	0.08	20.00	384.50		56.00	420.50	
6/28/2022	457.30	0.00	20.00	384.50		46.00	410.50	
7/26/2022	440.70	0.00	20.00	384.50		51.00	415.50	
8/25/2022	429.50	0.05	20.00	384.50		48.00	412.50	
9/28/2022	410.80	0.35	20.00	384.50		42.00	406.50	
10/25/2022	407.30	0.35	20.00	384.50		40.00	404.50	
11/23/2022	427.30	0.80	19.00	383.50		40.00	404.50	
12/20/2022	441.90	2.14	20.00	384.50		42.00	406.50	
1/26/2023	470.30	5.64	20.00	384.50		48.00	412.50	
2/23/2023	471.00	3.33	20.00	384.50		54.00	418.50	
3/28/2023	471.20	5.72	20.00	384.50		58.00	422.50	
4/25/2023	469.40	0.16	20.00	384.50		58.00	422.50	
5/23/2023	471.00	1.35	20.00	384.50		60.00	424.50	New hist max
6/28/2023	468.80	0.1	20.00	384.50		60.00	424.50	New hist max
7/27/2023	455.90	0	20.00	384.50		58.00	422.50	
8/29/2023	453.80	2.28	20.00	384.50		54.00	418.50	
9/26/2023	445.00	0	20.00	384.50		52.00	416.50	
10/26/2023	437.40	0.21	20.00	384.50		50.00	414.50	
11/29/2023	425.00	0.78	20.00	384.50		44.00	408.50	
12/21/2023	421.00	1.60	20.00	384.50		43.00	407.50	

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-7			C-8		
Piezo. Tip Elevation -->			324.90			440.60		
Zero Gage Reading -->			21.00			17.50		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/31/2007	405.80		18.00	321.90		17.00	440.10	
2/27/2007	426.80		20.00	323.90		18.00	441.10	
3/28/2007	438.80		19.00	322.90		16.00	439.10	
4/26/2007	450.90		18.00	321.90		16.00	439.10	
5/23/2007	461.40		19.00	322.90		20.00	443.10	
6/27/2007	457.20		18.00	321.90		22.00	445.10	
7/26/2007	445.50		18.00	321.90		22.00	445.10	
8/28/2007	434.60		19.00	322.90		22.00	445.10	
9/25/2007	416.80		18.00	321.90		21.00	444.10	
10/24/2007	404.50		19.00	322.90		20.00	443.10	
11/27/2007	422.20		18.00	321.90		18.00	441.10	
1/3/2008	443.20		18.00	321.90		16.00	439.10	
1/29/2008	452.20		18.00	321.90		17.00	440.10	
2/27/2008	460.80		19.00	322.90		19.00	442.10	
3/26/2008	468.00		19.00	322.90		26.00	449.10	
4/29/2008	468.60		18.00	321.90		31.00	454.10	
5/29/2008	464.70		18.00	321.90		32.00	455.10	
6/26/2008	455.70		18.00	321.90		28.00	451.10	
7/29/2008	447.30	0.00	18.50	322.40		26.00	449.10	
8/28/2008	438.80	0.00	18.00	321.90		25.00	448.10	
9/26/2008	430.70	0.00	19.00	322.90		23.00	446.10	
10/29/2008	412.50	0.00	18.00	321.90		22.00	445.10	
11/25/2008	404.70	2.60	18.00	321.90		20.00	443.10	
12/30/2008	440.90	3.42	19.00	322.90		20.00	443.10	
1/28/2009	463.70	0.17	18.00	321.90		20.00	443.10	
2/25/2009	470.10	3.35	18.00	321.90		27.00	450.10	
3/26/2009	469.40	0.19	19.00	322.90		31.00	454.10	
4/29/2009	466.90	0.07	19.00	322.90		32.00	455.10	
5/18/2009	466.70	0.00	19.00	322.90		32.00	455.10	
5/29/2009	465.00	0.00	20.00	323.90		30.00	453.10	
6/30/2009	460.20	0.00	19.00	322.90		30.00	453.10	

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PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-7			C-8		
Piezo. Tip Elevation -->			324.90			440.60		
Zero Gage Reading -->			21.00			17.50		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
7/30/2009	451.10	0.00	19.00	322.90		28.00	451.10	
8/25/2009	440.10	0.00	18.00	321.90		25.00	448.10	
9/30/2009	432.20	0.00	18.00	321.90		22.00	445.10	
10/29/2009	431.40	0.53	19.00	322.90		22.00	445.10	
12/1/2009	427.40	0.00	19.00	322.90		20.00	443.10	
12/29/2009	448.10	2.06	19.00	322.90		20.00	443.10	
1/27/2010	465.60	4.62	18.00	321.90		22.00	445.10	
2/25/2010	470.20	2.51	19.00	322.90		30.00	453.10	
3/29/2010	465.70	0.99	18.00	321.90		31.00	454.10	
4/4/2010	465.00		18.00	321.90		32.00	455.10	
4/27/2010	468.40	1.23	19.00	322.90		31.00	454.10	
5/27/2010	463.30	0.05	18.00	321.90		32.00	455.10	
6/30/2010	454.70	0.00	18.00	321.90		28.00	451.10	
7/28/2010	445.60	0.00	18.00	321.90		26.00	449.10	
8/31/2010	437.10	0.00	19.00	322.90		24.00	447.10	
9/29/2010	422.70	0.00	19.00	322.90		22.00	445.10	
10/27/2010	426.40	2.38	19.00	322.90		21.00	444.10	
11/29/2010	439.80	0.97	19.00	322.90		22.00	445.10	
12/30/2010	456.60	8.62	20.00	323.90		21.00	444.10	
2/1/2011	468.90	0.92	19.00	322.90		28.00	451.10	
2/23/2011	469.00	0.99	19.00	322.90		30.00	453.10	
3/29/2011	470.30	2.93	18.00	321.90		34.00	457.10	
4/27/2011	464.80	0.19	20.00	323.90		33.00	456.10	
5/26/2011	457.30	0.48	19.00	322.90		30.00	453.10	
6/28/2011	443.50	0.05	19.00	322.90		26.00	449.10	
7/29/2011	425.10	0.00	18.00	321.90		25.00	448.10	
8/24/2011	418.00	0.00	19.00	322.90		25.00	448.10	
9/27/2011	400.90	0.12	20.00	323.90		24.00	447.10	
10/26/2011	402.20	1.25	18.00	321.90		21.00	444.10	
11/30/2011	425.10	1.38	19.00	322.90		20.00	443.10	
12/21/2011	435.70	0.32	19.00	322.90		20.00	443.10	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-7			C-8		
Piezo. Tip Elevation -->			324.90			440.60		
Zero Gage Reading -->			21.00			17.50		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/24/2012	441.40	0.53	19.00	322.90		20.00	443.10	
2/28/2012	448.40	0.42	19.00	322.90		18.00	441.10	
3/26/2012	452.70	1.06	19.00	322.90		19.00	442.10	
4/23/2012	463.40	1.32	18.00	321.90		22.00	445.10	
5/30/2012	457.30	0.02	19.00	322.90		27.00	450.10	
6/13/2012	452.90	0.02	18.00	321.90		25.00	448.10	
6/26/2012	450.20	0.00	19.00	322.90		25.00	448.10	
7/24/2012	439.80	0.00	20.00	323.90		24.00	447.10	
8/8/2012	437.60	0.12	19.00	322.90		24.00	447.10	
8/22/2012	433.40	0.00	19.00	322.90		24.00	447.10	
8/29/2012	431.30	0.00	20.00	323.90		24.00	447.10	
9/25/2012	420.80	0.00	19.00	322.90		22.00	445.10	
10/31/2012	412.30	0.26	20.00	323.90		22.00	445.10	
11/27/2012	420.80	0.58	18.00	321.90		20.00	443.10	
12/18/2012	448.00	1.44	20.00	323.90		20.00	443.10	
1/29/2013	468.60	1.18	20.00	323.90		27.00	450.10	
2/28/2013	469.20	0.30	20.00	323.90		32.00	455.10	
3/27/2013	468.30	0.50	20.00	323.90		33.00	456.10	
4/25/2013	462.70	0.00	18.00	321.90		32.00	455.10	
5/21/2013	454.20	0.00	19.00	322.90		29.00	452.10	
6/25/2013	439.30	0.00	19.00	322.90		26.00	449.10	
7/23/2013	431.50	0.00	19.00	322.90		24.00	447.10	
8/21/2013	418.00	0.00	20.00	323.90		24.00	447.10	
9/24/2013	404.00	0.00	19.00	322.90		24.00	447.10	
10/29/2013	400.60	0.00	19.00	322.90		22.00	445.10	
11/26/2013	407.90	0.44	18.00	321.90		21.00	444.10	
12/19/2013	425.80	0.54	19.00	322.90		21.00	444.10	
1/28/2014	439.70	0.00	19.00	322.90		20.00	443.10	
2/25/2014	449.70	0.83	20.00	323.90		20.00	443.10	
3/26/2014	465.10		20.00	323.90		24.00	447.10	
3/28/2014	465.70	1.15	19.00	322.90		24.00	447.10	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-7			C-8		
Piezo. Tip Elevation -->			324.90			440.60		
Zero Gage Reading -->			21.00			17.50		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
4/29/2014	465.30	0.43	19.00	322.90		30.00	453.10	
5/28/2014	450.60	0.00	19.00	322.90		26.00	449.10	
6/25/2014	440.10	0.00	19.00	322.90		25.00	448.10	
7/29/2014	431.20	0.00	19.00	322.90		24.00	447.10	
8/26/2014	419.50	0.02	19.00	322.90		24.00	447.10	
9/23/2014	405.30	0.00	19.00	322.90		24.00	447.10	
10/29/2014	400.90	0.00	20.00	323.90		23.00	446.10	
11/25/2014	410.90	0.25	19.00	322.90		21.00	444.10	
12/30/2014	430.60	2.94	19.00	322.90		20.00	443.10	
1/27/2015	466.70	0.83	20.00	323.90		24.00	447.10	
2/25/2015	468.90	0.69	19.00	322.90		31.00	454.10	
3/26/2015	465.90	0.61	20.00	323.90		32.00	455.10	
4/28/2015	465.70	0.20	19.00	322.90		32.00	455.10	
5/28/2015	466.40	1.08	19.00	322.90		32.00	455.10	
6/30/2015	454.50	0.00	19.00	322.90		31.00	454.10	
7/28/2015	445.60	0.00	19.00	322.90		26.00	449.10	
8/28/2015	437.60	0.00	19.00	322.90		25.00	448.10	
9/24/2015	426.90	1.51	19.00	322.90		25.00	448.10	
10/27/2015	415.40	0.49	19.00	322.90		24.00	447.10	
11/19/2015	412.90	0.09	19.00	322.90		23.00	446.10	
12/22/2015	425.50	0.69	19.00	322.90		21.00	444.10	
1/27/2016	463.60	2.86	20.00	323.90		20.00	443.10	
2/25/2016	468.90	0.25	19.00	322.90		30.00	453.10	
3/30/2016	468.00	1.44	18.00	321.90		34.00	457.10	
4/28/2016	461.30	0.30	18.00	321.90		32.00	455.10	
5/25/2016	451.30	0.18	20.00	323.90		28.00	451.10	
6/28/2016	414.10	0.00	18.00	321.90		25.00	448.10	
7/27/2016	434.20	0.00	18.00	321.90		25.00	448.10	
8/23/2016	418.60	0.00	20.00	323.90		24.00	447.10	
9/27/2016	406.40	0.00	20.00	323.90		24.00	447.10	
10/26/2016	404.00	0.48	19.00	322.90		22.00	445.10	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-7			C-8		
Piezo. Tip Elevation -->			324.90			440.60		
Zero Gage Reading -->			21.00			17.50		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
11/22/2016	413.60	1.13	19.00	322.90		22.00	445.10	
12/20/2016	441.10	3.48	20.00	323.90		21.00	444.10	
1/26/2017	471.60	5.67	19.00	322.90		29.00	452.10	
2/24/2017	472.05	3.95	18.00	321.90		34.00	457.10	
2/25/2017	472.00							
2/26/2017	472.00							
2/27/2017	472.00		19.00	322.90		34.00	457.10	
2/28/2017	471.90		19.00	322.90		34.00	457.10	
3/1/2017	471.90		19.00	322.90		34.00	457.10	
3/2/2017	471.90		18.00	321.90		38.00	461.10	
3/29/2017	467.90	0.10	19.00	322.90		36.00	459.10	
4/27/2017	457.60	0.04	19.00	322.90		32.00	455.10	
5/23/2017	453.50	0.43	18.00	321.90		28.00	451.10	
6/21/2017	447.40	0.00	18.00	321.90		28.00	451.10	
7/26/2017	435.10	0.00	19.00	322.90		26.00	449.10	
8/25/2017	420.10	0.00	19.00	322.90		24.00	447.10	
9/27/2017	407.10	0.00	20.00	323.90		24.00	447.10	
10/26/2017	395.00	0.00	19.00	322.90		24.00	447.10	
11/28/2017	409.00	0.09	19.00	322.90		21.00	444.10	
12/20/2017	416.80	0.00	18.00	321.90		21.00	444.10	
1/24/2018	434.50	1.31	20.00	323.90		20.00	443.10	
2/21/2018	443.10	0.29	19.00	322.90		20.00	443.10	
3/29/2018	453.00	1.28	18.00	321.90		20.00	443.10	
4/26/2018	449.10	0.05	18.00	321.90		19.00	442.10	
5/31/2018	453.10	0.20	20.00	323.90		20.00	443.10	
6/28/2018	448.20	0.00	20.00	323.90		21.00	444.10	
7/25/2018	440.40	0.00	18.00	321.90		21.00	444.10	
8/22/2018	427.10	0.00	19.00	322.90		20.00	443.10	
9/27/2018	439.60	0.00	18.00	321.90		22.00	445.10	
10/18/2018	405.30	0.90	19.00	322.90		21.00	444.10	
11/28/2018	408.60	1.19	20.00	323.90		20.00	443.10	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-7			C-8		
Piezo. Tip Elevation -->			324.90			440.60		
Zero Gage Reading -->			21.00			17.50		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
12/19/2018	436.00	1.99	20.00	323.90		22.00	445.10	
1/30/2019	463.80	4.71	20.00	323.90		20.00	443.10	
2/27/2019	466.20	6.55	19.00	322.90		28.00	451.10	
3/27/2019	463.30	1.34	18.00	321.90		30.00	453.10	
4/29/2019	453.00	0.13	19.00	322.90		28.00	451.10	
5/30/2019	451.80	0.64	19.00	322.90		26.00	449.10	
6/26/2019	446.20	0.01	19.00	322.90		25.00	448.10	
7/5/2019	39.40	0.00	18.00	321.90		24.00	447.10	
7/30/2019	434.80	0.00	19.00	322.90		24.00	447.10	
8/27/2019	424.40	0.00	20.00	323.90		23.00	446.10	
9/26/2019	405.60	0.00	19.00	322.90		23.00	446.10	
10/22/2019	400.50	0.00	18.00	321.90		22.00	445.10	
11/26/2019	412.80	3.13	19.00	322.90		21.00	444.10	
12/18/2019	447.40	4.44	19.00	322.90		21.00	444.10	
1/28/2020	465.40	0.20	22.00	325.90		26.00	449.10	
2/26/2020	459.60	0.14	19.00	322.90		27.00	450.10	
3/24/2020	470.70	3.49	20.00	323.90		30.00	453.10	
4/29/2020	467.60	3.65	20.00	323.90		35.00	458.10	
5/27/2020	459.10	0.02	19.00	322.90		33.00	456.10	
6/23/2020	447.00	0.00	18.00	321.90		28.00	451.10	
7/30/2020	434.00	0.00	20.00	323.90		26.00	449.10	
8/26/2020	417.70	0.00	18.00	321.90		26.00	449.10	
9/29/2020	403.60	0.00	19.00	322.90		24.00	447.10	
10/28/2020	404.50	0.00	19.00	322.90		23.00	446.10	
11/24/2020	413.50	0.42	18.00	321.90		22.00	445.10	
12/22/2020	408.00	1.13	18.00	321.90		22.00	445.10	
1/27/2021	435.60	2.25	18.00	321.90		20.00	443.10	
2/25/2021	457.30	0.05	19.00	322.90		20.00	443.10	
3/23/2021	465.90	1.36	20.00	323.90		25.00	448.10	
4/27/2021	462.10	0.04	18.00	321.90		30.00	453.10	
5/26/2021	455.00	0.03	19.00	322.90		28.00	451.10	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-7			C-8		
Piezo. Tip Elevation -->			324.90			440.60		
Zero Gage Reading -->			21.00			17.50		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
6/30/2021	437.90	0.00	18.00	321.90		24.00	447.10	
7/29/2021	423.60	0.07	19.00	322.90		24.00	447.10	
8/24/2021	408.00	0.00	19.00	322.90		24.00	447.10	
9/29/2021	398.00	0.04	18.00	321.90		24.00	447.10	
10/26/2021	417.00	0.87	19.00	322.90		22.00	445.10	
11/25/2021	427.90	0.00	19.00	322.90		21.00	444.10	
12/21/2021	427.90	4.77	18.00	321.90		22.00	445.10	
1/27/2022	467.80	0.07	18.00	321.90	Below Tip	30.00	453.10	
2/23/2022	464.80	0.29	18.00	321.90	Below Tip	30.00	453.10	
3/23/2022	464.40	1.08	18.00	321.90	Below Tip	31.00	454.10	
4/26/2022	467.10	0.03	18.00	321.90	Below Tip	34.00	457.10	
5/26/2022	464.80	0.08	19.00	322.90	Below Tip	33.00	456.10	
6/28/2022	457.30	0.00	19.00	322.90	Below Tip	21.00	444.10	Dropped 12'
7/26/2022	440.70	0.00	18.00	321.90	Below Tip	37.00	460.10	increased 16'
8/25/2022	429.50	0.05	19.00	322.90	Below Tip	28.00	451.10	Dropped 9'
9/28/2022	410.80	0.35	20.00	323.90	Below Tip	25.00	448.10	
10/25/2022	407.30	0.35	18.00	321.90	Below Tip	24.00	447.10	
11/23/2022	427.30	0.80	19.00	322.90	Below Tip	22.00	445.10	
12/20/2022	441.90	2.14	20.00	323.90	Below Tip	24.00	447.10	
1/26/2023	470.30	5.64	18.00	321.90	Below Tip	28.00	451.10	
2/23/2023	471.00	3.33	34.00	337.90	Omitted	34.00	457.10	
3/28/2023	471.20	5.72	20.00	323.90	Below Tip	36.00	459.10	
4/25/2023	469.40	0.16	18.00	321.90	Below Tip	36.00	459.10	
5/23/2023	471.00	1.35	18.00	321.90	Below Tip	37.00	460.10	
6/28/2023	468.80	0.1	20.00	323.90	Below Tip	38.00	461.10	At hist max
7/27/2023	455.90	0	20.00	323.90	Below Tip	33.00	456.10	
8/29/2023	453.80	2.28	20.00	323.90	Below Tip	30.00	453.10	
9/26/2023	445.00	0	19.00	322.90	Below Tip	27.00	450.10	
10/26/2023	437.40	0.21	19.00	322.90	Below Tip	26.00	449.10	
11/29/2023	425.00	0.78	18.00	321.90	Below Tip	24.00	447.10	
12/21/2023	421.00	1.60	20.00	323.90	Below Tip	23.00	446.10	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-9			RR-2		
Piezo. Tip Elevation -->			357.00			393.20		
Zero Gage Reading -->			53.10			29.90		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/31/2007	405.80		59.00	362.90		33.00	396.30	
2/27/2007	426.80					52.00	415.30	
3/28/2007	438.80		20.00	323.90		62.00	425.30	
4/26/2007	450.90		59.00	362.90		74.00	437.30	
5/23/2007	461.40		60.00	363.90		84.00	447.30	
6/27/2007	457.20		60.00	363.90		81.00	444.30	
7/26/2007	445.50		60.00	363.90		74.00	437.30	
8/28/2007	434.60		60.00	363.90		65.00	428.30	
9/25/2007	416.80		60.00	363.90		48.00	411.30	
10/24/2007	404.50		60.00	363.90		35.00	398.30	
11/27/2007	422.20		58.00	361.90		46.00	409.30	
1/3/2008	443.20		60.00	363.90		67.00	430.30	
1/29/2008	452.20		60.00	363.90		76.00	439.30	
2/27/2008	460.80		60.00	363.90		84.00	447.30	
3/26/2008	468.00		60.00	363.90		91.00	454.30	
4/29/2008	468.60		60.00	363.90		92.00	455.30	
5/29/2008	464.70		60.00	363.90		90.00	453.30	
6/26/2008	455.70		60.00	363.90		82.00	445.30	
7/29/2008	447.30	0.00	61.00	364.90		75.00	438.30	
8/28/2008	438.80	0.00	60.00	363.90		68.00	431.30	
9/26/2008	430.70	0.00	61.00	364.90		60.00	423.30	
10/29/2008	412.50	0.00	60.00	363.90		44.00	407.30	
11/25/2008	404.70	2.60	60.00	363.90		36.00	399.30	
12/30/2008	440.90	3.42	60.00	363.90		65.00	428.30	
1/28/2009	463.70	0.17	58.00	361.90		86.00	449.30	
2/25/2009	470.10	3.35	58.00	361.90		90.00	453.30	
3/26/2009	469.40	0.19	60.00	363.90		92.00	455.30	
4/29/2009	466.90	0.07	59.00	362.90		91.00	454.30	
5/18/2009	466.70	0.00	59.00	362.90		92.00	455.30	
5/29/2009	465.00	0.00	59.00	362.90		90.00	453.30	
6/30/2009	460.20	0.00	60.00	363.90		85.00	448.30	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-9			RR-2		
Piezo. Tip Elevation -->			357.00			393.20		
Zero Gage Reading -->			53.10			29.90		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
7/30/2009	451.10	0.00	60.00	363.90		79.00	442.30	
8/25/2009	440.10	0.00	59.00	362.90		69.00	432.30	
9/30/2009	432.20	0.00	58.00	361.90		61.00	424.30	
10/29/2009	431.40	0.53	59.00	362.90		60.00	423.30	
12/1/2009	427.40	0.00	58.00	361.90		56.00	419.30	
12/29/2009	448.10	2.06	58.00	361.90		74.00	437.30	
1/27/2010	465.60	4.62	58.00	361.90		90.00	453.30	
2/25/2010	470.20	2.51	58.00	361.90		94.00	457.30	
3/29/2010	465.70	0.99	58.00	361.90		91.00	454.30	
4/4/2010	465.00		58.00	361.90		90.00	453.30	
4/27/2010	468.40	1.23	59.00	362.90		93.00	456.30	
5/27/2010	463.30	0.05	58.00	361.90		90.00	453.30	
6/30/2010	454.70	0.00	58.00	361.90		82.00	445.30	
7/28/2010	445.60	0.00	58.00	361.90		74.00	437.30	
8/31/2010	437.10	0.00	59.00	362.90		67.00	430.30	
9/29/2010	422.70	0.00	53.00	356.90		52.00	415.30	
10/27/2010	426.40	2.38	58.00	361.90		56.00	419.30	
11/29/2010	439.80	0.97	58.00	361.90		66.00	429.30	
12/30/2010	456.60	8.62	58.00	361.90		80.00	443.30	
2/1/2011	468.90	0.92	57.00	360.90		91.00	454.30	
2/23/2011	469.00	0.99	58.00	361.90		93.00	456.30	
3/29/2011	470.30	2.93	56.00	359.90		94.00	457.30	
4/27/2011	464.80	0.19	58.00	361.90		90.00	453.30	
5/26/2011	457.30	0.48	58.00	361.90		84.00	447.30	
6/28/2011	443.50	0.05	58.00	361.90		73.00	436.30	
7/29/2011	425.10	0.00	57.00	360.90		58.00	421.30	
8/24/2011	418.00	0.00	58.00	361.90		46.00	409.30	
9/27/2011	400.90	0.12	58.00	361.90		34.00	397.30	
10/26/2011	402.20	1.25	57.00	360.90		32.00	395.30	
11/30/2011	425.10	1.38	58.00	361.90		52.00	415.30	
12/21/2011	435.70	0.32	57.00	360.90		62.00	425.30	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-9			RR-2		
Piezo. Tip Elevation -->			357.00			393.20		
Zero Gage Reading -->			53.10			29.90		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/24/2012	441.40	0.53	56.00	359.90		67.00	430.30	
2/28/2012	448.40	0.42	47.00	350.90	Omitted	72.00	435.30	
3/26/2012	452.70	1.06	46.00	349.90	Omitted	76.00	439.30	
4/23/2012	463.40	1.32	55.00	358.90		87.00	450.30	
5/30/2012	457.30	0.02	56.00	359.90		82.00	445.30	
6/13/2012	452.90	0.02	55.00	358.90		78.00	441.30	
6/26/2012	450.20	0.00	56.00	359.90		78.00	441.30	
7/24/2012	439.80	0.00	55.00	358.90		69.00	432.30	
8/8/2012	437.60	0.12	56.00	359.90		67.00	430.30	
8/22/2012	433.40	0.00	56.00	359.90		63.00	426.30	
8/29/2012	431.30	0.00	56.00	359.90		61.00	424.30	
9/25/2012	420.80	0.00	56.00	359.90		61.00	424.30	
10/31/2012	412.30	0.26	56.00	359.90		44.00	407.30	
11/27/2012	420.80	0.58	56.00	359.90		49.00	412.30	
12/18/2012	448.00	1.44	57.00	360.90		79.00	442.30	
1/29/2013	468.60	1.18	56.00	359.90		91.00	454.30	
2/28/2013	469.20	0.30	56.00	359.90		92.00	455.30	
3/27/2013	468.30	0.50	55.00	358.90		92.00	455.30	
4/25/2013	462.70	0.00	54.00	357.90		88.00	451.30	
5/21/2013	454.20	0.00	56.00	359.90		80.00	443.30	
6/25/2013	439.30	0.00	55.00	358.90		68.00	431.30	
7/23/2013	431.50	0.00	55.00	358.90		61.00	424.30	
8/21/2013	418.00	0.00	56.00	359.90		50.00	413.30	
9/24/2013	404.00	0.00	55.00	358.90		38.00	401.30	
10/29/2013	400.60	0.00	52.00	355.90		33.00	396.30	
11/26/2013	407.90	0.44	51.00	354.90		38.00	401.30	
12/19/2013	425.80	0.54	52.00	355.90		53.00	416.30	
1/28/2014	439.70	0.00	52.00	355.90		66.00	429.30	
2/25/2014	449.70	0.83	52.00	355.90		75.00	438.30	
3/26/2014	465.10		52.00	355.90		88.00	451.30	
3/28/2014	465.70	1.15	51.00	354.90		89.00	452.30	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-9			RR-2		
Piezo. Tip Elevation -->			357.00			393.20		
Zero Gage Reading -->			53.10			29.90		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
4/29/2014	465.30	0.43	52.00	355.90		90.00	453.30	
5/28/2014	450.60	0.00	51.00	354.90		76.00	439.30	
6/25/2014	440.10	0.00	52.00	355.90		68.00	431.30	
7/29/2014	431.20	0.00	52.00	355.90		60.00	423.30	
8/26/2014	419.50	0.02	52.00	355.90		50.00	413.30	
9/23/2014	405.30	0.00	52.00	355.90		38.00	401.30	
10/29/2014	400.90	0.00	52.00	355.90		33.00	396.30	
11/25/2014	410.90	0.25	51.00	354.90		40.00	403.30	
12/30/2014	430.60	2.94	51.00	354.90		57.00	420.30	
1/27/2015	466.70	0.83	51.00	354.90		88.00	451.30	
2/25/2015	468.90	0.69	50.00	353.90		90.00	453.30	
3/26/2015	465.90	0.61	51.00	354.90		99.00	462.30	
4/28/2015	465.70	0.20	51.00	354.90		90.00	453.30	
5/28/2015	466.40	1.08	50.00	353.90		90.00	453.30	
6/30/2015	454.50	0.00	51.00	354.90		80.00	443.30	
7/28/2015	445.60	0.00	50.00	353.90		72.00	435.30	
8/28/2015	437.60	0.00	50.00	353.90		66.00	429.30	
9/24/2015	426.90	1.51	50.00	353.90		57.00	420.30	
10/27/2015	415.40	0.49	51.00	354.90		46.00	409.30	
11/19/2015	412.90	0.09	50.00	353.90		43.00	406.30	
12/22/2015	425.50	0.69	50.00	353.90		54.00	417.30	
1/27/2016	463.60	2.86	49.00	352.90		86.00	449.30	
2/25/2016	468.90	0.25	50.00	353.90		91.00	454.30	
3/30/2016	468.00	1.44	49.00	352.90		92.00	455.30	
4/28/2016	461.30	0.30	49.00	352.90		86.00	449.30	
5/25/2016	451.30	0.18	30.00	333.90	Omitted	76.00	439.30	
6/28/2016	414.10	0.00	48.00	351.90		71.00	434.30	
7/27/2016	434.20	0.00	50.00	353.90		62.00	425.30	
8/23/2016	418.60	0.00	49.00	352.90		50.00	413.30	
9/27/2016	406.40	0.00	50.00	353.90		38.00	401.30	
10/26/2016	404.00	0.48	49.00	352.90		35.00	398.30	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-9			RR-2		
Piezo. Tip Elevation -->			357.00			393.20		
Zero Gage Reading -->			53.10			29.90		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
11/22/2016	413.60	1.13	48.00	351.90		43.00	406.30	
12/20/2016	441.10	3.48	49.00	352.90		67.00	430.30	
1/26/2017	471.60	5.67	49.00	352.90		91.00	454.30	
2/24/2017	472.05	3.95	49.00	352.90		92.00	455.30	
2/25/2017	472.00							
2/26/2017	472.00							
2/27/2017	472.00		49.00	352.90		92.00	455.30	
2/28/2017	471.90		50.00	353.90		93.00	456.30	
3/1/2017	471.90		50.00	353.90		93.00	456.30	
3/2/2017	471.90		49.00	352.90		92.00	455.30	
3/29/2017	467.90	0.10	50.00	353.90		89.00	452.30	
4/27/2017	457.60	0.04	50.00	353.90		82.00	445.30	
5/23/2017	453.50	0.43	49.00	352.90		77.00	440.30	
6/21/2017	447.40	0.00	49.00	352.90		70.00	433.30	
7/26/2017	435.10	0.00	50.00	353.90		63.00	426.30	
8/25/2017	420.10	0.00	49.00	352.90		50.00	413.30	
9/27/2017	407.10	0.00	50.00	353.90		38.00	401.30	
10/26/2017	395.00	0.00	49.00	352.90		30.00	393.30	
11/28/2017	409.00	0.09	49.00	352.90		38.00	401.30	
12/20/2017	416.80	0.00	48.00	351.90		44.00	407.30	
1/24/2018	434.50	1.31	48.00	351.90		56.00	419.30	
2/21/2018	443.10	0.29	49.00	352.90		68.00	431.30	
3/29/2018	453.00	1.28	48.00	351.90		74.00	437.30	
4/26/2018	449.10	0.05	48.00	351.90		74.00	437.30	
5/31/2018	453.10	0.20	49.00	352.90		77.00	440.30	
6/28/2018	448.20	0.00	49.00	352.90		74.00	437.30	
7/25/2018	440.40	0.00	48.00	351.90		68.00	431.30	
8/22/2018	427.10	0.00	48.00	351.90		56.00	419.30	
9/27/2018	439.60	0.00	48.00	351.90		36.00	399.30	
10/18/2018	405.30	0.90	49.00	352.90		36.00	399.30	
11/28/2018	408.60	1.19	48.00	351.90		38.00	401.30	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-9			RR-2		
Piezo. Tip Elevation -->			357.00			393.20		
Zero Gage Reading -->			53.10			29.90		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
12/19/2018	436.00	1.99	48.00	351.90		60.00	423.30	
1/30/2019	463.80	4.71	50.00	353.90		86.00	449.30	
2/27/2019	466.20	6.55	50.00	353.90		88.00	451.30	
3/27/2019	463.30	1.34	38.00	341.90	Omitted	86.00	449.30	
4/29/2019	453.00	0.13	48.00	351.90		78.00	441.30	
5/30/2019	451.80	0.64	48.00	351.90		76.00	439.30	
6/26/2019	446.20	0.01	49.00	352.90		73.00	436.30	
7/5/2019	39.40	0.00	48.00	351.90		69.00	432.30	
7/30/2019	434.80	0.00	49.00	352.90		64.00	427.30	
8/27/2019	424.40	0.00	49.00	352.90		52.00	415.30	
9/26/2019	405.60	0.00	49.00	352.90		37.00	400.30	
10/22/2019	400.50	0.00	48.00	351.90		32.00	395.30	
11/26/2019	412.80	3.13	48.00	351.90		40.00	403.30	
12/18/2019	447.40	4.44	49.00	352.90		71.00	434.30	
1/28/2020	465.40	0.20	50.00	353.90		84.00	447.30	
2/26/2020	459.60	0.14	48.00	351.90		84.00	447.30	
3/24/2020	470.70	3.49	48.00	351.90		91.00	454.30	
4/29/2020	467.60	3.65	49.00	352.90		90.00	453.30	
5/27/2020	459.10	0.02	49.00	352.90		82.00	445.30	
6/23/2020	447.00	0.00	48.00	351.90		72.00	435.30	
7/30/2020	434.00	0.00	49.00	352.90		62.00	425.30	
8/26/2020	417.70	0.00	48.00	351.90		44.00	407.30	
9/29/2020	403.60	0.00	48.00	351.90		34.00	397.30	
10/28/2020	404.50	0.00	48.00	351.90		32.00	395.30	
11/24/2020	413.50	0.42	47.00	350.90		40.00	403.30	
12/22/2020	408.00	1.13	47.00	350.90		34.00	397.30	
1/27/2021	435.60	2.25	48.00	351.90		62.00	425.30	
2/25/2021	457.30	0.05	48.00	351.90		80.00	443.30	
3/23/2021	465.90	1.36	48.00	351.90		88.00	451.30	
4/27/2021	462.10	0.04	47.00	350.90		82.00	445.30	
5/26/2021	455.00	0.03	48.00	351.90		80.00	443.30	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			C-9			RR-2		
Piezo. Tip Elevation -->			357.00			393.20		
Zero Gage Reading -->			53.10			29.90		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
6/30/2021	437.90	0.00	47.00	350.90		64.00	427.30	
7/29/2021	423.60	0.07	48.00	351.90		53.00	416.30	
8/24/2021	408.00	0.00	48.00	351.90		40.00	403.30	
9/29/2021	398.00	0.04	47.00	350.90		18.00	381.30	
10/26/2021	417.00	0.87	47.00	350.90		45.00	408.30	
11/25/2021	427.90	0.00	48.00	351.90		56.00	419.30	
12/21/2021	427.90	4.77	48.00	351.90		70.00	433.30	
1/27/2022	467.80	0.07	47.00	350.90	Below Tip	86.00	449.30	
2/23/2022	464.80	0.29	47.00	350.90	Below Tip	0.00		Error
3/23/2022	464.40	1.08	47.00	350.90	Below Tip	84.00	447.30	
4/26/2022	467.10	0.03	47.00	350.90	Below Tip	88.00	451.30	
5/26/2022	464.80	0.08	48.00	351.90	Below Tip	88.00	451.30	
6/28/2022	457.30	0.00	48.00	351.90	Below Tip	82.00	445.30	
7/26/2022	440.70	0.00	48.00	351.90	Below Tip	68.00	431.30	
8/25/2022	429.50	0.05	48.00	351.90	Below Tip	57.00	420.30	
9/28/2022	410.80	0.35	49.00	352.90	Below Tip	42.00	405.30	
10/25/2022	407.30	0.35	48.00	351.90	Below Tip	34.00	397.30	
11/23/2022	427.30	0.80	48.00	351.90	Below Tip	54.00	417.30	
12/20/2022	441.90	2.14	49.00	352.90	Below Tip	54.00	417.30	
1/26/2023	470.30	5.64	48.00	351.90	Below Tip	90.00	453.30	
2/23/2023	471.00	3.33	48.00	351.90	Below Tip	92.00	455.30	
3/28/2023	471.20	5.72	49.00	352.90	Below Tip	93.00	456.30	
4/25/2023	469.40	0.16	48.00	351.90	Below Tip	90.00	453.30	
5/23/2023	471.00	1.35	48.00	351.90	Below Tip	92.00	455.30	
6/28/2023	468.80	0.1	48.00	351.90	Below Tip	92.00	455.30	
7/27/2023	455.90	0	50.00	353.90	Below Tip	82.00	445.30	
8/29/2023	453.80	2.28	59.00	362.90	Omitted	76.00	439.30	
9/26/2023	445.00	0	48.00	351.90	Below Tip	72.00	435.30	
10/26/2023	437.40	0.21	49.00	352.90	Below Tip	66.00	429.30	
11/29/2023	425.00	0.78	48.00	351.90	Below Tip	54.00	417.30	
12/21/2023	421.00	1.60	49.00	352.90	Below Tip	50.00	413.30	

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LA-1			LA-2		
Piezo. Tip Elevation -->			391.20			440.30		
Zero Gage Reading -->			27.30			17.60		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/31/2007	405.80		36.00	399.90		11.00	433.70	
2/27/2007	426.80		58.00	421.90		52.00	474.70	
3/28/2007	438.80		59.00	422.90		11.00	433.70	
4/26/2007	450.90		81.00	444.90		14.00	436.70	
5/23/2007	461.40		92.00	455.90		28.00	450.70	
6/27/2007	457.20		88.00	451.90		25.00	447.70	
7/26/2007	445.50		76.00	439.90		17.00	439.70	
8/28/2007	434.60		66.00	429.90		15.00	437.70	
9/25/2007	416.80		47.00	410.90		14.00	436.70	
10/24/2007	404.50		33.00	396.90		14.00	436.70	
11/27/2007	422.20		51.00	414.90		13.00	435.70	
1/3/2008	443.20		72.00	435.90		11.00	433.70	
1/29/2008	452.20		82.00	445.90		18.00	440.70	
2/27/2008	460.80		90.00	453.90		27.00	449.70	
3/26/2008	468.00		98.00	461.90		36.00	458.70	
4/29/2008	468.60		99.50	463.40		38.00	460.70	
5/29/2008	464.70		95.00	458.90		35.00	457.70	
6/26/2008	455.70		86.00	449.90		27.00	449.70	
7/29/2008	447.30	0.00	78.00	441.90		20.00	442.70	
8/28/2008	438.80	0.00	70.00	433.90		14.00	436.70	
9/26/2008	430.70	0.00	62.00	425.90		15.00	437.70	
10/29/2008	412.50	0.00	42.00	405.90		14.00	436.70	
11/25/2008	404.70	2.60	36.00	399.90		14.00	436.70	
12/30/2008	440.90	3.42	61.00	424.90		14.00	436.70	
1/28/2009	463.70	0.17	94.00	457.90		31.00	453.70	
2/25/2009	470.10	3.35	100.00	463.90		39.00	461.70	
3/26/2009	469.40	0.19	100.00	463.90		40.00	462.70	
4/29/2009	466.90	0.07	98.00	461.90		36.00	458.70	
5/18/2009	466.70	0.00	97.00	460.90		37.00	459.70	
5/29/2009	465.00	0.00	95.00	458.90		32.00	454.70	
6/30/2009	460.20	0.00	91.00	454.90		31.00	453.70	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LA-1			LA-2		
Piezo. Tip Elevation -->			391.20			440.30		
Zero Gage Reading -->			27.30			17.60		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
7/30/2009	451.10	0.00	81.00	444.90		22.00	444.70	
8/25/2009	440.10	0.00	70.00	433.90		16.00	438.70	
9/30/2009	432.20	0.00	61.00	424.90		14.00	436.70	
10/29/2009	431.40	0.53	62.00	425.90		15.00	437.70	
12/1/2009	427.40	0.00	57.00	420.90		15.00	437.70	
12/29/2009	448.10	2.06	79.00	442.90		16.00	438.70	
1/27/2010	465.60	4.62	96.00	459.90		34.00	456.70	
2/25/2010	470.20	2.51	101.00	464.90		40.00	462.70	
3/29/2010	465.70	0.99	96.00	459.90		37.00	459.70	
4/4/2010	465.00		96.00	459.90		36.00	458.70	
4/27/2010	468.40	1.23	98.00	461.90		38.00	460.70	
5/27/2010	463.30	0.05	94.00	457.90		34.00	456.70	
6/30/2010	454.70	0.00	84.00	447.90		26.00	448.70	
7/28/2010	445.60	0.00	78.00	441.90		19.00	441.70	
8/31/2010	437.10	0.00	67.00	430.90		16.00	438.70	
9/29/2010	422.70	0.00	54.00	417.90		16.00	438.70	
10/27/2010	426.40	2.38	57.50	421.40		15.50	438.20	
11/29/2010	439.80	0.97	70.00	433.90		13.00	435.70	
12/30/2010	456.60	8.62	84.00	447.90		25.00	447.70	
2/1/2011	468.90	0.92	98.00	461.90		39.00	461.70	
2/23/2011	469.00	0.99	99.00	462.90		39.00	461.70	
3/29/2011	470.30	2.93	100.00	463.90		40.00	462.70	
4/27/2011	464.80	0.19	96.00	459.90		36.00	458.70	
5/26/2011	457.30	0.48	88.00	451.90		29.00	451.70	
6/28/2011	443.50	0.05	74.00	437.90		18.00	440.70	
7/29/2011	425.10	0.00	59.00	422.90		16.00	438.70	
8/24/2011	418.00	0.00	44.00	407.90		16.00	438.70	
9/27/2011	400.90	0.12	31.00	394.90		15.00	437.70	
10/26/2011	402.20	1.25	32.00	395.90		13.00	435.70	
11/30/2011	425.10	1.38	55.00	418.90		15.00	437.70	
12/21/2011	435.70	0.32	66.00	429.90		16.00	438.70	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LA-1			LA-2		
Piezo. Tip Elevation -->			391.20			440.30		
Zero Gage Reading -->			27.30			17.60		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/24/2012	441.40	0.53	72.00	435.90		15.00	437.70	
2/28/2012	448.40	0.42	78.00	441.90		16.00	438.70	
3/26/2012	452.70	1.06	82.00	445.90		21.00	443.70	
4/23/2012	463.40	1.32	95.00	458.90		32.00	454.70	
5/30/2012	457.30	0.02	89.00	452.90		29.00	451.70	
6/13/2012	452.90	0.02	84.00	447.90		24.00	446.70	
6/26/2012	450.20	0.00	80.00	443.90		22.00	444.70	
7/24/2012	439.80	0.00	70.00	433.90		16.00	438.70	
8/8/2012	437.60	0.12	68.00	431.90		16.00	438.70	
8/22/2012	433.40	0.00	69.00	432.90		16.00	438.70	
8/29/2012	431.30	0.00	62.00	425.90		16.00	438.70	
9/25/2012	420.80	0.00	60.00	423.90		15.00	437.70	
10/31/2012	412.30	0.26	44.00	407.90		16.00	438.70	
11/27/2012	420.80	0.58	51.00	414.90		15.00	437.70	
12/18/2012	448.00	1.44	80.00	443.90		16.00	438.70	
1/29/2013	468.60	1.18	100.00	463.90		38.00	460.70	
2/28/2013	469.20	0.30	100.00	463.90		40.00	462.70	
3/27/2013	468.30	0.50	98.00	461.90		39.00	461.70	
4/25/2013	462.70	0.00	94.00	457.90		34.00	456.70	
5/21/2013	454.20	0.00	84.00	447.90		25.00	447.70	
6/25/2013	439.30	0.00	69.00	432.90		16.00	438.70	
7/23/2013	431.50	0.00	63.00	426.90		16.00	438.70	
8/21/2013	418.00	0.00	49.00	412.90		16.00	438.70	
9/24/2013	404.00	0.00	35.00	398.90		15.00	437.70	
10/29/2013	400.60	0.00	32.00	395.90		14.00	436.70	
11/26/2013	407.90	0.44	39.00	402.90		14.00	436.70	
12/19/2013	425.80	0.54	56.00	419.90		14.00	436.70	
1/28/2014	439.70	0.00	70.00	433.90		14.00	436.70	
2/25/2014	449.70	0.83	80.00	443.90		18.00	440.70	
3/26/2014	465.10		95.00	458.90		24.00	446.70	
3/28/2014	465.70	1.15	96.00	459.90		34.00	456.70	

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SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LA-1			LA-2		
Piezo. Tip Elevation -->			391.20			440.30		
Zero Gage Reading -->			27.30			17.60		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
4/29/2014	465.30	0.43	96.00	459.90		36.00	458.70	
5/28/2014	450.60	0.00	80.00	443.90		23.00	445.70	
6/25/2014	440.10	0.00	70.00	433.90		15.00	437.70	
7/29/2014	431.20	0.00	62.00	425.90		15.00	437.70	
8/26/2014	419.50	0.02	50.00	413.90		15.00	437.70	
9/23/2014	405.30	0.00	36.00	399.90		15.00	437.70	
10/29/2014	400.90	0.00	31.00	394.90		14.00	436.70	
11/25/2014	410.90	0.25	41.00	404.90		14.00	436.70	
12/30/2014	430.60	2.94	59.00	422.90		15.00	437.70	
1/27/2015	466.70	0.83	97.00	460.90		36.00	458.70	
2/25/2015	468.90	0.69	100.00	463.90		38.00	460.70	
3/26/2015	465.90	0.61	97.00	460.90		37.00	459.70	
4/28/2015	465.70	0.20	97.00	460.90		36.00	458.70	
5/28/2015	466.40	1.08	97.00	460.90		36.00	458.70	
6/30/2015	454.50	0.00	85.00	448.90		27.00	449.70	
7/28/2015	445.60	0.00	77.00	440.90		18.00	440.70	
8/28/2015	437.60	0.00	69.00	432.90		16.00	438.70	
9/24/2015	426.90	1.51	58.00	421.90		17.00	439.70	
10/27/2015	415.40	0.49	48.00	411.90		15.00	437.70	
11/19/2015	412.90	0.09	42.00	405.90		14.00	436.70	
12/22/2015	425.50	0.69	56.00	419.90		14.00	436.70	
1/27/2016	463.60	2.86	94.00	457.90		32.00	454.70	
2/25/2016	468.90	0.25	100.00	463.90		38.00	460.70	
3/30/2016	468.00	1.44	100.00	463.90		39.00	461.70	
4/28/2016	461.30	0.30	92.00	455.90		33.00	455.70	
5/25/2016	451.30	0.18	80.00	443.90		23.00	445.70	
6/28/2016	414.10	0.00	73.00	436.90		17.00	439.70	
7/27/2016	434.20	0.00	66.00	429.90		16.00	438.70	
8/23/2016	418.60	0.00	50.00	413.90		15.00	437.70	
9/27/2016	406.40	0.00	36.00	399.90		16.00	438.70	
10/26/2016	404.00	0.48	33.00	396.90		16.00	438.70	

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SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LA-1			LA-2		
Piezo. Tip Elevation -->			391.20			440.30		
Zero Gage Reading -->			27.30			17.60		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
11/22/2016	413.60	1.13	44.00	407.90		14.00	436.70	
12/20/2016	441.10	3.48	71.00	434.90		14.00	436.70	
1/26/2017	471.60	5.67	102.00	465.90		41.00	463.70	
2/24/2017	472.05	3.95	104.00	467.90		42.00	464.70	
2/25/2017	472.00							
2/26/2017	472.00							
2/27/2017	472.00		103.00	466.90		42.00	464.70	
2/28/2017	471.90		104.00	467.90		42.00	464.70	
3/1/2017	471.90		104.00	467.90		42.00	464.70	
3/2/2017	471.90		104.00	467.90		40.00	462.70	
3/29/2017	467.90	0.10	100.00	463.90		38.00	460.70	
4/27/2017	457.60	0.04	89.00	452.90		29.00	451.70	
5/23/2017	453.50	0.43	85.00	448.90		25.00	447.70	
6/21/2017	447.40	0.00	80.00	443.90		17.00	439.70	
7/26/2017	435.10	0.00	67.00	430.90		16.00	438.70	
8/25/2017	420.10	0.00	50.00	413.90		15.00	437.70	
9/27/2017	407.10	0.00	40.00	403.90		15.00	437.70	
10/26/2017	395.00	0.00	24.00	387.90		15.00	437.70	
11/28/2017	409.00	0.09	39.00	402.90		13.00	435.70	
12/20/2017	416.80	0.00	47.00	410.90		14.00	436.70	
1/24/2018	434.50	1.31	64.00	427.90		12.00	434.70	
2/21/2018	443.10	0.29	75.00	438.90		13.00	435.70	
3/29/2018	453.00	1.28	84.00	447.90		20.00	442.70	
4/26/2018	449.10	0.05	81.00	444.90		20.00	442.70	
5/31/2018	453.10	0.20	86.00	449.90		22.00	444.70	
6/28/2018	448.20	0.00	80.00	443.90		20.00	442.70	
7/25/2018	440.40	0.00	71.00	434.90		17.00	439.70	
8/22/2018	427.10	0.00	59.00	422.90		14.00	436.70	
9/27/2018	439.60	0.00	38.00	401.90		12.00	434.70	
10/18/2018	405.30	0.90	36.00	399.90		14.00	436.70	
11/28/2018	408.60	1.19	40.00	403.90		14.00	436.70	

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SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LA-1			LA-2		
Piezo. Tip Elevation -->			391.20			440.30		
Zero Gage Reading -->			27.30			17.60		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
12/19/2018	436.00	1.99	66.00	429.90		10.00	432.70	
1/30/2019	463.80	4.71	96.00	459.90		32.00	454.70	
2/27/2019	466.20	6.55	99.00	462.90		36.00	458.70	
3/27/2019	463.30	1.34	94.00	457.90		32.00	454.70	
4/29/2019	453.00	0.13	86.00	449.90		25.00	447.70	
5/30/2019	451.80	0.64	84.00	447.90		22.00	444.70	
6/26/2019	446.20	0.01	78.00	441.90		19.00	441.70	
7/5/2019	39.40	0.00	73.00	436.90		16.00	438.70	
7/30/2019	434.80	0.00	66.00	429.90		16.00	438.70	
8/27/2019	424.40	0.00	56.00	419.90		15.00	437.70	
9/26/2019	405.60	0.00	37.00	400.90		14.00	436.70	
10/22/2019	400.50	0.00	32.00	395.90		12.00	434.70	
11/26/2019	412.80	3.13	44.00	407.90		14.00	436.70	
12/18/2019	447.40	4.44	79.00	442.90		15.00	437.70	
1/28/2020	465.40	0.20	98.00	461.90		32.00	454.70	
2/26/2020	459.60	0.14	92.00	455.90		30.00	452.70	
3/24/2020	470.70	3.49	102.00	465.90		40.00	462.70	
4/29/2020	467.60	3.65	99.00	462.90		39.00	461.70	
5/27/2020	459.10	0.02	90.00	453.90		32.00	454.70	
6/23/2020	447.00	0.00	79.00	442.90		20.00	442.70	
7/30/2020	434.00	0.00	66.00	429.90		16.00	438.70	
8/26/2020	417.70	0.00	48.00	411.90		14.00	436.70	
9/29/2020	403.60	0.00	34.00	397.90		14.00	436.70	
10/28/2020	404.50	0.00	32.00	395.90		15.00	437.70	
11/24/2020	413.50	0.42	44.00	407.90		10.00	432.70	
12/22/2020	408.00	1.13	38.00	401.90		9.00	431.70	
1/27/2021	435.60	2.25	79.00	442.90		10.00	432.70	
2/25/2021	457.30	0.05	89.00	452.90		25.00	447.70	
3/23/2021	465.90	1.36	98.00	461.90		34.00	456.70	
4/27/2021	462.10	0.04	94.00	457.90		31.00	453.70	
5/26/2021	455.00	0.03	86.00	449.90		26.00	448.70	

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PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LA-1			LA-2		
Piezo. Tip Elevation -->			391.20			440.30		
Zero Gage Reading -->			27.30			17.60		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
6/30/2021	437.90	0.00	70.00	433.90		15.00	437.70	
7/29/2021	423.60	0.07	54.00	417.90		15.00	437.70	
8/24/2021	408.00	0.00	40.00	403.90		16.00	438.70	
9/29/2021	398.00	0.04	28.00	391.90		12.00	434.70	
10/26/2021	417.00	0.87	48.00	411.90		14.00	436.70	
11/25/2021	427.90	0.00	59.00	422.90		14.00	436.70	
12/21/2021	427.90	4.77	76.00	439.90		10.00	432.70	
1/27/2022	467.80	0.07	100.00	463.90		36.00	458.70	
2/23/2022	464.80	0.29	96.00	459.90		34.00	456.70	
3/23/2022	464.40	1.08	96.00	459.90		31.00	453.70	
4/26/2022	467.10	0.03	98.00	461.90		35.00	457.70	
5/26/2022	464.80	0.08	96.00	459.90		34.00	456.70	
6/28/2022	457.30	0.00	89.00	452.90		29.00	451.70	
7/26/2022	440.70	0.00	71.00	434.90		15.00	437.70	Below Tip
8/25/2022	429.50	0.05	60.00	423.90		15.00	437.70	Below Tip
9/28/2022	410.80	0.35	42.00	405.90		15.00	437.70	Below Tip
10/25/2022	407.30	0.35	36.00	399.90		12.00	434.70	Below Tip
11/23/2022	427.30	0.80	59.00	422.90		13.00	435.70	Below Tip
12/20/2022	441.90	2.14	73.00	436.90		10.00	432.70	Below Tip
1/26/2023	470.30	5.64	102.00	465.90		38.00	460.70	
2/23/2023	471.00	3.33	102.00	465.90		40.00	462.70	
3/28/2023	471.20	5.72	102.00	465.90		42.00	464.70	At hist. max
4/25/2023	469.40	0.16	101.00	464.90		38.00	460.70	
5/23/2023	471.00	1.35	102.00	465.90		40.00	462.70	
6/28/2023	468.80	0.1	100.00	463.90		40.00	462.70	
7/27/2023	455.90	0	87.00	450.90		28.00	450.70	
8/29/2023	453.80	2.28	84.00	447.90		22.00	444.70	
9/26/2023	445.00	0	78.00	441.90		18.00	440.70	
10/26/2023	437.40	0.21	70.00	433.90		16.00	438.70	Below Tip
11/29/2023	425.00	0.78	55.00	418.90		14.00	436.70	Below Tip
12/21/2023	421.00	1.60	51.00	414.90		15.00	437.70	Below Tip

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			RA-1			RA-2		
Piezo. Tip Elevation -->			364.50			354.30		
Zero Gage Reading -->			61.00			51.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/31/2007	405.80		80.00	383.50		81.00	384.30	
2/27/2007	426.80		90.00	393.50		86.00	389.30	
3/28/2007	438.80		97.00	400.50		92.00	395.30	
4/26/2007	450.90		104.00	407.50		98.00	401.30	
5/23/2007	461.40		110.00	413.50		104.00	407.30	
6/27/2007	457.20		113.00	416.50		105.00	408.30	
7/26/2007	445.50		109.00	412.50		103.00	406.30	
8/28/2007	434.60		103.00	406.50		96.00	399.30	
9/25/2007	416.80		93.00	396.50		94.00	397.30	
10/24/2007	404.50		86.00	389.50		88.00	391.30	
11/27/2007	422.20		86.00	389.50		88.00	391.30	
1/3/2008	443.20		97.00	400.50		96.00	399.30	
1/29/2008	452.20		102.00	405.50		98.00	401.30	
2/27/2008	460.80		110.00	413.50		103.00	406.30	
3/26/2008	468.00		116.00	419.50		106.00	409.30	
4/29/2008	468.60		119.50	423.00		108.00	411.30	
5/29/2008	464.70		116.00	419.50		108.00	411.30	
6/26/2008	455.70		116.00	419.50		106.00	409.30	
7/29/2008	447.30	0.00	111.00	414.50		104.00	407.30	
8/28/2008	438.80	0.00	106.00	409.50		100.00	403.30	
9/26/2008	430.70	0.00	101.00	404.50		99.00	402.30	
10/29/2008	412.50	0.00	90.00	393.50		90.00	393.30	
11/25/2008	404.70	2.60	86.00	389.50		88.00	391.30	
12/30/2008	440.90	3.42	99.00	402.50		94.00	397.30	
1/28/2009	463.70	0.17	112.00	415.50		102.00	405.30	
2/25/2009	470.10	3.35	118.00	421.50		106.00	409.30	
3/26/2009	469.40	0.19	118.00	421.50		108.00	411.30	
4/29/2009	466.90	0.07	118.00	421.50		108.00	411.30	
5/18/2009	466.70	0.00	118.00	421.50		108.00	411.30	
5/29/2009	465.00	0.00	119.00	422.50		108.00	411.30	
6/30/2009	460.20	0.00	116.00	419.50		108.00	411.30	

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PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			RA-1			RA-2		
Piezo. Tip Elevation -->			364.50			354.30		
Zero Gage Reading -->			61.00			51.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
7/30/2009	451.10	0.00	113.00	416.50		106.00	409.30	
8/25/2009	440.10	0.00	106.00	409.50		101.00	404.30	
9/30/2009	432.20	0.00	102.00	405.50		99.00	402.30	
10/29/2009	431.40	0.53	99.00	402.50		97.00	400.30	
12/1/2009	427.40	0.00	96.00	399.50		94.00	397.30	
12/29/2009	448.10	2.06	102.00	405.50		98.00	401.30	
1/27/2010	465.60	4.62	113.00	416.50		104.00	407.30	
2/25/2010	470.20	2.51	119.00	422.50		108.00	411.30	
3/29/2010	465.70	0.99	117.00	420.50		107.00	410.30	
4/4/2010	465.00		117.00	420.50		116.00	419.30	
4/27/2010	468.40	1.23	119.00	422.50		107.00	410.30	
5/27/2010	463.30	0.05	117.00	420.50		107.00	410.30	
6/30/2010	454.70	0.00	114.00	417.50		106.00	409.30	
7/28/2010	445.60	0.00	109.00	412.50		102.00	405.30	
8/31/2010	437.10	0.00	104.00	407.50		100.00	403.30	
9/29/2010	422.70	0.00	98.00	401.50		97.00	400.30	
10/27/2010	426.40	2.38	94.00	397.50		94.00	397.30	
11/29/2010	439.80	0.97	99.00	402.50		96.00	399.30	
12/30/2010	456.60	8.62	106.00	409.50		100.00	403.30	
2/1/2011	468.90	0.92	115.00	418.50		106.00	409.30	
2/23/2011	469.00	0.99	118.00	421.50		107.00	410.30	
3/29/2011	470.30	2.93	118.00	421.50		107.00	410.30	
4/27/2011	464.80	0.19	120.00	423.50		108.00	411.30	
5/26/2011	457.30	0.48	117.00	420.50		106.00	409.30	
6/28/2011	443.50	0.05	108.00	411.50		101.00	404.30	
7/29/2011	425.10	0.00	99.00	402.50		96.00	399.30	
8/24/2011	418.00	0.00	90.00	393.50		90.00	393.30	
9/27/2011	400.90	0.12	84.00	387.50		86.00	389.30	
10/26/2011	402.20	1.25	82.00	385.50		84.00	387.30	
11/30/2011	425.10	1.38	91.00	394.50		88.00	391.30	
12/21/2011	435.70	0.32	97.00	400.50		92.00	395.30	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			RA-1			RA-2		
Piezo. Tip Elevation -->			364.50			354.30		
Zero Gage Reading -->			61.00			51.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/24/2012	441.40	0.53	97.00	400.50		93.00	396.30	
2/28/2012	448.40	0.42	102.00	405.50		96.00	399.30	
3/26/2012	452.70	1.06	104.00	407.50		98.00	401.30	
4/23/2012	463.40	1.32	113.00	416.50		102.00	405.30	
5/30/2012	457.30	0.02	114.00	417.50		104.00	407.30	
6/13/2012	452.90	0.02	111.00	414.50		102.00	405.30	
6/26/2012	450.20	0.00	110.00	413.50		102.00	405.30	
7/24/2012	439.80	0.00	104.00	407.50		98.00	401.30	
8/8/2012	437.60	0.12	103.00	406.50		98.00	401.30	
8/22/2012	433.40	0.00	101.00	404.50		96.00	399.30	
8/29/2012	431.30	0.00	100.00	403.50		96.00	399.30	
9/25/2012	420.80	0.00	91.00	394.50		88.00	391.30	
10/31/2012	412.30	0.26	88.00	391.50		90.00	393.30	
11/27/2012	420.80	0.58	89.00	392.50		89.00	392.30	
12/18/2012	448.00	1.44	104.00	407.50		97.00	400.30	
1/29/2013	468.60	1.18	118.00	421.50		105.00	408.30	
2/28/2013	469.20	0.30	120.00	423.50		106.00	409.30	
3/27/2013	468.30	0.50	120.00	423.50		107.00	410.30	
4/25/2013	462.70	0.00	118.00	421.50		106.00	409.30	
5/21/2013	454.20	0.00	113.00	416.50		104.00	407.30	
6/25/2013	439.30	0.00	103.00	406.50		99.00	402.30	
7/23/2013	431.50	0.00	100.00	403.50		96.00	399.30	
8/21/2013	418.00	0.00	92.00	395.50		92.00	395.30	
9/24/2013	404.00	0.00	84.00	387.50		85.00	388.30	
10/29/2013	400.60	0.00	81.00	384.50		84.00	387.30	
11/26/2013	407.90	0.44	81.00	384.50		84.00	387.30	
12/19/2013	425.80	0.54	90.00	393.50		88.00	391.30	
1/28/2014	439.70	0.00	97.00	400.50		91.00	394.30	
2/25/2014	449.70	0.83	104.00	407.50		96.00	399.30	
3/26/2014	465.10		115.00	418.50		103.00	406.30	
3/28/2014	465.70	1.15	116.00	419.50		103.00	406.30	

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			RA-1			RA-2		
Piezo. Tip Elevation -->			364.50			354.30		
Zero Gage Reading -->			61.00			51.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
4/29/2014	465.30	0.43	119.00	422.50		106.00	409.30	
5/28/2014	450.60	0.00	111.00	414.50		102.00	405.30	
6/25/2014	440.10	0.00	104.00	407.50		98.00	401.30	
7/29/2014	431.20	0.00	100.00	403.50		96.00	399.30	
8/26/2014	419.50	0.02	93.00	396.50		92.00	395.30	
9/23/2014	405.30	0.00	84.00	387.50		86.00	389.30	
10/29/2014	400.90	0.00	82.00	385.50		85.00	388.30	
11/25/2014	410.90	0.25	82.00	385.50		85.00	388.30	
12/30/2014	430.60	2.94	94.00	397.50		89.00	392.30	
1/27/2015	466.70	0.83	117.00	420.50		104.00	407.30	
2/25/2015	468.90	0.69	120.00	423.50		105.00	408.30	
3/26/2015	465.90	0.61	119.00	422.50		105.00	408.30	
4/28/2015	465.70	0.20	120.00	423.50		106.00	409.30	
5/28/2015	466.40	1.08	118.00	421.50		106.00	409.30	
6/30/2015	454.50	0.00	116.00	419.50		105.00	408.30	
7/28/2015	445.60	0.00	109.00	412.50		101.00	404.30	
8/28/2015	437.60	0.00	105.00	408.50		99.00	402.30	
9/24/2015	426.90	1.51	98.00	401.50		94.00	397.30	
10/27/2015	415.40	0.49	91.00	394.50		91.00	394.30	
11/19/2015	412.90	0.09	87.00	390.50		88.00	391.30	
12/22/2015	425.50	0.69	92.00	395.50		90.00	393.30	
1/27/2016	463.60	2.86	116.00	419.50		102.00	405.30	
2/25/2016	468.90	0.25	122.00	425.50		105.00	408.30	
3/30/2016	468.00	1.44	122.00	425.50		106.00	409.30	
4/28/2016	461.30	0.30	120.00	423.50		104.00	407.30	
5/25/2016	451.30	0.18	114.00	417.50		102.00	405.30	
6/28/2016	414.10	0.00	108.00	411.50		100.00	403.30	
7/27/2016	434.20	0.00	103.00	406.50		97.00	400.30	
8/23/2016	418.60	0.00	83.00	386.50		91.00	394.30	
9/27/2016	406.40	0.00	86.00	389.50		86.00	389.30	
10/26/2016	404.00	0.48	82.00	385.50		83.00	386.30	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			RA-1			RA-2		
Piezo. Tip Elevation -->			364.50			354.30		
Zero Gage Reading -->			61.00			51.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
11/22/2016	413.60	1.13	86.00	389.50		85.00	388.30	
12/20/2016	441.10	3.48	102.00	405.50		93.00	396.30	
1/26/2017	471.60	5.67	123.00	426.50		104.00	407.30	
2/24/2017	472.05	3.95	125.00	428.50		106.00	409.30	
2/25/2017	472.00							
2/26/2017	472.00							
2/27/2017	472.00		125.00	428.50		106.00	409.30	
2/28/2017	471.90		125.00	428.50		106.00	409.30	
3/1/2017	471.90		126.00	429.50		106.00	409.30	
3/2/2017	471.90		126.00	429.50		106.00	409.30	
3/29/2017	467.90	0.10	124.00	427.50		106.00	409.30	
4/27/2017	457.60	0.04	118.00	421.50		104.00	407.30	
5/23/2017	453.50	0.43	105.00	408.50		102.00	405.30	
6/21/2017	447.40	0.00	111.00	414.50		102.00	405.30	
7/26/2017	435.10	0.00	103.00	406.50		97.00	400.30	
8/25/2017	420.10	0.00	93.00	396.50		91.00	394.30	
9/27/2017	407.10	0.00	86.00	389.50		87.00	390.30	
10/26/2017	395.00	0.00	77.00	380.50		80.00	383.30	
11/28/2017	409.00	0.09	82.00	385.50		82.00	385.30	
12/20/2017	416.80	0.00	87.00	390.50		84.00	387.30	
1/24/2018	434.50	1.31	98.00	401.50		90.00	393.30	
2/21/2018	443.10	0.29	103.00	406.50		92.00	395.30	
3/29/2018	453.00	1.28	110.00	413.50		96.00	399.30	
4/26/2018	449.10	0.05	110.00	413.50		97.00	400.30	
5/31/2018	453.10	0.20	112.00	415.50		99.00	402.30	
6/28/2018	448.20	0.00	110.00	413.50		98.00	401.30	
7/25/2018	440.40	0.00	106.00	409.50		97.00	400.30	
8/22/2018	427.10	0.00	99.00	402.50		93.00	396.30	
9/27/2018	439.60	0.00	85.00	388.50		87.00	390.30	
10/18/2018	405.30	0.90	83.00	386.50		85.00	388.30	
11/28/2018	408.60	1.19	82.00	385.50		85.00	388.30	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			RA-1			RA-2		
Piezo. Tip Elevation -->			364.50			354.30		
Zero Gage Reading -->			61.00			51.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
12/19/2018	436.00	1.99	100.00	403.50		92.00	395.30	
1/30/2019	463.80	4.71	123.00	426.50		102.00	405.30	
2/27/2019	466.20	6.55	121.00	424.50		102.00	405.30	
3/27/2019	463.30	1.34	120.00	423.50		102.00	405.30	
4/29/2019	453.00	0.13	114.00	417.50		100.00	403.30	
5/30/2019	451.80	0.64	114.00	417.50		100.00	403.30	
6/26/2019	446.20	0.01	111.00	414.50		99.00	402.30	
7/5/2019	39.40	0.00	108.00	411.50		98.00	401.30	
7/30/2019	434.80	0.00	103.00	406.50		96.00	399.30	
8/27/2019	424.40	0.00	98.00	401.50		92.00	395.30	
9/26/2019	405.60	0.00	85.00	388.50		85.00	388.30	
10/22/2019	400.50	0.00	80.00	383.50		82.00	385.30	
11/26/2019	412.80	3.13	86.00	389.50		84.00	387.30	
12/18/2019	447.40	4.44	109.00	412.50		95.00	398.30	
1/28/2020	465.40	0.20	122.00	425.50		103.00	406.30	
2/26/2020	459.60	0.14	118.00	421.50		102.00	405.30	
3/24/2020	470.70	3.49	126.00	429.50		104.00	407.30	
4/29/2020	467.60	3.65	125.00	428.50		105.00	408.30	
5/27/2020	459.10	0.02	120.00	423.50		104.00	407.30	
6/23/2020	447.00	0.00	112.00	415.50		100.00	403.30	
7/30/2020	434.00	0.00	103.00	406.50		95.00	398.30	
8/26/2020	417.70	0.00	92.00	395.50		90.00	393.30	
9/29/2020	403.60	0.00	82.00	385.50		82.00	385.30	
10/28/2020	404.50	0.00	82.00	385.50		83.00	386.30	
11/24/2020	413.50	0.42	86.00	389.50		84.00	387.30	
12/22/2020	408.00	1.13	82.00	385.50		82.00	385.30	
1/27/2021	435.60	2.25	100.00	403.50		79.00	382.30	
2/25/2021	457.30	0.05	118.00	421.50		98.00	401.30	
3/23/2021	465.90	1.36	122.00	425.50		102.00	405.30	
4/27/2021	462.10	0.04	121.00	424.50		102.00	405.30	
5/26/2021	455.00	0.03	118.00	421.50		101.00	404.30	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			RA-1			RA-2		
Piezo. Tip Elevation -->			364.50			354.30		
Zero Gage Reading -->			61.00			51.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
6/30/2021	437.90	0.00	106.00	409.50		95.00	398.30	
7/29/2021	423.60	0.07	97.00	400.50		91.00	394.30	
8/24/2021	408.00	0.00	88.00	391.50		86.00	389.30	
9/29/2021	398.00	0.04	80.00	383.50		80.00	383.30	
10/26/2021	417.00	0.87	91.00	394.50		85.00	388.30	
11/25/2021	427.90	0.00	98.00	401.50		89.00	392.30	
12/21/2021	427.90	4.77	111.00	414.50		95.00	398.30	
1/27/2022	467.80	0.07	126.00	429.50	at Max	104.00	407.30	
2/23/2022	464.80	0.29	124.00	427.50		103.00	406.30	
3/23/2022	464.40	1.08	124.00	427.50		103.00	406.30	
4/26/2022	467.10	0.03	126.00	429.50		105.00	408.30	
5/26/2022	464.80	0.08	126.00	429.50		105.00	408.30	
6/28/2022	457.30	0.00	121.00	424.50		103.00	406.30	
7/26/2022	440.70	0.00	110.00	413.50		97.00	400.30	
8/25/2022	429.50	0.05	103.00	406.50		94.00	397.30	
9/28/2022	410.80	0.35	90.00	393.50		87.00	390.30	
10/25/2022	407.30	0.35	86.00	389.50		84.00	387.30	
11/23/2022	427.30	0.80	98.00	401.50		88.00	391.30	
12/20/2022	441.90	2.14	108.00	411.50		94.00	397.30	
1/26/2023	470.30	5.64	129.00	432.50		105.00	408.30	
2/23/2023	471.00	3.33	128.00	431.50		105.00	408.30	
3/28/2023	471.20	5.72	130.00	433.50		106.00	409.30	
4/25/2023	469.40	0.16	128.00	431.50		106.00	409.30	
5/23/2023	471.00	1.35	130.00	433.50	New hist. max	107.00	410.30	At hist. max
6/28/2023	468.80	0.1	130.00	433.50	New hist. max	107.00	410.30	At hist. max
7/27/2023	455.90	0	122.00	425.50		104.00	407.30	
8/29/2023	453.80	2.28	120.00	423.50		102.00	405.30	
9/26/2023	445.00	0	114.00	417.50		100.00	403.30	
10/26/2023	437.40	0.21	109.00	412.50		97.00	400.30	
11/29/2023	425.00	0.78	100.00	403.50		90.00	393.30	
12/21/2023	421.00	1.60	96.00	399.50		90.00	393.30	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			RA-3			RA-4		
Piezo. Tip Elevation -->			390.80			441.00		
Zero Gage Reading -->			26.90			18.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/31/2007	405.80		32.00	395.90		15.00	438.00	
2/27/2007	426.80		50.00	413.90		16.00	439.00	
3/28/2007	438.80		61.00	424.90		14.00	437.00	
4/26/2007	450.90		73.00	436.90		16.00	439.00	
5/23/2007	461.40		82.00	445.90		25.00	448.00	
6/27/2007	457.20		79.00	442.90		25.00	448.00	
7/26/2007	445.50		71.00	434.90		22.00	445.00	
8/28/2007	434.60		62.00	425.90		20.00	443.00	
9/25/2007	416.80		46.00	409.90		19.00	442.00	
10/24/2007	404.50		34.00	397.90		17.00	440.00	
11/27/2007	422.20		46.00	409.90		14.00	437.00	
1/3/2008	443.20		66.00	429.90		14.00	437.00	
1/29/2008	452.20		74.00	437.90		16.00	439.00	
2/27/2008	460.80		81.00	444.90				
3/26/2008	468.00		88.00	451.90				
4/29/2008	468.60		90.00	453.90				
5/29/2008	464.70		87.00	450.90				
6/26/2008	455.70		80.00	443.90				
7/29/2008	447.30	0.00	72.00	435.90				
8/28/2008	438.80	0.00	66.00	429.90				
9/26/2008	430.70	0.00	58.00	421.90				
10/29/2008	412.50	0.00	42.00	405.90				
11/25/2008	404.70	2.60	36.00	399.90				
12/30/2008	440.90	3.42	63.00	426.90				
1/28/2009	463.70	0.17	84.50	448.40				
2/25/2009	470.10	3.35	90.00	453.90				
3/26/2009	469.40	0.19	90.00	453.90				
4/29/2009	466.90	0.07	89.00	452.90				
5/18/2009	466.70	0.00	89.00	452.90				
5/29/2009	465.00	0.00	88.00	451.90				
6/30/2009	460.20	0.00	84.00	447.90				

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			RA-3			RA-4		
Piezo. Tip Elevation -->			390.80			441.00		
Zero Gage Reading -->			26.90			18.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
7/30/2009	451.10	0.00	78.00	441.90				
8/25/2009	440.10	0.00	67.00	430.90				
9/30/2009	432.20	0.00	59.00	422.90				
10/29/2009	431.40	0.53	59.00	422.90				
12/1/2009	427.40	0.00	54.00	417.90				
12/29/2009	448.10	2.06	72.00	435.90				
1/27/2010	465.60	4.62	84.00	447.90				
2/25/2010	470.20	2.51	92.00	455.90				
3/29/2010	465.70	0.99	88.00	451.90				
4/4/2010	465.00		88.00	451.90				
4/27/2010	468.40	1.23	90.00	453.90				
5/27/2010	463.30	0.05	87.00	450.90				
6/30/2010	454.70	0.00	79.00	442.90				
7/28/2010	445.60	0.00	72.00	435.90				
8/31/2010	437.10	0.00	65.00	428.90				
9/29/2010	422.70	0.00	52.00	415.90				
10/27/2010	426.40	2.38	54.00	417.90				
11/29/2010	439.80	0.97	65.00	428.90				
12/30/2010	456.60	8.62	80.00	443.90				
2/1/2011	468.90	0.92	89.00	452.90				
2/23/2011	469.00	0.99	91.00	454.90				
3/29/2011	470.30	2.93	92.00	455.90				
4/27/2011	464.80	0.19	88.00	451.90				
5/26/2011	457.30	0.48	82.00	445.90				
6/28/2011	443.50	0.05	71.00	434.90				
7/29/2011	425.10	0.00	57.00	420.90				
8/24/2011	418.00	0.00	44.00	407.90				
9/27/2011	400.90	0.12	34.00	397.90		16.00	439.00	
10/26/2011	402.20	1.25	32.00	395.90		10.00	433.00	
11/30/2011	425.10	1.38	52.00	415.90		11.00	434.00	
12/21/2011	435.70	0.32	60.00	423.90		13.00	436.00	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			RA-3			RA-4		
Piezo. Tip Elevation -->			390.80			441.00		
Zero Gage Reading -->			26.90			18.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/24/2012	441.40	0.53	66.00	429.90		10.00	433.00	
2/28/2012	448.40	0.42	70.00	433.90		14.00	437.00	
3/26/2012	452.70	1.06	76.00	439.90		15.00	438.00	
4/23/2012	463.40	1.32	86.00	449.90		0.00	423.00	
5/30/2012	457.30	0.02	82.00	445.90		0.00	423.00	
6/13/2012	452.90	0.02	78.00	441.90		0.00	423.00	
6/26/2012	450.20	0.00	78.00	441.90		0.00	423.00	
7/24/2012	439.80	0.00	68.00	431.90		0.00	423.00	
8/8/2012	437.60	0.12	66.00	429.90		0.00	423.00	
8/22/2012	433.40	0.00	62.00	425.90		0.00	423.00	
8/29/2012	431.30	0.00	60.00	423.90		0.00	423.00	
9/25/2012	420.80	0.00	52.00	415.90		11.00	434.00	
10/31/2012	412.30	0.26	43.00	406.90		14.00	437.00	
11/27/2012	420.80	0.58	49.00	412.90		15.00	438.00	
12/18/2012	448.00	1.44	72.00	435.90		11.00	434.00	
1/29/2013	468.60	1.18	90.00	453.90		0.00	423.00	
2/28/2013	469.20	0.30	91.00	454.90		0.00	423.00	
3/27/2013	468.30	0.50	90.00	453.90		0.00	423.00	
4/25/2013	462.70	0.00	86.00	449.90		0.00	423.00	
5/21/2013	454.20	0.00	79.00	442.90		0.00	423.00	
6/25/2013	439.30	0.00	66.00	429.90		0.00	423.00	
7/23/2013	431.50	0.00	60.00	423.90		0.00	423.00	
8/21/2013	418.00	0.00	49.00	412.90		0.00	423.00	
9/24/2013	404.00	0.00	37.00	400.90		17.00	440.00	
10/29/2013	400.60	0.00	34.00	397.90		16.00	439.00	
11/26/2013	407.90	0.44	38.00	401.90		14.00	437.00	
12/19/2013	425.80	0.54	53.00	416.90		11.00	434.00	
1/28/2014	439.70	0.00	65.00	428.90		12.00	435.00	
2/25/2014	449.70	0.83	74.00	437.90		16.00	439.00	
3/26/2014	465.10		87.00	450.90		0.00	423.00	
3/28/2014	465.70	1.15	88.00	451.90		0.00	423.00	

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			RA-3			RA-4		
Piezo. Tip Elevation -->			390.80			441.00		
Zero Gage Reading -->			26.90			18.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
4/29/2014	465.30	0.43	88.00	451.90		0.00	423.00	
5/28/2014	450.60	0.00	78.00	441.90		0.00	423.00	
6/25/2014	440.10	0.00	67.00	430.90		0.00	423.00	
7/29/2014	431.20	0.00	60.00	423.90		0.00	423.00	
8/26/2014	419.50	0.02	50.00	413.90		0.00	423.00	
9/23/2014	405.30	0.00	38.00	401.90		15.00	438.00	
10/29/2014	400.90	0.00	44.00	407.90		16.00	439.00	
11/25/2014	410.90	0.25	40.00	403.90		18.00	441.00	
12/30/2014	430.60	2.94	56.00	419.90		11.00	434.00	
1/27/2015	466.70	0.83	88.00	451.90		0.00	423.00	
2/25/2015	468.90	0.69	90.00	453.90		0.00	423.00	
3/26/2015	465.90	0.61	88.00	451.90		0.00	423.00	
4/28/2015	465.70	0.20	89.00	452.90		0.00	423.00	
5/28/2015	466.40	1.08	88.00	451.90		0.00	423.00	
6/30/2015	454.50	0.00	80.00	443.90		0.00	423.00	
7/28/2015	445.60	0.00	71.00	434.90		0.00	423.00	
8/28/2015	437.60	0.00	65.00	428.90		0.00	423.00	
9/24/2015	426.90	1.51	56.00	419.90		0.00	423.00	
10/27/2015	415.40	0.49	46.00	409.90		0.00	423.00	
11/19/2015	412.90	0.09	43.00	406.90		17.00	440.00	
12/22/2015	425.50	0.69	54.00	417.90		12.00	435.00	
1/27/2016	463.60	2.86	85.00	448.90		0.00	423.00	
2/25/2016	468.90	0.25	91.00	454.90		0.00	423.00	
3/30/2016	468.00	1.44	90.00	453.90		0.00	423.00	
4/28/2016	461.30	0.30	84.00	447.90		0.00	423.00	
5/25/2016	451.30	0.18	76.00	439.90		0.00	423.00	
6/28/2016	414.10	0.00	70.00	433.90		0.00	423.00	
7/27/2016	434.20	0.00	62.00	425.90		0.00	423.00	
8/23/2016	418.60	0.00	49.00	412.90		0.00	423.00	
9/27/2016	406.40	0.00	38.00	401.90		12.00	435.00	
10/26/2016	404.00	0.48	34.00	397.90		14.00	437.00	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			RA-3			RA-4		
Piezo. Tip Elevation -->			390.80			441.00		
Zero Gage Reading -->			26.90			18.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
11/22/2016	413.60	1.13	42.00	405.90		14.00	437.00	
12/20/2016	441.10	3.48	66.00	429.90		16.00	439.00	
1/26/2017	471.60	5.67	91.00	454.90		0.00	423.00	
2/24/2017	472.05	3.95	92.00	455.90		0.00	423.00	
2/25/2017	472.00							
2/26/2017	472.00							
2/27/2017	472.00		92.00	455.90		0.00	423.00	
2/28/2017	471.90		92.00	455.90		0.00	423.00	
3/1/2017	471.90		93.00	456.90		0.00	423.00	
3/2/2017	471.90		92.00	455.90		0.00	423.00	
3/29/2017	467.90	0.10	90.00	453.90		0.00	423.00	
4/27/2017	457.60	0.04	82.00	445.90		0.00	423.00	
5/23/2017	453.50	0.43	78.00	441.90		0.00	423.00	
6/21/2017	447.40	0.00	70.00	433.90		0.00	423.00	
7/26/2017	435.10	0.00	63.00	426.90		0.00	423.00	
8/25/2017	420.10	0.00	49.00	412.90		0.00	423.00	
9/27/2017	407.10	0.00	38.00	401.90		0.00	423.00	
10/26/2017	395.00	0.00	27.00	390.90		14.00	437.00	
11/28/2017	409.00	0.09	38.00	401.90		12.00	435.00	
12/20/2017	416.80	0.00	44.00	407.90		13.00	436.00	
1/24/2018	434.50	1.31	56.00	419.90		12.00	435.00	
2/21/2018	443.10	0.29	68.00	431.90		13.00	436.00	
3/29/2018	453.00	1.28	75.00	438.90		0.00	423.00	
4/26/2018	449.10	0.05	73.00	436.90		0.00	423.00	
5/31/2018	453.10	0.20	77.00	440.90		0.00	423.00	
6/28/2018	448.20	0.00	74.00	437.90		0.00	423.00	
7/25/2018	440.40	0.00	67.00	430.90		0.00	423.00	
8/22/2018	427.10	0.00	56.00	419.90		0.00	423.00	
9/27/2018	439.60	0.00	38.00	401.90		14.00	437.00	
10/18/2018	405.30	0.90	36.00	399.90		13.00	436.00	
11/28/2018	408.60	1.19	38.00	401.90		12.00	435.00	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			RA-3			RA-4		
Piezo. Tip Elevation -->			390.80			441.00		
Zero Gage Reading -->			26.90			18.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
12/19/2018	436.00	1.99	60.00	423.90		14.00	437.00	
1/30/2019	463.80	4.71	86.00	449.90		0.00	423.00	
2/27/2019	466.20	6.55	88.00	451.90		0.00	423.00	
3/27/2019	463.30	1.34	0.00	363.90	Omitted	0.00	423.00	
4/29/2019	453.00	0.13	78.00	441.90		0.00	423.00	
5/30/2019	451.80	0.64	76.00	439.90		0.00	423.00	
6/26/2019	446.20	0.01	72.00	435.90		0.00	423.00	
7/5/2019	39.40	0.00	68.00	431.90		0.00	423.00	
7/30/2019	434.80	0.00	63.00	426.90		0.00	423.00	
8/27/2019	424.40	0.00	54.00	417.90		18.00	441.00	
9/26/2019	405.60	0.00	36.00	399.90		17.00	440.00	
10/22/2019	400.50	0.00	32.00	395.90		18.00	441.00	
11/26/2019	412.80	3.13	40.00	403.90		16.00	439.00	
12/18/2019	447.40	4.44	71.00	434.90		12.00	435.00	
1/28/2020	465.40	0.20	85.00	448.90		0.00	423.00	
2/26/2020	459.60	0.14	84.00	447.90		0.00	423.00	
3/24/2020	470.70	3.49	91.00	454.90		0.00	423.00	
4/29/2020	467.60	3.65	89.00	452.90		0.00	423.00	
5/27/2020	459.10	0.02	82.00	445.90		0.00	423.00	
6/23/2020	447.00	0.00	72.00	435.90		0.00	423.00	
7/30/2020	434.00	0.00	62.00	425.90		0.00	423.00	
8/26/2020	417.70	0.00	45.00	408.90		0.00	423.00	
9/29/2020	403.60	0.00	37.00	400.90		18.00	441.00	
10/28/2020	404.50	0.00	32.00	395.90		15.00	438.00	
11/24/2020	413.50	0.42	40.00	403.90		18.00	441.00	
12/22/2020	408.00	1.13	36.00	399.90		14.00	437.00	
1/27/2021	435.60	2.25	62.00	425.90		14.00	437.00	
2/25/2021	457.30	0.05	80.00	443.90		0.00	423.00	
3/23/2021	465.90	1.36	87.00	450.90		0.00	423.00	
4/27/2021	462.10	0.04	83.00	446.90		0.00	423.00	
5/26/2021	455.00	0.03	79.00	442.90		0.00	423.00	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			RA-3			RA-4		
Piezo. Tip Elevation -->			390.80			441.00		
Zero Gage Reading -->			26.90			18.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
6/30/2021	437.90	0.00	64.00	427.90		0.00	423.00	
7/29/2021	423.60	0.07	52.00	415.90		0.00	423.00	
8/24/2021	408.00	0.00	39.00	402.90		0.00	423.00	
9/29/2021	398.00	0.04	29.00	392.90		17.00	440.00	
10/26/2021	417.00	0.87	45.00	408.90		17.00	440.00	
11/25/2021	427.90	0.00	56.00	419.90		18.00	441.00	
12/21/2021	427.90	4.77	70.00	433.90		14.00	437.00	
1/27/2022	467.80	0.07	88.00	451.90		0.00		Zero reading
2/23/2022	464.80	0.29	86.00	449.90		0.00		Zero reading
3/23/2022	464.40	1.08	84.00	447.90		0.00		Zero reading
4/26/2022	467.10	0.03	88.00	451.90		0.00		Zero reading
5/26/2022	464.80	0.08	88.00	451.90		0.00		Zero reading
6/28/2022	457.30	0.00	82.00	445.90		0.00		Zero reading
7/26/2022	440.70	0.00	67.00	430.90		0.00		Zero reading
8/25/2022	429.50	0.05	58.00	421.90		0.00		Zero reading
9/28/2022	410.80	0.35	42.00	405.90		0.00		Zero reading
10/25/2022	407.30	0.35	36.00	399.90		0.00		Zero reading
11/23/2022	427.30	0.80	54.00	417.90		0.00		Zero reading
12/20/2022	441.90	2.14	64.00	427.90		0.00		Zero reading
1/26/2023	470.30	5.64	90.00	453.90		0.00		Zero reading
2/23/2023	471.00	3.33	90.00	453.90		0.00		Zero reading
3/28/2023	471.20	5.72	93.00	456.90	At hist.max	0.00		Zero reading
4/25/2023	469.40	0.16	90.00	453.90		0.00		Zero reading
5/23/2023	471.00	1.35	92.00	455.90		0.00		Zero reading
6/28/2023	468.80	0.1	90.00	453.90		0.00		Zero reading
7/27/2023	455.90	0	82.00	445.90		0.00		Zero reading
8/29/2023	453.80	2.28	76.00	439.90		0.00		Zero reading
9/26/2023	445.00	0	72.00	435.90		0.00		Zero reading
10/26/2023	437.40	0.21	68.00	431.90		0.00		Zero reading
11/29/2023	425.00	0.78	52.00	415.90		0.00		Zero reading
12/21/2023	421.00	1.60	50.00	413.90		0.00		Zero reading

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LR-1			LR-2		
Piezo. Tip Elevation -->			356.30			340.30		
Zero Gage Reading -->			53.60			37.60		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/31/2007	405.80		57.00	359.70		43.00	345.70	
2/27/2007	426.80		58.00	360.70		44.00	346.70	
3/28/2007	438.80		58.00	360.70		44.00	346.70	
4/26/2007	450.90		57.00	359.70		44.00	346.70	
5/23/2007	461.40		58.00	360.70		45.00	347.70	
6/27/2007	457.20		59.00	361.70		46.00	348.70	
7/26/2007	445.50		59.00	361.70		45.00	347.70	
8/28/2007	434.60		59.00	361.70		46.00	348.70	
9/25/2007	416.80		58.00	360.70		46.00	348.70	
10/24/2007	404.50		58.00	360.70		45.00	347.70	
11/27/2007	422.20		58.00	360.70		44.00	346.70	
1/3/2008	443.20		59.00	361.70		46.00	348.70	
1/29/2008	452.20		59.00	361.70		46.00	348.70	
2/27/2008	460.80		59.00	361.70		47.00	349.70	
3/26/2008	468.00		59.00	361.70		47.00	349.70	
4/29/2008	468.60		59.50	362.20		47.80	350.50	
5/29/2008	464.70		59.00	361.70		47.00	349.70	
6/26/2008	455.70		59.00	361.70		48.00	350.70	
7/29/2008	447.30	0.00	59.00	361.70		48.00	350.70	
8/28/2008	438.80	0.00	60.00	362.70		50.00	352.70	
9/26/2008	430.70	0.00	62.00	364.70		49.00	351.70	
10/29/2008	412.50	0.00	60.00	362.70		48.00	350.70	
11/25/2008	404.70	2.60	60.00	362.70		48.00	350.70	
12/30/2008	440.90	3.42	60.00	362.70		48.00	350.70	
1/28/2009	463.70	0.17	60.50	363.20		48.00	350.70	
2/25/2009	470.10	3.35	61.00	363.70		49.00	351.70	
3/26/2009	469.40	0.19	62.00	364.70		50.00	352.70	
4/29/2009	466.90	0.07	62.00	364.70		49.00	351.70	
5/18/2009	466.70	0.00	63.00	365.70		50.00	352.70	
5/29/2009	465.00	0.00	60.00	362.70		50.00	352.70	
6/30/2009	460.20	0.00	62.00	364.70		50.00	352.70	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LR-1			LR-2		
Piezo. Tip Elevation -->			356.30			340.30		
Zero Gage Reading -->			53.60			37.60		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
7/30/2009	451.10	0.00	63.00	365.70		51.00	353.70	
8/25/2009	440.10	0.00	62.00	364.70		51.00	353.70	
9/30/2009	432.20	0.00	62.00	364.70		50.00	352.70	
10/29/2009	431.40	0.53	64.00	366.70		51.00	353.70	
12/1/2009	427.40	0.00	63.00	365.70		50.00	352.70	
12/29/2009	448.10	2.06	64.00	366.70		50.00	352.70	
1/27/2010	465.60	4.62	64.00	366.70		51.00	353.70	
2/25/2010	470.20	2.51	64.00	366.70		51.00	353.70	
3/29/2010	465.70	0.99	65.00	367.70		51.00	353.70	
4/4/2010	465.00		65.00	367.70		52.00	354.70	
4/27/2010	468.40	1.23	64.00	366.70		51.00	353.70	
5/27/2010	463.30	0.05	64.00	366.70		52.00	354.70	
6/30/2010	454.70	0.00	64.00	366.70		52.00	354.70	
7/28/2010	445.60	0.00	65.00	367.70		52.00	354.70	
8/31/2010	437.10	0.00	65.00	367.70		52.00	354.70	
9/29/2010	422.70	0.00	65.00	367.70		51.00	353.70	
10/27/2010	426.40	2.38	65.00	367.70		52.00	354.70	
11/29/2010	439.80	0.97	64.00	366.70		51.00	353.70	
12/30/2010	456.60	8.62	65.00	367.70		52.00	354.70	
2/1/2011	468.90	0.92	67.00	369.70		52.00	354.70	
2/23/2011	469.00	0.99	67.00	369.70		52.00	354.70	
3/29/2011	470.30	2.93	66.00	368.70		52.00	354.70	
4/27/2011	464.80	0.19	67.00	369.70		52.00	354.70	
5/26/2011	457.30	0.48	67.00	369.70		53.00	355.70	
6/28/2011	443.50	0.05	67.00	369.70		53.00	355.70	
7/29/2011	425.10	0.00	66.00	368.70		52.00	354.70	
8/24/2011	418.00	0.00	66.00	368.70		51.00	353.70	
9/27/2011	400.90	0.12	64.00	366.70		50.00	352.70	
10/26/2011	402.20	1.25	64.00	366.70		50.00	352.70	
11/30/2011	425.10	1.38	63.00	365.70		51.00	353.70	
12/21/2011	435.70	0.32	64.00	366.70		51.00	353.70	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LR-1			LR-2		
Piezo. Tip Elevation -->			356.30			340.30		
Zero Gage Reading -->			53.60			37.60		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/24/2012	441.40	0.53	64.00	366.70		50.00	352.70	
2/28/2012	448.40	0.42	62.00	364.70		50.00	352.70	
3/26/2012	452.70	1.06	64.00	366.70		50.00	352.70	
4/23/2012	463.40	1.32	64.00	366.70		50.00	352.70	
5/30/2012	457.30	0.02	65.00	367.70		51.00	353.70	
6/13/2012	452.90	0.02	65.00	367.70		50.00	352.70	
6/26/2012	450.20	0.00	64.00	366.70		50.00	352.70	
7/24/2012	439.80	0.00	64.00	366.70		50.00	352.70	
8/8/2012	437.60	0.12	64.00	366.70		51.00	353.70	
8/22/2012	433.40	0.00	65.00	367.70		50.00	352.70	
8/29/2012	431.30	0.00	65.00	367.70		50.00	352.70	
9/25/2012	420.80	0.00	63.00	365.70		51.00	353.70	
10/31/2012	412.30	0.26	64.00	366.70		50.00	352.70	
11/27/2012	420.80	0.58	62.00	364.70		50.00	352.70	
12/18/2012	448.00	1.44	64.00	366.70		50.00	352.70	
1/29/2013	468.60	1.18	66.00	368.70		50.00	352.70	
2/28/2013	469.20	0.30	67.00	369.70		52.00	354.70	
3/27/2013	468.30	0.50	66.00	368.70		51.00	353.70	
4/25/2013	462.70	0.00	64.00	366.70		50.00	352.70	
5/21/2013	454.20	0.00	66.00	368.70		52.00	354.70	
6/25/2013	439.30	0.00	66.00	368.70		51.00	353.70	
7/23/2013	431.50	0.00	66.00	368.70		51.00	353.70	
8/21/2013	418.00	0.00	66.00	368.70		51.00	353.70	
9/24/2013	404.00	0.00	64.00	366.70		50.00	352.70	
10/29/2013	400.60	0.00	64.00	366.70		50.00	352.70	
11/26/2013	407.90	0.44	63.00	365.70		48.00	350.70	
12/19/2013	425.80	0.54	63.00	365.70		50.00	352.70	
1/28/2014	439.70	0.00	64.00	366.70		50.00	352.70	
2/25/2014	449.70	0.83	63.00	365.70		50.00	352.70	
3/26/2014	465.10		65.00	367.70		51.00	353.70	
3/28/2014	465.70	1.15	65.00	367.70		50.00	352.70	

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LR-1			LR-2		
Piezo. Tip Elevation -->			356.30			340.30		
Zero Gage Reading -->			53.60			37.60		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
4/29/2014	465.30	0.43	66.00	368.70		51.00	353.70	
5/28/2014	450.60	0.00	65.00	367.70		51.00	353.70	
6/25/2014	440.10	0.00	65.00	367.70		50.00	352.70	
7/29/2014	431.20	0.00	65.00	367.70		50.00	352.70	
8/26/2014	419.50	0.02	66.00	368.70		50.00	352.70	
9/23/2014	405.30	0.00	65.00	367.70		49.00	351.70	
10/29/2014	400.90	0.00	64.00	366.70		50.00	352.70	
11/25/2014	410.90	0.25	63.00	365.70		49.00	351.70	
12/30/2014	430.60	2.94	63.00	365.70		49.00	351.70	
1/27/2015	466.70	0.83	65.00	367.70		50.00	352.70	
2/25/2015	468.90	0.69	66.00	368.70		50.00	352.70	
3/26/2015	465.90	0.61	66.00	368.70		51.00	353.70	
4/28/2015	465.70	0.20	66.00	368.70		51.00	353.70	
5/28/2015	466.40	1.08	66.00	368.70		52.00	354.70	
6/30/2015	454.50	0.00	67.00	369.70		52.00	354.70	
7/28/2015	445.60	0.00	65.00	367.70		51.00	353.70	
8/28/2015	437.60	0.00	67.00	369.70		52.00	354.70	
9/24/2015	426.90	1.51	65.00	367.70		51.00	353.70	
10/27/2015	415.40	0.49	66.00	368.70		52.00	354.70	
11/19/2015	412.90	0.09	65.00	367.70		51.00	353.70	
12/22/2015	425.50	0.69	65.00	367.70		51.00	353.70	
1/27/2016	463.60	2.86	66.00	368.70		52.00	354.70	
2/25/2016	468.90	0.25	66.00	368.70		52.00	354.70	
3/30/2016	468.00	1.44	66.00	368.70		52.00	354.70	
4/28/2016	461.30	0.30	66.00	368.70		52.00	354.70	
5/25/2016	451.30	0.18	66.00	368.70		52.00	354.70	
6/28/2016	414.10	0.00	66.00	368.70		52.00	354.70	
7/27/2016	434.20	0.00	65.00	367.70		52.00	354.70	
8/23/2016	418.60	0.00	66.00	368.70		52.00	354.70	
9/27/2016	406.40	0.00	66.00	368.70		51.00	353.70	
10/26/2016	404.00	0.48	64.00	366.70		54.00	356.70	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LR-1			LR-2		
Piezo. Tip Elevation -->			356.30			340.30		
Zero Gage Reading -->			53.60			37.60		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
11/22/2016	413.60	1.13	64.00	366.70		50.00	352.70	
12/20/2016	441.10	3.48	64.00	366.70		51.00	353.70	
1/26/2017	471.60	5.67	66.00	368.70		51.00	353.70	
2/24/2017	472.05	3.95	66.00	368.70		52.00	354.70	
2/25/2017	472.00							
2/26/2017	472.00							
2/27/2017	472.00		67.00	369.70		52.00	354.70	
2/28/2017	471.90		67.00	369.70		53.00	355.70	
3/1/2017	471.90		67.00	369.70		52.00	354.70	
3/2/2017	471.90		67.00	369.70		52.00	354.70	
3/29/2017	467.90	0.10	67.00	369.70		53.00	355.70	
4/27/2017	457.60	0.04	67.00	369.70		53.00	355.70	
5/23/2017	453.50	0.43	66.00	368.70		52.00	354.70	
6/21/2017	447.40	0.00	64.00	366.70		52.00	354.70	
7/26/2017	435.10	0.00	67.00	369.70		52.00	354.70	
8/25/2017	420.10	0.00	66.00	368.70		52.00	354.70	
9/27/2017	407.10	0.00	66.00	368.70		52.00	354.70	
10/26/2017	395.00	0.00	65.00	367.70		51.00	353.70	
11/28/2017	409.00	0.09	62.00	364.70		50.00	352.70	
12/20/2017	416.80	0.00	64.00	366.70		50.00	352.70	
1/24/2018	434.50	1.31	60.00	362.70		50.00	352.70	
2/21/2018	443.10	0.29	64.00	366.70		51.00	353.70	
3/29/2018	453.00	1.28	62.00	364.70		50.00	352.70	
4/26/2018	449.10	0.05	64.00	366.70		51.00	353.70	
5/31/2018	453.10	0.20	65.00	367.70		51.00	353.70	
6/28/2018	448.20	0.00	65.00	367.70		52.00	354.70	
7/25/2018	440.40	0.00	64.00	366.70		51.00	353.70	
8/22/2018	427.10	0.00	65.00	367.70		51.00	353.70	
9/27/2018	439.60	0.00	62.00	364.70		49.00	351.70	
10/18/2018	405.30	0.90	65.00	367.70		50.00	352.70	
11/28/2018	408.60	1.19	65.00	367.70		50.00	352.70	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LR-1			LR-2		
Piezo. Tip Elevation -->			356.30			340.30		
Zero Gage Reading -->			53.60			37.60		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
12/19/2018	436.00	1.99	62.00	364.70		50.00	352.70	
1/30/2019	463.80	4.71	66.00	368.70		52.00	354.70	
2/27/2019	466.20	6.55	66.00	368.70		52.00	354.70	
3/27/2019	463.30	1.34	64.00	366.70		50.00	352.70	
4/29/2019	453.00	0.13	66.00	368.70		52.00	354.70	
5/30/2019	451.80	0.64	66.00	368.70		52.00	354.70	
6/26/2019	446.20	0.01	66.00	368.70		52.00	354.70	
7/5/2019	39.40	0.00	65.00	367.70		50.00	352.70	
7/30/2019	434.80	0.00	66.00	368.70		52.00	354.70	
8/27/2019	424.40	0.00	66.00	368.70		52.00	354.70	
9/26/2019	405.60	0.00	65.00	367.70		51.00	353.70	
10/22/2019	400.50	0.00	62.00	364.70		52.00	354.70	
11/26/2019	412.80	3.13	64.00	366.70		50.00	352.70	
12/18/2019	447.40	4.44	65.00	367.70		51.00	353.70	
1/28/2020	465.40	0.20	64.00	366.70		52.00	354.70	
2/26/2020	459.60	0.14	66.00	368.70		52.00	354.70	
3/24/2020	470.70	3.49	65.00	367.70		52.00	354.70	
4/29/2020	467.60	3.65	67.00	369.70		53.00	355.70	
5/27/2020	459.10	0.02	65.00	367.70		53.00	355.70	
6/23/2020	447.00	0.00	65.00	367.70		52.00	354.70	
7/30/2020	434.00	0.00	67.00	369.70		43.00	345.70	Omitted
8/26/2020	417.70	0.00	64.00	366.70		50.00	352.70	
9/29/2020	403.60	0.00	65.00	367.70		51.00	353.70	
10/28/2020	404.50	0.00	65.00	367.70		51.00	353.70	
11/24/2020	413.50	0.42	61.00	363.70		50.00	352.70	
12/22/2020	408.00	1.13	65.00	367.70		50.00	352.70	
1/27/2021	435.60	2.25	64.00	366.70		50.00	352.70	
2/25/2021	457.30	0.05	65.00	367.70		52.00	354.70	
3/23/2021	465.90	1.36	65.00	367.70		51.00	353.70	
4/27/2021	462.10	0.04	63.00	365.70		50.00	352.70	
5/26/2021	455.00	0.03	66.00	368.70		52.00	354.70	

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LR-1			LR-2		
Piezo. Tip Elevation -->			356.30			340.30		
Zero Gage Reading -->			53.60			37.60		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
6/30/2021	437.90	0.00	65.00	367.70		50.00	352.70	
7/29/2021	423.60	0.07	66.00	368.70		51.00	353.70	
8/24/2021	408.00	0.00	66.00	368.70		51.00	353.70	
9/29/2021	398.00	0.04	62.00	364.70		48.00	350.70	
10/26/2021	417.00	0.87	64.00	366.70		49.00	351.70	
11/25/2021	427.90	0.00	65.00	367.70		50.00	352.70	
12/21/2021	427.90	4.77	62.00	364.70		50.00	352.70	
1/27/2022	467.80	0.07	64.00	366.70		50.00	352.70	
2/23/2022	464.80	0.29	66.00	368.70		52.00	354.70	
3/23/2022	464.40	1.08	64.00	366.70		50.00	352.70	
4/26/2022	467.10	0.03	64.00	366.70		51.00	353.70	
5/26/2022	464.80	0.08	66.00	368.70		52.00	354.70	
6/28/2022	457.30	0.00	67.00	369.70	at Hist max	53.00	355.70	
7/26/2022	440.70	0.00	66.00	368.70		52.00	354.70	
8/25/2022	429.50	0.05	66.00	368.70		52.00	354.70	
9/28/2022	410.80	0.35	68.00	370.70	New hist max	52.00	354.70	
10/25/2022	407.30	0.35	64.00	366.70		50.00	352.70	
11/23/2022	427.30	0.80	65.00	367.70		51.00	353.70	
12/20/2022	441.90	2.14	64.00	366.70		51.00	353.70	
1/26/2023	470.30	5.64	64.00	366.70		41.00	343.70	Omitted
2/23/2023	471.00	3.33	66.00	368.70		52.00	354.70	
3/28/2023	471.20	5.72	68.00	370.70	At hist max	54.00	356.70	At hist. max
4/25/2023	469.40	0.16	64.00	366.70		52.00	354.70	
5/23/2023	471.00	1.35	66.00	368.70		52.00	354.70	
6/28/2023	468.80	0.1	68.00	370.70	At hist max	55.00	357.70	New hist. max
7/27/2023	455.90	0	68.00	370.70	At hist max	55.00	357.70	New hist. max
8/29/2023	453.80	2.28	66.00	368.70		54.00	356.70	
9/26/2023	445.00	0	68.00	370.70	At hist max	55.00	357.70	New hist. max
10/26/2023	437.40	0.21	68.00	370.70	At hist max	54.00	356.70	
11/29/2023	425.00	0.78	68.00	370.70	At hist max	54.00	356.70	
12/21/2023	421.00	1.60	68.00	370.70	At hist max	54.00	356.70	

Notes:

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TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LR-3			LR-4		
Piezo. Tip Elevation -->			390.10			440.00		
Zero Gage Reading -->			26.80			17.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/31/2007	405.80		37.00	400.30		12.00	435.00	
2/27/2007	426.80		50.00	413.30		12.00	435.00	
3/28/2007	438.80		72.00	435.30		12.00	435.00	
4/26/2007	450.90		85.00	448.30		20.00	443.00	
5/23/2007	461.40		96.00	459.30		32.00	455.00	
6/27/2007	457.20		92.00	455.30		26.00	449.00	
7/26/2007	445.50		80.00	443.30		17.00	440.00	
8/28/2007	434.60		69.00	432.30		13.00	436.00	
9/25/2007	416.80		50.00	413.30		12.00	435.00	
10/24/2007	404.50		35.00	398.30		13.00	436.00	
11/27/2007	422.20		54.00	417.30		12.00	435.00	
1/3/2008	443.20		78.00	441.30		12.00	435.00	
1/29/2008	452.20		86.00	449.30		22.00	445.00	
2/27/2008	460.80		96.00	459.30		31.00	454.00	
3/26/2008	468.00		102.00	465.30		36.00	459.00	
4/29/2008	468.60		104.00	467.30		40.00	463.00	
5/29/2008	464.70		100.00	463.30		36.00	459.00	
6/26/2008	455.70		90.00	453.30		26.00	449.00	
7/29/2008	447.30	0.00	81.00	444.30		19.00	442.00	
8/28/2008	438.80	0.00	74.00	437.30		12.00	435.00	
9/26/2008	430.70	0.00	65.00	428.30		13.00	436.00	
10/29/2008	412.50	0.00	44.00	407.30		12.00	435.00	
11/25/2008	404.70	2.60	36.00	399.30		12.00	435.00	
12/30/2008	440.90	3.42	75.00	438.30		12.00	435.00	
1/28/2009	463.70	0.17	98.00	461.30		34.00	457.00	
2/25/2009	470.10	3.35	105.00	468.30		36.00	459.00	
3/26/2009	469.40	0.19	105.00	468.30		40.50	463.50	
4/29/2009	466.90	0.07	102.00	465.30		38.00	461.00	
5/18/2009	466.70	0.00	102.00	465.30		38.00	461.00	
5/29/2009	465.00	0.00	100.00	463.30		35.00	458.00	
6/30/2009	460.20	0.00	95.00	458.30		31.00	454.00	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LR-3			LR-4		
Piezo. Tip Elevation -->			390.10			440.00		
Zero Gage Reading -->			26.80			17.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
7/30/2009	451.10	0.00	86.00	449.30		22.00	445.00	
8/25/2009	440.10	0.00	74.00	437.30		14.00	437.00	
9/30/2009	432.20	0.00	64.00	427.30		11.00	434.00	
10/29/2009	431.40	0.53	65.00	428.30		12.00	435.00	
12/1/2009	427.40	0.00	60.00	423.30		11.00	434.00	
12/29/2009	448.10	2.06	82.00	445.30		16.00	439.00	
1/27/2010	465.60	4.62	102.00	465.30		36.00	459.00	
2/25/2010	470.20	2.51	106.00	469.30		37.00	460.00	
3/29/2010	465.70	0.99	101.00	464.30		37.00	460.00	
4/4/2010	465.00		100.00	463.30		36.00	459.00	
4/27/2010	468.40	1.23	103.00	466.30		36.00	459.00	
5/27/2010	463.30	0.05	99.00	462.30		34.00	457.00	
6/30/2010	454.70	0.00	89.00	452.30		24.00	447.00	
7/28/2010	445.60	0.00	80.00	443.30		16.00	439.00	
8/31/2010	437.10	0.00	71.00	434.30		12.00	435.00	
9/29/2010	422.70	0.00	56.00	419.30		12.00	435.00	
10/27/2010	426.40	2.38	60.00	423.30		12.00	435.00	
11/29/2010	439.80	0.97	74.00	437.30		10.00	433.00	
12/30/2010	456.60	8.62	92.00	455.30		26.00	449.00	
2/1/2011	468.90	0.92	102.00	465.30		37.00	460.00	
2/23/2011	469.00	0.99	105.00	468.30		38.00	461.00	
3/29/2011	470.30	2.93	106.00	469.30		40.00	463.00	
4/27/2011	464.80	0.19	100.00	463.30		36.00	459.00	
5/26/2011	457.30	0.48	92.00	455.30		29.00	452.00	
6/28/2011	443.50	0.05	78.00	441.30		16.00	439.00	
7/29/2011	425.10	0.00	62.00	425.30		10.00	433.00	
8/24/2011	418.00	0.00	44.00	407.30		12.00	435.00	
9/27/2011	400.90	0.12	32.00	395.30		12.00	435.00	
10/26/2011	402.20	1.25	32.00	395.30		10.00	433.00	
11/30/2011	425.10	1.38	58.00	421.30		12.00	435.00	
12/21/2011	435.70	0.32	69.00	432.30		12.00	435.00	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LR-3			LR-4		
Piezo. Tip Elevation -->			390.10			440.00		
Zero Gage Reading -->			26.80			17.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
1/24/2012	441.40	0.53	75.00	438.30		11.00	434.00	
2/28/2012	448.40	0.42	80.00	443.30		16.00	439.00	
3/26/2012	452.70	1.06	83.00	446.30		21.00	444.00	
4/23/2012	463.40	1.32	99.00	462.30		30.00	453.00	
5/30/2012	457.30	0.02	92.00	455.30		28.00	451.00	
6/13/2012	452.90	0.02	88.00	451.30		24.00	447.00	
6/26/2012	450.20	0.00	86.00	449.30		22.00	445.00	
7/24/2012	439.80	0.00	75.00	438.30		14.00	437.00	
8/8/2012	437.60	0.12	72.00	435.30		12.00	435.00	
8/22/2012	433.40	0.00	67.00	430.30		16.00	439.00	
8/29/2012	431.30	0.00	66.00	429.30		12.00	435.00	
9/25/2012	420.80	0.00	58.00	421.30		12.00	435.00	
10/31/2012	412.30	0.26	44.00	407.30		12.00	435.00	
11/27/2012	420.80	0.58	51.00	414.30		11.00	434.00	
12/18/2012	448.00	1.44	81.00	444.30		15.00	438.00	
1/29/2013	468.60	1.18	104.00	467.30		38.00	461.00	
2/28/2013	469.20	0.30	105.00	468.30		39.00	462.00	
3/27/2013	468.30	0.50	104.00	467.30		38.00	461.00	
4/25/2013	462.70	0.00	98.00	461.30		34.00	457.00	
5/21/2013	454.20	0.00	89.00	452.30		26.00	449.00	
6/25/2013	439.30	0.00	74.00	437.30		12.00	435.00	
7/23/2013	431.50	0.00	65.00	428.30		10.00	433.00	
8/21/2013	418.00	0.00	52.00	415.30		11.00	434.00	
9/24/2013	404.00	0.00	37.00	400.30		11.00	434.00	
10/29/2013	400.60	0.00	33.00	396.30		10.00	433.00	
11/26/2013	407.90	0.44	40.00	403.30		11.00	434.00	
12/19/2013	425.80	0.54	59.00	422.30		11.00	434.00	
1/28/2014	439.70	0.00	73.00	436.30		10.00	433.00	
2/25/2014	449.70	0.83	84.00	447.30		20.00	443.00	
3/26/2014	465.10		100.00	463.30		37.00	460.00	
3/28/2014	465.70	1.15	101.00	464.30		38.00	461.00	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LR-3			LR-4		
Piezo. Tip Elevation -->			390.10			440.00		
Zero Gage Reading -->			26.80			17.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
4/29/2014	465.30	0.43	102.00	465.30		38.00	461.00	
5/28/2014	450.60	0.00	86.00	449.30		24.00	447.00	
6/25/2014	440.10	0.00	77.00	440.30		14.00	437.00	
7/29/2014	431.20	0.00	65.00	428.30		11.00	434.00	
8/26/2014	419.50	0.02	53.00	416.30		11.00	434.00	
9/23/2014	405.30	0.00	37.00	400.30		10.00	433.00	
10/29/2014	400.90	0.00	33.00	396.30		10.00	433.00	
11/25/2014	410.90	0.25	43.00	406.30		10.00	433.00	
12/30/2014	430.60	2.94	62.00	425.30		10.00	433.00	
1/27/2015	466.70	0.83	101.00	464.30		36.00	459.00	
2/25/2015	468.90	0.69	103.00	466.30		42.00	465.00	
3/26/2015	465.90	0.61	101.00	464.30		39.00	462.00	
4/28/2015	465.70	0.20	102.00	465.30		39.00	462.00	
5/28/2015	466.40	1.08	102.00	465.30		38.00	461.00	
6/30/2015	454.50	0.00	90.00	453.30		27.00	450.00	
7/28/2015	445.60	0.00	80.00	443.30		19.00	442.00	
8/28/2015	437.60	0.00	73.00	436.30		12.00	435.00	
9/24/2015	426.90	1.51	60.00	423.30		10.00	433.00	
10/27/2015	415.40	0.49	48.00	411.30		11.00	434.00	
11/19/2015	412.90	0.09	45.00	408.30		10.00	433.00	
12/22/2015	425.50	0.69	59.00	422.30		10.00	433.00	
1/27/2016	463.60	2.86	99.00	462.30		36.00	459.00	
2/25/2016	468.90	0.25	105.00	468.30		42.00	465.00	
3/30/2016	468.00	1.44	104.00	467.30		42.00	465.00	
4/28/2016	461.30	0.30	96.00	459.30		34.00	457.00	
5/25/2016	451.30	0.18	86.00	449.30		24.00	447.00	
6/28/2016	414.10	0.00	78.00	441.30		17.00	440.00	
7/27/2016	434.20	0.00	68.00	431.30		11.00	434.00	
8/23/2016	418.60	0.00	52.00	415.30		10.00	433.00	
9/27/2016	406.40	0.00	39.00	402.30		10.00	433.00	
10/26/2016	404.00	0.48	36.00	399.30		8.00	431.00	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LR-3			LR-4		
Piezo. Tip Elevation -->			390.10			440.00		
Zero Gage Reading -->			26.80			17.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
11/22/2016	413.60	1.13	46.00	409.30		7.00	430.00	
12/20/2016	441.10	3.48	75.00	438.30		8.00	431.00	
1/26/2017	471.60	5.67	105.00	468.30		41.00	464.00	
2/24/2017	472.05	3.95	108.00	471.30		44.00	467.00	
2/25/2017	472.00							
2/26/2017	472.00							
2/27/2017	472.00		107.00	470.30		43.00	466.00	
2/28/2017	471.90		107.00	470.30		44.00	467.00	
3/1/2017	471.90		108.00	471.30		43.00	466.00	
3/2/2017	471.90		108.00	471.30		43.00	466.00	
3/29/2017	467.90	0.10	102.00	465.30		38.00	461.00	
4/27/2017	457.60	0.04	93.00	456.30		28.00	451.00	
5/23/2017	453.50	0.43	88.00	451.30		23.00	446.00	
6/21/2017	447.40	0.00	80.00	443.30		15.00	438.00	
7/26/2017	435.10	0.00	70.00	433.30		10.00	433.00	
8/25/2017	420.10	0.00	53.00	416.30		9.00	432.00	
9/27/2017	407.10	0.00	40.00	403.30		8.00	431.00	
10/26/2017	395.00	0.00	24.00	387.30		6.00	429.00	
11/28/2017	409.00	0.09	41.00	404.30		5.00	428.00	
12/20/2017	416.80	0.00	46.00	409.30		6.00	429.00	
1/24/2018	434.50	1.31	64.00	427.30		2.00	425.00	
2/21/2018	443.10	0.29	77.00	440.30		9.00	432.00	
3/29/2018	453.00	1.28	84.00	447.30		21.00	444.00	
4/26/2018	449.10	0.05	84.00	447.30		18.00	441.00	
5/31/2018	453.10	0.20	88.00	451.30		21.00	444.00	
6/28/2018	448.20	0.00	84.00	447.30		17.00	440.00	
7/25/2018	440.40	0.00	76.00	439.30		12.00	435.00	
8/22/2018	427.10	0.00	61.00	424.30		10.00	433.00	
9/27/2018	439.60	0.00	39.00	402.30		4.00	427.00	
10/18/2018	405.30	0.90	37.00	400.30		4.00	427.00	
11/28/2018	408.60	1.19	40.00	403.30		3.00	426.00	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LR-3			LR-4		
Piezo. Tip Elevation -->			390.10			440.00		
Zero Gage Reading -->			26.80			17.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
12/19/2018	436.00	1.99	68.00	431.30		2.00	425.00	
1/30/2019	463.80	4.71	100.00	463.30		30.00	453.00	
2/27/2019	466.20	6.55	102.00	465.30		0.00	423.00	
3/27/2019	463.30	1.34	100.00	463.30		30.00	453.00	
4/29/2019	453.00	0.13	90.00	453.30		18.00	441.00	
5/30/2019	451.80	0.64	87.00	450.30		16.00	439.00	
6/26/2019	446.20	0.01	81.00	444.30		10.00	433.00	
7/5/2019	39.40	0.00	77.00	440.30		2.00	425.00	
7/30/2019	434.80	0.00	69.00	432.30		0.00	423.00	
8/27/2019	424.40	0.00	58.00	421.30		0.00	423.00	
9/26/2019	405.60	0.00	37.00	400.30		0.00	423.00	
10/22/2019	400.50	0.00	32.00	395.30		0.00	423.00	
11/26/2019	412.80	3.13	44.00	407.30		0.00	423.00	
12/18/2019	447.40	4.44	78.00	441.30		10.00	433.00	
1/28/2020	465.40	0.20	98.00	461.30		28.00	451.00	
2/26/2020	459.60	0.14	96.00	459.30		24.00	447.00	
3/24/2020	470.70	3.49	106.00	469.30		36.00	459.00	
4/29/2020	467.60	3.65	103.00	466.30		33.00	456.00	
5/27/2020	459.10	0.02	94.00	457.30		30.00	453.00	
6/23/2020	447.00	0.00	82.00	445.30		14.00	437.00	
7/30/2020	434.00	0.00	69.00	432.30		12.00	435.00	
8/26/2020	417.70	0.00	48.00	411.30		10.00	433.00	
9/29/2020	403.60	0.00	39.00	402.30		6.00	429.00	
10/28/2020	404.50	0.00	32.00	395.30		3.00	426.00	
11/24/2020	413.50	0.42	44.00	407.30		0.00	423.00	
12/22/2020	408.00	1.13	38.00	401.30		0.00	423.00	
1/27/2021	435.60	2.25	70.00	433.30		0.00	423.00	
2/25/2021	457.30	0.05	91.00	454.30		27.00	450.00	
3/23/2021	465.90	1.36	100.00	463.30		35.00	458.00	
4/27/2021	462.10	0.04	98.00	461.30		22.00	445.00	
5/26/2021	455.00	0.03	90.00	453.30		26.00	449.00	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 8
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Pneumatic Piezo. -->			LR-3			LR-4		
Piezo. Tip Elevation -->			390.10			440.00		
Zero Gage Reading -->			26.80			17.00		
Date	Reservoir Elevation (ft)	Monthly Rainfall	Reading (ft)	Elevation (ft)	Comment	Reading (ft)	Elevation (ft)	Comment
6/30/2021	437.90	0.00	72.00	435.30		14.00	437.00	
7/29/2021	423.60	0.07	56.00	419.30		13.00	436.00	
8/24/2021	408.00	0.00	40.00	403.30		14.00	437.00	
9/29/2021	398.00	0.04	28.00	391.30		9.00	432.00	
10/26/2021	417.00	0.87	49.00	412.30		9.00	432.00	
11/25/2021	427.90	0.00	60.00	423.30		8.00	431.00	
12/21/2021	427.90	4.77	80.00	443.30		10.00	433.00	
1/27/2022	467.80	0.07	104.00	467.30		37.00	460.00	
2/23/2022	464.80	0.29	100.00	463.30		36.00	459.00	
3/23/2022	464.40	1.08	100.00	463.30		35.00	458.00	
4/26/2022	467.10	0.03	103.00	466.30		39.00	462.00	
5/26/2022	464.80	0.08	100.00	463.30		36.00	459.00	
6/28/2022	457.30	0.00	92.00	455.30		30.00	453.00	
7/26/2022	440.70	0.00	75.00	438.30		14.00	437.00	Below Tip
8/25/2022	429.50	0.05	64.00	427.30		12.00	435.00	Below Tip
9/28/2022	410.80	0.35	43.00	406.30		12.00	435.00	Below Tip
10/25/2022	407.30	0.35	36.00	399.30		8.00	431.00	Below Tip
11/23/2022	427.30	0.80	60.00	423.30		10.00	433.00	Below Tip
12/20/2022	441.90	2.14	0.00		Zero reading	10.00	433.00	Below Tip
1/26/2023	470.30	5.64	106.00	469.30		41.00	464.00	
2/23/2023	471.00	3.33	106.00	469.30		42.00	465.00	
3/28/2023	471.20	5.72	107.00	470.30		44.00	467.00	At hist. max
4/25/2023	469.40	0.16	106.00	469.30		41.00	464.00	
5/23/2023	471.00	1.35	106.00	469.30		42.00	465.00	
6/28/2023	468.80	0.1	104.00	467.30		42.00	465.00	
7/27/2023	455.90	0	92.00	455.30		29.00	452.00	
8/29/2023	453.80	2.28	88.00	451.30		22.00	445.00	
9/26/2023	445.00	0	80.00	443.30		16.00	439.00	Below Tip
10/26/2023	437.40	0.21	72.00	435.30		11.00	434.00	Below Tip
11/29/2023	425.00	0.78	58.00	421.30		10.00	433.00	Below Tip
12/21/2023	421.00	1.60	54.00	417.30		11.00	434.00	Below Tip

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			East Drain		West Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
1/31/2007	405.80		1.80		0.18	
2/27/2007	426.80		2.50		0.24	
3/28/2007	438.80		2.50		0.28	
4/26/2007	450.90		3.20		0.31	
5/23/2007	461.40		3.70		0.34	
6/27/2007	457.20		3.80		0.34	
7/26/2007	445.50		3.60		0.33	
8/28/2007	434.60		3.10		0.30	
9/25/2007	416.80		2.50		0.26	
10/24/2007	404.50		2.00		0.20	
11/27/2007	422.20		2.40		0.22	
1/3/2008	443.20		3.20		0.28	
1/29/2008	452.20		3.80		0.30	
2/27/2008	460.80		4.20		0.34	
3/26/2008	468.00		4.60		0.40	
4/29/2008	468.60		57.00		69.70	
5/29/2008	464.70		50.00		68.10	
6/26/2008	455.70		43.50		60.00	
7/29/2008	447.30	0.00	39.60		35.27	
8/28/2008	438.80	0.00	29.00		46.00	
9/26/2008	430.70	0.00	23.93		38.58	
10/29/2008	412.50	0.00	11.00		25.26	
11/25/2008	404.70	2.60	10.40		28.50	
12/30/2008	440.90	3.42	36.00		42.79	
1/28/2009	463.70	0.17	105.70		79.30	
2/25/2009	470.10	3.35	52.30		53.63	
3/26/2009	469.40	0.19	63.40		79.30	
4/29/2009	466.90	0.07	46.09		81.12	
5/18/2009	466.70	0.00	60.00		75.00	
5/29/2009	465.00	0.00	61.30		72.30	
6/30/2009	460.20	0.00	55.10		69.60	
7/30/2009	451.10	0.00	44.95		59.40	
8/25/2009	440.10	0.00	34.11		50.70	
9/30/2009	432.20	0.00	26.10		41.20	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			East Drain		West Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
10/29/2009	431.40	0.53	22.36		37.12	
12/1/2009	427.40	0.00	19.67		32.43	
12/29/2009	448.10	2.06	32.52		43.41	
1/27/2010	465.60	4.62	54.82		67.12	
2/25/2010	470.20	2.51	61.60		76.90	
3/29/2010	465.70	0.99	56.91		71.73	
4/4/2010	465.00		55.00		69.40	
4/27/2010	468.40	1.23	62.10		70.70	
5/27/2010	463.30	0.05	47.80		65.00	
6/30/2010	454.70	0.00	54.37		63.75	
7/28/2010	445.60	0.00	44.00		55.00	
8/31/2010	437.10	0.00	38.94		47.95	
9/29/2010	422.70	0.00	28.10		38.00	
10/27/2010	426.40	2.38	26.50		37.00	
11/29/2010	439.80	0.97	34.27		41.64	
12/30/2010	456.60	8.62	34.00		46.00	
2/1/2011	468.90	0.92	58.00		71.00	
2/23/2011	469.00	0.99	60.03		71.80	
3/29/2011	470.30	2.93	61.50		74.90	
4/27/2011	464.80	0.19	39.94		58.62	
5/26/2011	457.30	0.48	34.00		51.20	
6/28/2011	443.50	0.05	26.50		43.91	
7/29/2011	425.10	0.00	18.96		35.15	
8/24/2011	418.00	0.00	13.42		27.08	
9/27/2011	400.90	0.12	9.18		20.55	
10/26/2011	402.20	1.25	8.14		18.73	
11/30/2011	425.10	1.38	13.11		26.33	
12/21/2011	435.70	0.32	18.45		32.30	
1/24/2012	441.40	0.53	19.51		37.32	
2/28/2012	448.40	0.42	21.40		40.90	
3/26/2012	452.70	1.06	23.14		43.41	
4/23/2012	463.40	1.32	39.54		56.48	
5/30/2012	457.30	0.02	35.45		55.39	
6/13/2012	452.90	0.02	31.31		51.82	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			East Drain		West Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
6/26/2012	450.20	0.00	29.30		49.60	
7/24/2012	439.80	0.00	22.25		42.76	
8/8/2012	437.60	0.12	20.94		40.38	
8/22/2012	433.40	0.00	19.79		35.01	
8/29/2012	431.30	0.00	19.10		32.62	
9/25/2012	420.80	0.00	15.38		26.33	
10/31/2012	412.30	0.26	10.48		21.63	
11/27/2012	420.80	0.58	12.00		24.50	
12/18/2012	448.00	1.44	31.81		27.29	
1/29/2013	468.60	1.18	60.00		56.70	
2/28/2013	469.20	0.30	62.57		60.52	
3/27/2013	468.30	0.50	56.89		67.68	
4/25/2013	462.70	0.00	51.59		59.13	
5/21/2013	454.20	0.00	40.10		46.50	
6/25/2013	439.30	0.00	27.97		36.61	
7/23/2013	431.50	0.00	22.44		30.45	
8/21/2013	418.00	0.00	15.80		23.60	
9/24/2013	404.00	0.00	11.15		19.46	
10/29/2013	400.60	0.00	8.70		16.17	
11/26/2013	407.90	0.44	8.19		15.80	
12/19/2013	425.80	0.54	16.15		22.45	
1/28/2014	439.70	0.00	24.89		31.46	
2/25/2014	449.70	0.83	30.84		38.79	
3/26/2014	465.10		48.97		55.26	
3/28/2014	465.70	1.15	48.66		55.41	
4/29/2014	465.30	0.43	50.10		57.60	
5/28/2014	450.60	0.00	34.05		46.03	
6/25/2014	440.10	0.00	30.19		39.64	
7/29/2014	431.20	0.00	24.97		33.85	
8/26/2014	419.50	0.02	19.12		27.02	
9/23/2014	405.30	0.00	13.04		21.32	
10/29/2014	400.90	0.00	10.06		18.54	
11/25/2014	410.90	0.25	10.75		18.60	
12/30/2014	430.60	2.94	23.26		26.64	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			East Drain		West Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
1/27/2015	466.70	0.83	61.45		60.49	
2/25/2015	468.90	0.69	63.90		64.50	
3/26/2015	465.90	0.61	62.14		63.40	
4/28/2015	465.70	0.20	60.10		59.60	
5/28/2015	466.40	1.08	54.04		49.61	
6/30/2015	454.50	0.00	44.81		43.46	
7/28/2015	445.60	0.00	35.40		35.90	
8/28/2015	437.60	0.00	29.20		30.40	
9/24/2015	426.90	1.51	23.50		25.10	
10/27/2015	415.40	0.49	16.90		18.70	
11/19/2015	412.90	0.09	14.23		16.38	
12/22/2015	425.50	0.69	19.50		19.40	
1/27/2016	463.60	2.86	53.20		42.08	
2/25/2016	468.90	0.25	59.37		50.05	
3/30/2016	468.00	1.44	56.40		50.90	
4/28/2016	461.30	0.30	50.83		46.75	
5/25/2016	451.30	0.18	43.06		40.29	
6/28/2016	414.10	0.00	34.98		34.83	
7/27/2016	434.20	0.00	28.20		29.30	
8/23/2016	418.60	0.00	18.96		20.95	
9/27/2016	406.40	0.00	13.04		15.91	
10/26/2016	404.00	0.48	10.92		13.95	
11/22/2016	413.60	1.13	12.01		14.80	
12/20/2016	441.10	3.48	29.72		25.63	
1/26/2017	471.60	5.67	58.70		51.40	
2/24/2017	472.05	3.95	57.36		60.38	
2/25/2017	472.00		57.55		60.35	
2/26/2017	472.00		56.81		60.38	
2/27/2017	472.00		56.90		60.40	
2/28/2017	471.90		56.32		60.15	
3/1/2017	471.90		55.80		59.70	
3/2/2017	471.90		56.34		59.71	
3/29/2017	467.90	0.10	51.95		56.32	
4/27/2017	457.60	0.04	44.35		47.55	

Notes:

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TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			East Drain		West Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
5/23/2017	453.50	0.43	38.22		41.80	
6/21/2017	447.40	0.00	34.25		39.20	
7/26/2017	435.10	0.00	29.68		32.46	
8/25/2017	420.10	0.00	22.90		24.30	
9/27/2017	407.10	0.00	16.00		18.94	
10/26/2017	395.00	0.00	10.73		14.80	
11/28/2017	409.00	0.09	13.48		16.68	
12/20/2017	416.80	0.00	15.28		18.42	
1/24/2018	434.50	1.31	27.22		26.47	
2/21/2018	443.10	0.29	32.75		32.39	
3/29/2018	453.00	1.28	39.88		42.15	
4/26/2018	449.10	0.05	36.60		39.21	
5/31/2018	453.10	0.20	39.70		40.77	
6/28/2018	448.20	0.00	36.70		38.50	
7/25/2018	440.40	0.00	33.48		35.20	
8/22/2018	427.10	0.00	23.07		28.26	
9/27/2018	439.60	0.00	13.85		19.09	
10/18/2018	405.30	0.90	10.95		15.38	
11/28/2018	408.60	1.19	10.60		14.80	
12/19/2018	436.00	1.99	24.80		23.10	
1/30/2019	463.80	4.71	49.09		45.60	
2/27/2019	466.20	6.55	50.80		49.50	
3/27/2019	463.30	1.34	47.06		48.88	
4/29/2019	453.00	0.13	38.70		42.48	
5/30/2019	451.80	0.64	38.10		40.80	
6/26/2019	446.20	0.01	36.33		38.07	
7/5/2019	39.40	0.00	35.69		36.21	
7/30/2019	434.80	0.00	31.49		32.54	
8/27/2019	424.40	0.00	23.74		26.39	
9/26/2019	405.60	0.00	15.51		19.42	
10/22/2019	400.50	0.00	12.42		16.33	
11/26/2019	412.80	3.13	13.27		17.34	
12/18/2019	447.40	4.44	32.88		30.36	
1/28/2020	465.40	0.20	49.22		47.62	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			East Drain		West Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
2/26/2020	459.60	0.14	42.43		43.84	
3/24/2020	470.70	3.49	49.77		50.87	
4/29/2020	467.60	3.65	46.09		51.62	
5/27/2020	459.10	0.02	37.52		46.35	
6/23/2020	447.00	0.00	26.50		38.60	
7/30/2020	434.00	0.00	18.19		31.84	
8/26/2020	417.70	0.00	12.73		24.35	
9/29/2020	403.60	0.00	9.93		19.08	
10/28/2020	404.50	0.00	8.78		17.05	
11/24/2020	413.50	0.42	10.39		14.46	
12/22/2020	408.00	1.13	9.86		13.71	
1/27/2021	435.60	2.25	19.94		19.13	
2/25/2021	457.30	0.05	35.30		37.80	
3/23/2021	465.90	1.36	44.40		44.20	
4/27/2021	462.10	0.04	39.60		42.30	
5/26/2021	455.00	0.03	33.95		38.73	
6/30/2021	437.90	0.00	24.80		31.60	
7/29/2021	423.60	0.07	17.60		25.85	
8/24/2021	408.00	0.00	12.75		20.30	
9/29/2021	398.00	0.04	10.20		16.70	
10/26/2021	417.00	0.87	12.19		18.96	
11/25/2021	427.90	0.00	18.55		24.67	
12/21/2021	427.90	4.77	28.00		30.00	
1/27/2022	467.80	0.07	45.81		43.02	
2/23/2022	464.80	0.29	41.08		39.43	
3/23/2022	464.40	1.08	39.70		38.20	
4/26/2022	467.10	0.03	40.26		43.23	
5/26/2022	464.80	0.08	37.36		41.89	
6/28/2022	457.30	0.00	31.70		40.15	
7/26/2022	440.70	0.00	22.85		33.21	
8/25/2022	429.50	0.05	17.50		27.89	
9/28/2022	410.80	0.35	12.35		19.20	
10/25/2022	407.30	0.35	10.18		14.65	
11/23/2022	427.30	0.80	13.80		19.65	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			East Drain		West Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
12/20/2022	441.90	2.14	19.84		23.40	
1/26/2023	470.30	5.64	42.16		40.15	
2/23/2023	471.00	3.33	38.96		42.07	
3/28/2023	471.20	5.72	36.47		36.15	
4/25/2023	469.40	0.16	36.14		35.23	
5/23/2023	471.00	1.35	38.13		40.51	
6/28/2023	468.8	0.1	37.47		44.75	
7/27/2023	455.9	0	30.23		41.33	
8/29/2023	453.8	2.28	27.7		39.03	
9/26/2023	445	0	24.9		31.8	
10/26/2023	437.40	0.21	22.33		27.95	
11/29/2023	425.00	0.78	16.90		21.30	
12/21/2023	421.00	1.60	15.16		19.51	

Notes:

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TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			Filter Drain		U/S Collector Drain #1	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
1/31/2007	405.80		2.20		0.00	
2/27/2007	426.80		2.30		0.00	
3/28/2007	438.80		2.00		0.00	
4/26/2007	450.90		2.00		0.00	
5/23/2007	461.40		2.00		0.00	
6/27/2007	457.20		2.00		0.00	
7/26/2007	445.50		2.00		0.00	
8/28/2007	434.60		2.00		0.00	
9/25/2007	416.80		2.20		0.00	
10/24/2007	404.50		2.10		0.00	
11/27/2007	422.20		2.10		0.00	
1/3/2008	443.20		2.00	dry	0.00	
1/29/2008	452.20		2.20	dry	0.00	
2/27/2008	460.80		2.20	dry	0.00	
3/26/2008	468.00		2.00	dry	0.00	
4/29/2008	468.60		2.00	dry	0.00	
5/29/2008	464.70		0.18	dry	0.00	
6/26/2008	455.70		1.12	dry	0.00	
7/29/2008	447.30	0.00	1.00	dry	0.00	
8/28/2008	438.80	0.00	0.37	dry	0.00	
9/26/2008	430.70	0.00	10.27	dry	0.00	
10/29/2008	412.50	0.00	9.94	dry	0.00	
11/25/2008	404.70	2.60	9.20	dry	0.00	
12/30/2008	440.90	3.42	11.56	dry	0.00	
1/28/2009	463.70	0.17	9.90	dry	0.00	
2/25/2009	470.10	3.35	10.10	dry	0.00	
3/26/2009	469.40	0.19	12.29	dry	0.00	
4/29/2009	466.90	0.07	11.03	dry	0.00	
5/18/2009	466.70	0.00	12.00	dry	0.00	
5/29/2009	465.00	0.00	12.30	dry	0.00	
6/30/2009	460.20	0.00	12.50	dry	0.00	
7/30/2009	451.10	0.00	12.75		0.13	
8/25/2009	440.10	0.00	13.19	dry	0.00	
9/30/2009	432.20	0.00	12.20	dry	0.00	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			Filter Drain		U/S Collector Drain #1	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
10/29/2009	431.40	0.53	11.05	dry	0.00	
12/1/2009	427.40	0.00	11.31	dry	0.00	
12/29/2009	448.10	2.06	10.38	dry	0.00	
1/27/2010	465.60	4.62	11.55	dry	0.00	
2/25/2010	470.20	2.51	12.20	dry	0.00	
3/29/2010	465.70	0.99	12.14	dry	0.00	
4/4/2010	465.00		11.20		0.26	
4/27/2010	468.40	1.23	11.90	dry	0.00	
5/27/2010	463.30	0.05	11.90		0.55	
6/30/2010	454.70	0.00	12.25		0.50	
7/28/2010	445.60	0.00	13.00		0.40	
8/31/2010	437.10	0.00	12.49		0.27	
9/29/2010	422.70	0.00	11.40		0.23	
10/27/2010	426.40	2.38	11.40		0.15	
11/29/2010	439.80	0.97	10.67		0.00	
12/30/2010	456.60	8.62	11.00		0.00	
2/1/2011	468.90	0.92	11.50		0.26	
2/23/2011	469.00	0.99	12.66		0.26	
3/29/2011	470.30	2.93	12.90		0.53	
4/27/2011	464.80	0.19	9.98		0.70	
5/26/2011	457.30	0.48	9.93		0.61	
6/28/2011	443.50	0.05	10.35		0.52	
7/29/2011	425.10	0.00	10.34		0.40	
8/24/2011	418.00	0.00	10.37		0.00	
9/27/2011	400.90	0.12	10.18		0.00	
10/26/2011	402.20	1.25	9.58		0.00	
11/30/2011	425.10	1.38	9.28		0.00	
12/21/2011	435.70	0.32	9.09		0.00	
1/24/2012	441.40	0.53	8.90		0.00	
2/28/2012	448.40	0.42	8.60		0.00	
3/26/2012	452.70	1.06	8.65		0.00	
4/23/2012	463.40	1.32	8.34		0.00	
5/30/2012	457.30	0.02	8.72		0.00	
6/13/2012	452.90	0.02	8.53		0.00	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			Filter Drain		U/S Collector Drain #1	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
6/26/2012	450.20	0.00	8.90		0.00	
7/24/2012	439.80	0.00	8.79		0.00	
8/8/2012	437.60	0.12	8.91		0.00	
8/22/2012	433.40	0.00	9.23		0.00	
8/29/2012	431.30	0.00	8.10		0.00	
9/25/2012	420.80	0.00	7.90		0.00	
10/31/2012	412.30	0.26	7.77		0.00	
11/27/2012	420.80	0.58	8.00		0.00	
12/18/2012	448.00	1.44	8.07		0.00	
1/29/2013	468.60	1.18	8.00		0.00	
2/28/2013	469.20	0.30	8.46		0.00	
3/27/2013	468.30	0.50	8.54		0.00	
4/25/2013	462.70	0.00	8.57		0.00	
5/21/2013	454.20	0.00	8.70		0.00	
6/25/2013	439.30	0.00	8.66		0.00	
7/23/2013	431.50	0.00	9.56		0.00	
8/21/2013	418.00	0.00	9.15		0.00	
9/24/2013	404.00	0.00	7.81		0.00	
10/29/2013	400.60	0.00	7.81		0.00	
11/26/2013	407.90	0.44	7.34		0.00	
12/19/2013	425.80	0.54	7.70		0.00	
1/28/2014	439.70	0.00	7.76		0.00	
2/25/2014	449.70	0.83	7.73		0.00	
3/26/2014	465.10		8.10		0.00	
3/28/2014	465.70	1.15	7.70		0.00	
4/29/2014	465.30	0.43	9.04		0.00	
5/28/2014	450.60	0.00	8.18		0.00	
6/25/2014	440.10	0.00	8.80		0.00	
7/29/2014	431.20	0.00	8.16		0.00	
8/26/2014	419.50	0.02	8.02		0.00	
9/23/2014	405.30	0.00	8.00		0.00	
10/29/2014	400.90	0.00	7.85		0.00	
11/25/2014	410.90	0.25	7.00		0.00	
12/30/2014	430.60	2.94	7.54		0.00	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			Filter Drain		U/S Collector Drain #1	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
1/27/2015	466.70	0.83	8.24		0.00	
2/25/2015	468.90	0.69	8.33		0.00	
3/26/2015	465.90	0.61	9.04		0.00	
4/28/2015	465.70	0.20	9.85		0.00	
5/28/2015	466.40	1.08	7.35		0.00	
6/30/2015	454.50	0.00	8.25		0.00	
7/28/2015	445.60	0.00	6.70		0.00	
8/28/2015	437.60	0.00	7.09		0.00	
9/24/2015	426.90	1.51	7.10		0.00	
10/27/2015	415.40	0.49	6.90		0.00	
11/19/2015	412.90	0.09	6.42		0.00	
12/22/2015	425.50	0.69	6.68		0.00	
1/27/2016	463.60	2.86	6.77		0.00	
2/25/2016	468.90	0.25	6.58		0.00	
3/30/2016	468.00	1.44	6.20		0.00	
4/28/2016	461.30	0.30	6.73		0.00	
5/25/2016	451.30	0.18	7.17		0.00	
6/28/2016	414.10	0.00	6.68		0.00	
7/27/2016	434.20	0.00	6.60		0.00	
8/23/2016	418.60	0.00	6.53		0.00	
9/27/2016	406.40	0.00	5.90		0.00	
10/26/2016	404.00	0.48	5.85		0.00	
11/22/2016	413.60	1.13	6.17		0.00	
12/20/2016	441.10	3.48	6.15		0.00	
1/26/2017	471.60	5.67	6.50		0.00	
2/24/2017	472.05	3.95	7.41		0.00	
2/25/2017	472.00		7.44		0.00	
2/26/2017	472.00		7.39		0.00	
2/27/2017	472.00		7.34		0.00	
2/28/2017	471.90		7.14		0.00	
3/1/2017	471.90		7.02		0.00	
3/2/2017	471.90		7.04		0.00	
3/29/2017	467.90	0.10	7.34		0.00	
4/27/2017	457.60	0.04	7.65		0.00	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			Filter Drain		U/S Collector Drain #1	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
5/23/2017	453.50	0.43	7.76		0.00	
6/21/2017	447.40	0.00	7.61		0.00	
7/26/2017	435.10	0.00	7.54		0.00	
8/25/2017	420.10	0.00	7.70		0.00	
9/27/2017	407.10	0.00	7.44		0.00	
10/26/2017	395.00	0.00	7.19		0.00	
11/28/2017	409.00	0.09	7.45		0.00	
12/20/2017	416.80	0.00	7.17		0.00	
1/24/2018	434.50	1.31	7.11		0.00	
2/21/2018	443.10	0.29	6.80		0.00	
3/29/2018	453.00	1.28	7.01		0.00	
4/26/2018	449.10	0.05	6.97		0.00	
5/31/2018	453.10	0.20	7.66		0.00	
6/28/2018	448.20	0.00	8.04		0.00	
7/25/2018	440.40	0.00	7.76		0.00	
8/22/2018	427.10	0.00	7.82		0.00	
9/27/2018	439.60	0.00	7.53		0.00	
10/18/2018	405.30	0.90	6.79		0.00	
11/28/2018	408.60	1.19	5.90		0.00	
12/19/2018	436.00	1.99	5.80		0.00	
1/30/2019	463.80	4.71	6.45		0.00	
2/27/2019	466.20	6.55	7.80		0.00	
3/27/2019	463.30	1.34	7.16		0.00	
4/29/2019	453.00	0.13	7.35		0.00	
5/30/2019	451.80	0.64	7.80		0.00	
6/26/2019	446.20	0.01	7.19		0.00	
7/5/2019	39.40	0.00	7.22		0.00	
7/30/2019	434.80	0.00	7.80		0.00	
8/27/2019	424.40	0.00	8.19		0.00	
9/26/2019	405.60	0.00	7.57		0.00	
10/22/2019	400.50	0.00	7.02		0.00	
11/26/2019	412.80	3.13	6.67		0.00	
12/18/2019	447.40	4.44	6.52		0.00	
1/28/2020	465.40	0.20	6.67		0.00	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			Filter Drain		U/S Collector Drain #1	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
2/26/2020	459.60	0.14	6.77		0.00	
3/24/2020	470.70	3.49	7.23		0.00	
4/29/2020	467.60	3.65	8.72		0.00	
5/27/2020	459.10	0.02	8.43		0.00	
6/23/2020	447.00	0.00	8.40		0.00	
7/30/2020	434.00	0.00	7.48		0.00	
8/26/2020	417.70	0.00	7.79		0.00	
9/29/2020	403.60	0.00	7.42		0.00	
10/28/2020	404.50	0.00	6.76		0.00	
11/24/2020	413.50	0.42	6.67		0.00	
12/22/2020	408.00	1.13	6.81		0.00	
1/27/2021	435.60	2.25	7.46		0.00	
2/25/2021	457.30	0.05	6.62		0.00	
3/23/2021	465.90	1.36	6.70		0.00	
4/27/2021	462.10	0.04	6.50		0.00	
5/26/2021	455.00	0.03	6.78		0.00	
6/30/2021	437.90	0.00	7.10		0.00	
7/29/2021	423.60	0.07	6.90		0.00	
8/24/2021	408.00	0.00	6.77		0.00	
9/29/2021	398.00	0.04	6.00		0.00	
10/26/2021	417.00	0.87	5.72		0.00	
11/25/2021	427.90	0.00	3.02		0.00	
12/21/2021	427.90	4.77	5.80		0.00	
1/27/2022	467.80	0.07	6.18		0.00	
2/23/2022	464.80	0.29	6.20		0.00	
3/23/2022	464.40	1.08	6.70		0.00	
4/26/2022	467.10	0.03	6.97		0.00	
5/26/2022	464.80	0.08	7.12		0.00	
6/28/2022	457.30	0.00	7.57		0.00	
7/26/2022	440.70	0.00	7.94		0.00	
8/25/2022	429.50	0.05	7.86		0.00	
9/28/2022	410.80	0.35	7.82		0.00	
10/25/2022	407.30	0.35	7.29		0.00	
11/23/2022	427.30	0.80	7.22		0.00	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			Filter Drain		U/S Collector Drain #1	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
12/20/2022	441.90	2.14	5.91		0.00	
1/26/2023	470.30	5.64	6.99		0.00	
2/23/2023	471.00	3.33	6.62		0.00	
3/28/2023	471.20	5.72	9.95		0.00	
4/25/2023	469.40	0.16	8.53		0.00	
5/23/2023	471.00	1.35	8.81		0.00	
6/28/2023	468.8	0.1	8.82		0.00	
7/27/2023	455.9	0	8.69		0.02	
8/29/2023	453.8	2.28	9		0.01	
9/26/2023	445	0	9.22		0.0023	
10/26/2023	437.40	0.21	9.19		0.00	
11/29/2023	425.00	0.78	8.40		0.00	
12/21/2023	421.00	1.60	8.36		0.00	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			U/S Collector Drain #2		D/S Toe Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
1/31/2007	405.80		0.00		1.40	
2/27/2007	426.80		0.00		1.75	
3/28/2007	438.80		0.00		1.66	
4/26/2007	450.90		0.00		1.78	
5/23/2007	461.40		0.00		1.52	
6/27/2007	457.20		0.00		2.10	
7/26/2007	445.50		0.00		1.61	
8/28/2007	434.60		0.00		1.66	
9/25/2007	416.80		0.00		1.66	
10/24/2007	404.50		0.00		1.59	
11/27/2007	422.20		0.00		1.65	
1/3/2008	443.20		0.00	dry	2.20	
1/29/2008	452.20		0.00	dry	1.96	
2/27/2008	460.80		0.00	dry	1.86	
3/26/2008	468.00		0.00	dry	1.86	
4/29/2008	468.60		0.00	dry	1.88	
5/29/2008	464.70		0.00	dry	2.16	
6/26/2008	455.70		0.00	dry	2.50	
7/29/2008	447.30	0.00	0.00	dry	2.30	
8/28/2008	438.80	0.00	0.00	dry	2.11	
9/26/2008	430.70	0.00	0.00	dry	1.56	
10/29/2008	412.50	0.00	0.00	dry	1.98	
11/25/2008	404.70	2.60	0.00	dry	2.00	
12/30/2008	440.90	3.42	0.00	dry	2.00	
1/28/2009	463.70	0.17	0.00	dry	2.00	
2/25/2009	470.10	3.35	0.00	dry	2.12	
3/26/2009	469.40	0.19	0.00	dry	2.19	
4/29/2009	466.90	0.07	0.00	dry	1.98	
5/18/2009	466.70	0.00	0.00	dry	1.00	
5/29/2009	465.00	0.00	0.00	dry		
6/30/2009	460.20	0.00	0.00	dry	1.90	
7/30/2009	451.10	0.00	0.00	dry	1.93	
8/25/2009	440.10	0.00	0.00	dry	2.09	
9/30/2009	432.20	0.00	0.00	dry	1.52	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			U/S Collector Drain #2		D/S Toe Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
10/29/2009	431.40	0.53	0.00	dry		
12/1/2009	427.40	0.00	0.00	dry		
12/29/2009	448.10	2.06	0.00	dry		
1/27/2010	465.60	4.62	0.00	dry	2.43	
2/25/2010	470.20	2.51	0.00	dry	2.94	
3/29/2010	465.70	0.99	0.20		2.40	
4/4/2010	465.00		0.00	dry	1.00	
4/27/2010	468.40	1.23	0.00	dry	2.40	
5/27/2010	463.30	0.05	0.00	dry	2.50	
6/30/2010	454.70	0.00	0.00	dry	2.11	
7/28/2010	445.60	0.00	0.00	dry	2.40	
8/31/2010	437.10	0.00	0.00	dry	2.08	
9/29/2010	422.70	0.00	0.00	dry	2.11	
10/27/2010	426.40	2.38	0.00	dry	2.20	
11/29/2010	439.80	0.97	0.00	dry	2.26	
12/30/2010	456.60	8.62	0.00	dry	4.00	
2/1/2011	468.90	0.92	0.00	dry	4.00	
2/23/2011	469.00	0.99	0.00	dry	3.51	
3/29/2011	470.30	2.93	0.00	dry	3.17	
4/27/2011	464.80	0.19	0.00	dry	2.60	
5/26/2011	457.30	0.48	0.00	dry	2.70	
6/28/2011	443.50	0.05	0.00	dry	2.50	
7/29/2011	425.10	0.00	0.00	dry	2.43	
8/24/2011	418.00	0.00	0.20		2.43	
9/27/2011	400.90	0.12	0.00		2.26	
10/26/2011	402.20	1.25	0.00		2.26	
11/30/2011	425.10	1.38	0.00		2.56	
12/21/2011	435.70	0.32	0.00		2.26	
1/24/2012	441.40	0.53	0.00		2.38	
2/28/2012	448.40	0.42	0.00		2.11	
3/26/2012	452.70	1.06	0.00		2.29	
4/23/2012	463.40	1.32	0.00		2.43	
5/30/2012	457.30	0.02	0.00		2.11	
6/13/2012	452.90	0.02	0.00		2.26	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			U/S Collector Drain #2		D/S Toe Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
6/26/2012	450.20	0.00	0.00		1.58	
7/24/2012	439.80	0.00	0.00		1.58	
8/8/2012	437.60	0.12	0.00		1.58	
8/22/2012	433.40	0.00	0.00		1.98	
8/29/2012	431.30	0.00	0.00		1.58	
9/25/2012	420.80	0.00	0.00		2.56	
10/31/2012	412.30	0.26	0.00		2.11	
11/27/2012	420.80	0.58	0.00		2.11	
12/18/2012	448.00	1.44	0.00		2.28	
1/29/2013	468.60	1.18	0.00		2.11	
2/28/2013	469.20	0.30	0.00		2.11	
3/27/2013	468.30	0.50	0.00		2.26	
4/25/2013	462.70	0.00	0.00		2.16	
5/21/2013	454.20	0.00	0.00		2.26	
6/25/2013	439.30	0.00	0.00		2.34	
7/23/2013	431.50	0.00	0.00		2.12	
8/21/2013	418.00	0.00	0.00		2.11	
9/24/2013	404.00	0.00	0.00		1.98	
10/29/2013	400.60	0.00	0.00		2.13	
11/26/2013	407.90	0.44	0.00		2.16	
12/19/2013	425.80	0.54	0.00		2.26	
1/28/2014	439.70	0.00	0.00		2.11	
2/25/2014	449.70	0.83	0.00		2.17	
3/26/2014	465.10		0.00		1.66	
3/28/2014	465.70	1.15	0.00		2.09	
4/29/2014	465.30	0.43	0.00		2.16	
5/28/2014	450.60	0.00	0.00		1.90	
6/25/2014	440.10	0.00	0.00		2.26	
7/29/2014	431.20	0.00	0.00		2.03	
8/26/2014	419.50	0.02	0.00		1.98	
9/23/2014	405.30	0.00	0.00		2.11	
10/29/2014	400.90	0.00	0.00		2.07	
11/25/2014	410.90	0.25	0.00		1.90	
12/30/2014	430.60	2.94	0.00		1.80	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			U/S Collector Drain #2		D/S Toe Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
1/27/2015	466.70	0.83	0.00		2.26	
2/25/2015	468.90	0.69	0.00		2.11	
3/26/2015	465.90	0.61	0.00		2.12	
4/28/2015	465.70	0.20	0.00		2.29	
5/28/2015	466.40	1.08	0.00		1.90	
6/30/2015	454.50	0.00	0.00		1.50	
7/28/2015	445.60	0.00	0.00		1.90	
8/28/2015	437.60	0.00	0.00		2.10	
9/24/2015	426.90	1.51	0.00		2.10	
10/27/2015	415.40	0.49	0.00		2.00	
11/19/2015	412.90	0.09	0.00		2.21	
12/22/2015	425.50	0.69	0.00		2.53	
1/27/2016	463.60	2.86	0.00		2.43	
2/25/2016	468.90	0.25	0.00		2.53	
3/30/2016	468.00	1.44	0.00		2.29	
4/28/2016	461.30	0.30	0.00		2.10	
5/25/2016	451.30	0.18	0.00		1.90	
6/28/2016	414.10	0.00	0.00		1.70	
7/27/2016	434.20	0.00	0.00		1.90	
8/23/2016	418.60	0.00	0.00		2.06	
9/27/2016	406.40	0.00	0.00		1.53	
10/26/2016	404.00	0.48	0.00		2.21	
11/22/2016	413.60	1.13	0.00		2.17	
12/20/2016	441.10	3.48	0.00		2.23	
1/26/2017	471.60	5.67	0.00		3.50	
2/24/2017	472.05	3.95	0.00		3.15	
2/25/2017	472.00		0.00		3.15	
2/26/2017	472.00		0.00		3.15	
2/27/2017	472.00		0.00		3.17	
2/28/2017	471.90		0.00		3.15	
3/1/2017	471.90		0.00		3.17	
3/2/2017	471.90		0.00		3.36	
3/29/2017	467.90	0.10	0.00		3.18	
4/27/2017	457.60	0.04	0.02		2.50	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			U/S Collector Drain #2		D/S Toe Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
5/23/2017	453.50	0.43	0.00		2.50	
6/21/2017	447.40	0.00	0.00		2.50	
7/26/2017	435.10	0.00	0.00		2.50	
8/25/2017	420.10	0.00	0.00		2.50	
9/27/2017	407.10	0.00	0.00		2.50	
10/26/2017	395.00	0.00	0.00		2.50	
11/28/2017	409.00	0.09	0.00		2.50	
12/20/2017	416.80	0.00	0.00		2.50	
1/24/2018	434.50	1.31	0.00		1.86	
2/21/2018	443.10	0.29	0.00		2.40	
3/29/2018	453.00	1.28	0.00		3.85	
4/26/2018	449.10	0.05	0.00		2.26	
5/31/2018	453.10	0.20	0.00		2.54	
6/28/2018	448.20	0.00	0.00		2.11	
7/25/2018	440.40	0.00	0.00		2.21	
8/22/2018	427.10	0.00	0.00		2.21	
9/27/2018	439.60	0.00	0.00		2.24	
10/18/2018	405.30	0.90	0.00		2.37	
11/28/2018	408.60	1.19	0.00		2.26	
12/19/2018	436.00	1.99	0.00		2.56	
1/30/2019	463.80	4.71	0.00		2.80	
2/27/2019	466.20	6.55	0.00		3.90	
3/27/2019	463.30	1.34	0.00		3.10	
4/29/2019	453.00	0.13	0.00		3.10	
5/30/2019	451.80	0.64	0.00		2.80	
6/26/2019	446.20	0.01	0.00		2.80	
7/5/2019	39.40	0.00	0.00		2.80	
7/30/2019	434.80	0.00	0.00		3.78	
8/27/2019	424.40	0.00	0.00		2.43	
9/26/2019	405.60	0.00	0.00		1.90	
10/22/2019	400.50	0.00	0.00		2.40	
11/26/2019	412.80	3.13	0.00		2.40	
12/18/2019	447.40	4.44	0.00		3.00	
1/28/2020	465.40	0.20	0.00		2.43	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			U/S Collector Drain #2		D/S Toe Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
2/26/2020	459.60	0.14	0.00		2.90	
3/24/2020	470.70	3.49	0.00		3.17	
4/29/2020	467.60	3.65	0.00		4.12	
5/27/2020	459.10	0.02	0.00		3.33	
6/23/2020	447.00	0.00	0.00		2.80	
7/30/2020	434.00	0.00	0.00		2.69	
8/26/2020	417.70	0.00	0.00		2.70	
9/29/2020	403.60	0.00	0.00		2.60	
10/28/2020	404.50	0.00	0.00		3.77	
11/24/2020	413.50	0.42	0.00		2.80	
12/22/2020	408.00	1.13	0.00		2.60	
1/27/2021	435.60	2.25	0.00		2.53	
2/25/2021	457.30	0.05	0.00		2.28	
3/23/2021	465.90	1.36	0.00		2.43	
4/27/2021	462.10	0.04	0.00		2.43	
5/26/2021	455.00	0.03	0.00		2.10	
6/30/2021	437.90	0.00	0.00		2.40	
7/29/2021	423.60	0.07	0.00		2.06	
8/24/2021	408.00	0.00	0.00		1.10	
9/29/2021	398.00	0.04	0.00		2.30	
10/26/2021	417.00	0.87	0.00		2.40	
11/25/2021	427.90	0.00	0.00		2.40	
12/21/2021	427.90	4.77	0.00		2.00	
1/27/2022	467.80	0.07	0.00		0.66	
2/23/2022	464.80	0.29	0.00		2.60	
3/23/2022	464.40	1.08	0.00		2.40	
4/26/2022	467.10	0.03	0.00		1.09	
5/26/2022	464.80	0.08	0.00		8.00	above hist max
6/28/2022	457.30	0.00	0.00		2.43	
7/26/2022	440.70	0.00	0.00		2.43	
8/25/2022	429.50	0.05	0.00		2.44	
9/28/2022	410.80	0.35	0.00		2.18	
10/25/2022	407.30	0.35	0.00		1.76	
11/23/2022	427.30	0.80	0.00		3.17	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			U/S Collector Drain #2		D/S Toe Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
12/20/2022	441.90	2.14	0.00		2.60	
1/26/2023	470.30	5.64	0.00		3.50	
2/23/2023	471.00	3.33	0.00		2.19	
3/28/2023	471.20	5.72	0.00		7.90	
4/25/2023	469.40	0.16	0.14		3.36	
5/23/2023	471.00	1.35	0.43		2.69	
6/28/2023	468.8	0.1	1.00		3.17	
7/27/2023	455.9	0	1.10		2.90	
8/29/2023	453.8	2.28	1.06		2.43	
9/26/2023	445	0	0.93		3.17	
10/26/2023	437.40	0.21	0.60		2.90	
11/29/2023	425.00	0.78	0.42			Cannot be read, vault overflow
12/21/2023	421.00	1.60	0.27			Cannot be read, vault overflow

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			Floor Drain		Right Groin Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
1/31/2007	405.80		12.00			
2/27/2007	426.80		7.05			
3/28/2007	438.80		9.32			
4/26/2007	450.90		9.44			
5/23/2007	461.40		14.00			
6/27/2007	457.20		10.50			
7/26/2007	445.50		8.79			
8/28/2007	434.60		10.22			
9/25/2007	416.80		9.95			
10/24/2007	404.50		8.17			
11/27/2007	422.20		9.05			
1/3/2008	443.20		10.50			
1/29/2008	452.20		7.92			
2/27/2008	460.80		14.00			
3/26/2008	468.00		10.56			
4/29/2008	468.60		10.74			
5/29/2008	464.70		8.11			
6/26/2008	455.70		8.80			
7/29/2008	447.30	0.00	8.10			
8/28/2008	438.80	0.00	8.33		0.11	
9/26/2008	430.70	0.00	16.00		0.39	
10/29/2008	412.50	0.00	3.75		0.40	
11/25/2008	404.70	2.60	8.80		0.00	
12/30/2008	440.90	3.42	10.56		0.00	
1/28/2009	463.70	0.17	10.60		0.00	
2/25/2009	470.10	3.35	9.46		0.00	
3/26/2009	469.40	0.19	9.30		0.05	
4/29/2009	466.90	0.07	9.84		0.23	
5/18/2009	466.70	0.00	10.00		0.13	
5/29/2009	465.00	0.00			0.16	
6/30/2009	460.20	0.00	10.30		0.10	
7/30/2009	451.10	0.00	10.56		0.00	
8/25/2009	440.10	0.00	7.90		0.00	
9/30/2009	432.20	0.00	16.00		0.13	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			Floor Drain		Right Groin Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
10/29/2009	431.40	0.53			0.14	
12/1/2009	427.40	0.00			0.00	
12/29/2009	448.10	2.06			0.17	
1/27/2010	465.60	4.62	9.34		0.62	
2/25/2010	470.20	2.51	10.56		0.61	
3/29/2010	465.70	0.99	16.00		0.00	
4/4/2010	465.00		16.00			
4/27/2010	468.40	1.23	10.56		0.00	
5/27/2010	463.30	0.05	10.00		1.50	
6/30/2010	454.70	0.00	9.18		1.10	
7/28/2010	445.60	0.00	10.56		0.99	
8/31/2010	437.10	0.00	9.51		1.07	
9/29/2010	422.70	0.00	6.34		0.72	
10/27/2010	426.40	2.38	7.80		0.11	
11/29/2010	439.80	0.97	7.92		0.27	
12/30/2010	456.60	8.62	16.00		2.00	
2/1/2011	468.90	0.92	8.00		2.30	
2/23/2011	469.00	0.99	7.92		0.95	
3/29/2011	470.30	2.93	7.90		0.38	
4/27/2011	464.80	0.19	5.20		0.71	
5/26/2011	457.30	0.48	9.50		0.00	
6/28/2011	443.50	0.05	8.90		0.00	
7/29/2011	425.10	0.00	6.34		0.00	
8/24/2011	418.00	0.00	7.92		0.25	
9/27/2011	400.90	0.12	7.92		0.20	
10/26/2011	402.20	1.25	7.05		0.27	
11/30/2011	425.10	1.38	7.93		0.31	
12/21/2011	435.70	0.32	7.93		0.29	
1/24/2012	441.40	0.53	7.92		0.36	
2/28/2012	448.40	0.42	6.34		0.34	
3/26/2012	452.70	1.06	7.79		0.35	
4/23/2012	463.40	1.32	7.92		0.31	
5/30/2012	457.30	0.02	6.34		0.26	
6/13/2012	452.90	0.02	7.92		0.31	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			Floor Drain		Right Groin Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
6/26/2012	450.20	0.00	10.56		0.21	
7/24/2012	439.80	0.00	10.56		0.21	
8/8/2012	437.60	0.12	10.56		0.15	
8/22/2012	433.40	0.00	7.92		0.24	
8/29/2012	431.30	0.00	10.56		0.13	
9/25/2012	420.80	0.00	7.93		0.10	
10/31/2012	412.30	0.26	6.34		0.14	
11/27/2012	420.80	0.58	7.92		0.16	
12/18/2012	448.00	1.44	7.37		0.19	
1/29/2013	468.60	1.18	7.90		0.26	
2/28/2013	469.20	0.30	7.92		0.24	
3/27/2013	468.30	0.50	7.92		0.25	
4/25/2013	462.70	0.00	7.92		0.25	
5/21/2013	454.20	0.00	7.92		0.26	
6/25/2013	439.30	0.00	7.51		0.21	
7/23/2013	431.50	0.00	7.04		0.19	
8/21/2013	418.00	0.00	6.34		0.17	
9/24/2013	404.00	0.00	6.34		0.16	
10/29/2013	400.60	0.00	6.89		0.19	
11/26/2013	407.90	0.44	6.34		0.20	
12/19/2013	425.80	0.54	5.28		0.22	
1/28/2014	439.70	0.00	7.90		0.16	
2/25/2014	449.70	0.83	7.20		0.19	
3/26/2014	465.10		7.92		0.52	
3/28/2014	465.70	1.15	6.44		0.18	
4/29/2014	465.30	0.43	7.51		0.21	
5/28/2014	450.60	0.00	7.08		0.21	
6/25/2014	440.10	0.00	6.34		0.17	
7/29/2014	431.20	0.00	6.49		0.15	
8/26/2014	419.50	0.02	10.56		0.16	
9/23/2014	405.30	0.00	6.30		0.13	
10/29/2014	400.90	0.00	6.15		0.14	
11/25/2014	410.90	0.25	6.34		0.14	
12/30/2014	430.60	2.94	6.34		0.23	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			Floor Drain		Right Groin Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
1/27/2015	466.70	0.83	7.04		0.96	
2/25/2015	468.90	0.69	6.30		0.15	
3/26/2015	465.90	0.61	7.20		0.24	
4/28/2015	465.70	0.20	5.70		0.15	
5/28/2015	466.40	1.08	5.34		0.14	
6/30/2015	454.50	0.00	4.30		0.52	
7/28/2015	445.60	0.00	6.30		0.19	
8/28/2015	437.60	0.00	6.30		0.15	
9/24/2015	426.90	1.51	6.34		0.19	
10/27/2015	415.40	0.49	6.30		0.16	
11/19/2015	412.90	0.09	6.56		0.17	
12/22/2015	425.50	0.69	5.89		0.19	
1/27/2016	463.60	2.86	6.34		0.25	
2/25/2016	468.90	0.25	7.33		0.22	
3/30/2016	468.00	1.44	5.38		0.23	
4/28/2016	461.30	0.30	7.30		0.23	
5/25/2016	451.30	0.18	5.60		0.20	
6/28/2016	414.10	0.00	6.00		0.15	
7/27/2016	434.20	0.00	6.30		0.13	
8/23/2016	418.60	0.00	6.40		0.09	
9/27/2016	406.40	0.00	4.61		0.10	
10/26/2016	404.00	0.48	6.34		0.17	
11/22/2016	413.60	1.13	5.77		0.15	
12/20/2016	441.10	3.48	6.16		0.15	
1/26/2017	471.60	5.67	6.30		0.15	
2/24/2017	472.05	3.95	6.30		0.15	
2/25/2017	472.00		6.30			
2/26/2017	472.00		6.30			
2/27/2017	472.00		6.30		0.15	
2/28/2017	471.90		6.40		0.16	
3/1/2017	471.90		6.30		0.16	
3/2/2017	471.90		7.90		0.15	
3/29/2017	467.90	0.10	6.70		0.15	
4/27/2017	457.60	0.04	6.30		0.39	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			Floor Drain		Right Groin Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
5/23/2017	453.50	0.43	6.30		0.41	
6/21/2017	447.40	0.00	5.60		0.20	
7/26/2017	435.10	0.00	6.30		0.25	
8/25/2017	420.10	0.00	5.20		0.24	
9/27/2017	407.10	0.00	5.20		0.19	
10/26/2017	395.00	0.00	5.80		0.22	
11/28/2017	409.00	0.09	4.20		0.39	
12/20/2017	416.80	0.00	4.51		0.17	
1/24/2018	434.50	1.31	4.81		0.15	
2/21/2018	443.10	0.29	5.70		0.08	
3/29/2018	453.00	1.28	9.30		0.22	
4/26/2018	449.10	0.05	6.34		0.20	
5/31/2018	453.10	0.20	6.34		0.11	
6/28/2018	448.20	0.00	5.28		0.21	
7/25/2018	440.40	0.00	6.30		0.17	
8/22/2018	427.10	0.00	6.10		0.13	
9/27/2018	439.60	0.00	5.70		0.12	
10/18/2018	405.30	0.90	5.46		0.18	
11/28/2018	408.60	1.19	4.80		0.15	
12/19/2018	436.00	1.99	5.10		0.28	
1/30/2019	463.80	4.71	6.30		0.82	
2/27/2019	466.20	6.55	5.70		1.50	
3/27/2019	463.30	1.34	4.50		0.80	
4/29/2019	453.00	0.13	6.30		0.79	
5/30/2019	451.80	0.64	6.30		0.60	
6/26/2019	446.20	0.01	5.07		0.40	
7/5/2019	39.40	0.00	4.70		0.23	
7/30/2019	434.80	0.00	5.38		0.34	
8/27/2019	424.40	0.00	6.30		0.25	
9/26/2019	405.60	0.00	5.30		0.22	
10/22/2019	400.50	0.00	4.50		0.19	
11/26/2019	412.80	3.13	5.80		0.24	
12/18/2019	447.40	4.44	6.30		0.39	
1/28/2020	465.40	0.20	5.01		0.76	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			Floor Drain		Right Groin Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
2/26/2020	459.60	0.14	5.20		0.55	
3/24/2020	470.70	3.49	6.30		0.79	
4/29/2020	467.60	3.65	6.02		1.42	
5/27/2020	459.10	0.02	4.59		0.95	
6/23/2020	447.00	0.00	5.20		0.60	
7/30/2020	434.00	0.00	5.11		0.40	
8/26/2020	417.70	0.00	4.50		0.38	
9/29/2020	403.60	0.00	4.80		0.25	
10/28/2020	404.50	0.00	5.23		0.26	
11/24/2020	413.50	0.42	4.70		0.25	
12/22/2020	408.00	1.13	4.50		0.20	
1/27/2021	435.60	2.25	4.75		0.33	
2/25/2021	457.30	0.05	4.37		0.36	
3/23/2021	465.90	1.36	5.28		0.39	
4/27/2021	462.10	0.04	4.38		0.27	
5/26/2021	455.00	0.03	5.00		0.22	
6/30/2021	437.90	0.00	4.50		0.32	
7/29/2021	423.60	0.07	4.12		0.15	
8/24/2021	408.00	0.00	2.20		0.14	
9/29/2021	398.00	0.04	3.90		0.22	
10/26/2021	417.00	0.87	4.40		0.21	
11/25/2021	427.90	0.00	5.20		0.36	
12/21/2021	427.90	4.77	3.20		0.32	
1/27/2022	467.80	0.07	1.17		0.50	
2/23/2022	464.80	0.29	5.20		0.43	
3/23/2022	464.40	1.08	4.50		0.38	
4/26/2022	467.10	0.03	2.20		0.39	
5/26/2022	464.80	0.08	4.40		0.23	
6/28/2022	457.30	0.00	3.96		0.17	
7/26/2022	440.70	0.00	4.52		0.20	
8/25/2022	429.50	0.05	5.28		0.19	
9/28/2022	410.80	0.35	3.80		0.16	
10/25/2022	407.30	0.35	3.59		0.19	
11/23/2022	427.30	0.80	3.59		0.22	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 9
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2007 THROUGH DECEMBER 2023

Seepage Weir -->			Floor Drain		Right Groin Drain	
Date	Reservoir Elevation (ft)	Monthly Rainfall	Flow (gpm)	Comment	Flow (gpm)	Comment
12/20/2022	441.90	2.14	3.60		0.34	
1/26/2023	470.30	5.64	3.70		1.10	
2/23/2023	471.00	3.33	3.88		0.63	
3/28/2023	471.20	5.72	4.90		2.40	
4/25/2023	469.40	0.16	4.12		2.06	
5/23/2023	471.00	1.35	3.70		1.17	
6/28/2023	468.8	0.1	6.34		0.78	
7/27/2023	455.9	0	5.2		0.58	
8/29/2023	453.8	2.28	4.29		0.48	
9/26/2023	445	0	6.34		0.49	
10/26/2023	437.40	0.21	5.70		0.42	
11/29/2023	425.00	0.78		Cannot be read, vault overflow	0.44	
12/21/2023	421.00	1.60		Cannot be read, vault overflow	0.32	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 10
SAN JOAQUIN DAM
SEDIMENT COLLECTION AND SEEPAGE
APRIL 2014 THROUGH DECEMBER 2023

Date	Reservoir Elevation (feet)	West Drain				East Drain			
		Silt Depth (in.)	Slit Volume (lbs)	Flow (gpm)	Comments	Silt Depth (in.)	Slit Volume (lbs)	Flow (gpm)	Comments
4/30/2014	465.3	1.5	6.47	57.00	CK/MD	0.0	0.0	50.0	
5/28/2014	450.6	0.5	1.85	46.03	BW/MC	0.0	0.0	34.1	
7/17/2014	436.4	1.6	5.14	36.19	10 day hold 7/1/14 to 7/11/14@ 438' CK/MC	0.0	0.0	27.4	
7/29/2014	431.2	0.5	2.69	33.88	SH/MD	0.0	0.0	25.0	
8/28/2014	419.5	0.1	3.54	27.02	CK/MD	0.0	0.0	19.1	
9/23/2014	405.3	0.3	3.14	21.32	BW/MD	0.0	0.0	13.0	
10/30/2014	400.9	0.1	3.21	18.50	West Drain Has a lot of Foam. TC/SH	0.0	0.0	10.1	
11/25/2014	410.9	0.1	3.88	18.60	CK/TC	0.0	0.0	10.8	
12/30/2014	430.6	0.3	3.61	26.64	SH	0.0	0.0	23.3	
1/27/2015	466.7	0.5	8.71	60.49	SH/MC	0.0	0.0	61.5	
3/5/2015	470.1	0.3	4.30	64.10	MD/CK	0.0	0.0	64.2	
3/26/2015	465.9	0.1	2.73	63.40	SH/MC	0.0	0.0	62.1	
4/28/2015	465.7	0.1	2.41	59.60	MD/MC	0.0	0.0	60.1	
5/28/2015	466.4	0.1	2.33	49.61	SH/CK	0.0	0.0	54.0	
6/30/2015	454.5	0.3	2.47	43.46	MD/TC	0.0	0.0	44.8	
7/28/2015	445.6	0.1	2.08	35.90	MC/BW	0.0	0.0	35.4	
8/28/2015	473.6	0.3	2.13	30.40	CK/MC	0.0	0.0	29.2	
9/24/2015	426.9	0.1	2.04	25.10	MC/JG	0.0	0.0	23.5	
10/27/2015	415.4	0.3	2.11	18.70	JG/CK	0.0	0.0	16.9	
11/19/2015	412.9	0.1	2.02	16.38	JG/MD	0.0	0.0	14.2	
12/22/2015	425.5	0.1	2.04	19.40	CK/MD	0.0	0.0	19.5	
1/27/2016	463.6	0.3	2.47	42.08	SH	0.0	0.0	53.2	
2/25/2016	468.9	0.5	3.72	50.05	MD	0.0	0.0	53.4	
3/30/2016	468.0	0.3	2.61	50.90	CC	0.0	0.0	56.4	
4/28/2016	461.3	0.3	2.43	46.75	SH	0.0	0.0	50.8	
5/25/2016	451.3	0.1	2.09	40.29	MD	0.0	0.0	43.1	
6/28/2016	414.1	0.1	2.11	34.83	AW	0.0	0.0	35.0	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 10
SAN JOAQUIN DAM
SEDIMENT COLLECTION AND SEEPAGE
APRIL 2014 THROUGH DECEMBER 2023

Date	Reservoir Elevation (feet)	West Drain				East Drain			
		Silt Depth (in.)	Slit Volume (lbs)	Flow (gpm)	Comments	Silt Depth (in.)	Slit Volume (lbs)	Flow (gpm)	Comments
7/27/2016	434.2	0.1	2.27	29.30	CK	0.0	0.0	28.2	
8/23/2016	418.6	0.1	2.04	20.95	JM	0.0	0.0	19.0	
9/27/2016	406.4	0.1	2.06	15.91	JM	0.0	0.0	13.0	
10/26/2016	404.0	0.3	2.07	13.95	MC	0.0	0.0	10.9	
11/22/2016	413.6	0.3	2.13	14.80	SH	0.0	0.0	12.0	
12/20/2016	441.10			6.15				29.72	
1/26/2017	471.60			51.40				58.70	
2/24/2017	472.05			60.38				57.36	
2/25/2017	472.00			60.35				57.55	
2/26/2017	472.00			60.38				56.81	
2/27/2017	472.00			60.40				56.90	
2/28/2017	471.90			60.15				56.32	
3/1/2017	471.90			59.70				55.80	
3/2/2017	471.90			59.71				56.34	
3/29/2017	467.90			56.32				51.95	
4/27/2017	457.60			47.55				44.35	
5/23/2017	453.50			41.80				38.22	
6/21/2017	447.40			39.20				34.25	
7/26/2017	435.10			32.46				29.68	
8/25/2017	420.10			24.30				22.90	
9/27/2017	407.10			18.94				16.00	
10/26/2017	395.00			14.80				10.73	
11/28/2017	409.00			16.68				13.48	
12/20/2017	416.80			18.42				15.28	
1/24/2018	434.50			26.47				27.22	
2/21/2018	443.10			32.39				32.75	
3/29/2018	453.00			42.15				39.88	
4/26/2018	449.10			39.21				36.60	
5/31/2018	453.10			40.77				39.70	
6/28/2018	448.20			38.50				36.70	
7/25/2018	440.40			35.20				33.48	
8/22/2018	427.10			28.26				23.07	

Notes:

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TABLE 10
SAN JOAQUIN DAM
SEDIMENT COLLECTION AND SEEPAGE
APRIL 2014 THROUGH DECEMBER 2023

Date	Reservoir Elevation (feet)	West Drain				East Drain			
		Silt Depth (in.)	Slit Volume (lbs)	Flow (gpm)	Comments	Silt Depth (in.)	Slit Volume (lbs)	Flow (gpm)	Comments
9/27/2018	439.60			19.09				13.85	
10/18/2018	405.30			15.38				10.95	
11/28/2018	408.60			14.80				10.60	
12/19/2018	436.00			23.10				24.80	
1/30/2019	463.80			45.60				49.09	
2/3/2019	471.60	0.25	3.04	51.40				50.80	
3/27/2019	463.30	0.25	3.66	48.88				47.06	
4/29/2019	453.00	0.125	2.12	42.48				38.70	
5/30/2019	451.80	0.25	2.04	40.80				38.10	
6/26/2019	446.20	0.125	2.08	38.07				36.33	
7/30/2019	434.80	0.125	2.21	32.54				31.49	
8/27/2019	424.40	0.25	2.13	26.39				23.74	
9/26/2019	405.60	0.25	1.97	19.42				15.51	
10/22/2019	400.50	0.25	1.81	16.33				12.42	
11/26/2019	412.80	0.25	1.96	17.34				13.27	
12/18/2019	447.40	0.125	2.03	30.36				32.88	
1/28/2020	465.40	0.50	3.42	47.62				49.22	
2/26/2020	459.60	0.50	2.61	43.84				42.43	
3/24/2020	470.70	0.25	2.93	50.87				49.77	
9/1/2021	404.70	0.75	4.24	20.80				12.62	
10/28/2021	419.80	0.13	2.16	18.86				12.15	
11/22/2021	427.80	0.13	2.08	24.56				18.62	
3/23/2022	464.40	0.50	3.59	38.20				39.70	
4/26/2022	467.10	0.25	3.04	43.23				40.26	
5/26/2022	464.80	0.25	2.84	41.89				37.36	
9/28/2022	410.60	1.00	39.96	19.20				12.35	
11/24/2022	407.40	0.75	13.4	19.65				13.80	
12/20/2022	441.90			23.40				19.84	
1/26/2023	470.40	0.75	11.20	40.15				42.16	
2/23/2023	471.00	0.50	7.12	42.07				38.96	
4/26/2023	390.80	0.50	4.12	35.23				36.14	
7/6/2023	465.60	0.50	8.20	43.66				34.78	

Notes:

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TABLE 10
SAN JOAQUIN DAM
SEDIMENT COLLECTION AND SEEPAGE
APRIL 2014 THROUGH DECEMBER 2023

Date	Reservoir Elevation (feet)	Filter Drain		
		Silt Depth (in.)	Flow (gpm)	Comments
4/30/2014	465.3	0.0	9.0	
5/28/2014	450.6		8.2	
7/17/2014	436.4		7.9	
7/29/2014	431.2	0.0	8.2	
8/28/2014	419.5	0.0	8.0	
9/23/2014	405.3	0.0	8.0	
10/30/2014	400.9	0.0	7.9	
11/25/2014	410.9	0.0	7.0	
12/30/2014	430.6	0.0	7.5	
1/27/2015	466.7	0.0	8.2	
3/5/2015	470.1	0.0	8.0	
3/26/2015	465.9	0.0	9.0	
4/28/2015	465.7	0.0	9.9	
5/28/2015	466.4	0.0	7.4	
6/30/2015	454.5	0.0	8.3	
7/28/2015	445.6	0.0	6.7	
8/28/2015	473.6	0.0	7.1	
9/24/2015	426.9	0.0	7.1	
10/27/2015	415.4	0.0	6.9	
11/19/2015	412.9	0.0	6.4	
12/22/2015	425.5	0.0	6.7	
1/27/2016	463.6	0.0	6.5	
2/25/2016	468.9	0.0	6.6	
3/30/2016	468.0	0.0	6.2	
4/28/2016	461.3	0.0	6.7	
5/25/2016	451.3	0.0	7.2	
6/28/2016	414.1	0.0	6.7	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 10
SAN JOAQUIN DAM
SEDIMENT COLLECTION AND SEEPAGE
APRIL 2014 THROUGH DECEMBER 2023

Date	Reservoir Elevation (feet)	Filter Drain		
		Silt Depth (in.)	Flow (gpm)	Comments
7/27/2016	434.2	0.0	6.6	10 day hold 7/11-7/21/16
8/23/2016	418.6	0.0	6.5	5 day hold 8/23-8/28/16
9/27/2016	406.4	0.0	5.7	10 day hold 9/30-
10/26/2016	404.0	0.0	5.9	
11/22/2016	413.6	0.0	6.2	
12/20/2016	441.10		25.63	
1/26/2017	471.60		6.50	
2/24/2017	472.05		7.41	
2/25/2017	472.00		7.44	
2/26/2017	472.00		7.39	
2/27/2017	472.00		7.34	
2/28/2017	471.90		7.14	
3/1/2017	471.90		7.02	
3/2/2017	471.90		7.04	
3/29/2017	467.90		7.34	
4/27/2017	457.60		7.65	
5/23/2017	453.50		7.76	
6/21/2017	447.40		7.61	
7/26/2017	435.10		7.54	Reservoir 5 day hold at 438' from 7/7 to 7/16.
8/25/2017	420.10		7.70	
9/27/2017	407.10		7.44	
10/26/2017	395.00		7.19	
11/28/2017	409.00		7.45	
12/20/2017	416.80		7.17	
1/24/2018	434.50		7.11	
2/21/2018	443.10		6.80	
3/29/2018	453.00		7.01	
4/26/2018	449.10		6.97	
5/31/2018	453.10		7.66	
6/28/2018	448.20		8.04	
7/25/2018	440.40		7.76	Reservoir 10 day hold at 438' from 7/30 to 8/8
8/22/2018	427.10		7.82	

Notes:

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2. Piezometer data based on NAVD 88 datum.

TABLE 10
SAN JOAQUIN DAM
SEDIMENT COLLECTION AND SEEPAGE
APRIL 2014 THROUGH DECEMBER 2023

Date	Reservoir Elevation (feet)	Filter Drain		
		Silt Depth (in.)	Flow (gpm)	Comments
9/27/2018	439.60		7.53	Reservoir 5 day hold at 418.6' from 9/6 to 9/11.
10/18/2018	405.30		6.79	
11/28/2018	408.60		5.90	
12/19/2018	436.00		5.80	
1/30/2019	463.80		6.45	
2/3/2019	471.60		7.80	
3/27/2019	463.30		7.16	
4/29/2019	453.00		7.35	
5/30/2019	451.80		7.80	
6/26/2019	446.20		7.19	
7/30/2019	434.80		7.80	
8/27/2019	424.40		8.19	
9/26/2019	405.60		7.57	
10/22/2019	400.50		7.02	
11/26/2019	412.80		6.67	
12/18/2019	447.40		6.52	
1/28/2020	465.40		6.67	
2/26/2020	459.60		6.77	
3/24/2020	470.70		7.73	
9/1/2021	404.70		6.64	
10/28/2021	419.80		5.86	
11/22/2021	427.80		3.13	
3/23/2022	464.40		6.70	
4/26/2022	467.10		6.97	
5/26/2022	464.80		7.12	
9/28/2022	410.60		7.82	
11/24/2022	407.40		7.22	
12/20/2022	441.90		5.91	
1/26/2023	470.40		6.99	
2/23/2023	471.00		6.62	
4/26/2023	390.80		8.82	
7/6/2023	465.60		8.96	

Notes:

1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

TABLE 11
SAN JOAQUIN DAM
HORIZONTAL MOVEMENT AND ELEVATION SURVEY DATA
DECEMBER 2004 THROUGH DECEMBER 2023

Date	Reservoir Elevation (feet)	Temperature (C°)	Horizontal Movement Since Initial Survey (feet) Positive=North (Downstream); Negative=South (Upstream)																				
			SA-1	SA-2	SA-3	SA-4R		SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	SB-7		SC-1	SC-2	SC-3	SC-4	SC-5	SC-6	SC-7	SC-8
12/20/2004	370.00		0.000	0.000	0.000			0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9/27/2005	422.80		0.000	0.000	0.000				0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10/26/2005	411.70		0.000	0.000	0.000				0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
11/4/2005	411.70		-0.020	0.000	-0.030			-0.005	0.005	0.020	0.020	0.015	0.000	0.005		-0.035	-0.045	-0.050	-0.070	-0.085	-0.105	-0.125	-0.120
6/1/2006	467.10		-0.020	0.000	-0.040			-0.005	0.010	0.030	0.030	0.025	0.000	0.010		-0.035	-0.045	-0.045	-0.070	-0.085	-0.105	-0.125	-0.120
5/25/2007	461.40		-0.020	0.000	-0.035			-0.005	0.010	0.025	0.025	0.020	-0.005	0.010		No Survey Data							
6/9/2008	460.00		-0.020	0.000	-0.025			0.005	0.020	0.030	0.030	0.025	0.000	0.020		-0.045	-0.040	-0.045	-0.070	-0.090	-0.110	-0.120	-0.120
6/10/2009	460.00		-0.035	-0.005	-0.035			-0.005	0.010	0.025	0.025	0.020	0.000	0.015		-0.065	-0.060	-0.055	-0.080	-0.095	-0.110	-0.130	-0.125
5/27/2010	463.30		-0.035	-0.005	-0.040			-0.005	0.005	0.025	0.025	0.020	0.000	0.015		-0.065	-0.050	-0.050	-0.080	-0.095	-0.105	-0.130	-0.125
5/26/2011	457.20		-0.040	-0.005	-0.040			-0.005	0.005	0.020	0.025	0.025	0.000	0.015		-0.065	-0.050	-0.050	-0.075	-0.095	-0.105	-0.130	-0.130
5/24/2012	457.20		-0.030	-0.005	-0.035			0.000	0.010	0.020	0.020	0.020	-0.005	0.010		-0.065	-0.050	-0.050	-0.080	-0.105	-0.110	-0.135	-0.135
6/20/2013	441.40		-0.035	-0.010	-0.040			-0.010	0.005	0.015	0.020	0.015	-0.005	0.015		-0.060	-0.055	-0.055	-0.080	-0.105	-0.115	-0.135	-0.135
5/2/2014	465.10		-0.040	-0.015	-0.040			-0.015	0.005	0.015	0.020	0.020	-0.005	0.010		-0.050	-0.050	-0.050	-0.080	-0.090	-0.115	-0.135	-0.130
6/10/2015	463.20		-0.035	-0.010	-0.035			-0.015	0.010	0.015	0.020	0.020	-0.005	0.010		-0.060	-0.055	-0.045	-0.075	-0.095	-0.115	-0.130	-0.130
8/1/2016	430.80		-0.030	-0.005	-0.035			-0.015	0.010	0.020	0.020	0.025	0.000	0.020		-0.065	-0.055	-0.050	-0.075	-0.095	-0.115	-0.125	-0.125
6/1/2017			No Survey Data					No Survey Data								No Survey Data							
6/27/2018			-0.040	-0.010	-0.040			-0.025	0.005	0.015	0.020	0.025	0.000	0.020		-0.070	-0.060	-0.050	-0.070	-0.100	-0.115	-0.135	-0.140
6/17/2019			-0.040	-0.015	-0.035			-0.010	0.020	0.030	0.030	0.035	0.005	0.020		-0.070	-0.055	-0.060	-0.085	-0.105	-0.125	-0.145	-0.135
11/25/2020			-0.030	-0.030	-0.050	0.000		0.000	0.020	0.020	0.020	0.020	0.000	0.020		-0.070	-0.080	-0.065	-0.085	-0.105	-0.130	-0.135	-0.145
6/30/2021			No Survey Data					No Survey Data								No Survey Data							
5/10/2022			-0.040	-0.020	-0.050	-0.005		-0.010	0.000	0.015	0.020	0.015	0.000	0.010		-0.060	-0.065	-0.060	-0.085	-0.105	-0.115	-0.130	-0.150
11/16/2022	415.30	18.33	-0.040	-0.020	-0.045	-0.005		-0.005	0.000	0.020	0.020	0.020	-0.010	0.010		-0.065	-0.080	-0.065	-0.095	-0.120	-0.130	-0.150	-0.150
12/4/2023	423.20	23.89	-0.050	-0.030	-0.050	-0.010		-0.005	0.010	0.015	0.030	0.020	0.005	0.010		-0.070	-0.080	-0.065	-0.100	-0.120	-0.130	-0.160	-0.140

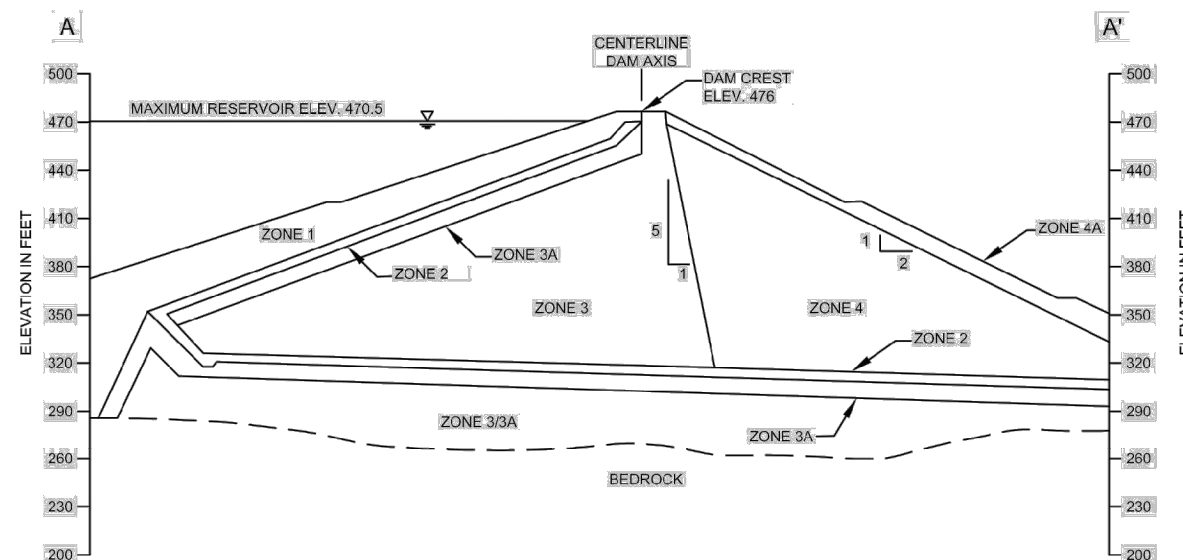
Date	Reservoir Elevation (feet)	Temperature (C°)	Elevation Since Initial Survey (feet)																				
			SA-1	SA-2	SA-3	SA-4R		SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	SB-7		SC-1	SC-2	SC-3	SC-4	SC-5	SC-6	SC-7	SC-8
12/20/2004	370.00		300.242	300.137	300.170			360.119	360.627	360.443	360.504	360.256	360.177	360.926		420.056	419.748	419.955	419.516	419.467	419.526	419.768	420.402
9/27/2005	422.80		302.379	302.263	302.294			362.253	362.760	362.573	362.631	362.393	362.291	363.060		422.200	421.876	422.082	421.643	421.593	421.655	421.897	422.525
10/26/2005	411.70		No Survey Data					No Survey Data								No Survey Data							
11/4/2005	411.70		No Survey Data					No Survey Data								No Survey Data							
6/1/2006	467.10		302.374	302.264	302.294			362.264	362.769	362.584	362.639	362.404	362.299	363.069		422.225	421.900	422.105	421.665	421.615	421.675	421.915	422.504
5/25/2007	461.40		302.362	302.258	302.291			362.244	362.751	362.564	362.619	362.383	362.283	363.054		422.197	421.875	422.081	421.641	421.592	421.654	421.895	422.524
6/9/2008	460.00		302.359	302.254	302.288			362.246	362.756	362.571	362.626	362.391	362.291	363.061		422.198	421.888	422.093	421.653	421.608	421.668	421.908	422.538
6/10/2009	460.00		302.353	302.246	302.281			362.254	362.764	362.574	362.629	362.394	362.294	363.064		422.194	421.884	422.089	421.649	421.599	421.664	421.909	422.539
5/27/2010	463.30		302.355	302.250	302.283			362.254	362.759	362.569	362.624	362.389	362.289	363.059		422.209	421.894	422.099	421.659	421.609	421.674	421.919	422.549
5/26/2011	457.20		302.351	302.248	302.280			362.259	362.764	362.574	362.629	362.394	362.294	363.064		422.209	421.889	422.094	421.654	421.604	421.669	421.914	422.544
5/24/2012	457.20		302.348	302.242	302.277			362.244	362.754	362.564	362.624	362.389	362.289	363.059		422.204	421.884	422.089	421.649	421.599	421.664	421.909	422.539
6/20/2013	441.40		302.345	302.238	302.275			362.254	362.764	362.579	362.634	362.399	362.299	363.069		422.189	421.884	422.089	421.649	421.599	421.664	421.914	422.534
5/2/2014	465.10		302.342	302.235	302.272			362.254	362.759	362.564	362.629	362.394	362.294	363.064		422.184	421.889	422.094	421.654	421.604	421.669	421.919	422.534
6/10/2015	463.20		302.343	302.237	302.274			362.249	362.754	362.564	362.624	362.389	362.289	363.059		422.169	421.884	422.089	421.649	421.599	421.664	421.909	422.524
8/1/2016	430.80		302.344	302.239	302.278			362.244	362.754	362.564	362.624	362.389	362.294	363.064		422.159	421.874	422.079	421.639	421.594	421.659	421.904	422.519
6/1/2017			No Survey Data					No Survey Data								No Survey Data							
6/27/2018			302.339	302.339	302.234			362.254	362.764	362.574	362.629	362.394	362.299	363.069		422.184	421.904	422.109	421.669	421.619	421.684	421.934	422.559
6/17/2019			302.339	302.234	302.264			362.269	362.779	362.589	362.649	362.414	362.314	363.084		422.234	421.929	422.129	421.694	421.639	421.714	421.959	422.589
11/25/2020			302.330	302.223	302.263	303.022		362.241	362.742	362.559	362.617	362.383	362.285	363.056		422.212	421.899	422.105	421.663	421.612	421.680	421.930	422.56
6/30/2021			No Survey Data					No Survey Data								No Survey Data							
5/10/2022			302.319	302.214	302.252	303.012		362.237	362.744	362.561	362.616	362.382	362.29	363.068		422.214	421.906						

TABLE 11
SAN JOAQUIN DAM
HORIZONTAL MOVEMENT AND ELEVATION SURVEY DATA
DECEMBER 2004 THROUGH DECEMBER 2023

Date	Reservoir Elevation (feet)	Temperature (C°)	Horizontal Movement Since Initial Survey (feet) Positive=North (Downstream); Negative=South (Upstream)						
			SD-1	SD-2	SD-3	SD-4	SD-5	SD-6	SD-7
12/20/2004	370.00		0.000	0.000	0.000	0.000	0.000	0.000	0.000
9/27/2005	422.80		0.000	0.000	0.000	0.000	0.000	0.000	0.000
10/26/2005	411.70		0.000	0.000	0.000	0.000	0.000	0.000	0.000
11/4/2005	411.70		0.000	0.000	0.000	0.065	0.045	-0.010	-0.005
6/1/2006	467.10		0.000	0.000	0.000	0.075	0.045	-0.015	-0.005
5/25/2007	461.40		No Survey Data						
6/9/2008	460.00		-0.005	0.000	0.000	0.080	0.045	-0.015	0.000
6/10/2009	460.00		-0.010	0.000	0.000	0.085	0.040	-0.015	-0.005
5/27/2010	463.30		-0.010	0.000	0.000	0.080	0.045	-0.020	-0.005
5/26/2011	457.20		-0.010	0.005	0.010	0.090	0.055	-0.015	-0.005
5/24/2012	457.20		-0.010	0.005	0.010	0.090	0.055	-0.015	-0.005
6/20/2013	441.40		-0.010	0.015	0.015	0.095	0.060	-0.010	-0.005
5/2/2014	465.10		-0.015	0.000	0.015	0.080	0.040	-0.015	-0.005
6/10/2015	463.20		-0.005	0.010	0.015	0.090	0.055	-0.010	-0.005
8/1/2016	430.80		-0.010	0.010	0.015	0.080	0.055	-0.010	-0.005
6/1/2017			No Survey Data						
6/27/2018			-0.010	0.010	0.020	0.085	0.055	-0.010	0.000
6/17/2019			0.010	0.010	0.015	0.100	0.060	-0.005	0.000
11/25/2020			0.000	0.000	0.020	0.080	0.040	-0.015	0.000
6/30/2021			No Survey Data						
5/10/2022			-0.010	0.000	0.010	0.075	0.040	-0.025	-0.005
11/16/2022	415.30	18.33	0.000	0.020	0.020	0.090	0.050	-0.010	0.010
12/4/2023	423.20	23.89	0.000	0.010	0.030	0.090	0.040	-0.010	-0.010
Date	Reservoir Elevation (feet)	Temperature (C°)	Elevation Since Initial Survey (feet)						
			SD-1	SD-2	SD-3	SD-4	SD-5	SD-6	SD-7
12/20/2004	370.00		476.015	476.636	477.565	478.427	477.546	476.917	476.307
9/27/2005	422.80		478.151	478.767	479.699	480.556	479.664	479.038	478.418
10/26/2005	411.70		No Survey Data						
11/4/2005	411.70		No Survey Data						
6/1/2006	467.10		478.158	478.773	479.698	480.553	479.663	479.033	478.408
5/25/2007	461.40		478.144	478.758	479.688	480.540	479.650	479.023	478.405
6/9/2008	460.00		478.156	478.771	479.701	480.556	479.661	479.036	478.421
6/10/2009	460.00		478.164	478.779	479.709	480.564	479.674	479.049	478.434
5/27/2010	463.30		478.174	478.784	479.714	480.569	479.679	479.054	478.439
5/26/2011	457.20		478.174	478.784	479.714	480.569	479.679	479.054	478.439
5/24/2012	457.20		478.164	478.774	479.699	480.554	479.664	479.039	478.424
6/20/2013	441.40		478.164	478.774	479.704	480.554	479.659	479.034	478.424
5/2/2014	465.10		478.159	478.774	479.699	480.549	479.654	479.034	478.429
6/10/2015	463.20		478.164	478.774	479.699	480.549	479.654	479.034	478.429
8/1/2016	430.80		478.169	478.779	479.704	480.554	479.659	479.039	478.429
6/1/2017			No Survey Data						
6/27/2018			478.199	478.809	479.739	480.594	479.689	479.074	478.479
6/17/2019			478.204	478.814	479.739	480.594	479.689	479.074	478.474
11/25/2020			478.190	478.798	479.724	480.570	479.679	479.064	478.453
6/30/2021			No Survey Data						
5/10/2022			478.199	478.807	479.732	480.584	479.693	479.078	478.467
11/16/2022	415.30	18.33	478.172	478.782	479.711	480.565	479.673	479.052	478.444
12/4/2023	423.20	23.89	478.131	478.739	479.667	480.521	479.629	479.011	478.402

Notes:
1. Readings in red are classified as erroneous.
2. Piezometer data based on NAVD 88 datum.

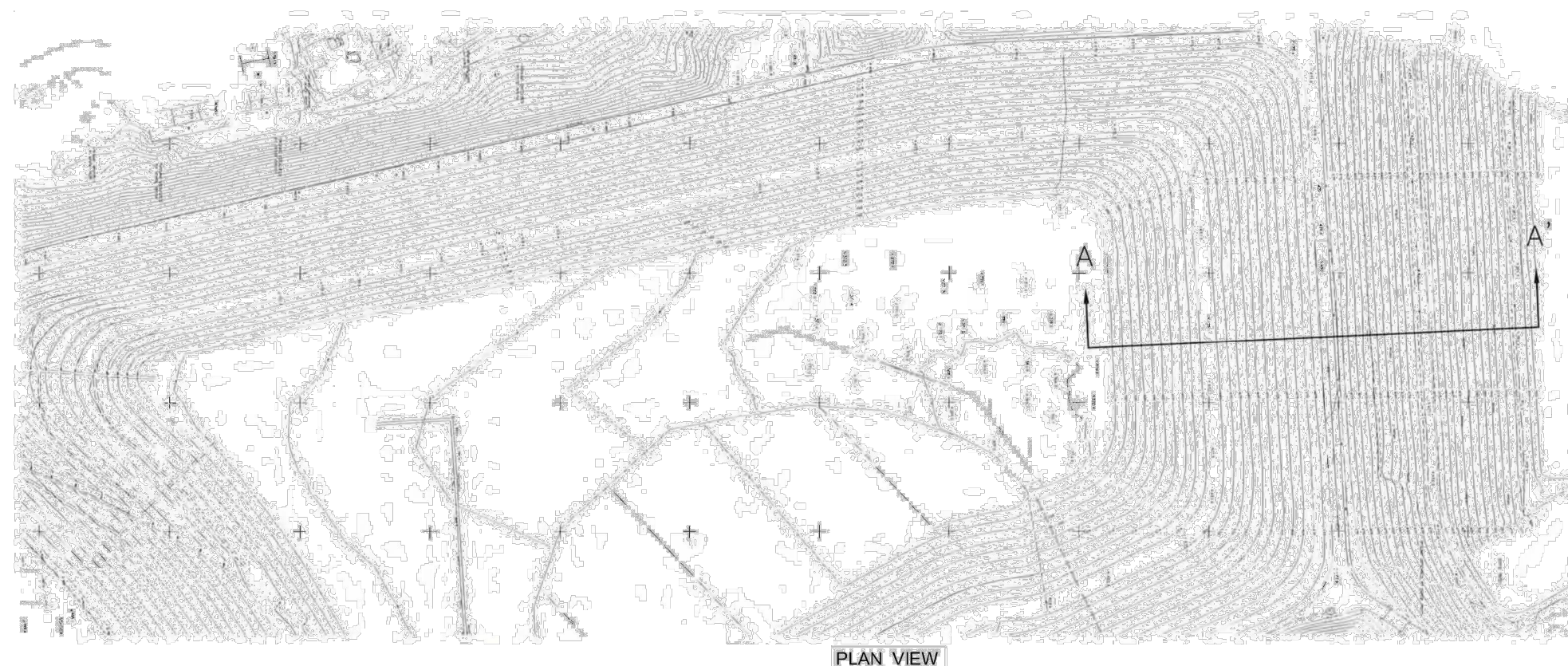
Figures



ZONE NO.	MATERIAL	FUNCTION
1	TERRACE SOIL	IMPERVIOUS BLANKET AND RESERVOIR LINING
2	IMPORTED SAND	FILTER DRAIN
3	IMPORTED GRAVEL	ROCK CORE (MAX. SIZE 6")
3A	SANDSTONE	ROCK CORE TRANSITION (MAX. SIZE 3")
4	SANDSTONE	DOWNSTREAM RANDOM SHELL (MAX. SIZE 12")
4A	SANDSTONE	DOWNSTREAM SLOPE PROTECTION (MAX. SIZE 30")

SECTION A-A'

0 50 100
SCALE, FEET



PLAN VIEW

LEGEND

A A'
LOCATION OF SECTION

NOT TO SCALE

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San Joaquin Dam and Reservoir
Irvine, CA

Irvine Ranch Water District
Irvine, CA

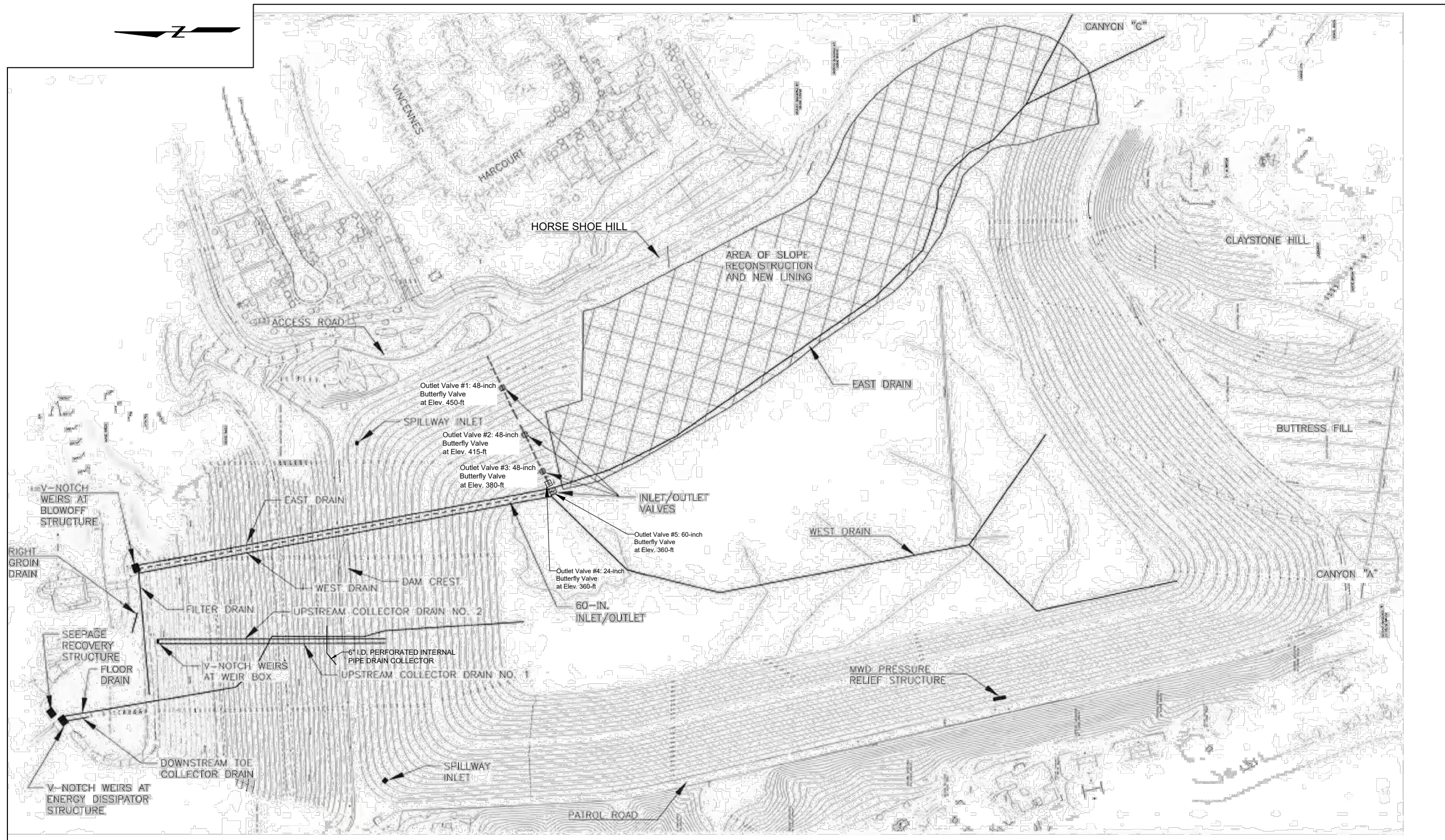


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PLAN VIEW AND SECTION A-A'

July 2024

Fig. 1



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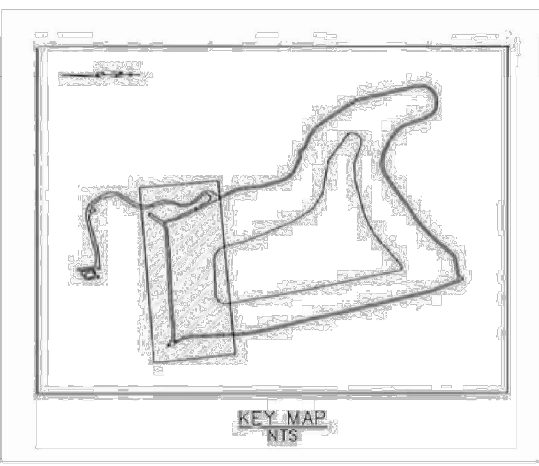
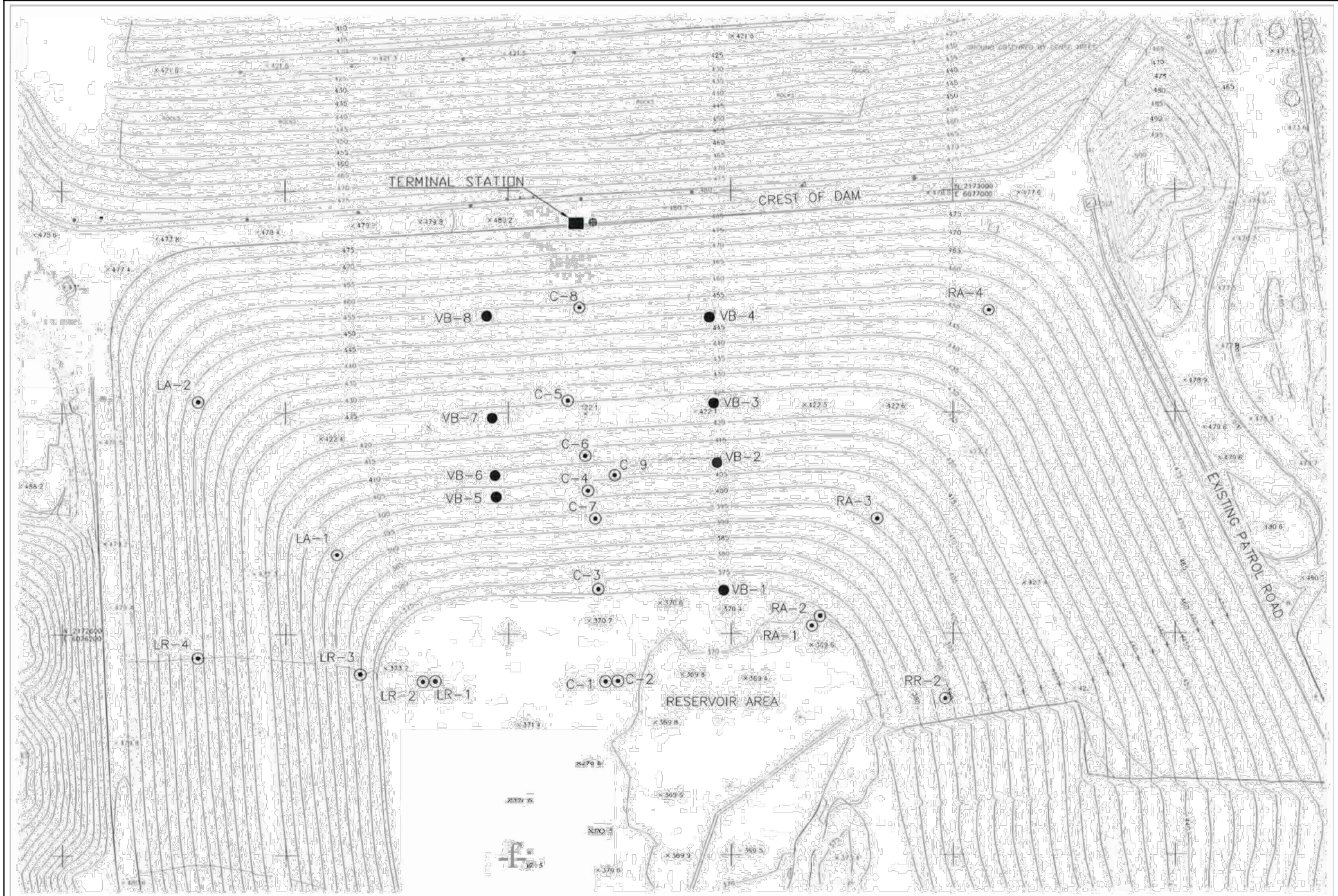
Annual Surveillance Report from Jan. 2023 to Dec. 2023	
San Joaquin Dam and Reservoir	
Irvine, CA	
Irvine Ranch Water District	
Irvine, CA	

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DAM AND RESERVOIR SITE
PLAN

July 2024


Fig. 2

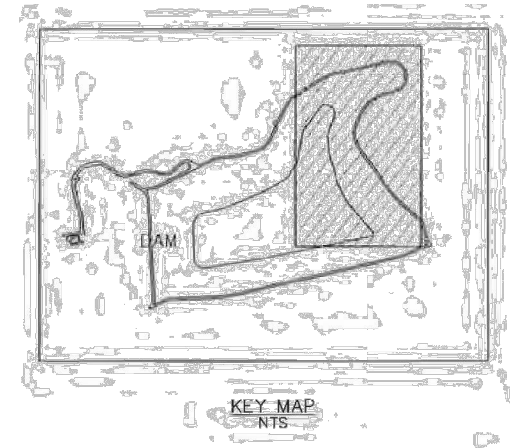
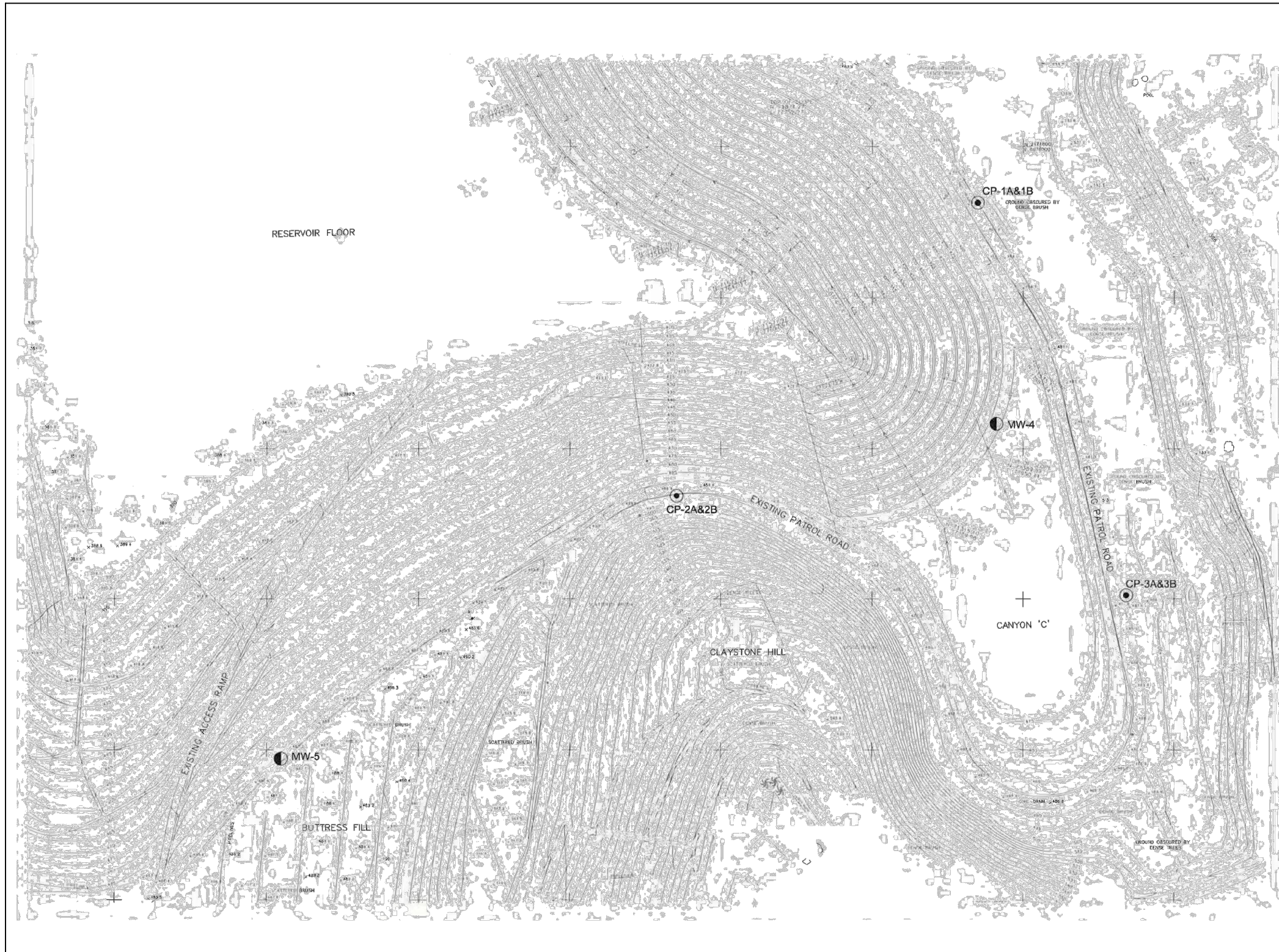


LEGEND

- 3' CONTOUR LINES
- VIBRATING WIRE PIEZOMETER
- PNEUMATIC PIEZOMETER

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Annual Surveillance Report from Jan. 2023 to Dec. 2023 San Joaquin Dam and Reservoir Irvine, CA			DAM EMBANKMENT AND ABUTMENT LOCATIONS
Irvine Ranch Water District Irvine, CA	Project 1901888		
		July 2024	Fig. 3



LEGEND

- CP-1A OPEN-WELL PIEZOMETER
- MW-4 MONITORING WELLS

NOT TO SCALE

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Irvine Ranch Water District Irvine, CA	



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LOCATIONS OF OPEN-WELL
PIEZOMETERS AND MW-4 AND
MW-5

July 2024

Fig. 4



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Irvine Ranch Water District Irvine, CA	


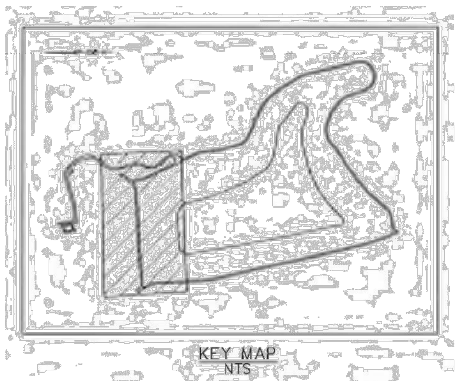
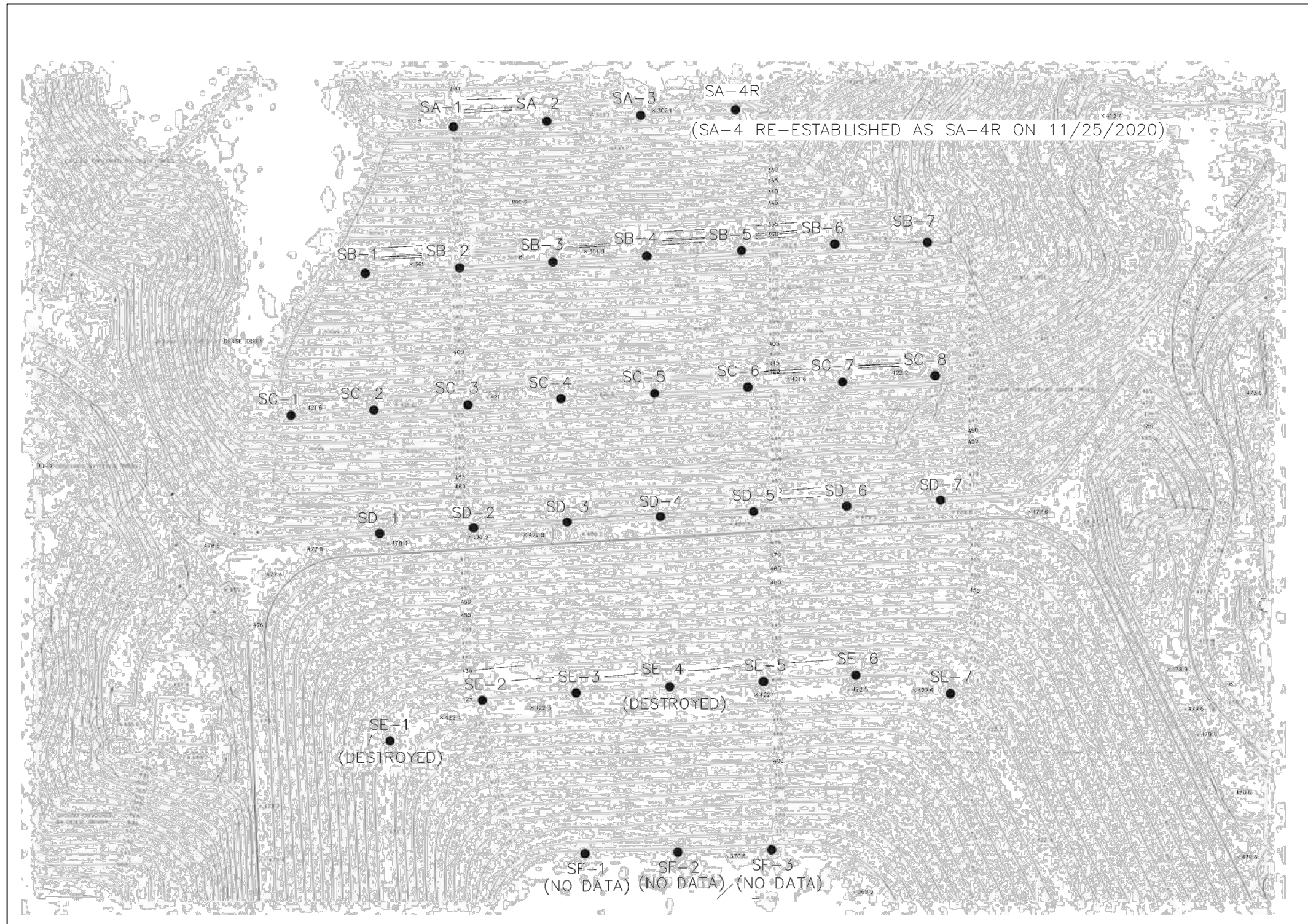
	LOCATIONS OF MW-1, MW-2, MW-3, MW-6, MW-7, AND MW-8	
	Project 1901888	July 2024

Fig. 5



LEGEND

● SURVEY MONUMENT
SD-2

NOTES:

1. SF-1, SF-2 AND SF-3 SURVEY MONUMENTS ARE SUBMERGED UNDER WATER WHEN RESERVOIR WATER LEVEL IS ABOVE 371 FT.
2. SE-2, SE-3, SE-5, SE-6 AND SE-7 SURVEY MONUMENTS ARE SUBMERGED UNDER WATER WHEN RESERVOIR WATER LEVEL IS ABOVE 423 FT.

NOT TO SCALE

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LOCATION OF SURVEY MONUMENT POINTS	
July 2024	Fig. 6

Figure 7
 SAN JOAQUIN DAM
 2-YR OPEN WELL PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
 OPEN WELL PIEZOMETERS CP-1A, CP-1B, CP-3A, and CP-3B
 JANUARY 2022 THROUGH DECEMBER 2023

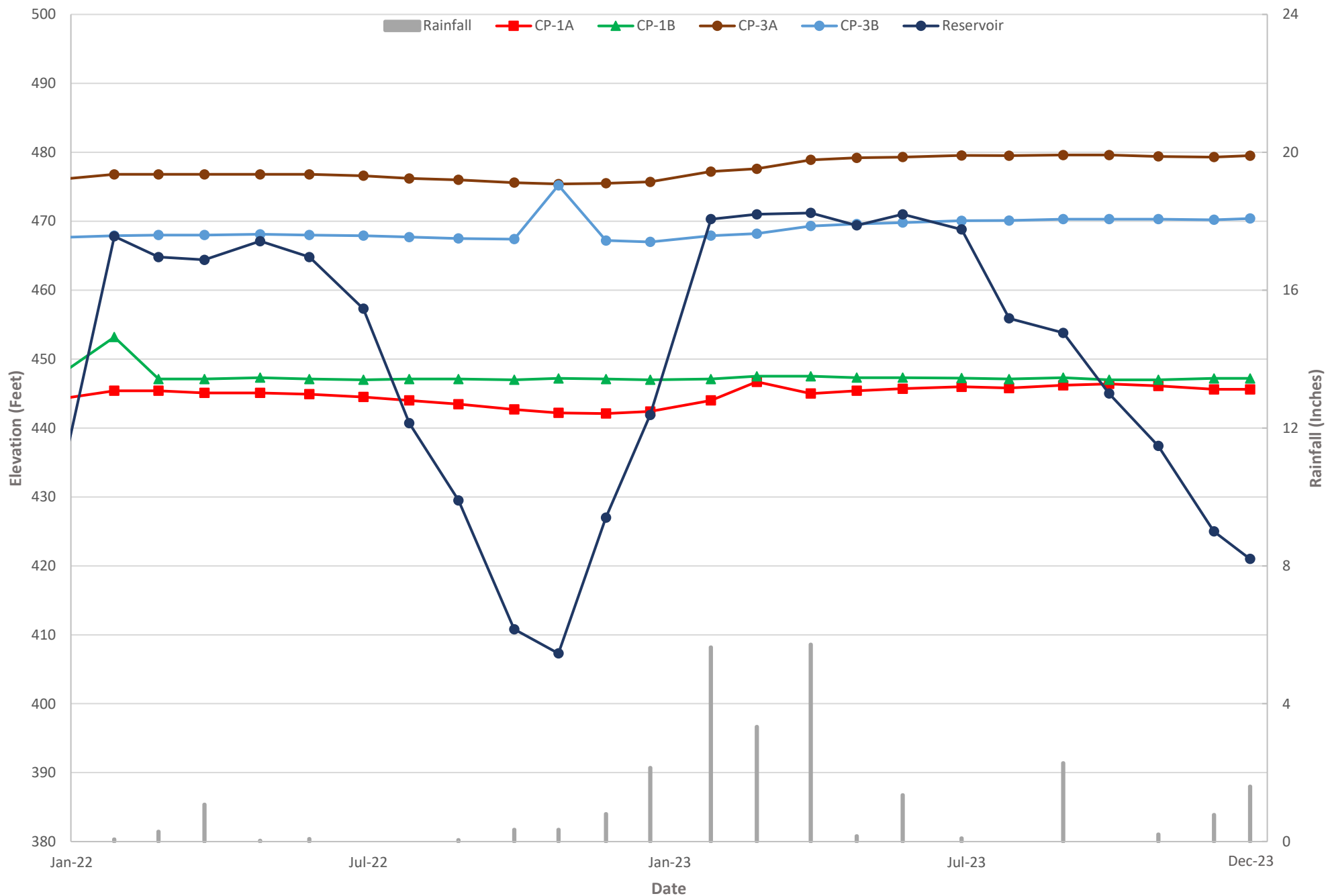


Figure 8
 SAN JOAQUIN DAM
 2-YR OPEN WELL PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
 OPEN WELL PIEZOMETERS CP-2A, and CP-2B
 JANUARY 2022 THROUGH DECEMBER 2023

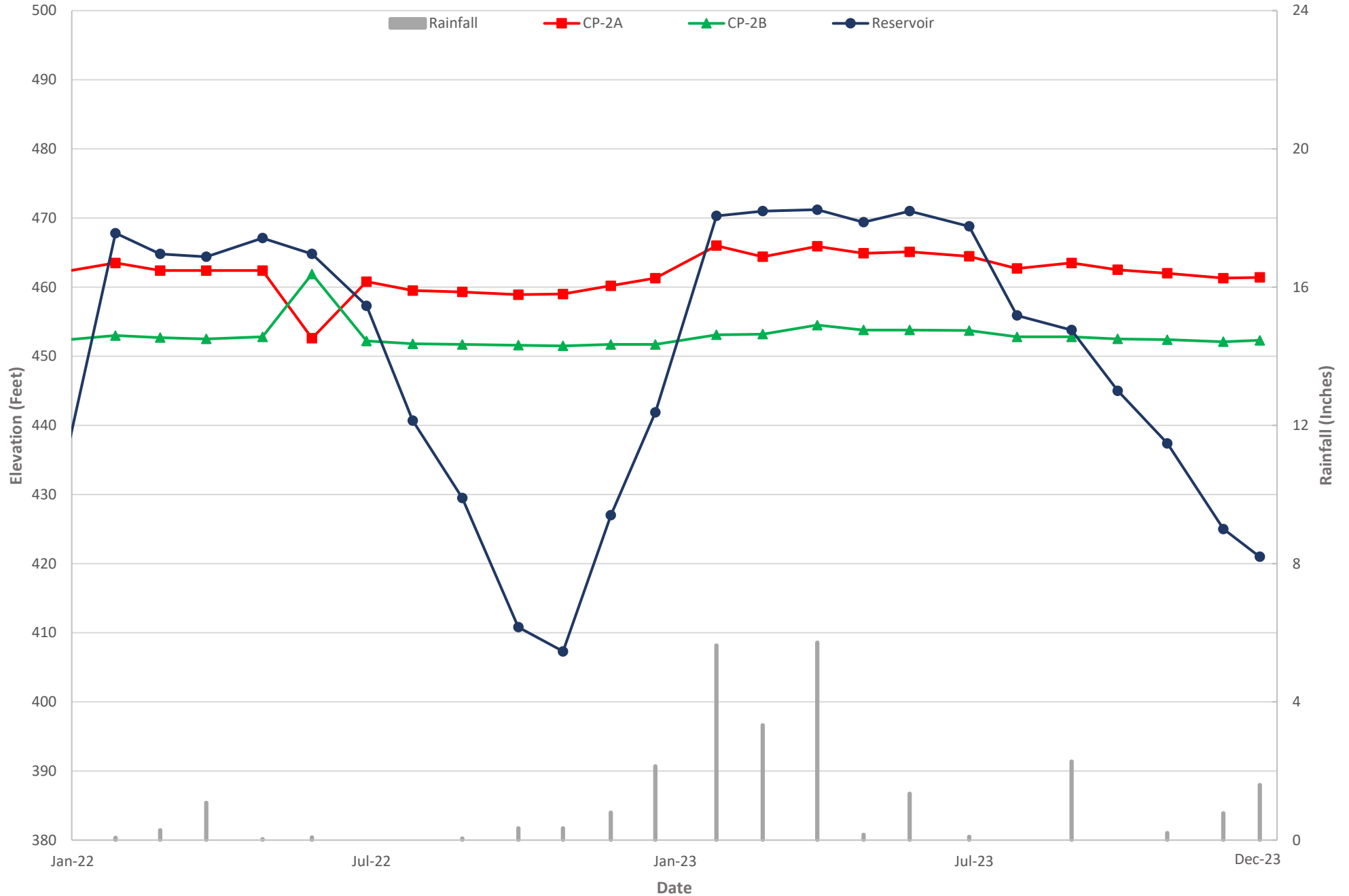


Figure 9
 SAN JOAQUIN DAM
 2-YR MONITORING WELL AND RESERVOIR WATER SURFACE ELEVATIONS
 MONITORING WELLS MW-1, MW-2, MW-3, and MW-6
 JANUARY 2022 THROUGH DECEMBER 2023

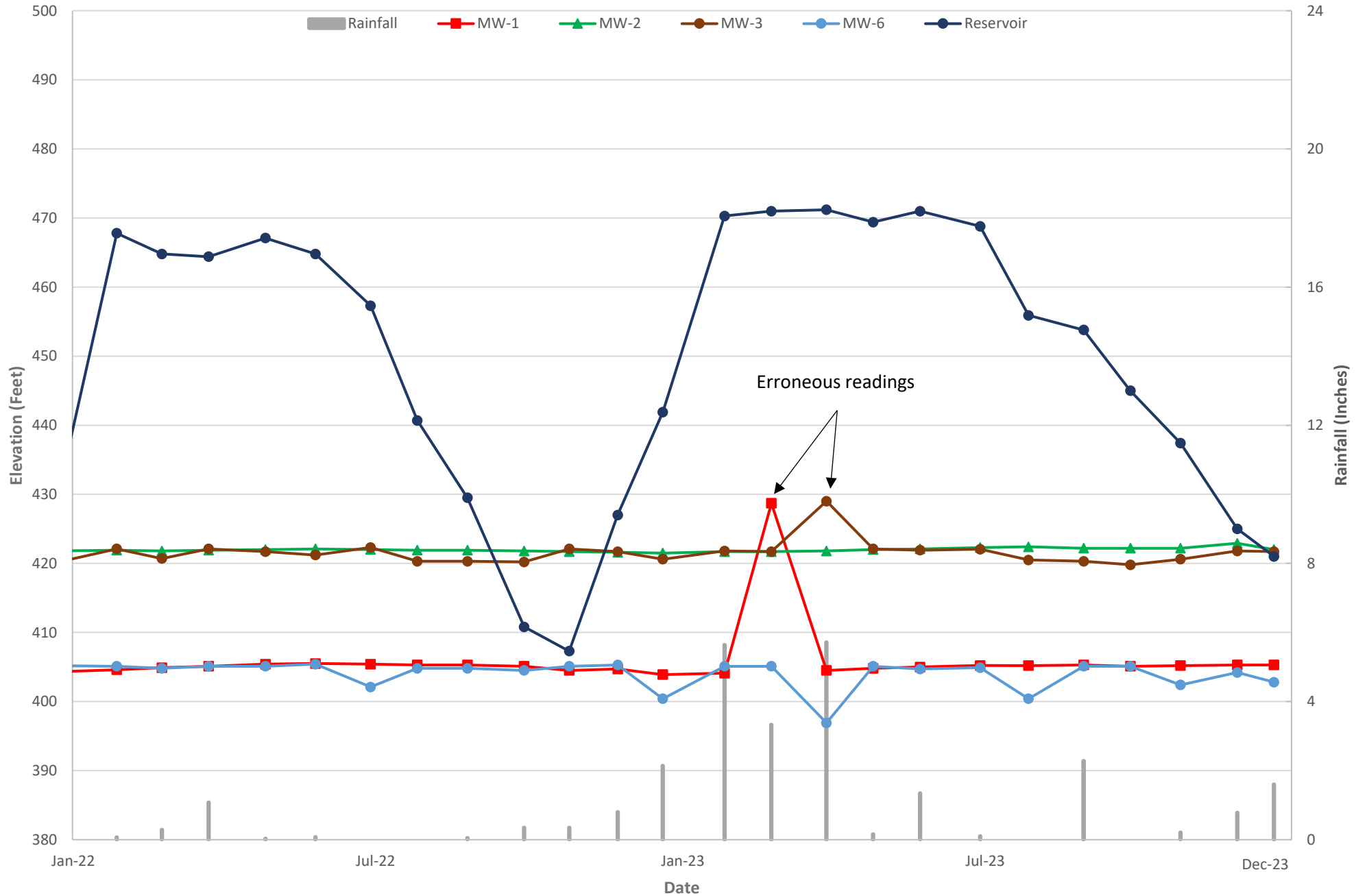


Figure 10
 SAN JOAQUIN DAM
 2-YR MONITORING WELL AND RESERVOIR WATER SURFACE ELEVATIONS
 MONITORING WELLS MW-4, and MW-5
 JANUARY 2022 THROUGH DECEMBER 2023

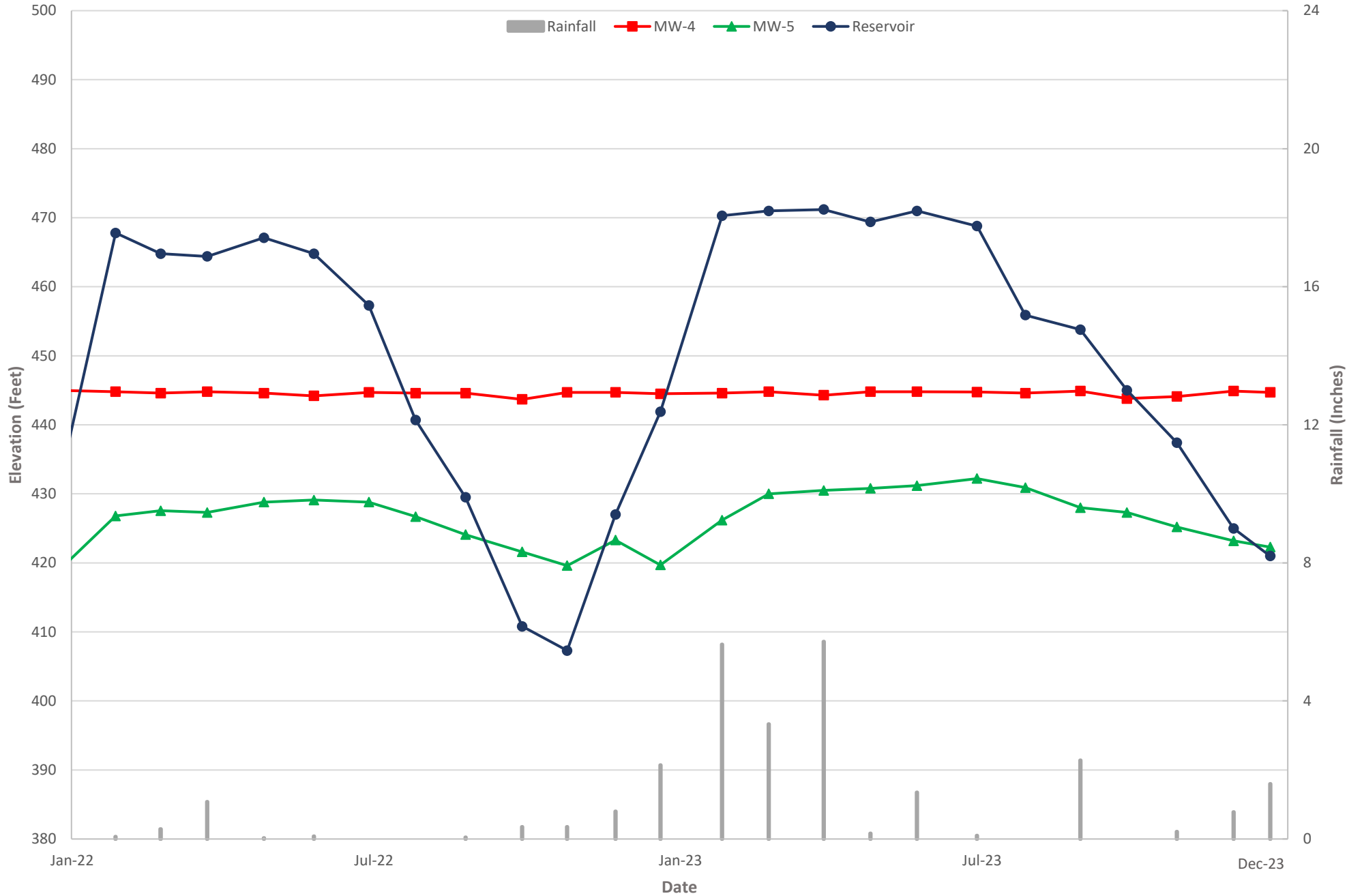


Figure 11
 SAN JOAQUIN DAM
 2-YR MONITORING WELL AND RESERVOIR WATER SURFACE ELEVATIONS
 MONITORING WELLS MW-7, and MW-8
 JANUARY 2022 THROUGH DECEMBER 2023

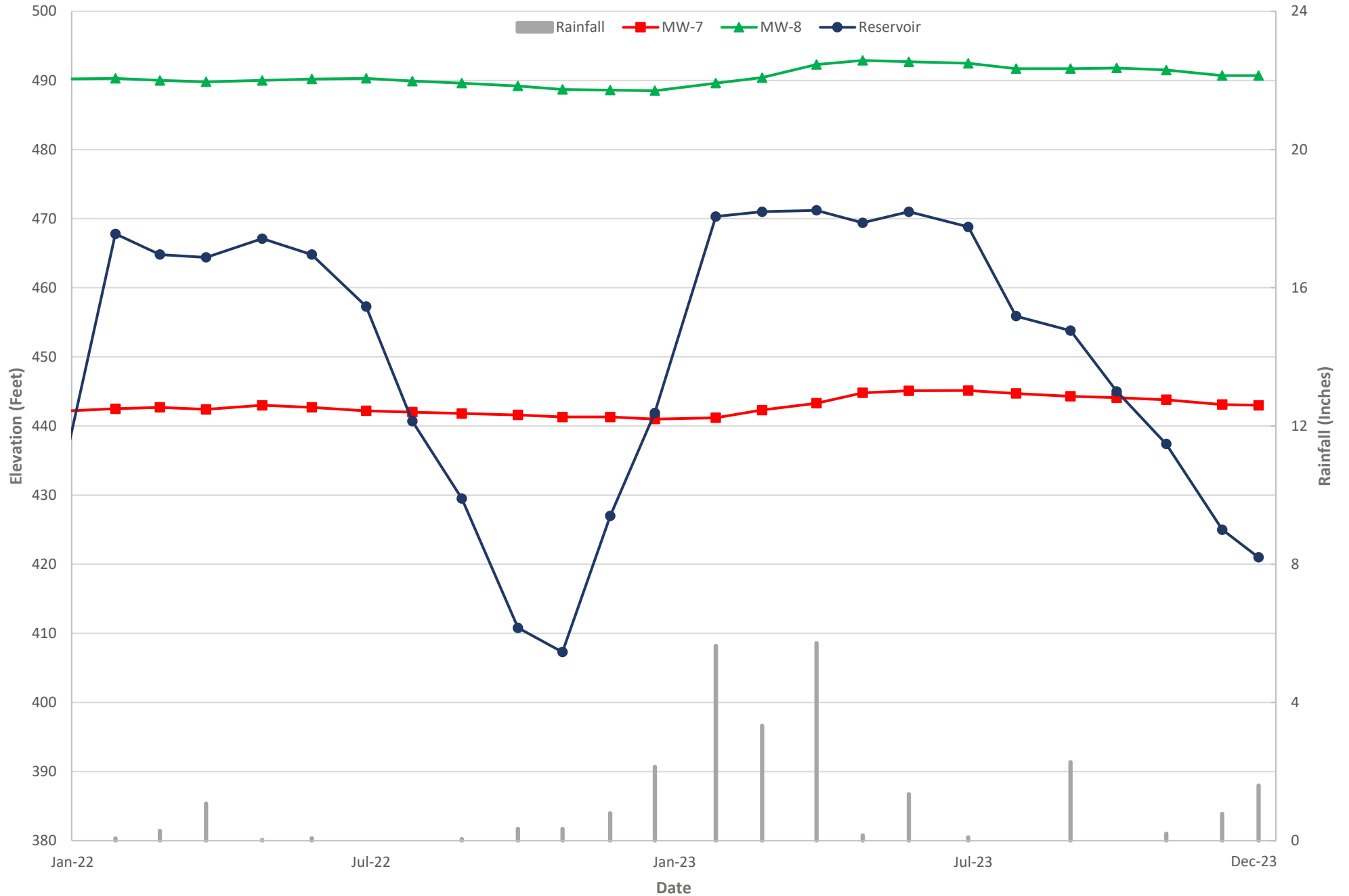


Figure 12
 SAN JOAQUIN DAM
 HISTORICAL OPEN WELL PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
 OPEN WELL PIEZOMETERS CP-1A, CP-1B, CP-3A, and CP-3B
 JANUARY 2013 THROUGH DECEMBER 2023

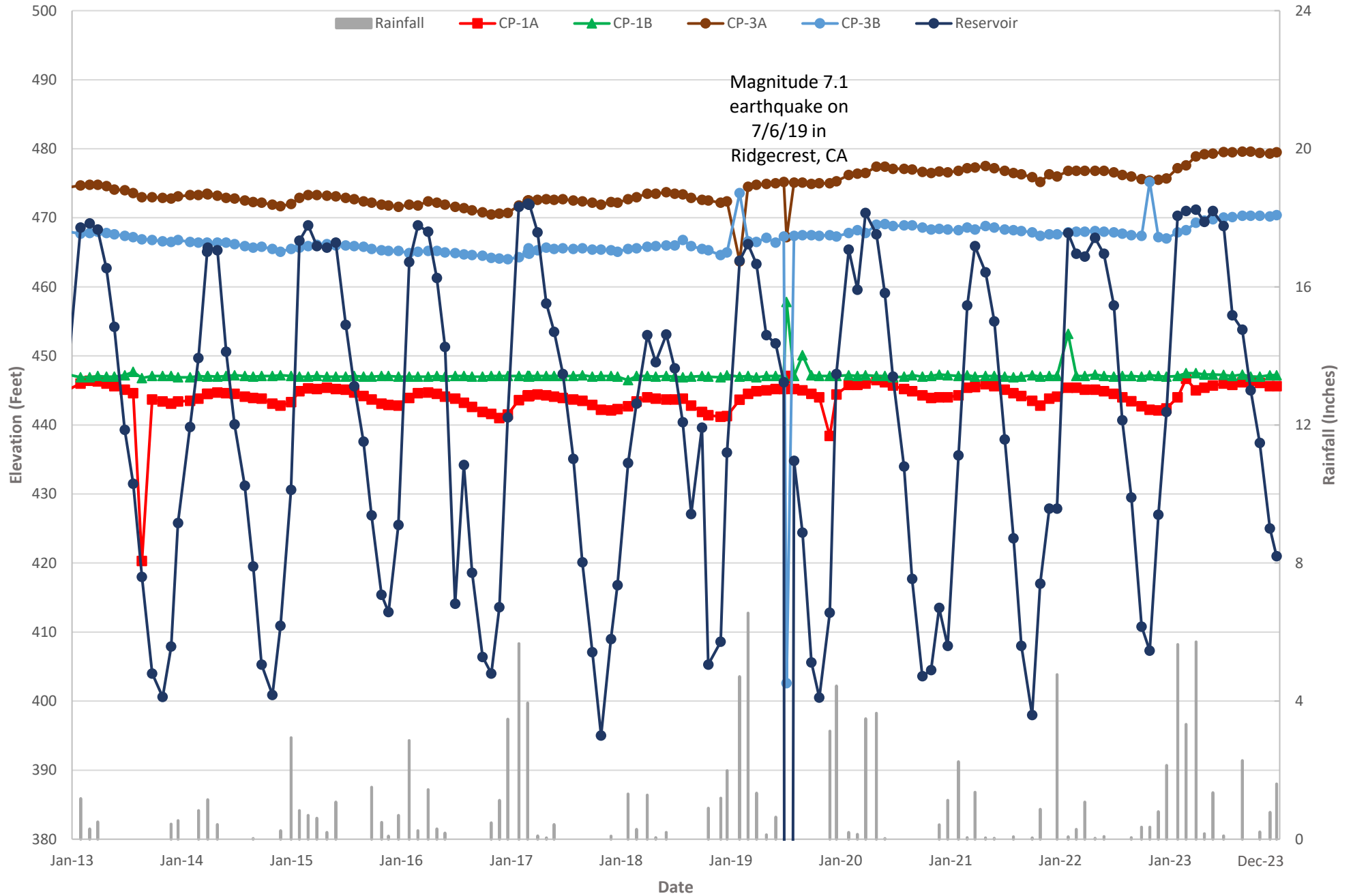


Figure 13
 SAN JOAQUIN DAM
 HISTORICAL OPEN WELL PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
 OPEN WELL PIEZOMETERS CP-2A, and CP-2B
 JANUARY 2013 THROUGH DECEMBER 2023

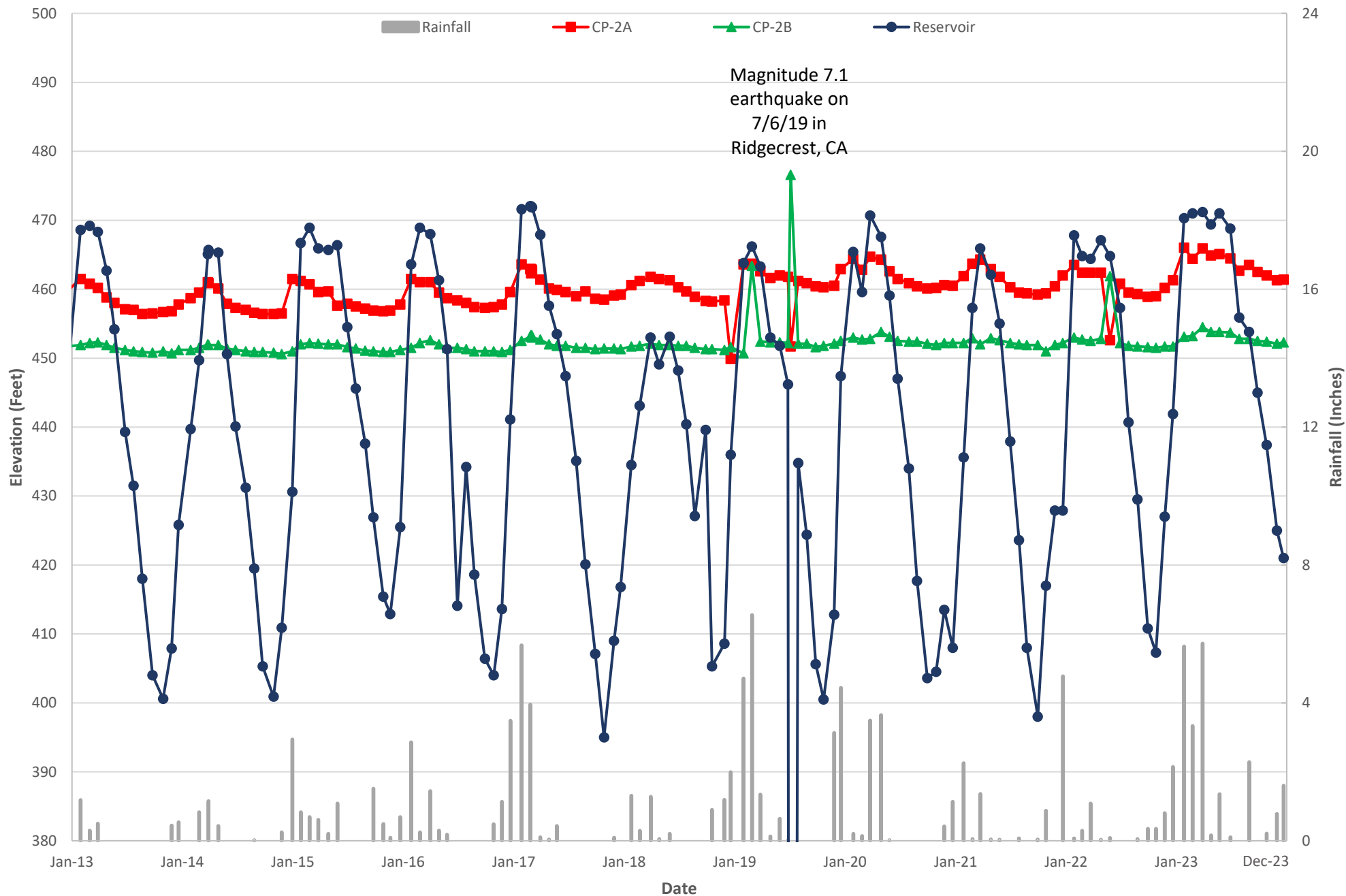


Figure 14
 SAN JOAQUIN DAM
 HISTORICAL MONITORING WELL AND RESERVOIR WATER SURFACE ELEVATIONS
 MONITORING WELLS MW-1, MW-2, MW-3, and MW-6
 JANUARY 2013 THROUGH DECEMBER 2023

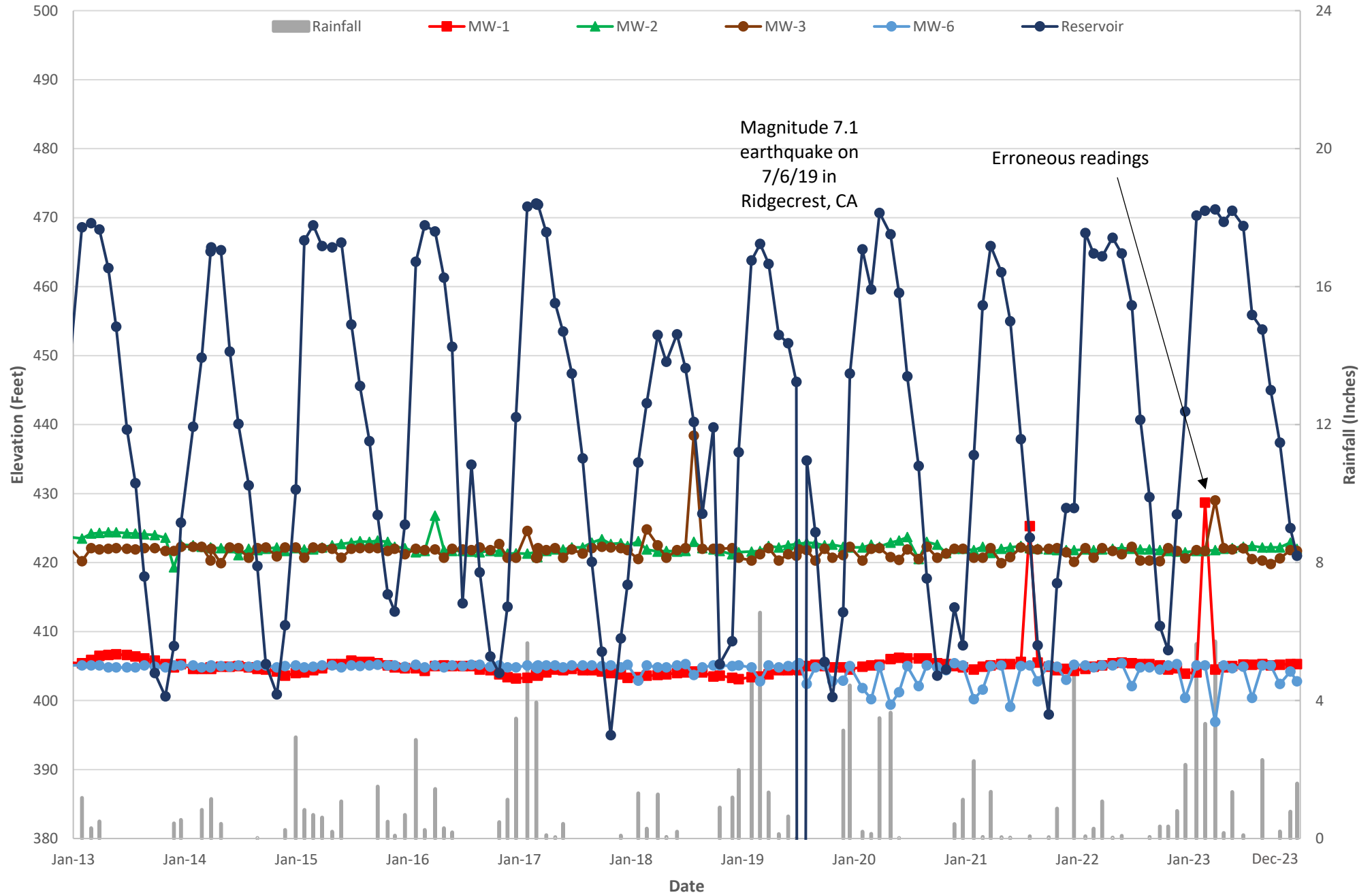


Figure 15
 SAN JOAQUIN DAM
 HISTORICAL MONITORING WELL AND RESERVOIR WATER SURFACE ELEVATIONS
 MONITORING WELLS MW-4, and MW-5
 JANUARY 2013 THROUGH DECEMBER 2023

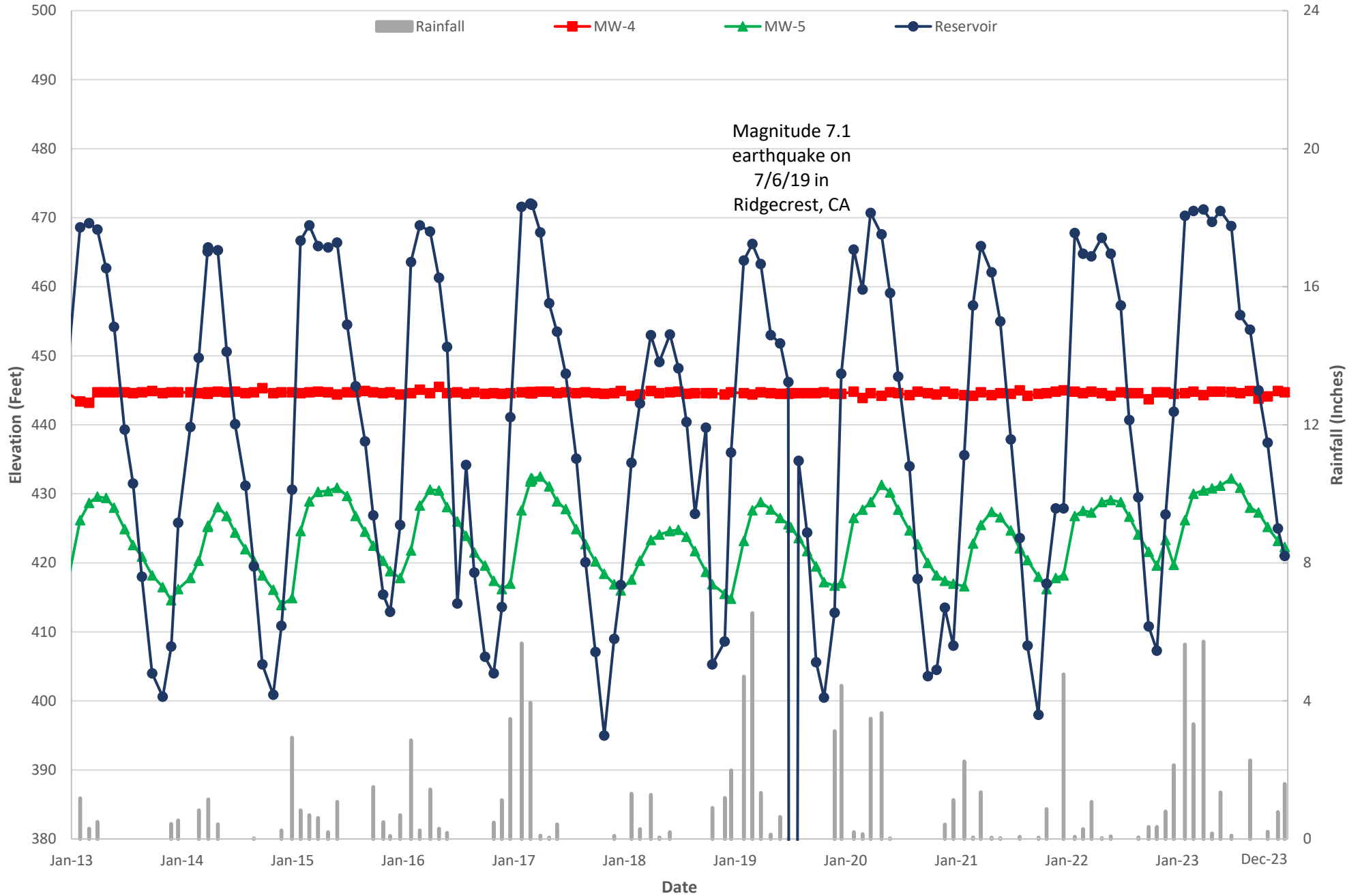


Figure 16
 SAN JOAQUIN DAM
 HISTORICAL MONITORING WELL AND RESERVOIR WATER SURFACE ELEVATIONS
 MONITORING WELLS MW-7, and MW-8
 JANUARY 2013 THROUGH DECEMBER 2023

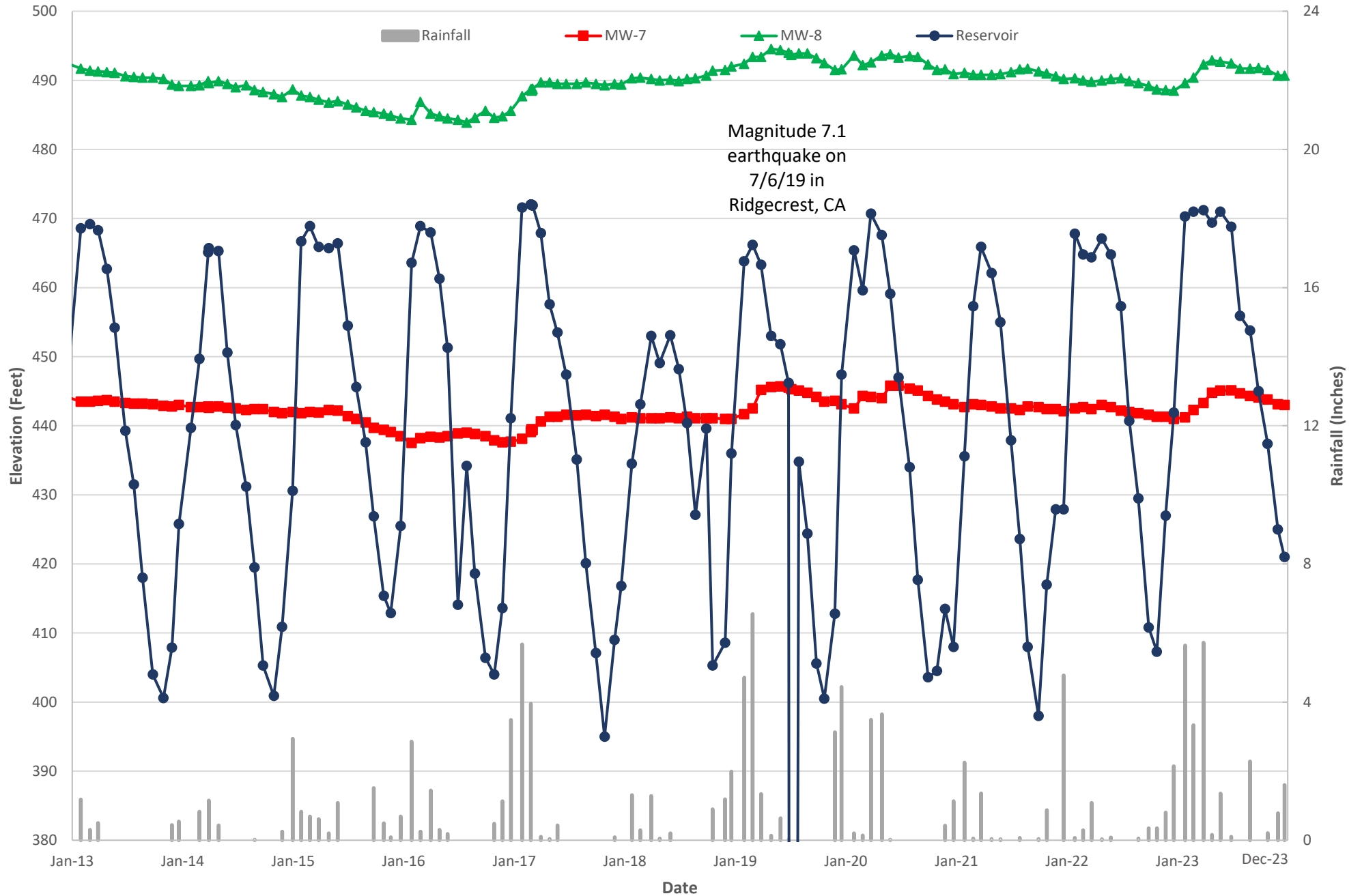


Figure 17
 SAN JOAQUIN DAM
 2-YR VIBRATING WIRE PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
 VIBRATING WIRE PIEZOMETERS VB-1, VB-2, VB-5, and VB-6
 JANUARY 2022 THROUGH DECEMBER 2023

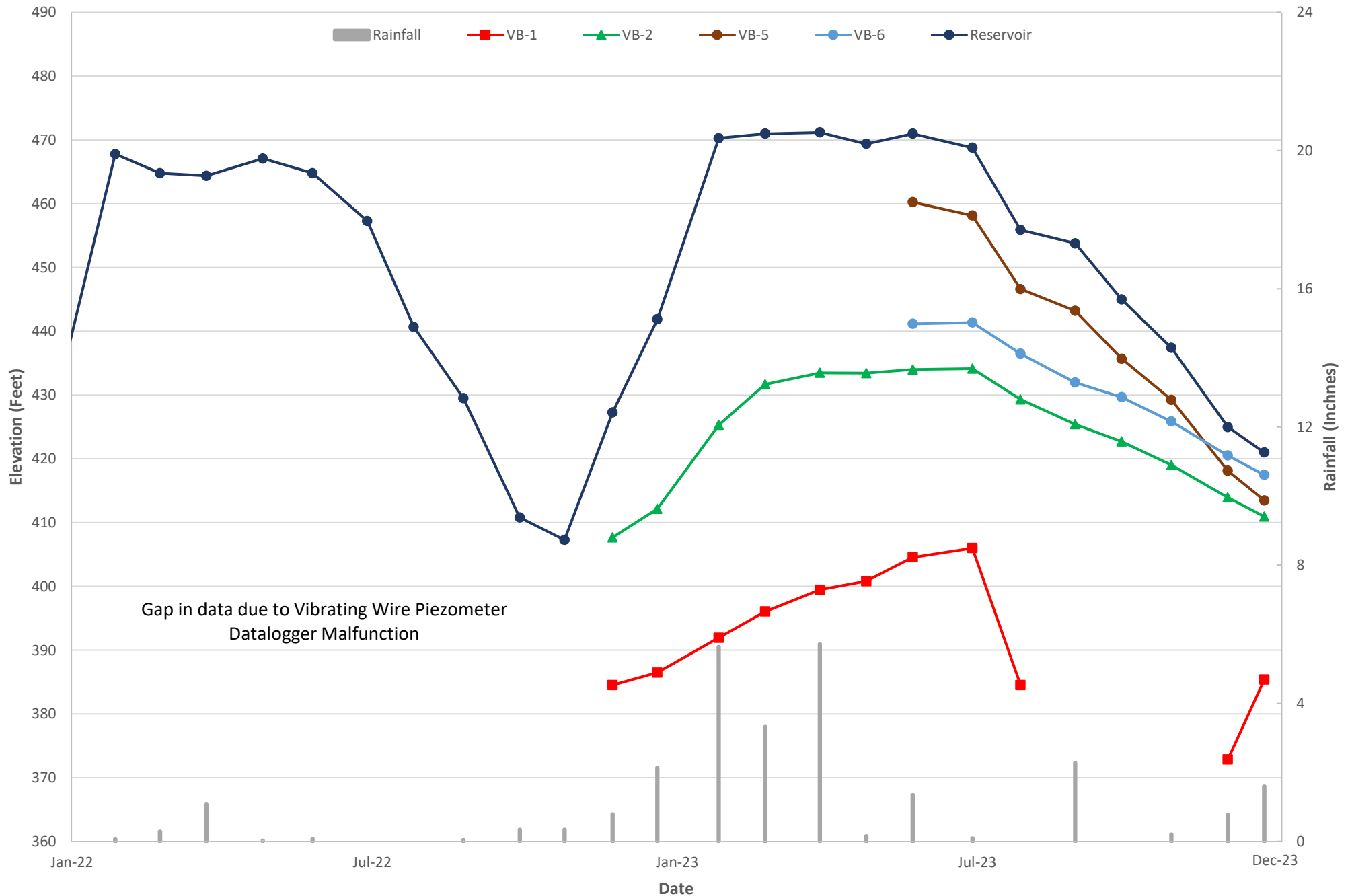


Figure 18
 SAN JOAQUIN DAM
 2-YR VIBRATING WIRE PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
 VIBRATING WIRE PIEZOMETERS VB-3, VB-4, VB-7, and VB-8
 JANUARY 2022 THROUGH DECEMBER 2023

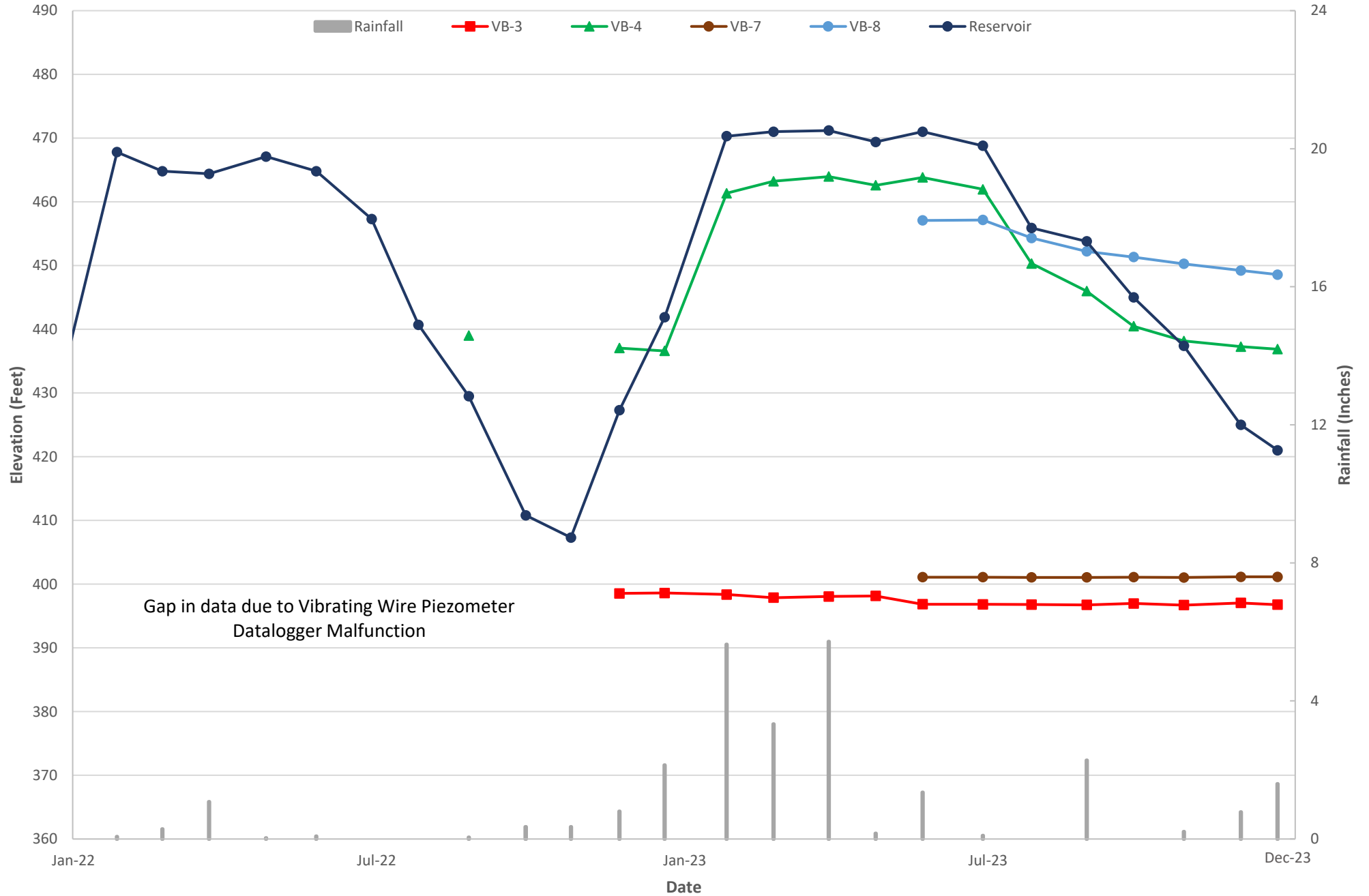


Figure 19
 SAN JOAQUIN DAM
 HISTORICAL VIBRATING WIRE PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
 VIBRATING WIRE PIEZOMETERS VB-1, VB-2, VB-5, and VB-6
 JANUARY 2013 THROUGH DECEMBER 2023

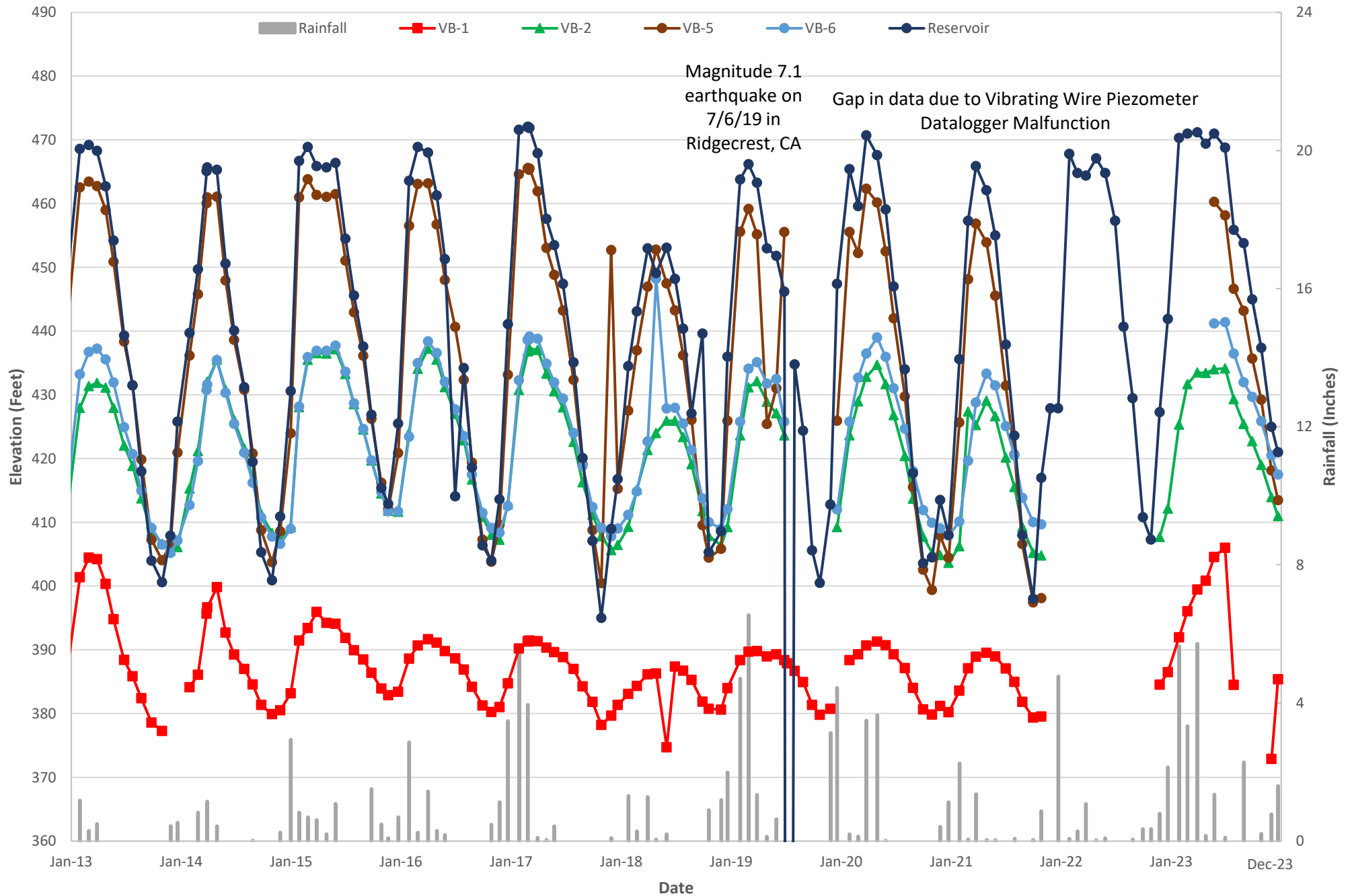


Figure 20
 SAN JOAQUIN DAM
 HISTORICAL VIBRATING WIRE PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
 VIBRATING WIRE PIEZOMETERS VB-3, VB-4, VB-7, and VB-8
 JANUARY 2013 THROUGH DECEMBER 2023

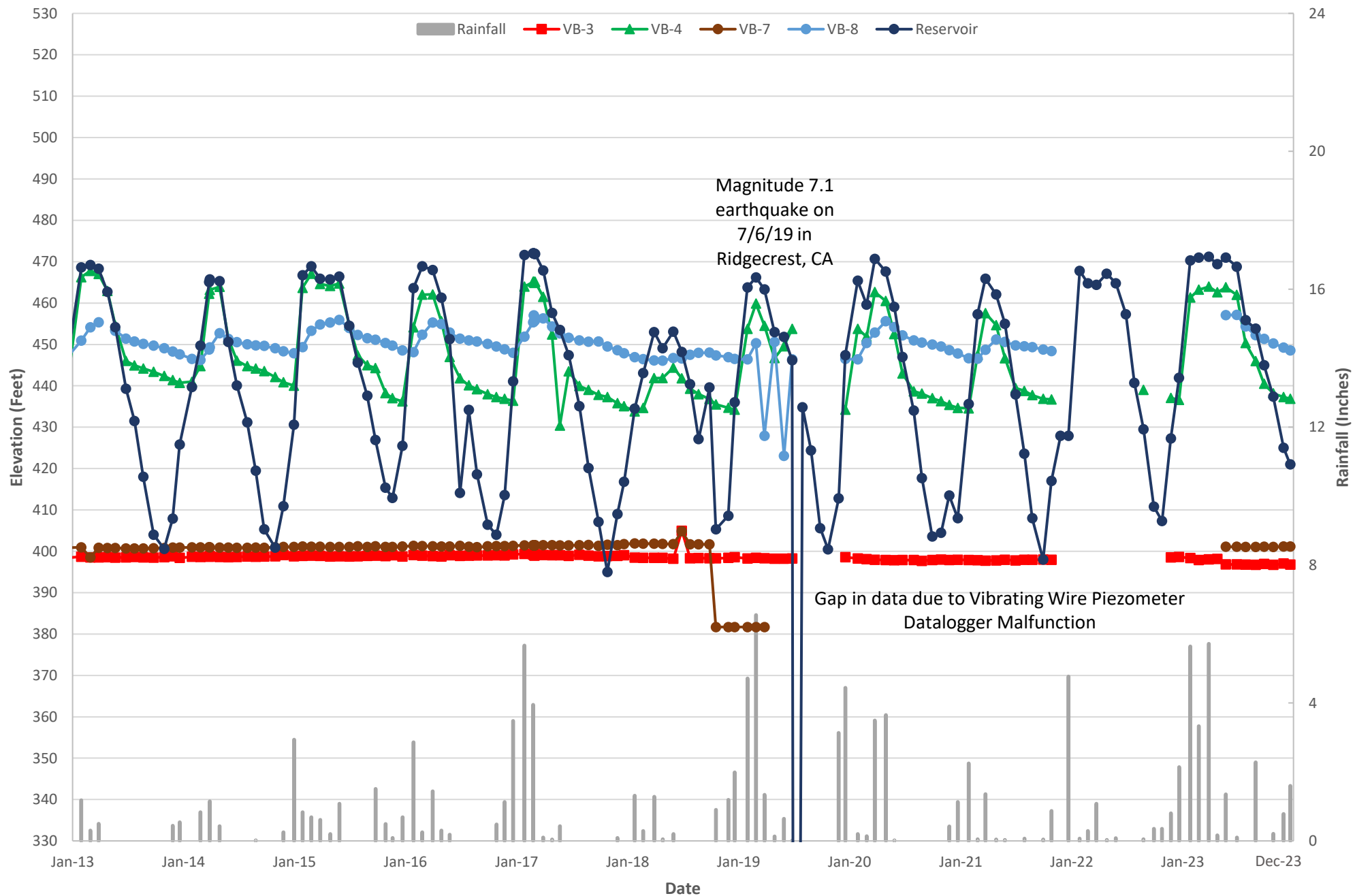


Figure 21
 SAN JOAQUIN DAM
 2-YR PNEUMATIC PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
 PNEUMATIC PIEZOMETERS C-1, C-2, C-3, and C-4
 JANUARY 2022 THROUGH DECEMBER 2023

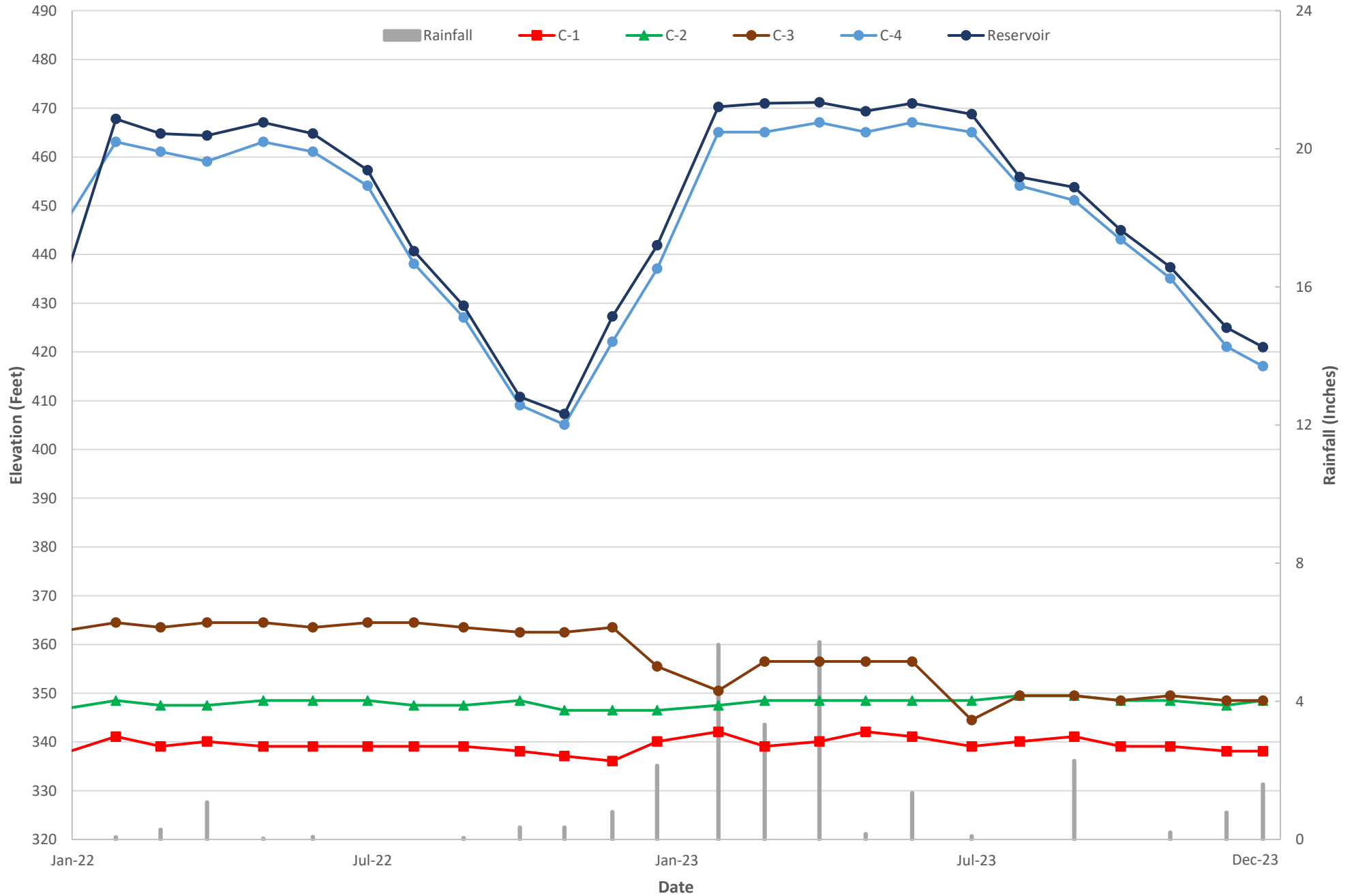


Figure 22
 SAN JOAQUIN DAM
 2-YR PNEUMATIC PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
 PNEUMATIC PIEZOMETERS C-5, C-6, C-7, and C-8
 JANUARY 2022 THROUGH DECEMBER 2023

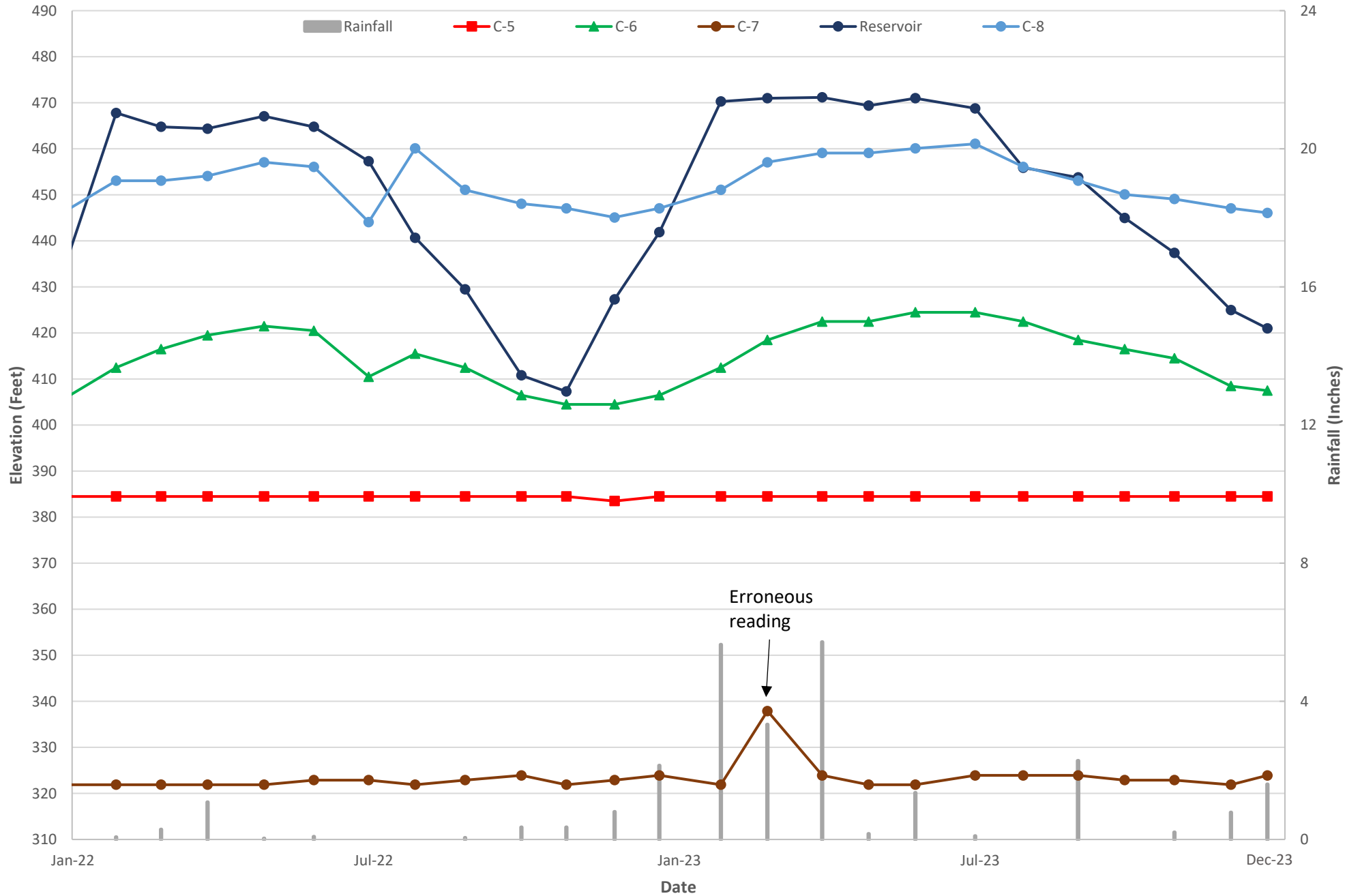


Figure 23
SAN JOAQUIN DAM
2-YR PNEUMATIC PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
PNEUMATIC PIEZOMETERS C-9, RR-2, LR-1,LR-2,LR-3, and LR-4
JANUARY 2022 THROUGH DECEMBER 2023

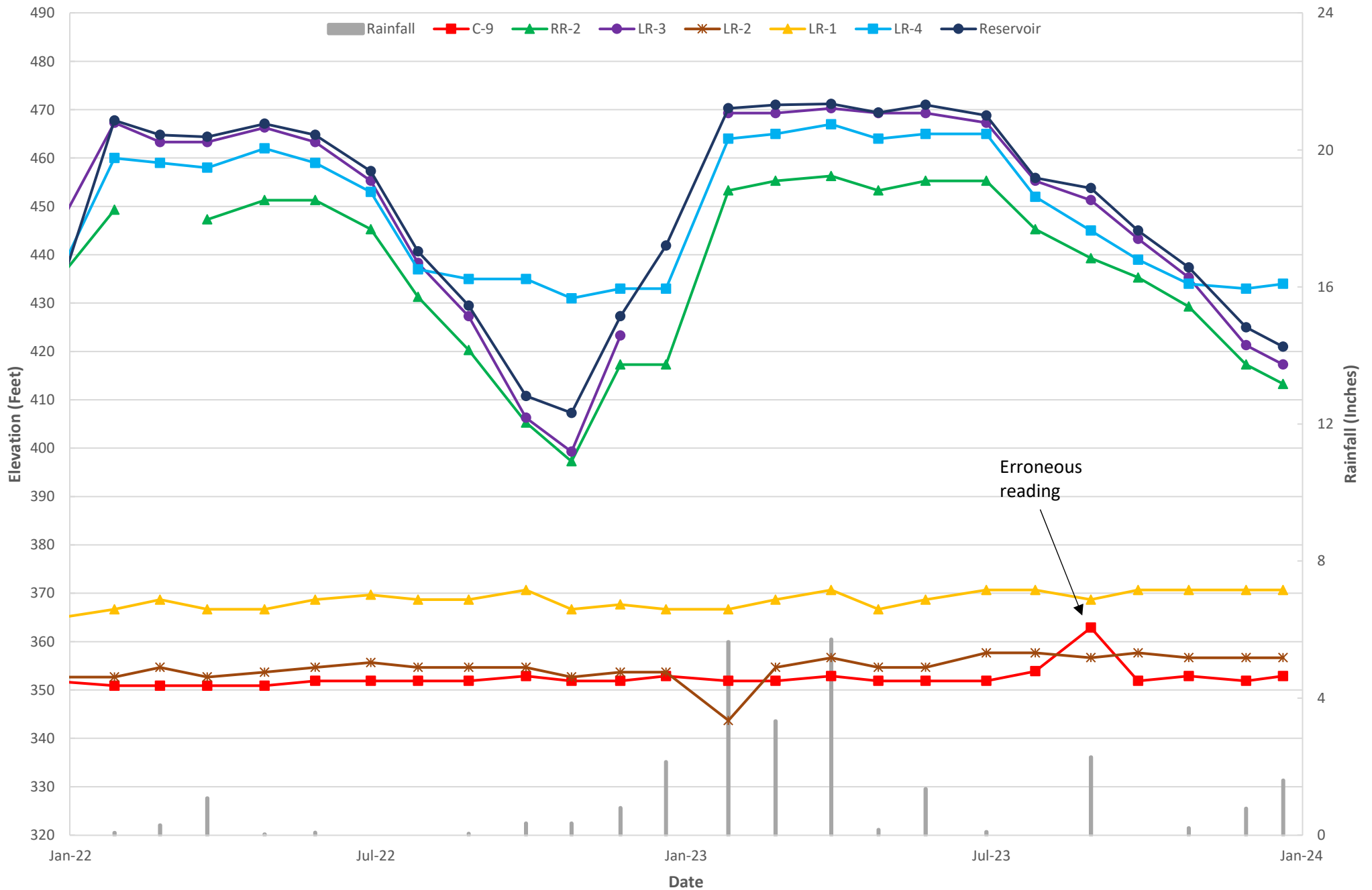


Figure 24
 SAN JOAQUIN DAM
 2-YR PNEUMATIC PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
 PNEUMATIC PIEZOMETERS LA-1 and LA-2
 JANUARY 2022 THROUGH DECEMBER 2023

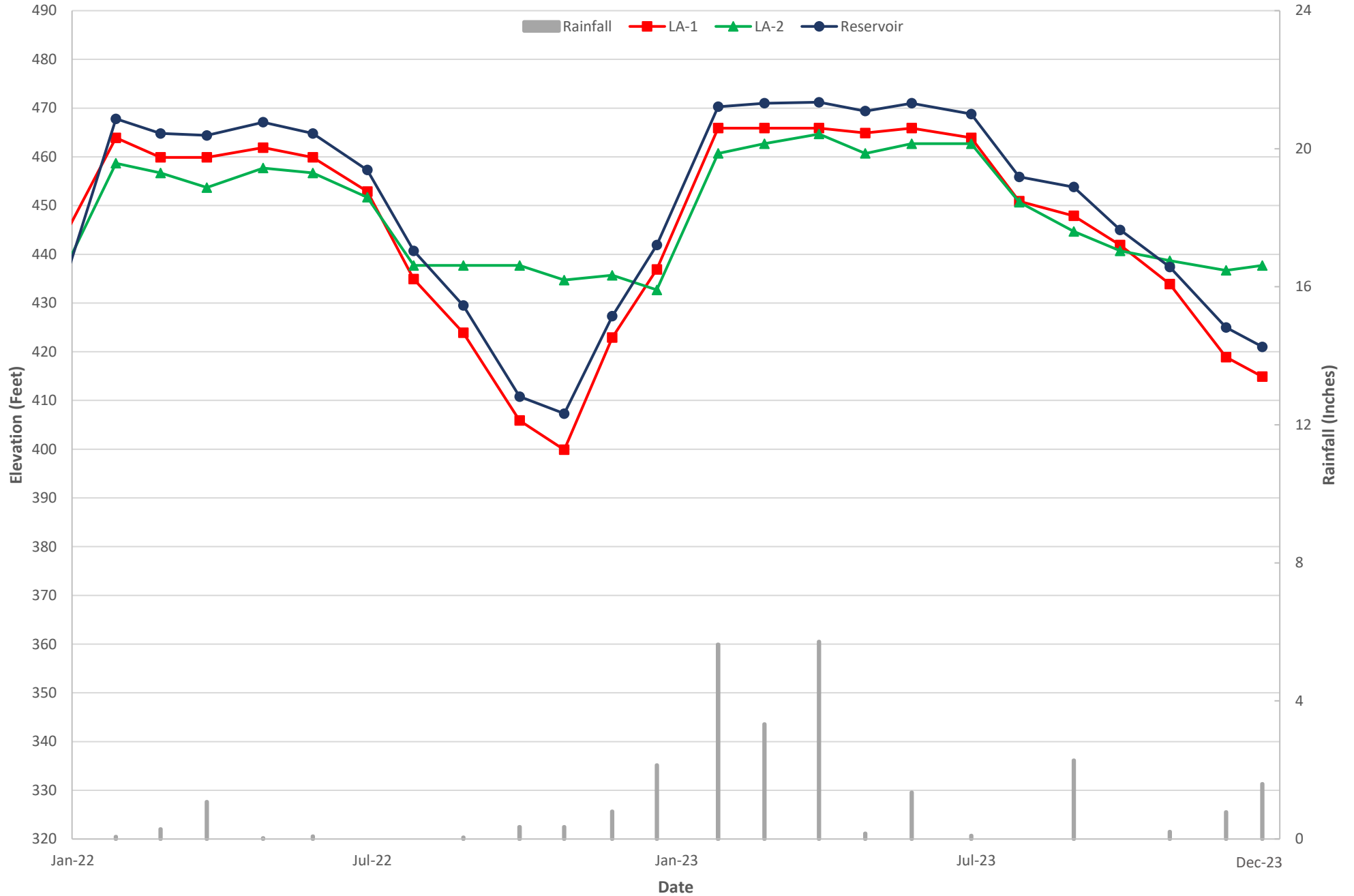


Figure 25
 SAN JOAQUIN DAM
 2-YR PNEUMATIC PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
 PNEUMATIC PIEZOMETERS RA-1, RA-2, RA-3, and RA-4
 JANUARY 2022 THROUGH DECEMBER 2023

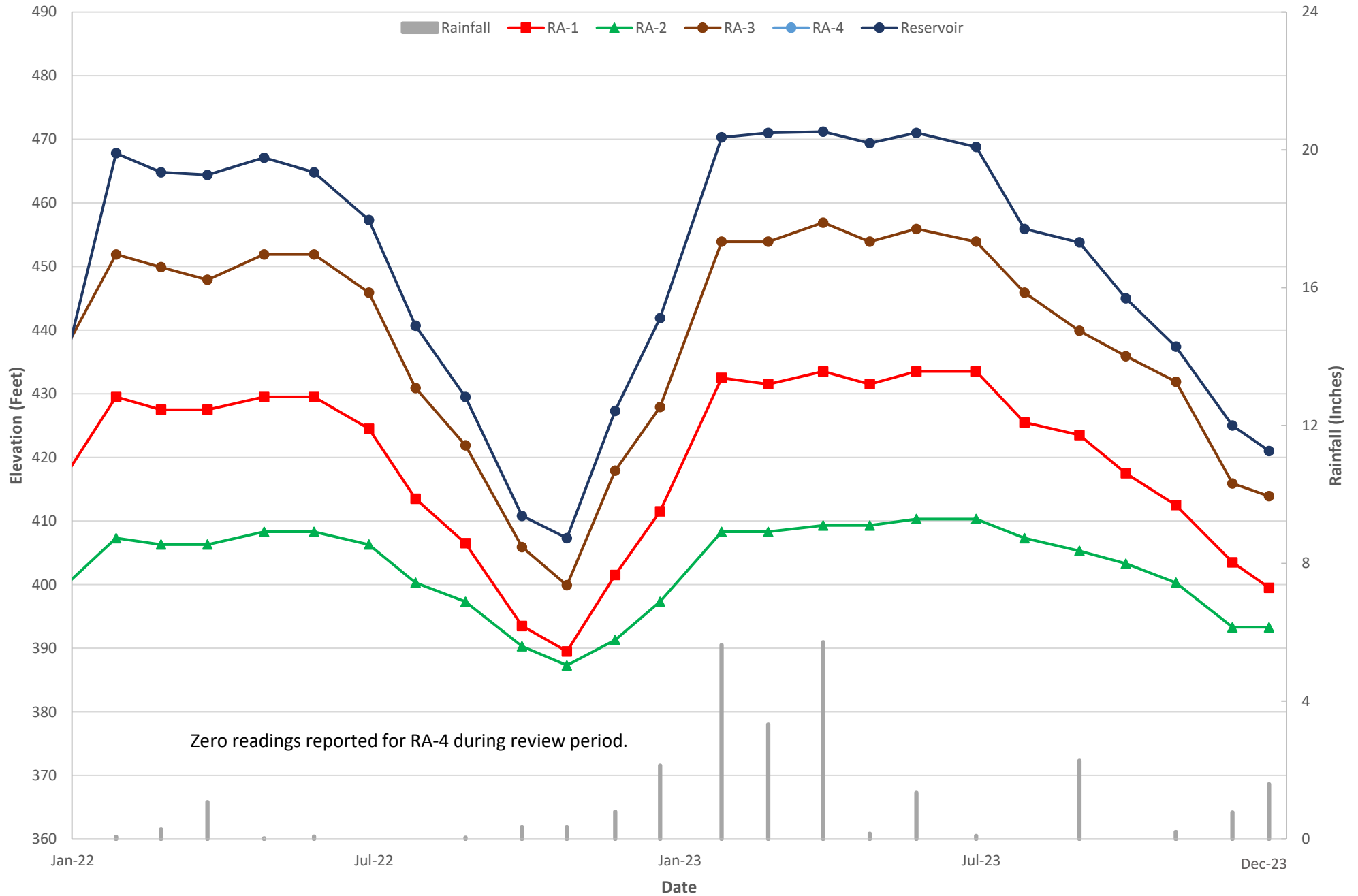


Figure 26
 SAN JOAQUIN DAM
 HISTORICAL PNEUMATIC PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
 PNEUMATIC PIEZOMETERS C-1, C-2, C-3, and C-4
 JANUARY 2013 THROUGH DECEMBER 2023

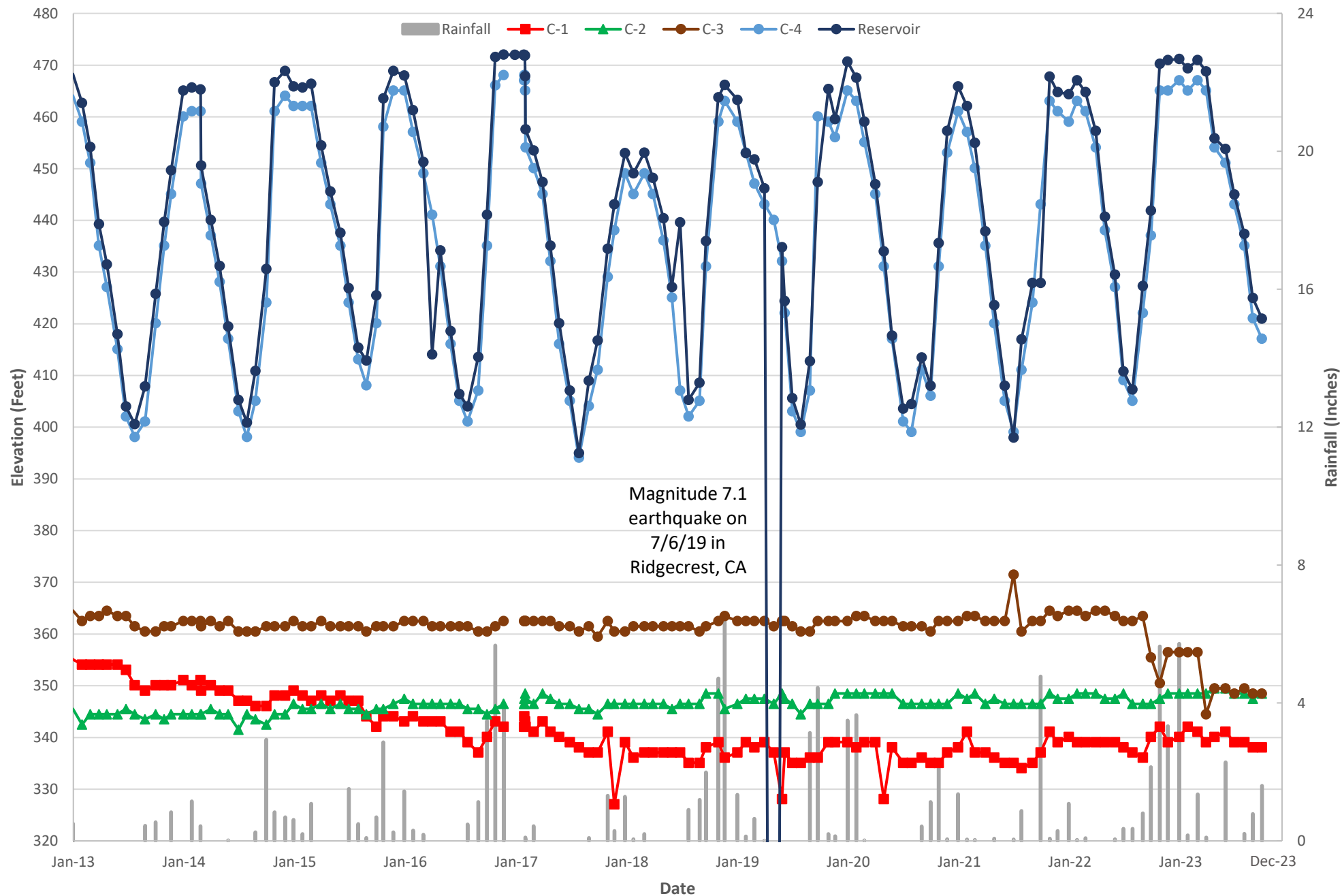


Figure 27
 SAN JOAQUIN DAM
 HISTORICAL PNEUMATIC PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
 PNEUMATIC PIEZOMETERS C-5, C-6, C-7, and C-8
 JANUARY 2013 THROUGH DECEMBER 2023

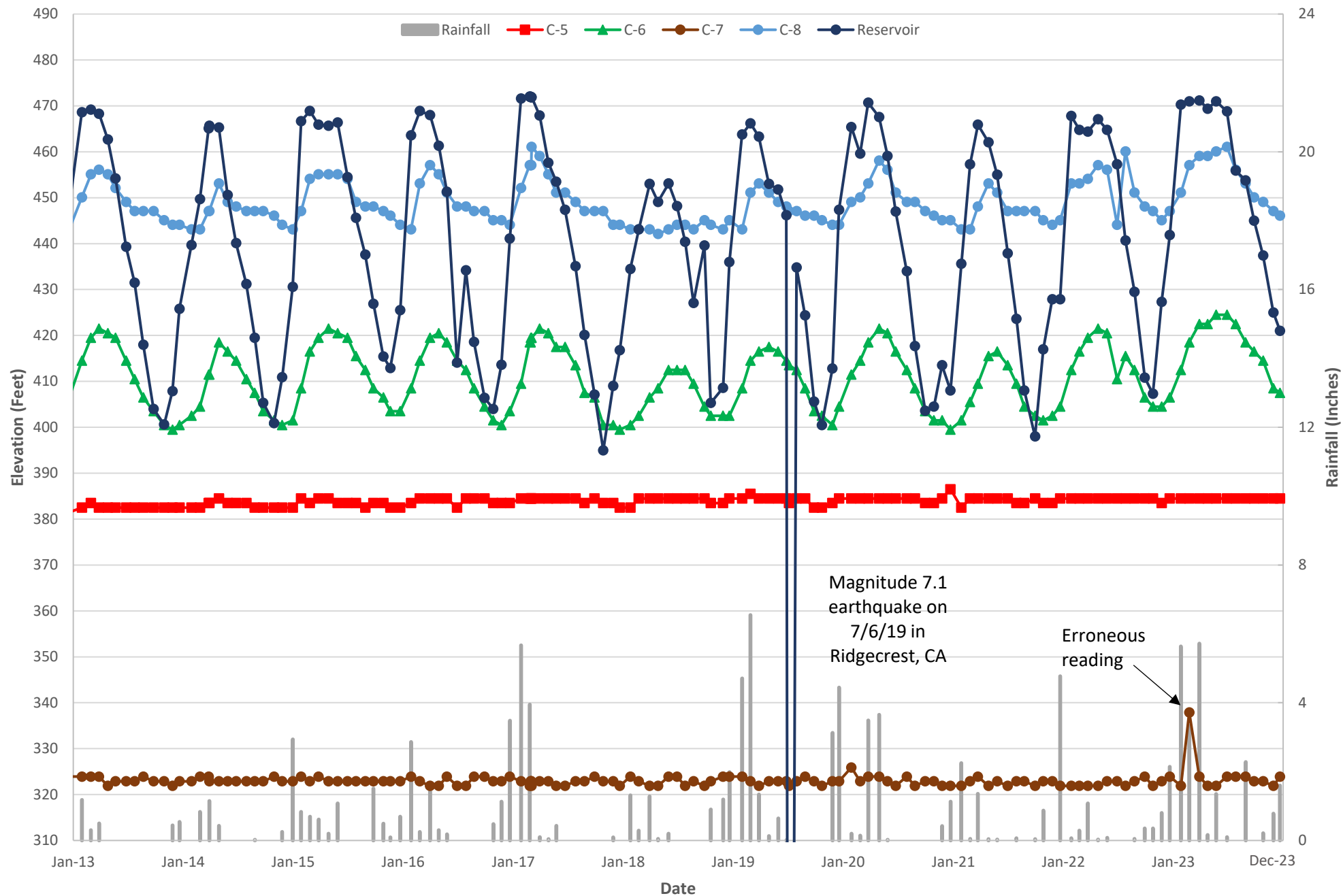


Figure 28
 SAN JOAQUIN DAM
 HISTORICAL PNEUMATIC PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
 PNEUMATIC PIEZOMETERS C-9, RR-2, LR-1,LR-2,LR-3, and LR-4
 JANUARY 2013 THROUGH DECEMBER 2023

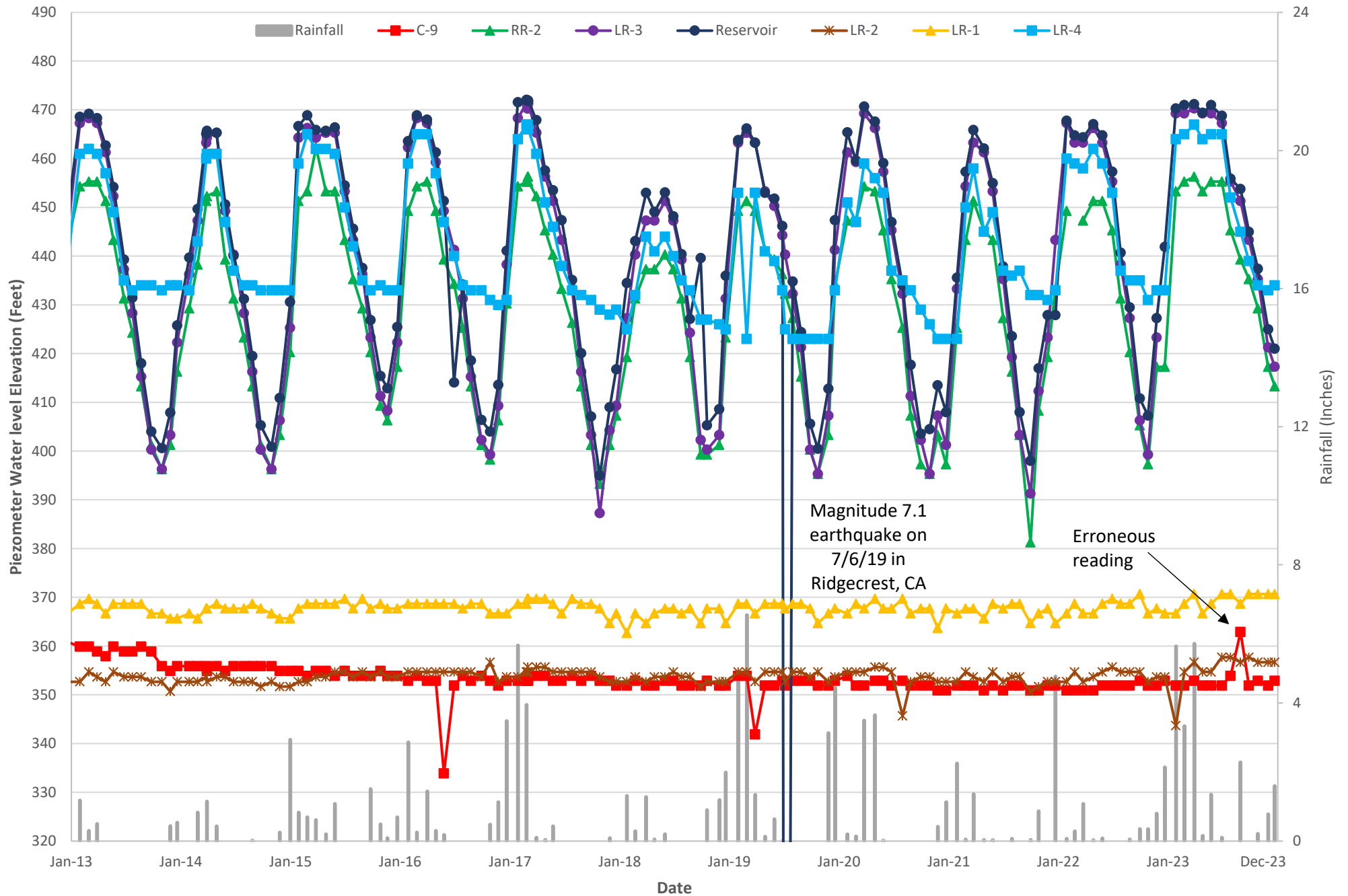


Figure 29
 SAN JOAQUIN DAM
 HISTORICAL PNEUMATIC PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
 PNEUMATIC PIEZOMETERS LA-1, and LA-2
 JANUARY 2013 THROUGH DECEMBER 2023

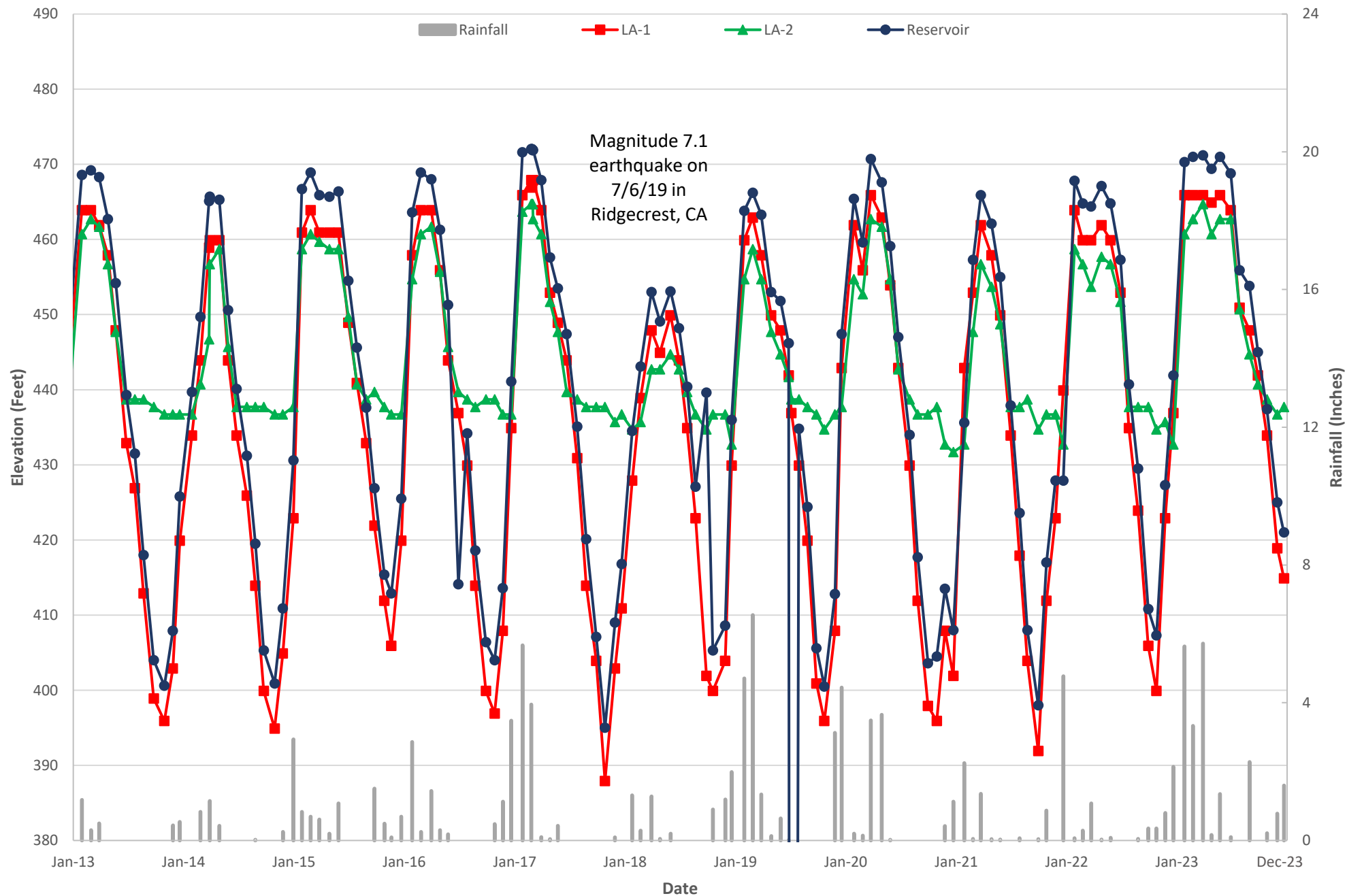


Figure 30
 SAN JOAQUIN DAM
 HISTORICAL PNEUMATIC PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
 PNEUMATIC PIEZOMETERS RA-1, RA-2, RA-3, and RA-4
 JANUARY 2013 THROUGH DECEMBER 2023

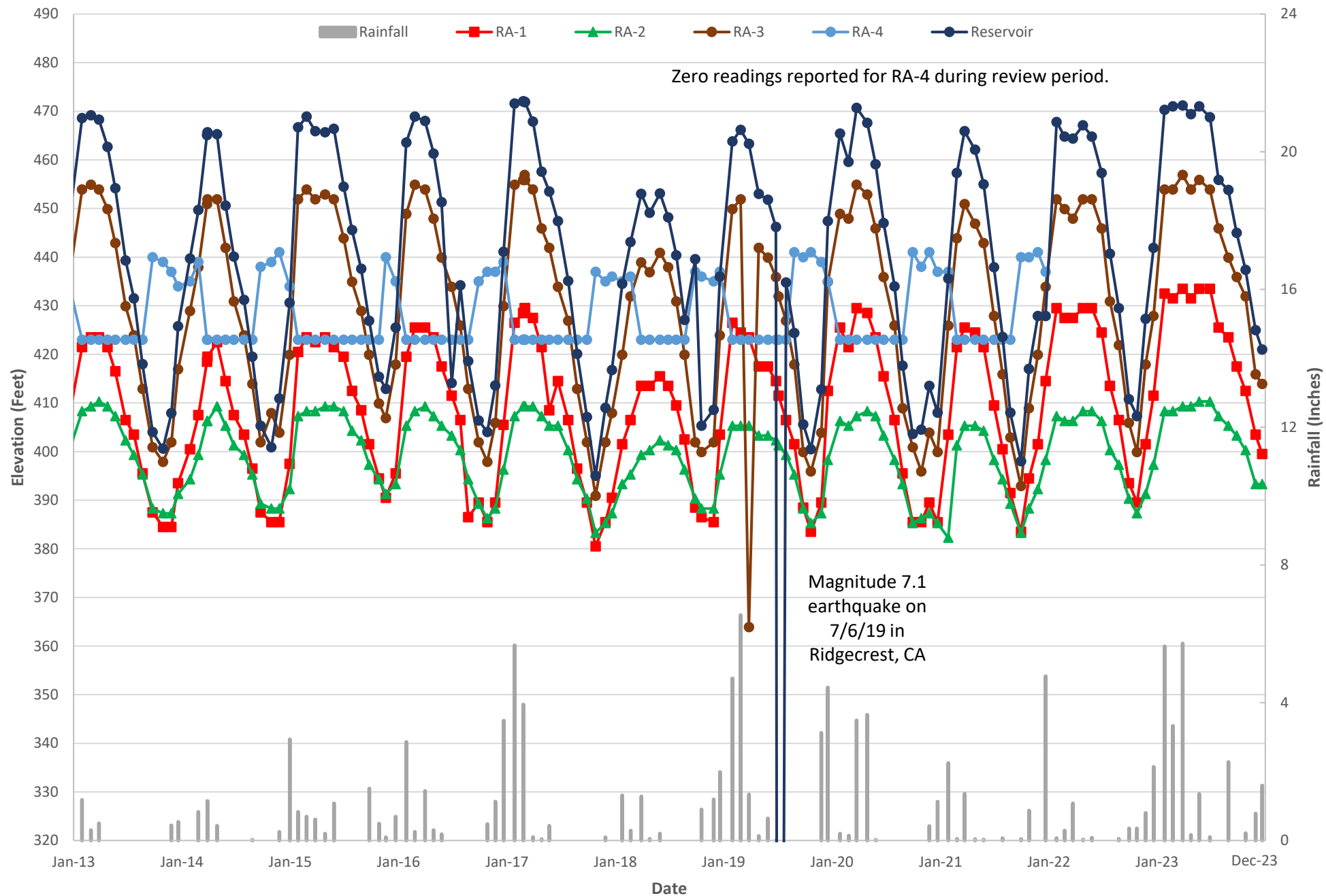


Figure 31
 SAN JOAQUIN DAM
 2-YR SEEPAGE, RESERVOIR WATER SURFACE ELEVATIONS, AND RAINFALL
 EAST DRAIN, WEST DRAIN, FILTER DRAIN, RIGHT GROIN DRAIN
 JANUARY 2022 THROUGH DECEMBER 2023

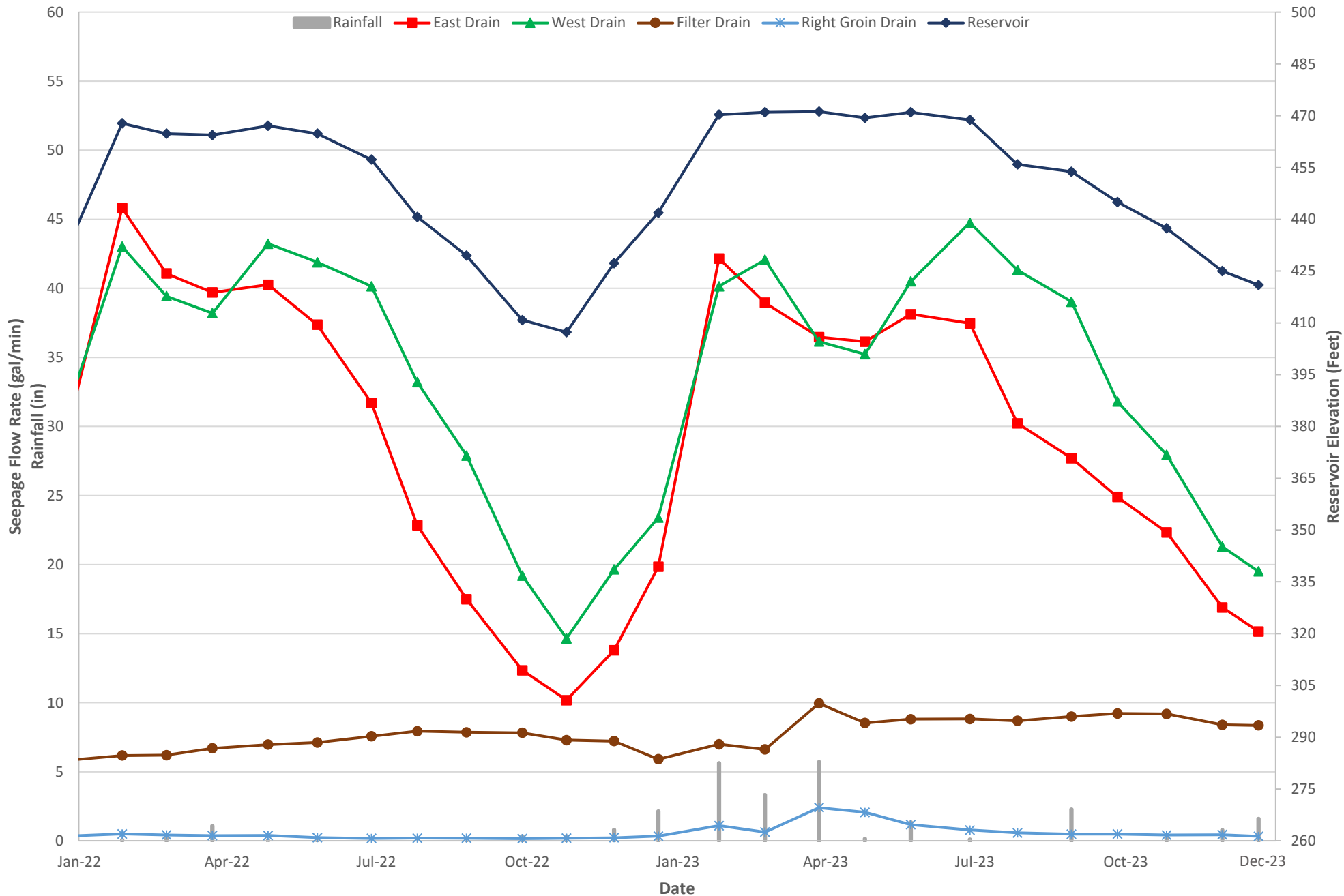


Figure 32
SAN JOAQUIN DAM
2-YR SEEPAGE, RESERVOIR WATER SURFACE ELEVATIONS, AND RAINFALL
UPSTREAM COLLECTOR DRAINS, DOWNSTREAM TOE DRAIN, FLOOR DRAIN
JANUARY 2022 THROUGH DECEMBER 2023

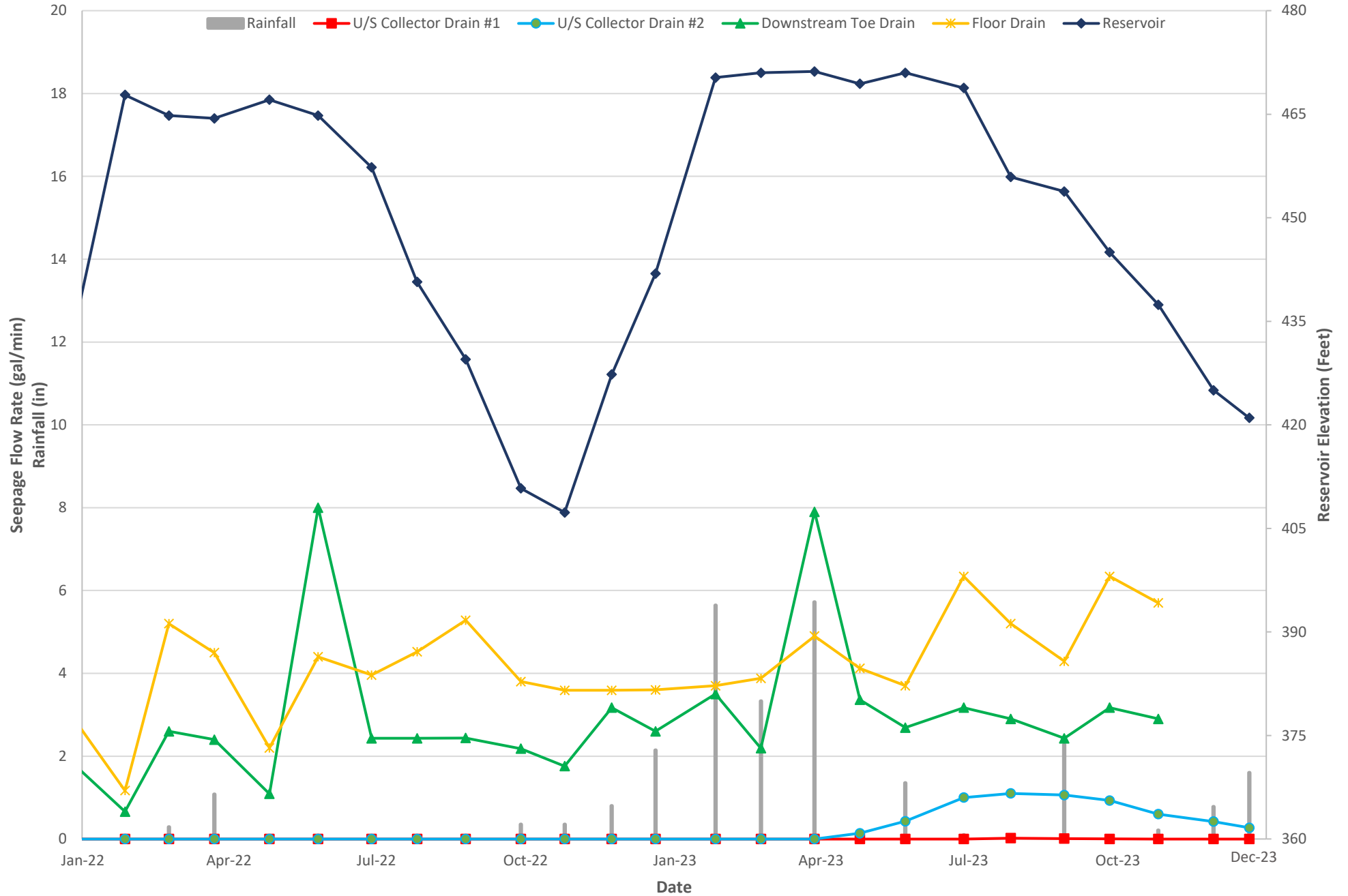


Figure 33
 SAN JOAQUIN DAM
 HISTORICAL SEEPAGE AND RESERVOIR WATER SURFACE ELEVATIONS
 EAST DRAIN, WEST DRAIN, FILTER DRAIN, AND RIGHT GROIN DRAIN
 JANUARY 2013 THROUGH DECEMBER 2023

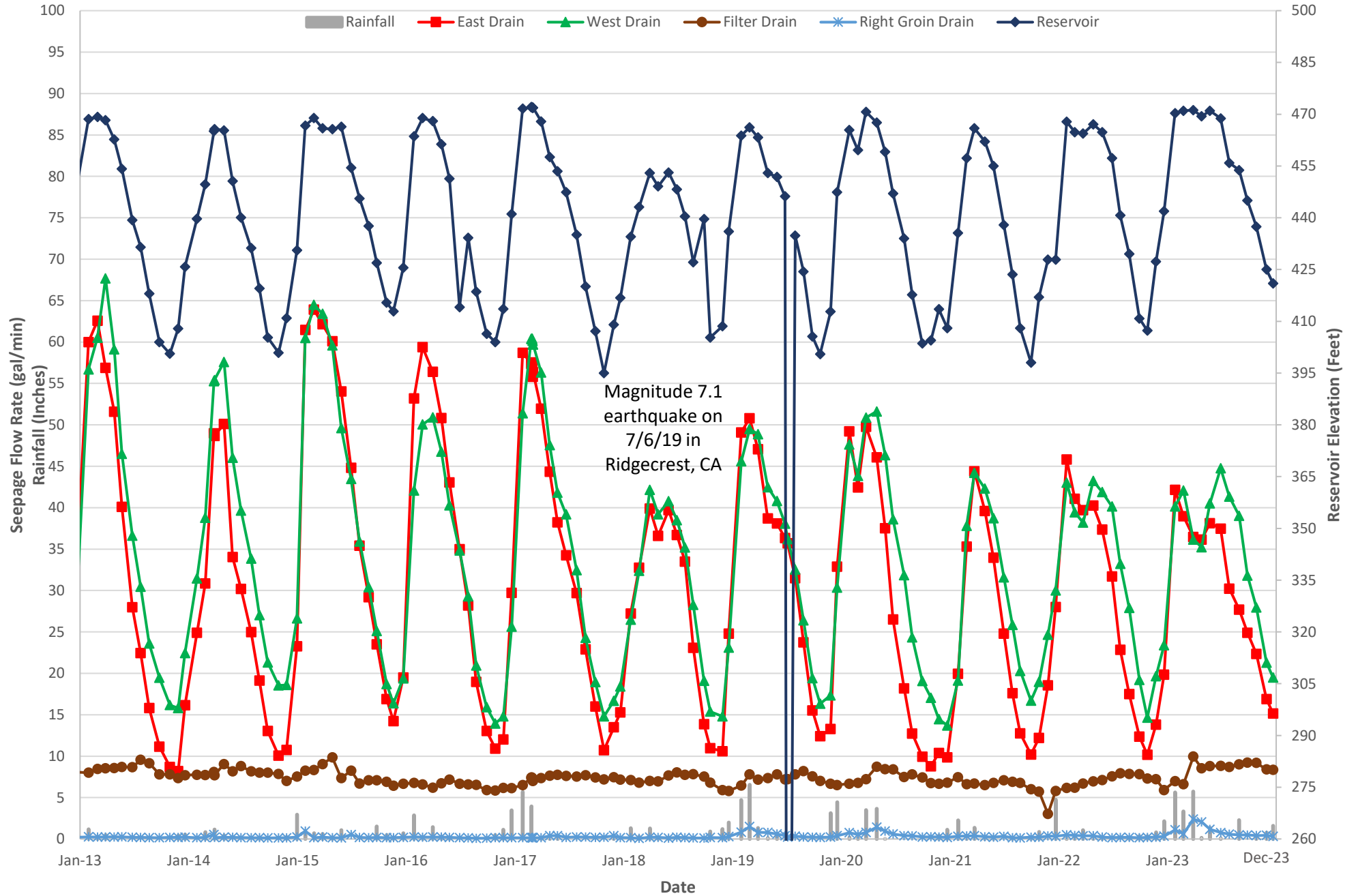


Figure 34
 SAN JOAQUIN DAM
 HISTORICAL SEEPAGE AND RESERVOIR WATER SURFACE ELEVATIONS
 UPSTREAM COLLECTOR DRAINS, DOWNSTREAM TOE DRAIN, AND FLOOR DRAIN
 JANUARY 2013 THROUGH DECEMBER 2023

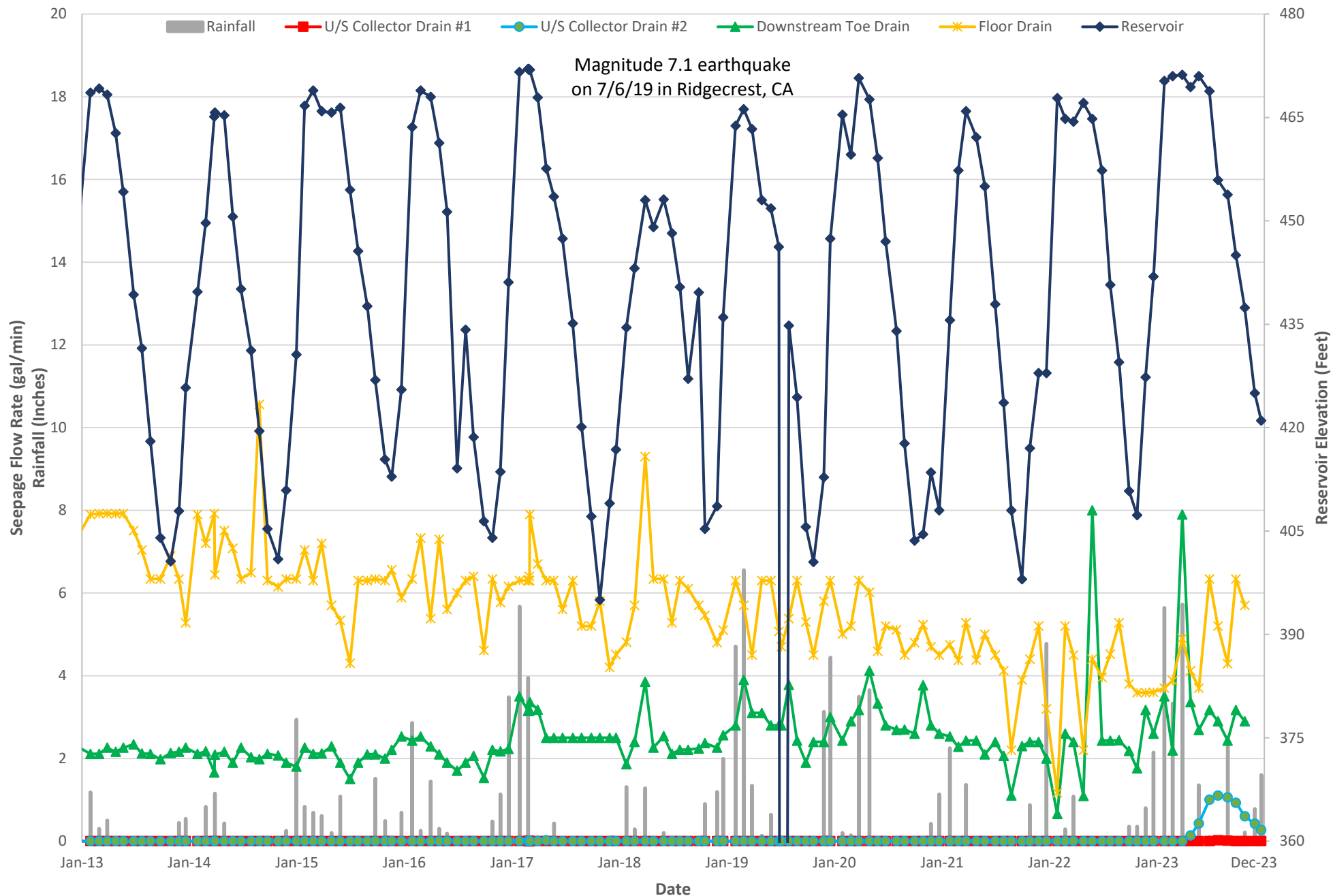


Figure 35
 SAN JOAQUIN DAM
 HISTORICAL HORIZONTAL MOVEMENT
 SURVEY MONUMENTS SA-1, SA-2, AND SA-3
 2006 THROUGH 2023

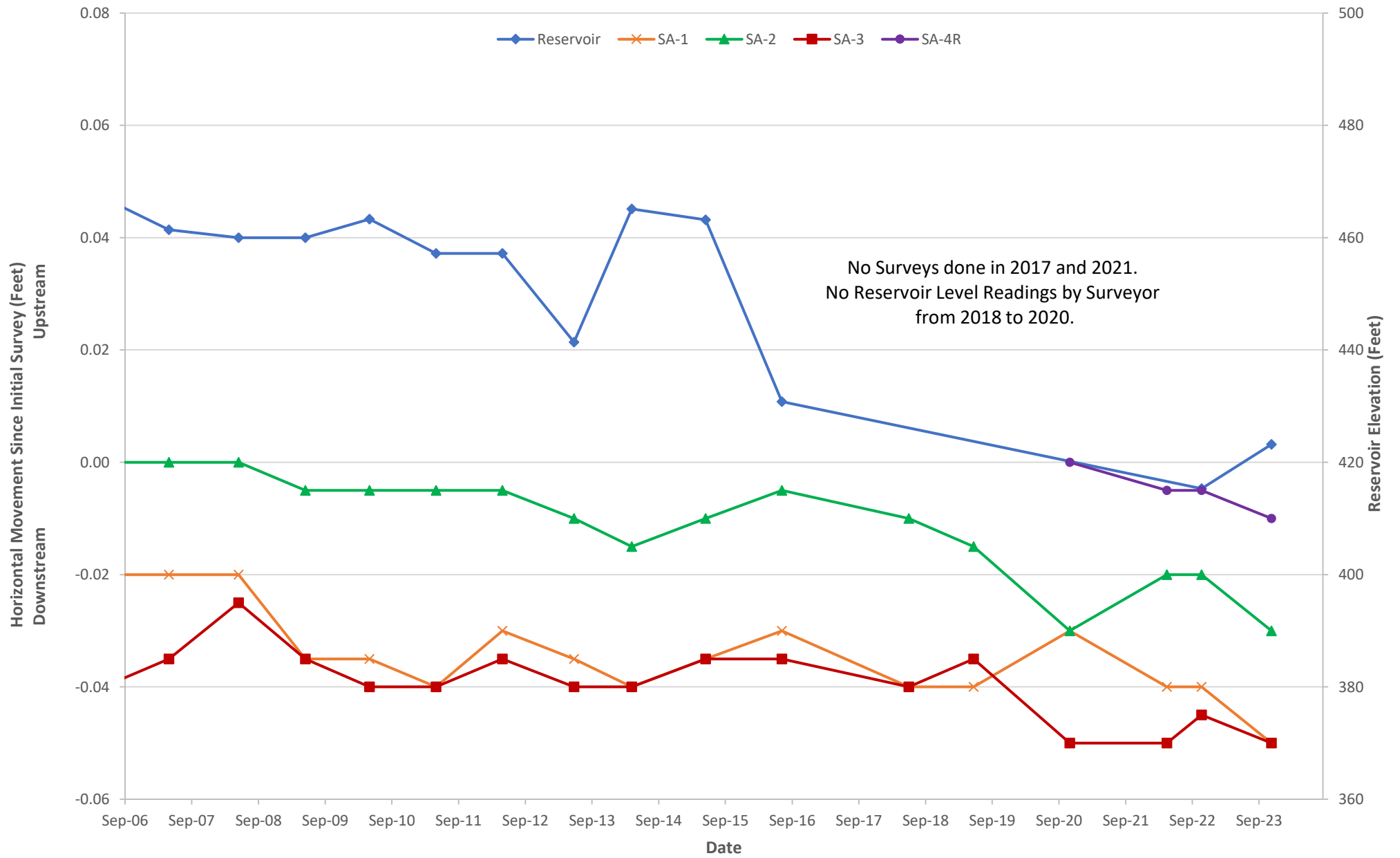


Figure 36
 SAN JOAQUIN DAM
 HISTORICAL HORIZONTAL MOVEMENT
 SURVEY MONUMENTS SB-1, SB-2, SB-3, SB-4, SB-5, SB-6, AND SB-7
 2006 THROUGH 2023

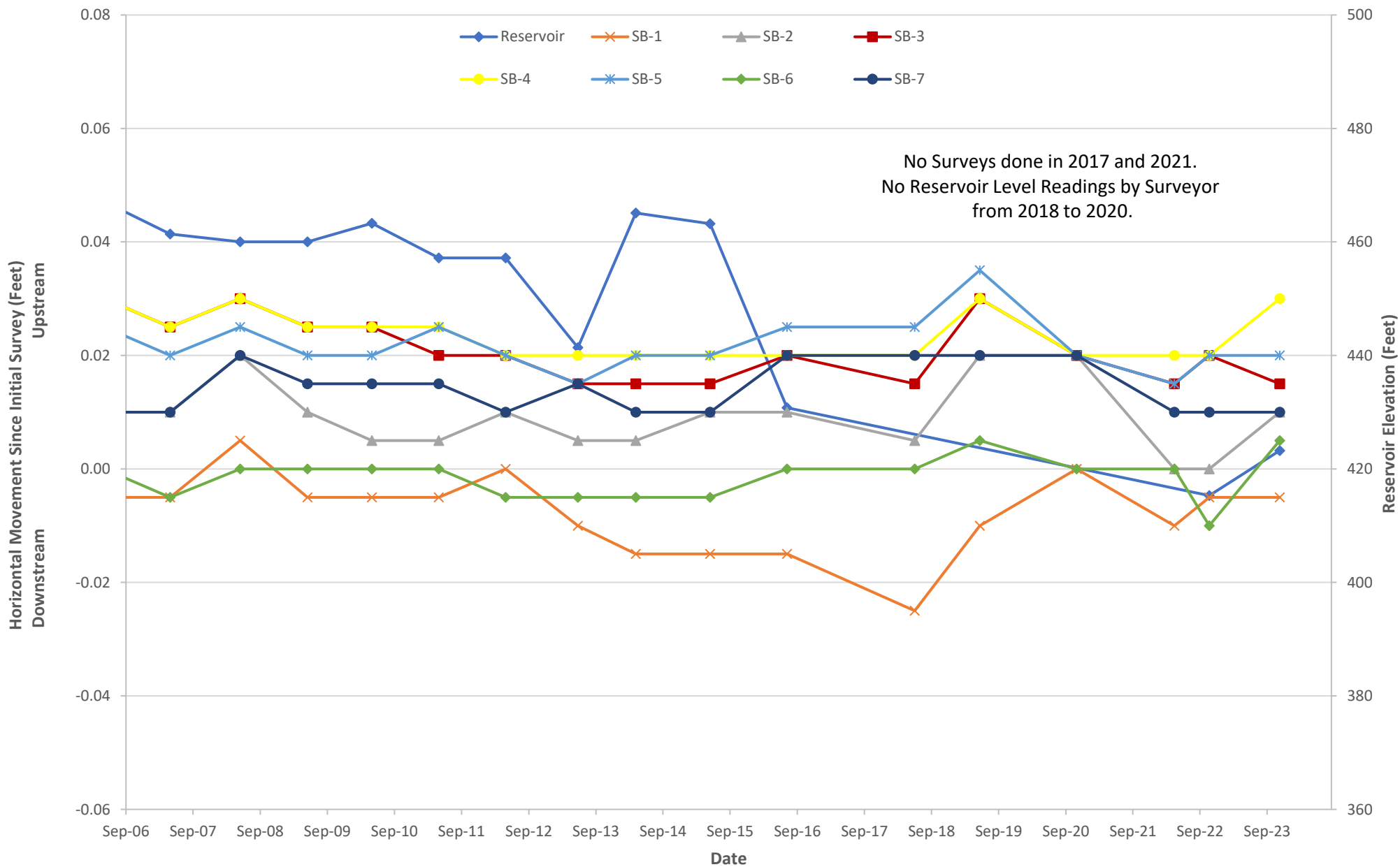


Figure 37
SAN JOAQUIN DAM
HISTORICAL HORIZONTAL MOVEMENT
SURVEY MONUMENTS SC-1, SC-2, SC-3, SC-4, SC-5, SC-6, SC-7, AND SC-8
2006 THROUGH 2023

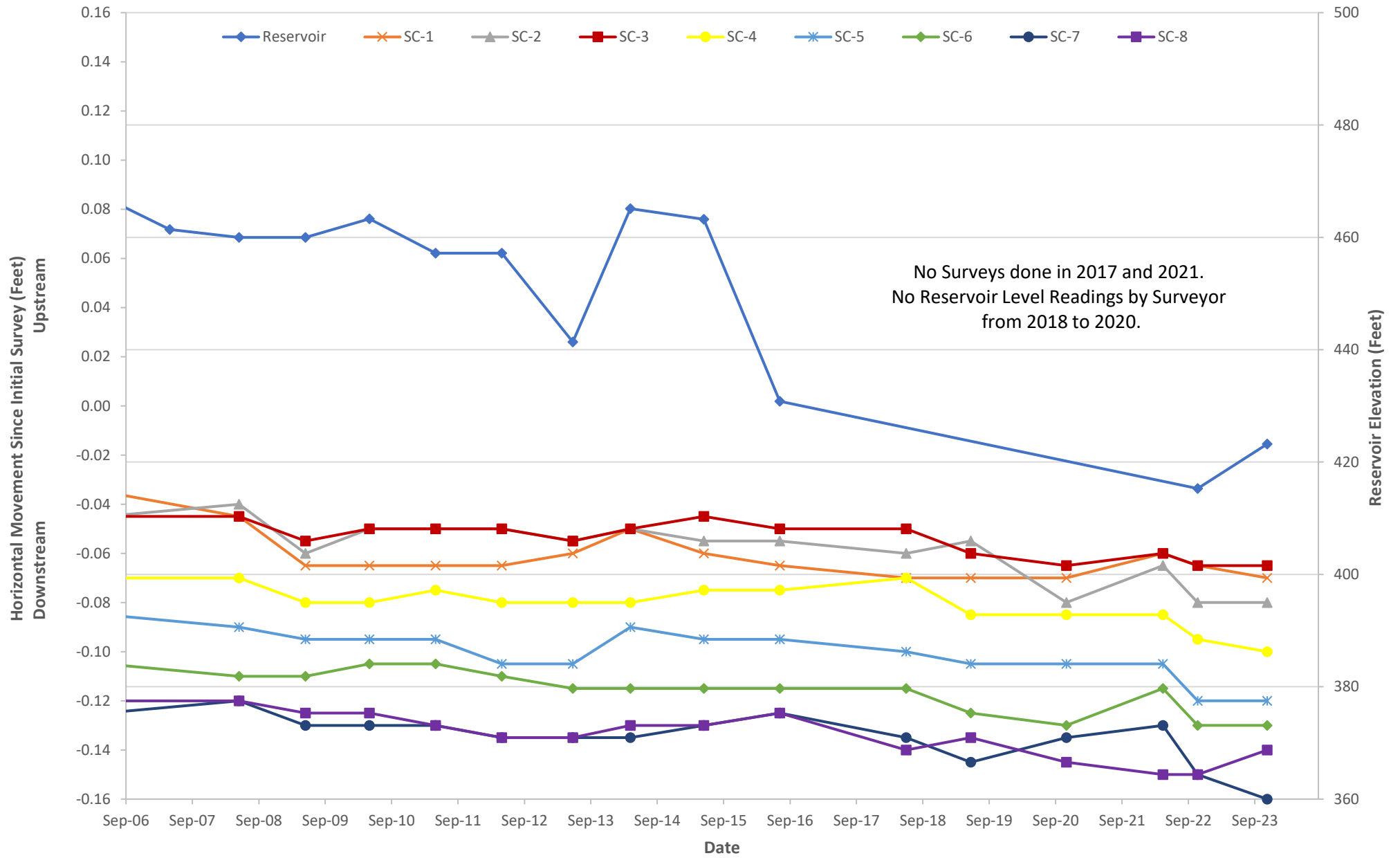


Figure 38
 SAN JOAQUIN DAM
 HISTORICAL HORIZONTAL MOVEMENT
 SURVEY MONUMENTS SD-1, SD-2, SD-3, SD-4, SD-5, SD-6, AND SD-7
 2006 THROUGH 2023

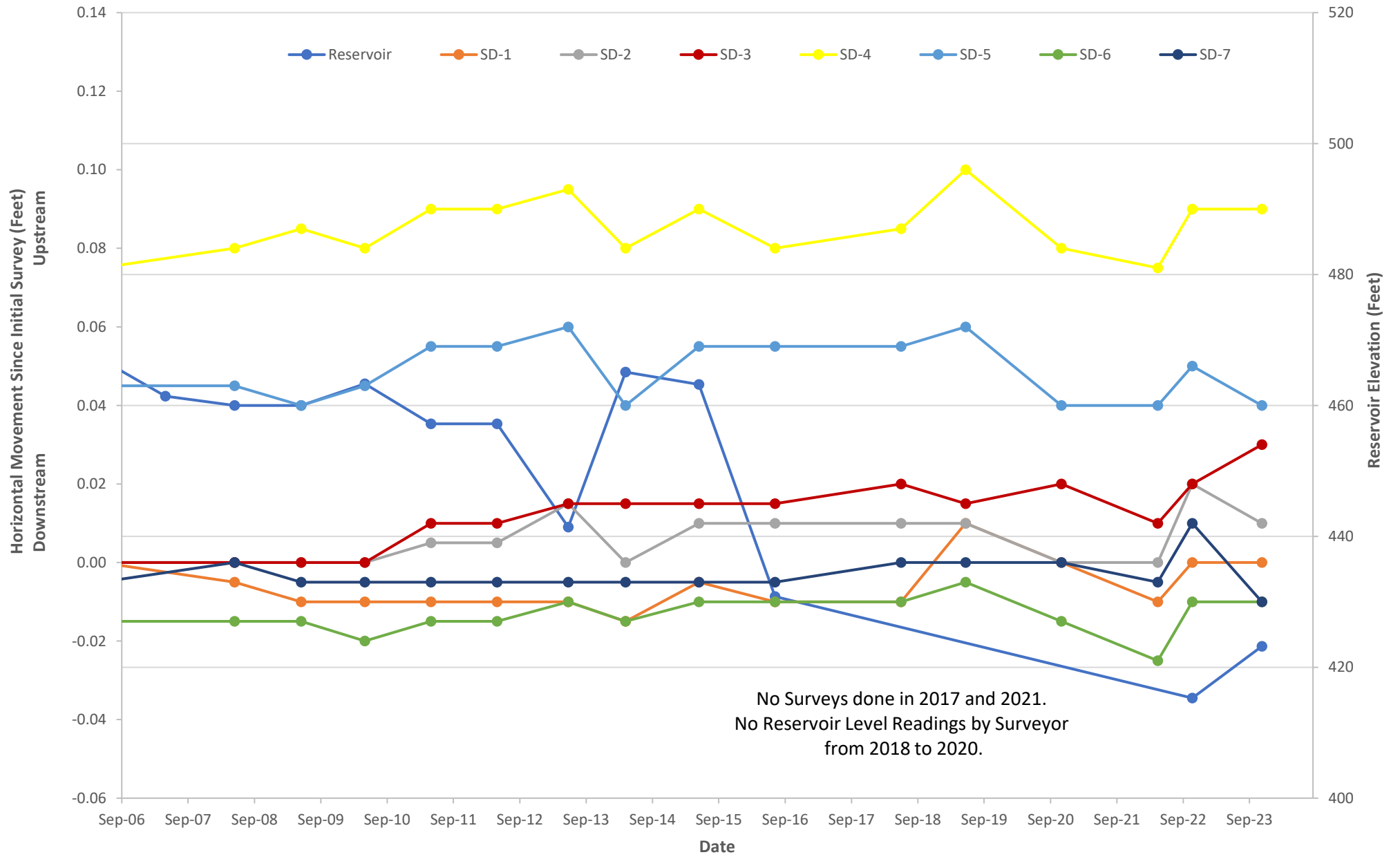


Figure 39
 SAN JOAQUIN DAM
 HISTORICAL ELEVATIONS
 SURVEY MONUMENTS SA-1, SA-2, AND SA-3
 2006 THROUGH 2023

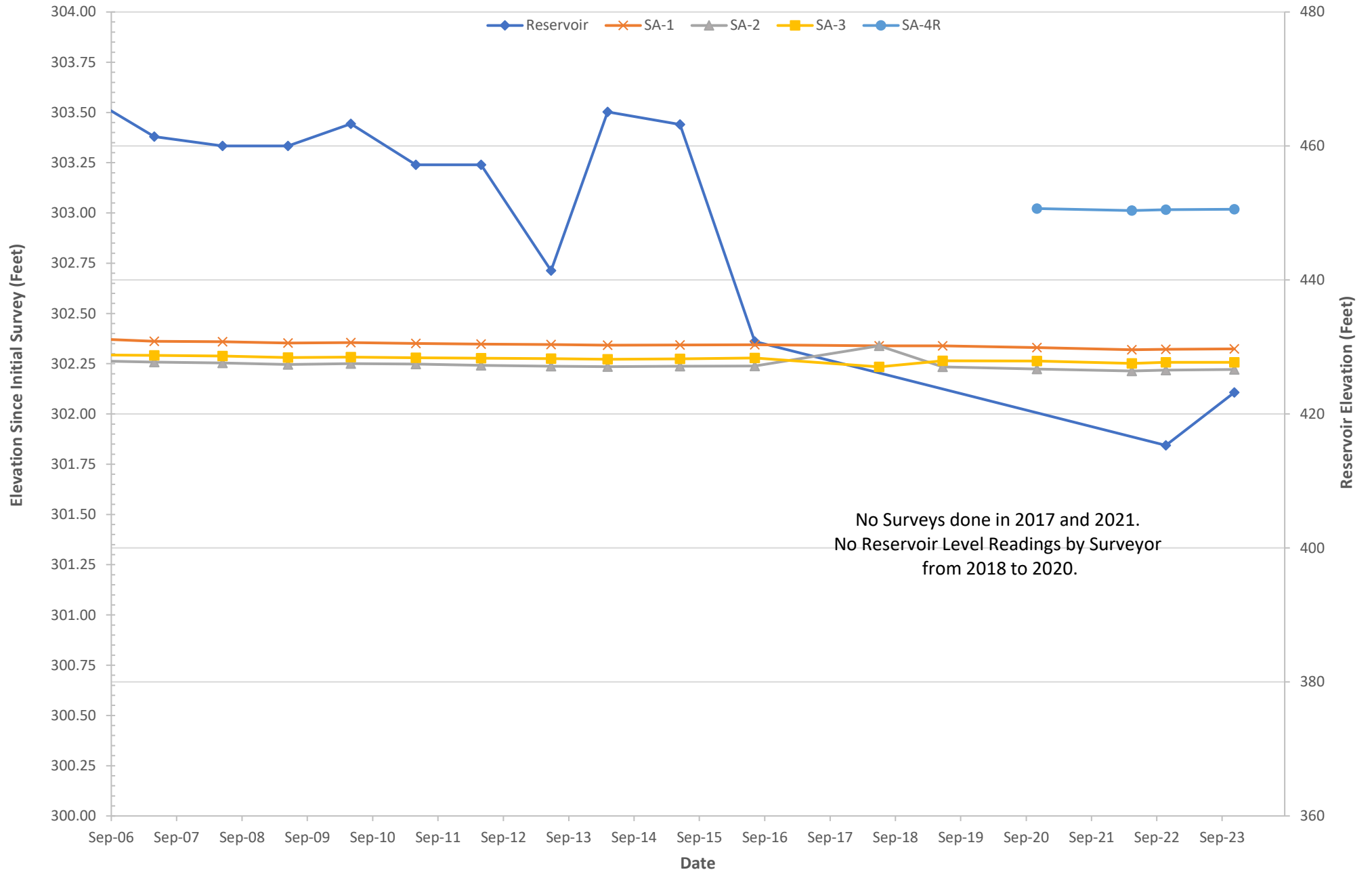


Figure 40
SAN JOAQUIN DAM
HISTORICAL ELEVATIONS
SURVEY MONUMENTS SB-1, SB-2, SB-3, SB-4, SB-5, SB-6, AND SB-7
2006 THROUGH 2023

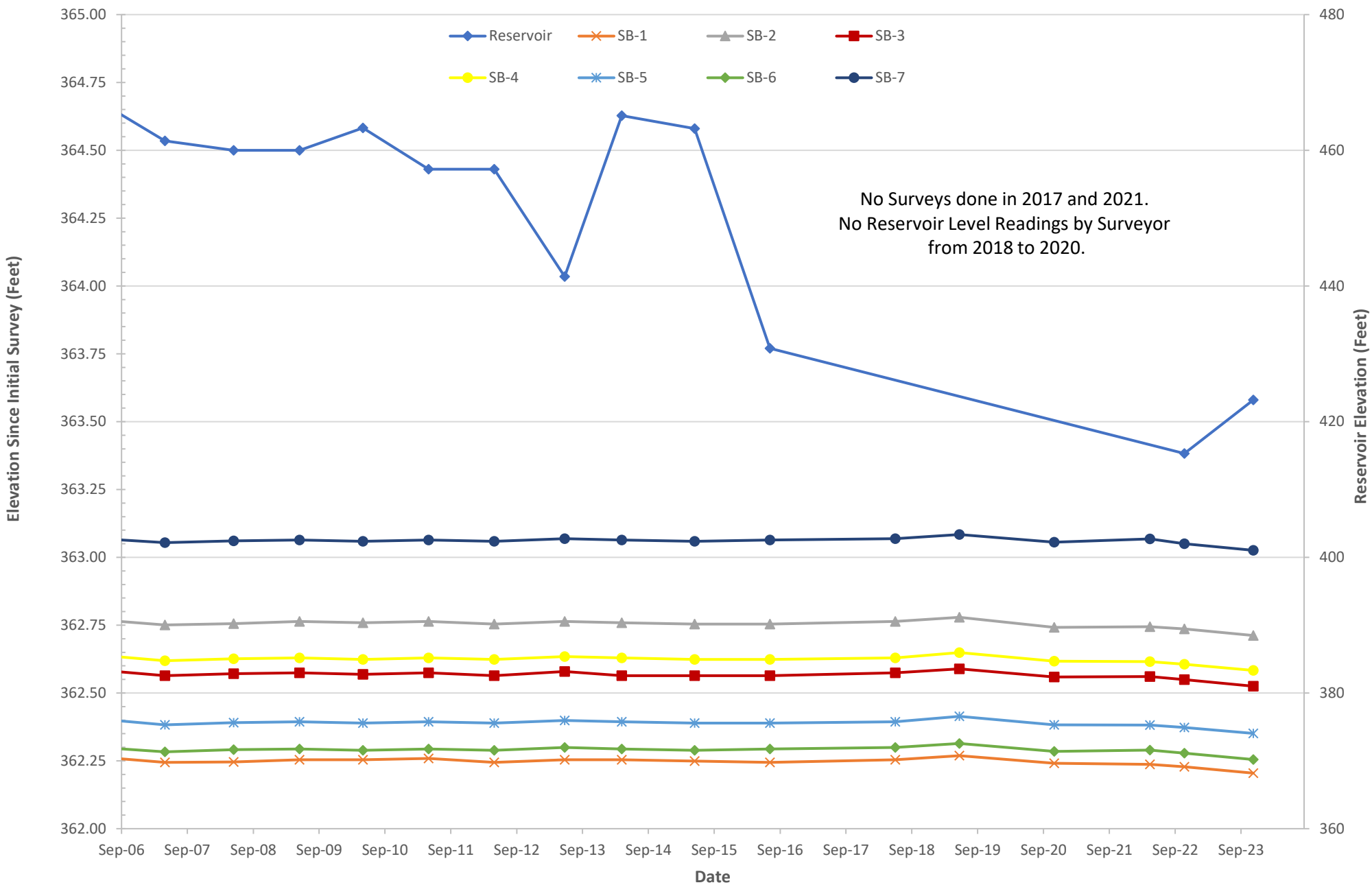


Figure 41
SAN JOAQUIN DAM
HISTORICAL ELEVATIONS
SURVEY MONUMENTS SC-1, SC-2, SC-3, SC-4, SC-5, SC-6, SC-7, AND SC-8
2006 THROUGH 2023

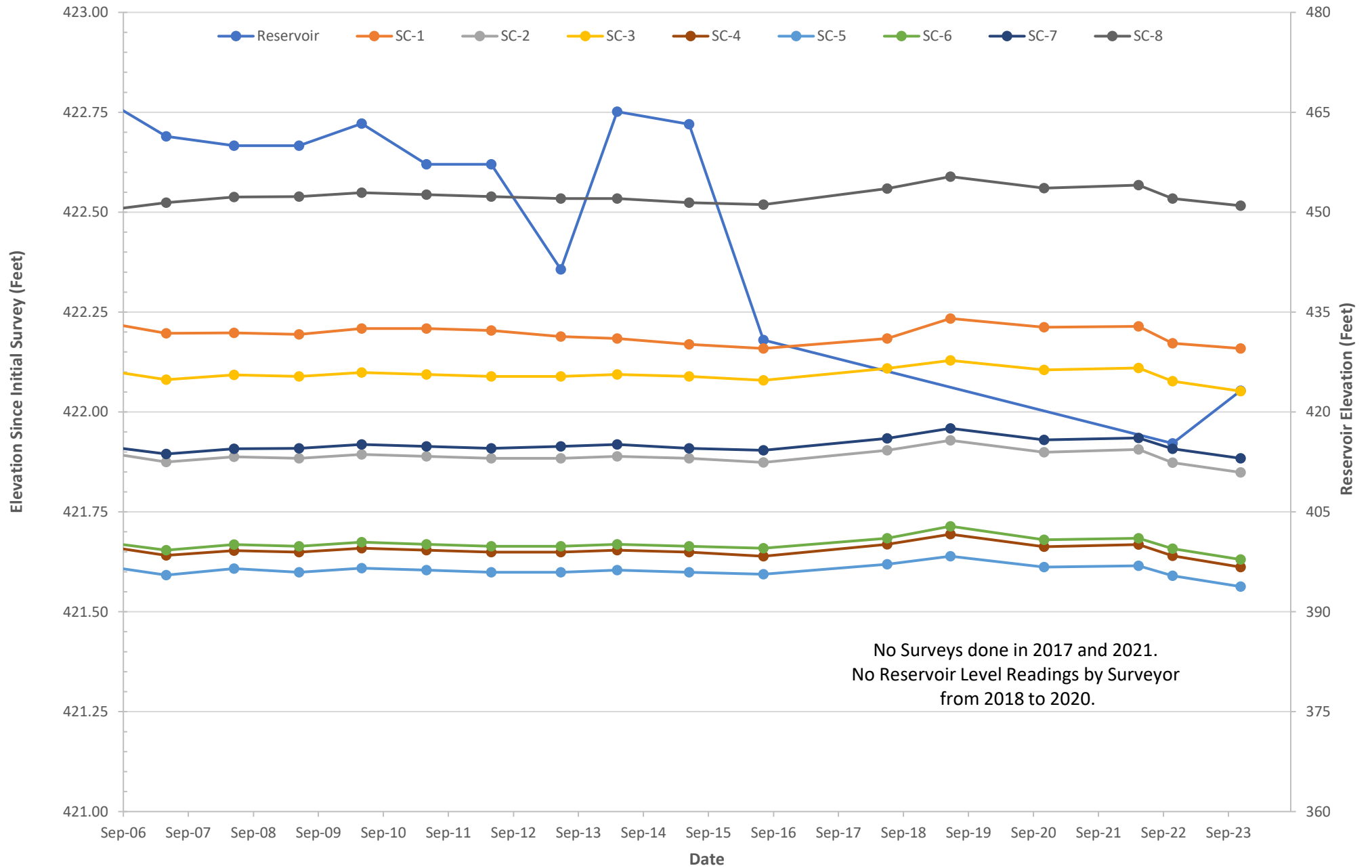
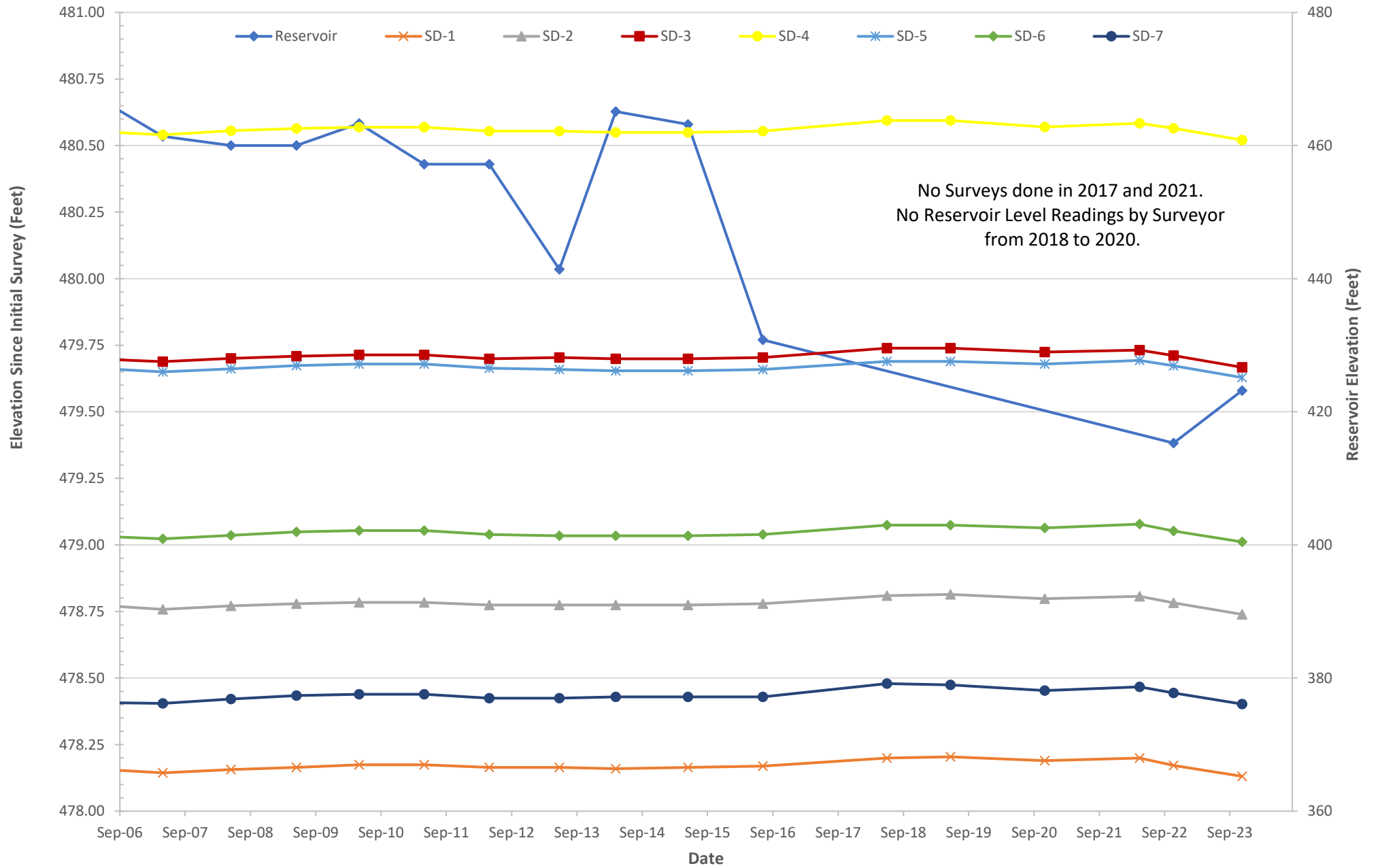


Figure 42
SAN JOAQUIN DAM
HISTORICAL ELEVATIONS
SURVEY MONUMENTS SD-1, SD-2, SD-3, SD-4, SD-5, SD-6, AND SD-7
2006 THROUGH 2023



Appendix

Inspection Photographs of San Joaquin Dam - July 10, 2023

Reservoir Dam Valve Exercising Table

CNC Survey Report

West Drain Sediment Gradation Test Results

Instrumentation Maintenance

Inspection Photographs of San Joaquin Dam
July 10, 2023



Photo 1) AC-lined upstream face looking towards right abutment.



Photo 2) AC-lined upstream face looking north.

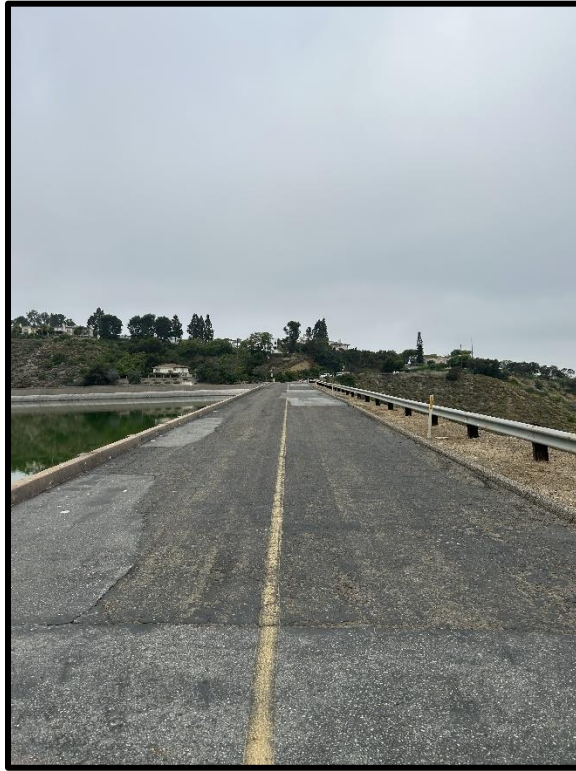


Photo 3) AC pavement on crest looking towards the left abutment.

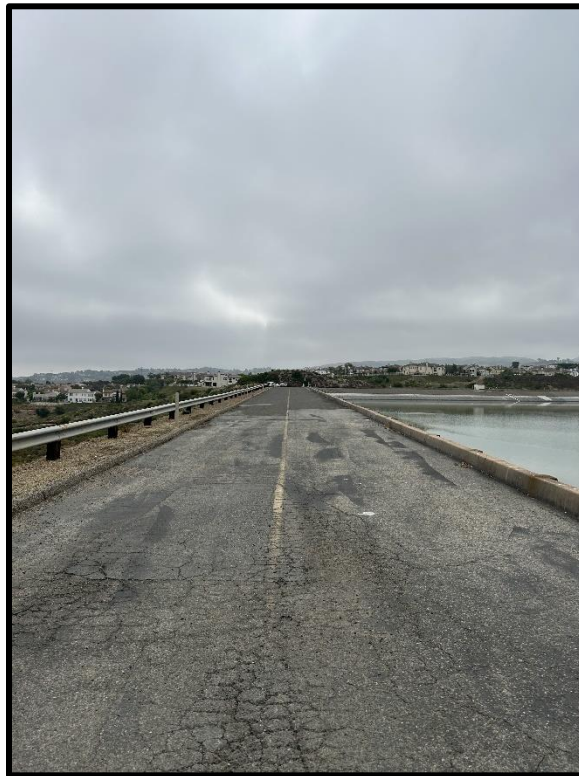


Photo 4) AC pavement cracking on crest looking towards the right abutment.



Photo 5) AC pavement cracking looking downstream. At left abutment.



Photo 6) Cracking and spalling at joints of concrete crest curb on upstream side.



Photo 7) Downstream face looking towards left abutment.



Photo 8) Downstream face looking towards left abutment from the middle berm.



Photo 9) Downstream face looking towards the right abutment from the top berm.



Photo 10) Looking upstream at left groin. Note rill erosion.



Photo 11) Pneumatic piezometer control valves. Note significant corrosion throughout vault box.



Photo 12) Relief valve gauge behind pneumatic piezometers. Note significant corrosion throughout vault box.



Photo 13) Looking at downstream slope at the toe of dam near the V-notch weirs and energy dissipator structure.
Note minor rill erosion.



Photo 14) Energy dissipator structure. Note significant corrosion on handrails and ladder.



Photo 15) AC liner deterioration and pothole at left upstream area.



Photo 16) Looking at the southwest corner of the reservoir. Note reservoir liner separation cracking and transverse cracking.



Photo 17) Longitudinal and transverse cracking of reservoir liner at the left south end of the reservoir.



Photo 18) Approximately 4-inch-wide longitudinal cracking of reservoir liner at the left south end of the reservoir.



Photo 19) Bottom of right spillway drop inlet. Note wet spot.

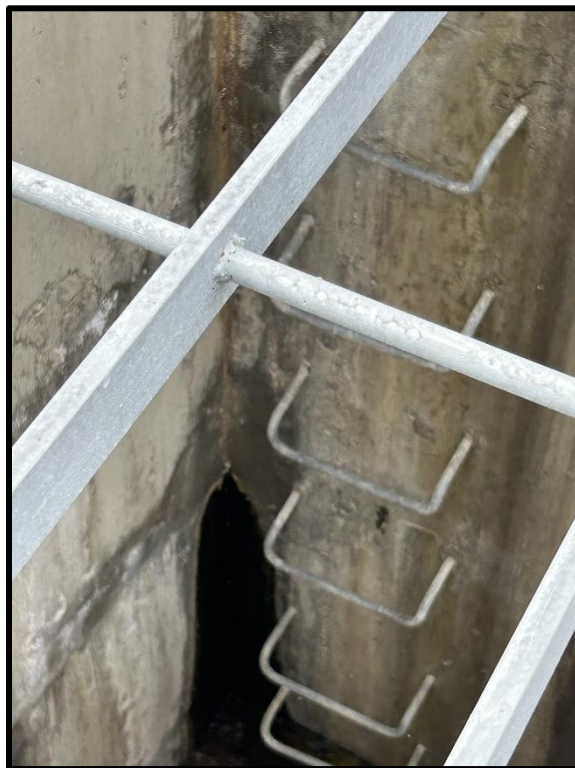


Photo 20) Minor seepage point at the right spillway drop inlet.



Photo 21) Bottom of left spillway drop inlet structure.



Photo 22) U/S Collector Drain #1 (left) and #2 (right). Note leakage underneath V-notch weirs.



Photo 23) Right Groin Drain pipe (6/16/08 Drain pipe).

Reservoir Dam Valve Exercising Table

Reservoir Dam Valve Exercising

San Joaquin Dam

Date	24" Valve	48" 450 valve	48" 415 valve	48" 380 valve	60" Main Valve	2-12" Blow off valves
10/10/2013	Exercised	Exercised	Exercised	Exercised	Exercised	
4/22/2014	Exercised	Exercised	Exercised	Exercised	Exercised	
4/20/2015 DSOD	Exercised	Off Line	Exercised	Exercised	Exercised	
8/25/2015	Exercised	Exercised	Exercised	Exercised	Exercised	
5/26/2016 DSOD	Exercised	Exercised	Exercised	Exercised	Exercised	
6/6/2016	All valves exercised and inspected by divers					
7/19/2016						Exercised 100%
4/5/2017 DSOD						Exercised 100%
4/18/2017	Exercised	Exercised	Exercised	Exercised	Exercised	
5/2/2018 DSOD	Exercised	Exercised	Exercised	Exercised	Exercised	Not Turned
9/20/2018						Exercised 100%
3/28/2019 DSOD	Exercised	Exercised	Exercised	Exercised	Exercised	Exercised 100% 4/1/19 Not Witnessed by DSOD
1/14/2020 DSOD	Exercised	Exercised	Exercised	Exercised	Exercised	Exercised
4/27/2021	Exercised	Exercised	Exercised	Exercised	Exercised	Exercised
5/25/2022	Exercised	Exercised	Exercised	Exercised	Exercised	Exercised

CNC Survey Report

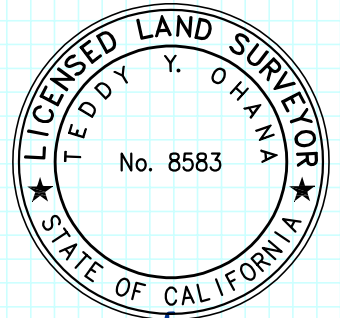
Prepared by:



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JOB NAME IRWD
SAN JOAQUIN RESERVOIR
JOB NO. 22-006 SRN
CREW A. MORENO
R. STEWART
DATE 11-16-2022 SHEET 1 OF 11

INDEX MAP



Teddy Ohana
TEDDY Y. OHANA PLS 8583

NOTES:

- REPRESENTS 1-3/4" BRASS DISC PUNCHED AT ENDS OF MONITORING CONTROL LINE.
- INSTRUMENT SETUP

WEATHER CONDITIONS:

TEMP - 65°
CLEAR SKIES
HUMIDITY - 23.0%
BAROMETRIC PRESSURE (INHG) 30.40
RESERVOIR WATER LEVEL ELEVATION 415.3±

RPSD
HOLD FOR LINE.
BOTTOM OF SLOPE

RPSC
HOLD FOR LINE.
WITHIN SLOPE AREA

RPSB
HOLD FOR LINE.
OUTSIDE FENCE AREA

LINE D TOP

CREST

RESERVOIR

LINE C

LINE B

RPSA
HOLD FOR LINE.

WITHIN SLOPE AREA

LINE A

BOTTOM RESERVOIR

RPSD
HOLD FOR LINE

RPSC
HOLD FOR LINE

RPSB
HOLD FOR LINE

RPSA
HOLD FOR LINE

WITHIN SLOPE AREA

Prepared by:



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JOB NAME IRWD
SAN JOAQUIN RESERVOIR
JOB NO. 22-006 SRN
CREW A. MORENO
R. STEWART
DATE 11-16-2022 SHEET 2 OF 11

RESERVOIR MONITORING LAND SURVEYING NOTES



N.T.S.

LINE A

WITHIN SLOPE AREA
RPSA
HOLD FOR LINE.

NAME	STA.
RPSA	5+26.273
1-3/4" BRASS DISC IN CONCRETE 1.5' EAST OF PADDLEBOARD	

OFFSET



NOTES:

- - ALL "SA" POINTS ARE 1-3/4" BRASS DISC W/PUNCH MARK SET IN CONCRETE AT F.S. 1.0' SOUTH OF YELLOW POST.
- RPSA REPRESENTS 1-3/4" BRASS DISC PUNCHED AT ENDS OF MONITORING CONTROL LINE.
- △ INSTRUMENT SETUP
- SEE WEATHER CONDITIONS ON SHEET 1

SA1	3+80.769
-----	----------

0.040'

SA2	2+80.665
-----	----------

0.020'

SA3	1+80.651
-----	----------

0.045'

SA4R	0+84.846
------	----------

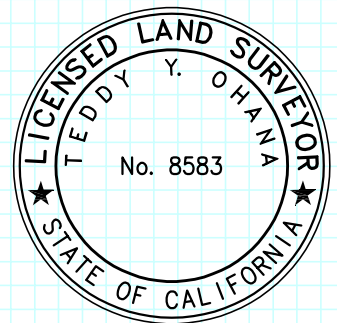
0.005'

RPSA	0+00.00
1-3/4" BRASS DISC IN CONCRETE 2.5' WEST OF PADDLEBOARD	



RPSA
HOLD FOR LINE
WITHIN SLOPE AREA

LINE A
BOTTOM SLOPE RESERVOIR



Teddy Y. Ohana
TEDDY Y. OHANA PLS 8583

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JOB NAME IRWD
SAN JOAQUIN RESERVOIR
JOB NO. 22-006 SRN
CREW A. MORENO
R. STEWART
DATE 11-16-2022 SHEET 3 OF 11

RESERVOIR MONITORING LAND SURVEYING NOTES

NAME STA.
RPSB 9+57.000
1-3/4" BRASS DISC IN CONCRETE
1.7' EAST OF PADDLEBOARD AT TOP
OF SLOPE THRU GATES. (OUTSIDE
FENCED AREA)

LINE B
RPSB OUTSIDE FENCE AREA
HOLD FOR LINE.
OFFSET

N.T.S.

NOTES:

- - ALL "SB" POINTS ARE 1-3/4" BRASS DISC W/PUNCH MARK SET IN CONCRETE AT F.S. 1.0' SOUTH OF YELLOW POST.
- RPSB REPRESENTS 1-3/4" BRASS DISC PUNCHED AT ENDS OF MONITORING CONTROL LINE.
- △ INSTRUMENT SETUP
- SEE WEATHER CONDITIONS ON SHEET 1

SB1 7+10.663

0.005'

SB2 6+10.674

ON LINE

SB3 5+10.695

0.020'

SB4 4+10.648

0.020'

SB5 3+10.666

0.020'

SB6 2+10.534

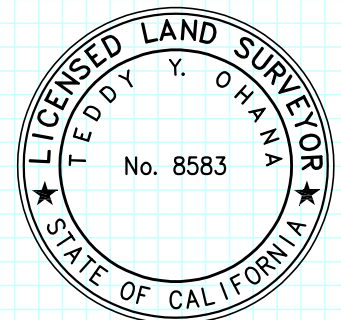
0.010'

SB7 1+10.580

0.010'

RPSB 0+00.00
1-3/4" BRASS DISC IN CONCRETE
2.7' WEST OF PADDLEBOARD

RPSB
HOLD FOR LINE



Teddy Ohana
TEDDY Y. OHANA PLS 8583

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JOB NAME IRWD
SAN JOAQUIN RESERVOIR
JOB NO. 22-006 SRN
CREW A. MORENO
R. STEWART
DATE 11-16-2022 SHEET 4 OF 11

RESERVOIR MONITORING LAND SURVEYING NOTES

NAME STA.
RPSC 9+77.591
1-3/4" BRASS DISC IN CONCRETE
2.5' EAST OF PADDLEBOARD

SC1 8+72.422

SC2 7+72.122

SC3 6+72.131

SC4 5+72.160

SC5 4+72.136

SC6 3+72.113

SC7 2+71.602

SC8 1+72.176

RPSC 0+00.00
1-3/4" BRASS DISC IN CONCRETE
3.1' WEST OF PADDLEBOARD

LINE C

RPSC WITHIN SLOPE AREA
HOLD FOR LINE.
OFFSET

N.T.S.

NOTES:

• - ALL "SC" POINTS ARE 1-3/4" BRASS DISC
W/PUNCH MARK SET IN CONCRETE AT F.S.
1.0' SOUTH OF YELLOW POST.

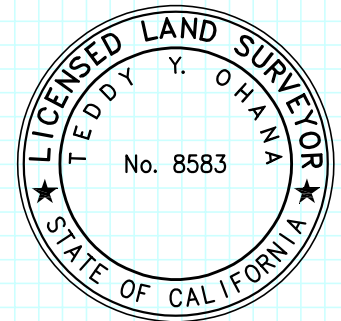
⊙ RPSC REPRESENTS 1-3/4" BRASS DISC PUNCHED
AT ENDS OF MONITORING CONTROL LINE.



INSTRUMENT SETUP

SEE WEATHER CONDITIONS ON SHEET 1

LINE C



Teddy Y. Ohana
TEDDY Y. OHANA PLS 8583



RPSC
HOLD FOR LINE
WITHIN SLOPE AREA

Prepared by:



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JOB NAME IRWD
SAN JOAQUIN RESERVOIR
JOB NO. 22-006 SRN
CREW A. MORENO
R. STEWART
DATE 11-16-2022 SHEET 5 OF 11

RESERVOIR MONITORING LAND SURVEYING NOTES

LINE D

RPSD

HOLD FOR LINE. BOTTOM OF SLOPE

NAME STA. OFFSET
RPSD 10+02.183
1-3/4" BRASS DISC IN CONCRETE
2.5' EAST OF PADDLEBOARD



NOTES:

SD1 7+85.673

ON LINE

• - ALL "SD" POINTS ARE 1-3/4" BRASS DISC W/PUNCH MARK SET IN CONCRETE AT F.S. BETWEEN BERM CURB AND GUARD RAIL AT PADDLEBOARD.

SD2 6+85.650

0.020'

⊙ RPSD REPRESENTS 1-3/4" BRASS DISC PUNCHED AT ENDS OF MONITORING CONTROL LINE.

SD3 5+85.702

0.020'



INSTRUMENT SETUP

SD4 4+85.712

0.090'

SEE WEATHER CONDITIONS ON SHEET 1

SD5 3+85.788

0.050'

SD6 2+85.817

0.010'

SD7 1+85.759

0.010'



Teddy Y. Ohana
TEDDY Y. OHANA PLS 8583

RPSD 0+00.00
1-3/4" BRASS DISC IN CONCRETE
2.0' WEST OF PADDLEBOARD



RPSD
HOLD FOR LINE
WITHIN SLOPE AREA



Date: 11/16/2022

 Sheet 6 of 11
SURVEY LEVELING NOTES
PROJECT: IRWD / San Joaquin Reservoir – AC Road LEVELING from SJR21 to MWD-Disc (East)

STATION	B.S.	HI	F.S.	ELEVATION	SURVEY LEVELING NOTES
SJR21				315.824	MWD SJR21 BM (1994)
	9.590	325.414			1 3/4" Brass Disc Near Restroom
TP1			0.325	325.089	
	15.927	341.016			
TP2			0.375	340.640	BEGIN "SB" BENCH RUN LINE
	16.321	356.962			
TP3			0.310	356.650	
	16.045	372.698			
TP4			0.162	372.535	
	15.781	388.317			
TP5			0.221	388.096	
	16.350	404.446			
TP6			0.077	404.369	
	16.238	420.607			
TP7			0.152	420.457	BEGIN "SC" BENCH RUN LINE
	16.383	436.839			
TP8			0.319	436.523	
	12.743	449.263			
TP9			0.137	449.128	
	11.137	460.263			
TP10			0.480	459.787	
	9.749	469.532			
TP11			1.829	467.706	
	14.210	481.913			
MWD E			2.709	479.208	END RUN TO RETURN DR BEGIN "SD" BENCH RUN LINE
	2.568	481.772			
TP11			14.070	467.706	
	2.305	470.007			
TP10			10.224	459.787	



Date: 11/16/2022

 Sheet 7 of 11
SURVEY LEVELING NOTES
PROJECT: IRWD / San Joaquin Reservoir – AC Road LEVELING from SJR21 to MWD-Disc (East)

STATION	B.S.	HI	F.S.	ELEVATION	SURVEY LEVELING NOTES
TP10				459.787	
	0.514	460.296			
TP9			11.174	449.128	
	0.098	449.220			
TP8			12.702	436.523	
	0.185	436.704			
TP7			16.253	420.457	
	0.050	420.501			
TP6			16.139	404.369	
	0.030	404.392			
TP5			16.304	388.096	
	0.124	388.212			
TP4			15.686	372.535	
	0.129	372.656			
TP3			16.016	356.650	
	0.139	356.778			
TP2			16.147	340.640	
	0.197	340.828			
TP1			15.747	325.089	
	0.086	325.167			
SJR21			9.351	315.824	MWD SJR21 BM (1994)
					1 3/4" Brass Disc Near Restroom
					ALL ELEVATIONS ARE ADJUSTED



Date: 11/16/2022

Sheet 8 of 11
SURVEY LEVELING NOTES

PROJECT: IRWD / San Joaquin Reservoir – “A” LINE (Slope Bench)

STATION	B.S.	HI	F.S.	ELEVATION	SURVEY LEVELING NOTES
SJR21				315.824	MWD SJR21 BM (1994)
	1.170	316.994			1 3/4” Brass Disc Near Restroom
TURN1			12.011	304.983	
	2.236	307.219			
SA4R			4.203	303.016	CNC RESET “SA4R” 1 3/4” BRASS DISC
	4.482	307.497			
SA3			5.241	302.257	
	5.024	307.281			
SA2			5.063	302.218	
	4.839	307.057			
SA1			4.735	302.322	
	5.247	307.569			
TURN1			2.589	304.981	
	12.169	317.150			
SJR21			1.327	315.824	MWD SJR21 BM (1994)
					1 3/4” Brass Disc Near Restroom
					ALL ELEVATIONS ARE ADJUSTED



Date: 11/16/2022

Sheet 9 of 11
SURVEY LEVELING NOTES

PROJECT: IRWD / San Joaquin Reservoir – “B” LINE (Slope Bench)

STATION	B.S.	HI	F.S.	ELEVATION	SURVEY LEVELING NOTES
TP2				340.640	BM from AC Road Level RUN
	10.553	351.193			
TURN1			0.367	350.826	Mag Nail Edge Gutter
	14.210	365.037			
SB7			1.986	363.050	
	4.313	367.364			
SB6			5.086	362.278	
	5.089	367.367			
SB5			4.994	362.373	
	4.915	367.288			
SB4			4.683	362.606	
	4.362	366.967			
SB3			4.419	362.549	
	4.574	367.122			
SB2			4.388	362.736	
	4.290	367.023			
SB1			4.798	362.228	
	4.813	367.038			
SB5			4.672	362.373	
	4.862	367.228			
SB7			4.185	363.050	
	1.080	364.123			
TURN1			13.304	350.826	Mag Nail Edge Gutter
	0.269	351.088			
TP2			10.454	340.640	BM from AC Road Level RUN
					ALL ELEVATIONS ARE ADJUSTED



Date: 11/16/2022

 Sheet 10 of 11
SURVEY LEVELING NOTES
PROJECT: IRWD / San Joaquin Reservoir – “C” LINE (Slope Bench)

STATION	B.S.	HI	F.S.	ELEVATION	SURVEY LEVELING NOTES
TP7				420.457	BM from AC Road Level RUN
	11.380	431.837			
TURN1			15.089	416.748	
	9.938	426.685			
SC8			4.153	422.534	
	4.554	427.086			
SC7			5.181	421.908	
	4.745	426.651			
SC6			4.996	421.658	
	4.691	426.347			
SC5			4.759	421.590	
	4.675	426.262			
SC4			4.625	421.640	
	4.614	426.251			
SC3			4.177	422.077	
	4.380	426.454			
SC2			4.584	421.873	
	4.739	426.609			
SC1			4.441	422.172	
	4.157	426.325			
SC5			4.743	421.587	
	5.045	426.627			
SC8			4.101	422.532	
	4.274	426.800			
TURN1			10.060	416.747	
	15.306	432.046			
TP7			11.596	420.457	BM from AC Road Level RUN
					ALL ELEVATIONS ARE ADJUSTED



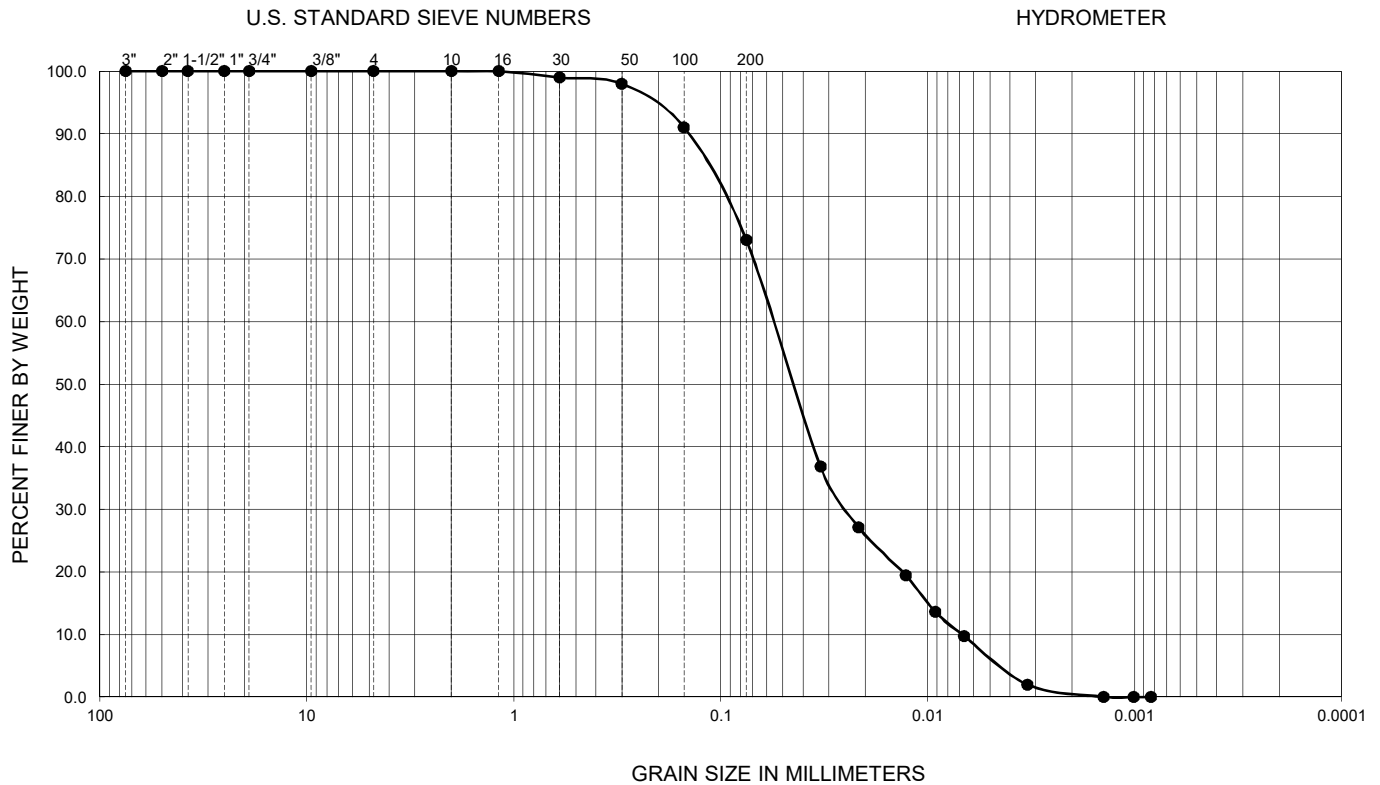
Date: 11/16/2022

 Sheet 11 of 11
SURVEY LEVELING NOTES
PROJECT: IRWD / San Joaquin Reservoir – “D” LINE (Slope Bench)

STATION	B.S.	HI	F.S.	ELEVATION	SURVEY LEVELING NOTES
MWD E				479.208	MWD 1 3/4” Brass Disc (East)
	4.804	484.012			
SD7			5.567	478.444	
	5.720	484.165			
SD6			5.112	479.052	
	5.864	484.917			
SD5			5.243	479.673	
	6.212	485.886			
SD4			5.319	480.565	
	5.219	485.786			
SD3			6.073	479.711	
	5.169	484.882			
SD2			6.098	478.782	
	5.305	484.089			
SD1			5.915	478.172	
	5.051	483.224			
MWD W			5.072	478.151	MWD 1 3/4” Brass Disc (West)
	6.497	484.649			
RPSD			4.034	480.614	
	2.763	483.378			
SD3			3.668	479.711	
	5.839	485.549			
SD7			7.104	478.444	
	5.202	483.647			
MWD E			4.438	479.208	MWD 1 3/4” Brass Disc (East)
					ALL ELEVATIONS ARE ADJUSTED

**West Drain Sediment
Gradation Test Results**

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D ₁₀	D ₃₀	D ₆₀	C _u	C _c	Passing No. 200 (%)	USCS
●	DRAIN SEDIMENT	--	--	--	--	0.007	0.021	0.060	8.3	1.1	73	ML

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 6913

Instrumentation Maintenance

Memorandum

To: Terry Shreiner – Irvine Ranch Water District

CC: Steve Habiger – Irvine Ranch Water District
Esteban Rendon – Irvine Ranch Water District

From: Douglas Wahl, PE, GE
James Heins, EIT

Date: March 30, 2023

Re: Site Visit Memorandum – Piezometer Instrumentation System Inspection – San Joaquin Reservoir

This memorandum documents our site visit on Monday, March 27, 2023. This work was performed in accordance with Irvine Ranch Water District's (IRWD's) Purchase Order No. 634622 dated March 10, 2023, and our proposal dated February 24, 2023, for piezometer instrumentation system inspection services at IRWD's San Joaquin Reservoir.

On March 27, 2023 (Monday), Doug Wahl and James Heins from GeoPentech visited the site and met with Terry Schreiner (Instrumentation Supervisor), Steve Habiger (Water Operations), and Esteban Rendon (Electrical/Instrumentation), all from the (IRWD). The primary purpose of our visit was to perform an inspection of vibrating-wire piezometers (VWPs) to evaluate their current functionality. We understand that the recent performance of the current piezometer system has been inconsistent. The reservoir level at the time of our visit was approximately elevation 471.1 ft.

VWP System Visual Inspection

Based on our discussions with you and our observations at the site, the VWP system currently in operation at the dam consists of eight (8) DGSi VWP transducer sensors, two (2) junction boxes, and a main datalogger/multiplexer. The eight VWP sensors are buried below ground surface in the upstream side of the main embankment at varying locations and depths below the dam and reservoir ground surface. They are numbered VB-1 through VB-8 and are arranged in two lines perpendicular to the dam crest. The cabling from the sensors extends in conduit up to the dam crest where it is gathered into two junction boxes and then directed to a single main collection point at roughly the center of the dam on the north side of the reservoir. Attachment 1 (site plan) shows the layout of the sensors as well as top and bottom elevations (i.e. ground surface and sensor elevation). We understand that these VWP sensors, associated cabling, junction boxes, and datalogger were installed in 2004.

The main collection box, containing the VWP datalogger and multiplexer, is located on the dam crest at approximately the transverse centerline. The two junction boxes are located on the crest on either side of

the main box, either toward the left abutment or toward the right abutment. The main box appeared to be in good condition and contains a 16-channel Geokon unit (Figure 1). The unit is powered by a 12-volt battery charged by a solar panel. Steve Habiger connected his computer running LogView to the datalogger during our visit and showed us real-time VWP readings collected by the system. Because the installed multiplexer terminal board covers the datalogger board behind it, we could not directly observe the datalogger board. The multiplexer appeared to be operating correctly and switching between the sensor channels appropriately. We noted that the box's earth ground post was not connected to any outgoing grounding rod or other connection.

The right abutment junction box (VB-1 thru VB-4, Figure 2) and the left abutment junction box (VB-5 thru VB-8, Figure 3), both contain four VWP transient protection modules (i.e. isolators) and connect the sensor cables from the dam to the datalogger box at the center of the dam. The right abutment junction box appears to be in reasonable condition with some minor contamination of an apparent elastic waterproofing material that has degraded overtime (Figure 2). The ground posts on the isolators in the right abutment junction box (VB-1 thru VB-4) did not appear to be connected to a ground connection.

However, the left abutment junction box is in poor condition (Figure 3). The components contained in the left abutment station box were almost entirely surrounded by the same degraded elastic waterproofing material, making it difficult to determine the condition of the underlying electronics. We were not able to see any evidence of ground connections for this location. It should be noted that the three VWPs indicated by Steve Habiger to not be working properly (VB-6, VB-7, and VB-8) all run through the left abutment junction box.

Electronics Troubleshooting/Data Collection

After performing a visual inspection of the three electronics boxes along the dam crest, Doug Wahl and James Heins attempted to collect manual measurements of the VWP sensors from the main box location to assess functionality. The resistance of each VWP was measured using a digital multimeter. Resistances were measured between the two VW wires and between the two temperature sensor wires. According to the VW Piezometer 52611099 manual, typical values for these resistances are roughly 300 ohms and 3,000 ohms, respectively. Instrument measurements were taken from each VWP using a Geokon Model GK-404 Vibrating Wire Readout unit. The Geokon Model GK-404 reports readings of temperature, in degrees Celsius, and frequency, in Hz, that can be converted to psi based on the VWP calibration reports. All values collected at the main box for each VWP are summarized in Table 1. To perform VWP readings, the cable ends were removed from their terminals, manually read using the GK-404, and then replaced. At the main station box, valid temperature readings for VWP-5 and VWP-7 and valid pressure readings at VWP-6, VWP-7, and VWP-8 could not be obtained perhaps due to VWP system malfunction, but all other readings were successful (See Table 1).

After testing the electronics in the main box, measurements were also collected at the junction boxes. All measurements were taken on the sensor side of the junction box isolators (i.e. measurements were taken directly from sensor wires). The measurements recorded at the left abutment junction box and the right abutment junction box are also summarized in Table 1. Due to the waterproof coating covering the VWP-4 sensor wires, no measurements could be taken with the Geokon Model GK-404 instrument.



Data Validation

For data validation purposes, the field measurements collected during our site visit were compared with historic values recorded at times when the reservoir was at about the same water level (i.e. elevations 470-472 ft). Table 2 summarizes historic data available from past VWP sensor measurements and Figure 4 shows a comparison of the historic data with the GeoPentech measurements taken in the field on March 27, 2023. Note that the field measurements shown are the ones taken from the junction boxes (i.e. directly from the sensor leads). Also, note that historic data shown for comparison in Figure 4 do not include any measurements after 2018. Based on this comparison, the field measurements obtained during our visit appear to be reasonably consistent with past values. The temperature values appear to have a slightly higher deviation from historic values than the pressure/frequency readings.

Conclusions

- Based on our observations and testing, it appears that all eight VWP sensors are still operational.
 - When the sensors are read manually at the junction boxes on the sensor side of the isolators, they produce measurements that are reasonably consistent with historical values collect when the reservoir was at a similar water level.
 - In addition, the measured resistances across the sensor wires are also reasonably consistent with expected values based on information from DGSI.
 - Temperature values appear to have slightly more variation from historic data than the pressure/frequency. Note that this is consistent with our experience that thermistors tend to be less reliable over time.
- Measured values at the datalogger terminal indicate potential problems with the connections to sensors VB-5 through VB-8.
 - Could be due to either malfunction of cabling extending from the datalogger box or wiring/modules in the junction boxes.
- It looks like the transient protection modules (isolators) in the two junction boxes may not be protecting the datalogger.
 - There are small gauge wires connected to the metal backing panel, but it appears that the grounding lugs on the protection modules are not connected to the box (see Figures 2 and 3).
 - It is also not clear whether the appropriate grounding cables were buried with the VWP sensors at the time of installation (see Attachment 2).
- There does not appear to be any lightning protection or grounding rod for the datalogger box.

Recommendations

Based on our observations and testing, we do not recommend replacing the VWP sensors at this time. Instead, we recommend the following steps before considering sensor replacement.

1. Switch the sensor input locations within the datalogger/multiplexer to new channels (i.e. switch from current positions 1-8 to positions 9-16. Note that the configuration of logview and/or the code running on the datalogger may need to be updated to ensure the data is properly logged.



2. Collect measurements from the VWPs with the sensor input locations changed for at least 2-4 months to establish whether the sensors and collection system can now be considered reliable.
3. If switching the positions of the sensor inputs in the datalogger is not successful, both junction boxes should be replaced. Based on readings at the datalogger terminal, either the transient protection modules or the cabling from the junction boxes to the datalogger may be causing system malfunction and data collection problems. We suggest that the cables be spliced at the junction box locations to provide a direct connection to the datalogger and minimize connection problems. Alternatively, they could be replaced with new modules and properly grounded to protect the datalogger.
4. Collect measurements from the VWPs with the junction boxes replaced for at least 2-4 months to establish whether the sensors and collection system can now be considered reliable.
5. If replacing the junction boxes does not resolve the problem, consider replacing the datalogger and/or the multiplexer.

If it becomes necessary to replace the datalogger or multiplexer, there may be further considerations such as the desire for new functionality, standardization across your system portfolio, etc. It may be possible to replace only the datalogger, to replace both components, or to replace the entire collection system. Note that replacing the existing hardware with newer versions may also allow upgrades for new features such as wireless transmission or connection to your SCADA system. If you would like to discuss these potential tradeoffs, we would be happy to give you further feedback.

Please call if you have any questions or comments.

Attachments

Attachment 1: Genterra Consultants, “San Joaquin Reservoir Drawdown Study - Site Plan: Figure 1”, dated December 2, 2011.

Attachment 2: Durham Geo Slope Indicator (DGSI), “Transient Protection Module” Data Sheet.



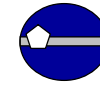


Table 1: Measurements Taken by GeoPentech on March 27, 2023

Sensor Measured	Measurements Taken at Main Box				Measurements Taken at Junction Boxes			
	Resistance Between Temperature Sensor Wires (ohms)	Resistance Between VW Wires (ohms)	Temperature (°C)	Frequency (Hz)	Resistance Between Temperature Sensor Wires (ohms)	Resistance Between VW Wires (ohms)	Temperature (°C)	Frequency (Hz)
VWP-1	3620	315	20.9	2971.7	3620	305.4	20.7	2971.7
VWP-2	3600	311.4	20.9	2887	3596	301.4	20.9	2887
VWP-3	3455	310	21.5	3161.5	3493	299	21.5	3161.5
VWP-4	3910	305.1	20.9	2972.9	3900	394.3	N/A**	N/A**
VWP-5	*	309.5	*	2790	3860	299.6	19.4***	2790
VWP-6	3590	*	20.9	*	3584	298.4	20.9	2919.4
VWP-7	*	*	*	*	3491	295.8	21.5	3081
VWP-8	3600	*	20.8	*	3600	293.3	20.9	2995

Notes:

*Valid measurement could not be obtained, possibly due to VWP system malfunction.

**No measurement could be taken due to surficial waterproofing

***When shield wire is connected, temperature measures 5.6

Table 2: Summary of Historic VWP Measurements

Date	Reservoir Elevation	VB-1 Frequency (Hz)	VB-1 Temp. (°C)	VB-2 Frequency (Hz)	VB-2 Temp. (°C)	VB-3 Frequency (Hz)	VB-3 Temp. (°C)	VB-4 Frequency (Hz)	VB-4 Temp. (°C)	VB-5 Frequency (Hz)	VB-5 Temp. (°C)	VB-6 Frequency (Hz)	VB-6 Temp. (°C)	VB-7 Frequency (Hz)	VB-7 Temp. (°C)	VB-8 Frequency (Hz)	VB-8 Temp. (°C)
2/25/2009	470.10	2988.80	22.30	2912.40	23.0	3162.90	21.30	2965.70	20.80	2774.50	20.50	2946.10	22.40	3083.30	22.4	3035.40	21.80
2/25/2010	470.20	2957.30	22.30	2899.70	23.0	3162.80	21.20	2961.30	20.60	2772.60	20.40	2936.00	20.50	3083.30	20.70	3029.40	21.60
3/29/2011	470.30	2956.90	22.30	2891.90	23.0	3162.90	20.70	2957.70	20.60	2770.70	19.80	2931.60	19.70	3082.90	19.80	3014.70	19.90
3/27/2023	471.10	2971.7	20.7	2887	20.9	3161.5	21.5	2972.9	20.9	2790	19.4	2919.4	20.9	3081	21.5	2995	20.90
1/26/2017	471.60	3011.61	21.30	2900.67	22.00	3159.30	22.00	2976.99	21.80	2771.84	21.10	2953.45	22.00	3081.10	22.30	3014.56	23.20
2/28/2017	471.90	3007.02	21.10	2871.54	21.60	3160.84	21.90	2972.98	20.60	2768.30	20.40	2923.73	21.70	3081.21	22.10	2998.07	22.30
3/1/2017	471.90	3007.11	21.10	2871.54	21.60	3160.24	21.90	2971.86	20.07	2767.52	20.40	2924.67	21.80	3081.14	22.10	2996.94	22.40
3/2/2017	471.90	3006.69	21.10	2870.57	21.60	3159.45	21.90	2971.67	20.50	2767.23	20.40	2922.65	21.70	3080.93	22.10	2997.18	22.20
2/25/2017	472.00	3007.04	21.10	2872.45	21.70	3159.68	21.90	2971.58	20.70	2767.01	20.50	2924.57	21.80	3081.08	22.10	2998.95	22.40
2/26/2017	472.00	3007.17	21.10	2872.02	21.60	3160.09	21.90	2971.99	20.70	2767.46	20.40	2924.16	21.70	3081.09	22.10	2992.11	22.30
2/27/2017	472.00	3007.06	21.10	2872.13	21.60	3160.10	21.90	2971.99	20.07	2767.31	20.40	2924.02	21.80	3081.09	22.10	2992.67	22.30
2/24/2017	472.05	3007.20	21.10	2872.81	21.60	3160.02	22.00	2971.88	20.70	2767.24	20.50	2925.06	21.70	3081.04	22.10	2999.46	22.40

Notes:

- Only historic data collected prior to 2020 considered for comparison
- Blue highlight indicates measurements collected by GeoPentech on March 27, 2023

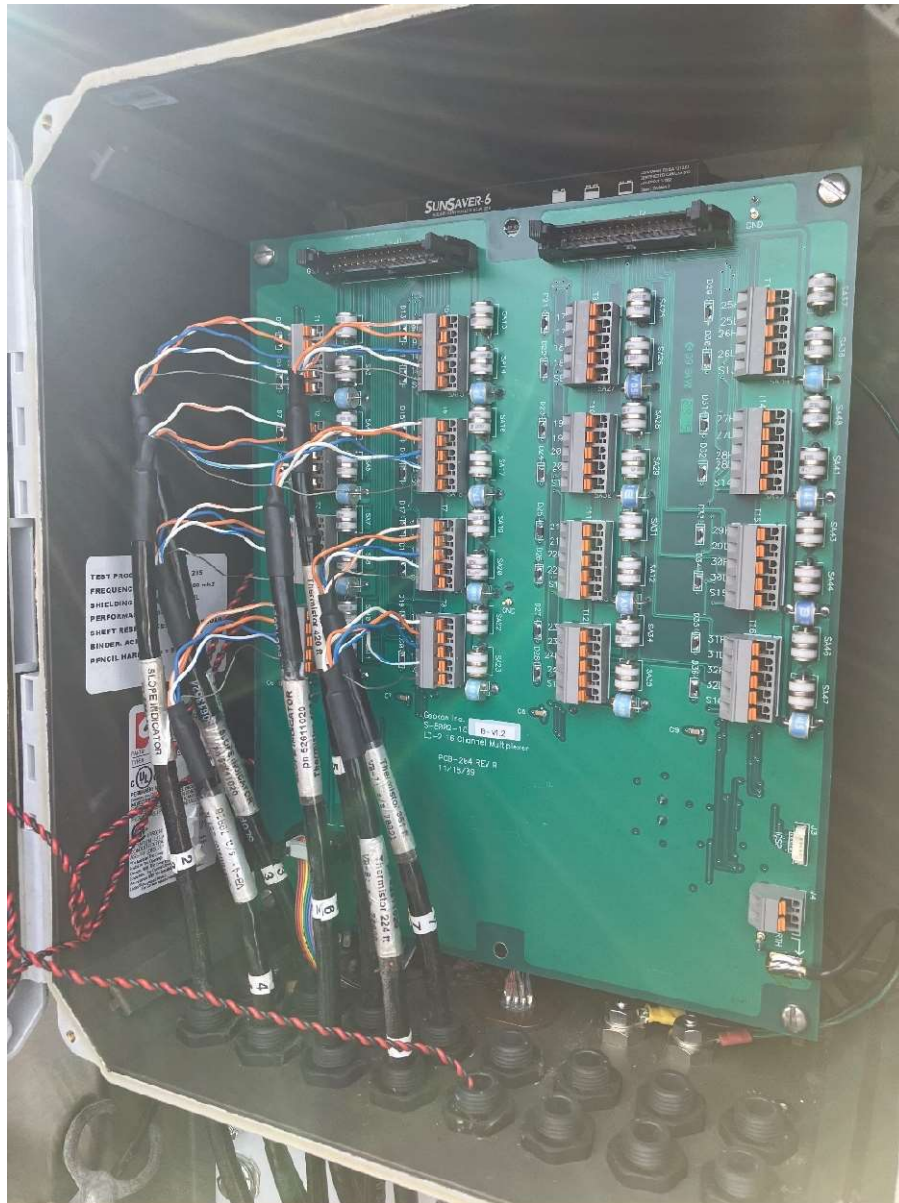


Figure 1: Condition of Main Box, containing datalogger, on March 27th, 2023.

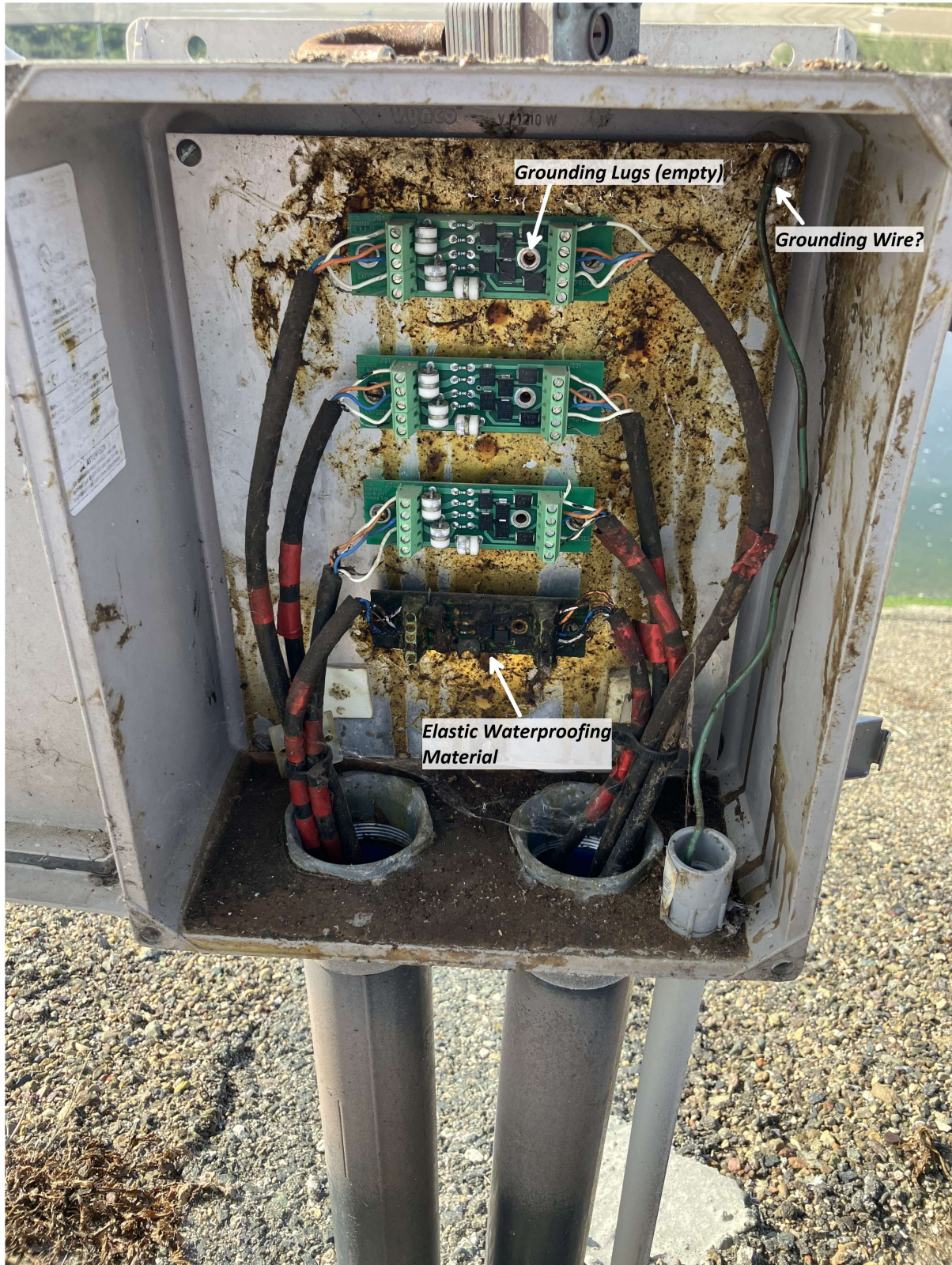
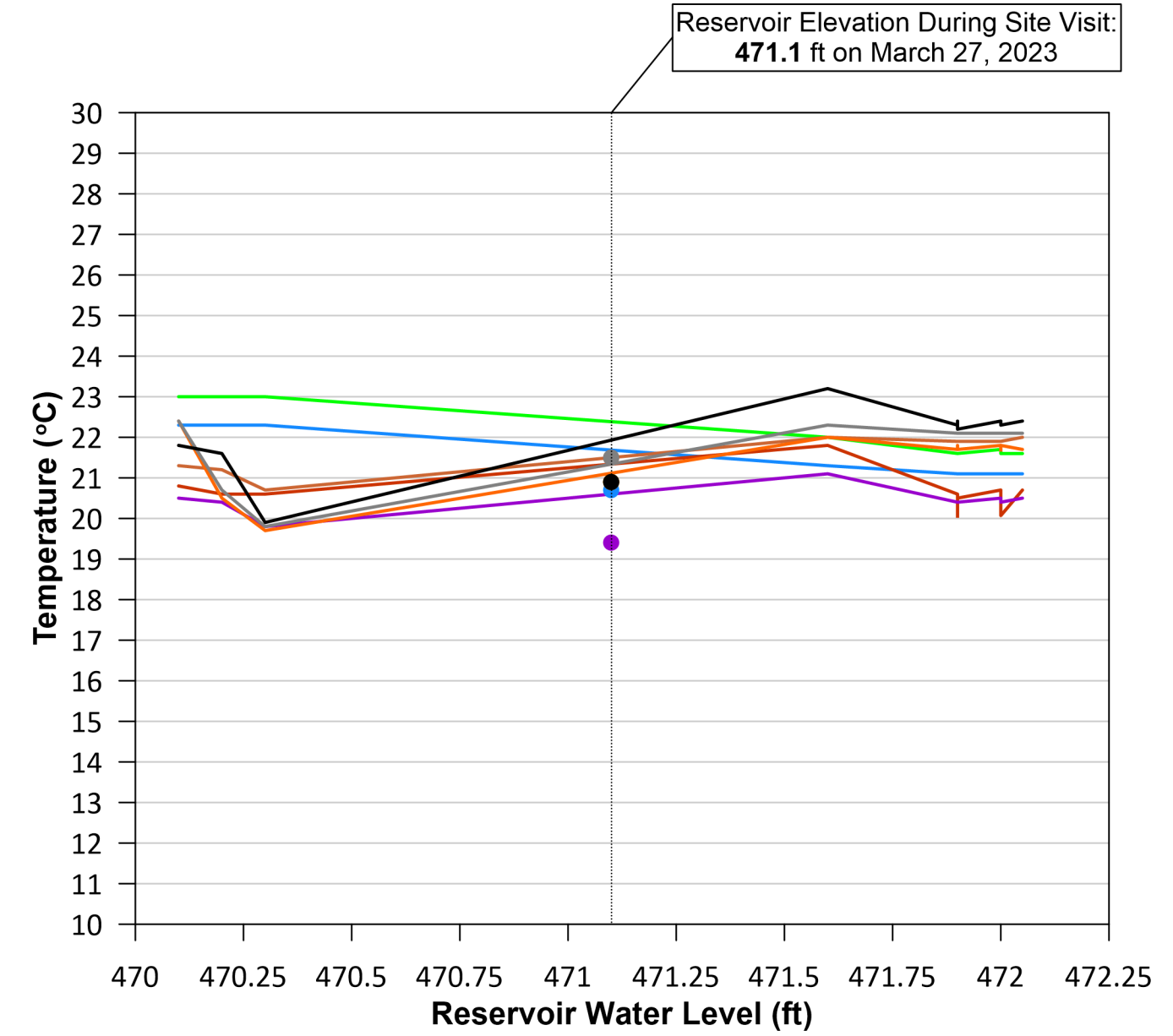
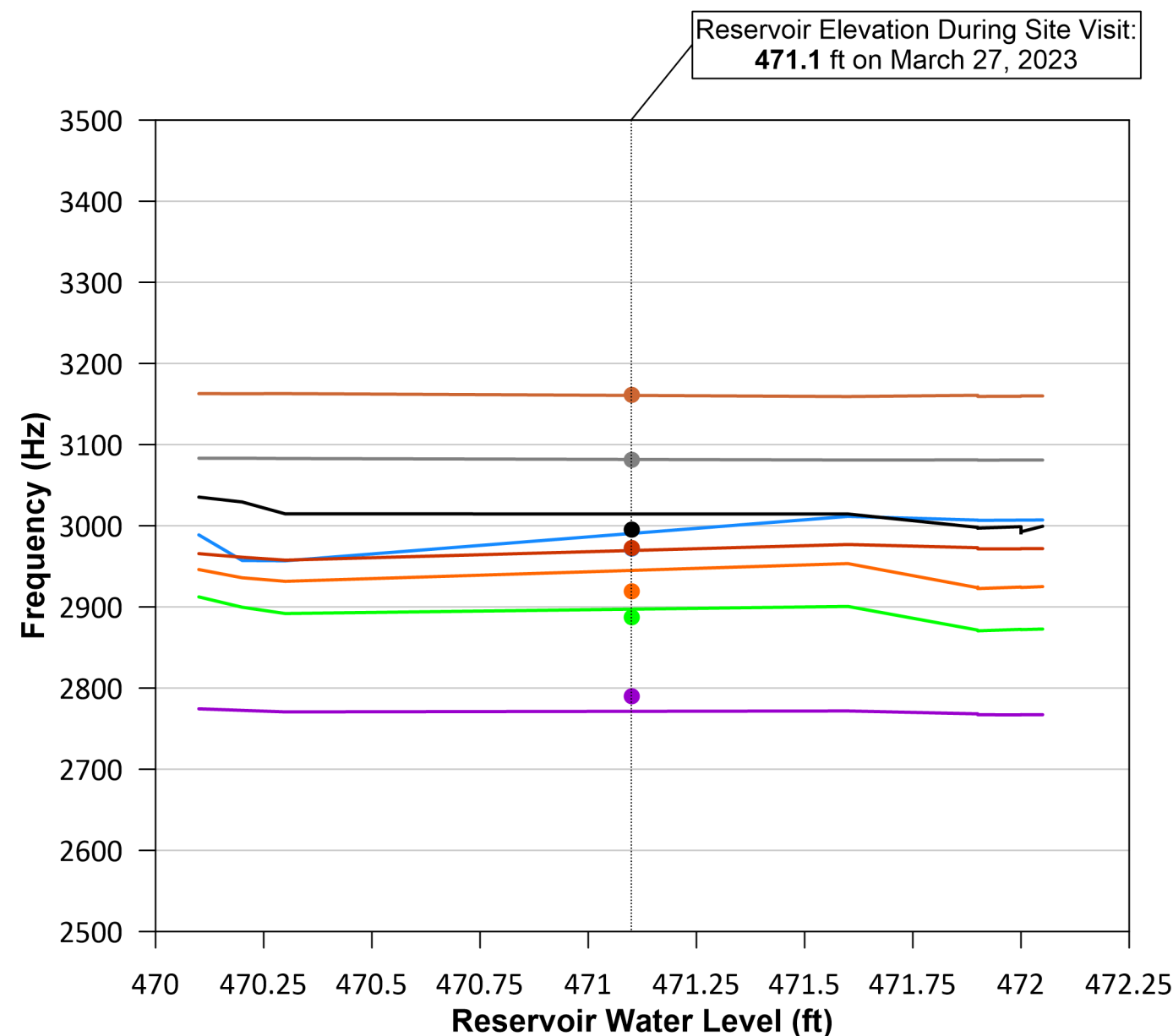


Figure 2: Condition of Right Abutment Junction Box (VB-1 through VB-4) on March 27th, 2023



Figure 3: Condition of Left Abutment Junction Box (VB-5 through VB-8) on March 27th, 2023


VWP Data Validation



<u>Legend</u>	
— VB-1 Historic Data	● VB-1 GeoPentech Measurement
— VB-2 Historic Data	● VB-2 GeoPentech Measurement
— VB-3 Historic Data	● VB-3 GeoPentech Measurement
— VB-4 Historic Data	● VB-4 GeoPentech Measurement
— VB-5 Historic Data	● VB-5 GeoPentech Measurement
— VB-6 Historic Data	● VB-6 GeoPentech Measurement
— VB-7 Historic Data	● VB-7 GeoPentech Measurement
— VB-8 Historic Data	● VB-8 GeoPentech Measurement

Notes:

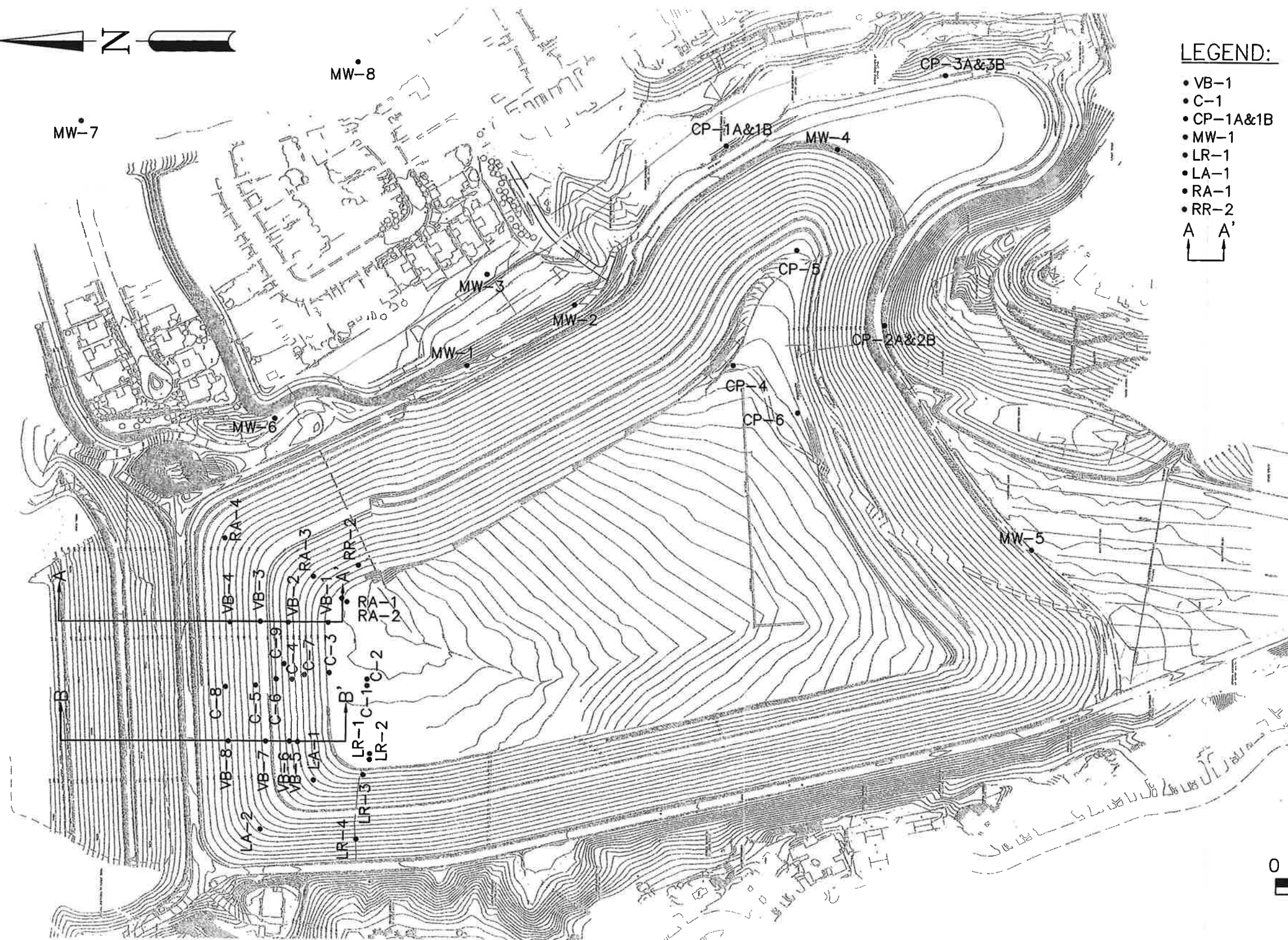
- Only Historic Data recorded prior to 2020 is shown
- GeoPentech measurements taken at junction boxes

**GeoPentech**

VWP DATA VALIDATION		
Project: IRWD - San Joaquin Reservoir VWP		Figure 4
Project No.: 23016A	Date: MAR 2023	

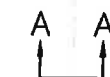
Attachment 1

Genterra Consultants, “San Joaquin Reservoir Drawdown Study - Site Plan: Figure 1”, dated December 2, 2011.



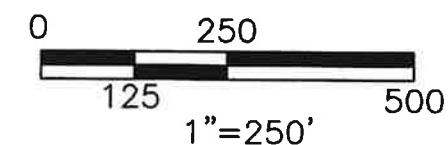
LEGEND:

- VB-1 VIBRATING WIRE PIEZOMETER
- C-1 PNEUMATIC PIEZOMETER
- CP-1A&1B STANDPIPE PIEZOMETER
- MW-1 MONITORING WELL
- LR-1 PNEUMATIC PIEZOMETER
- LA-1 PNEUMATIC PIEZOMETER
- RA-1 PNEUMATIC PIEZOMETER
- RR-2 PNEUMATIC PIEZOMETER



LOCATION OF SECTION

PIEZOMETER/ WELL	TOP ELEV. (FT)	BOTTOM ELEV. (FT)
MW-1	487.8	363.2
MW-2	489.0	409.9
MW-3	509.0	423.0
MW-4	489.9	444.5
MW-5	489.4	406.5
MW-6	481.4	404.9
MW-7	463.3	397.3
MW-8	512.8	419.8
CP-1A	484.4	398.5
CP-1B	484.3	449.3
CP-2A	487.7	395.8
CP-2B	487.7	432.8
CP-3A	486.0	409.3
CP-3B	486.0	453.7
VB-1	371.0	357.0
VB-2	407.0	392.0
VB-3	421.5	399.5
VB-4	448.0	441.0
VB-5	402.0	392.8
VB-6	408.0	392.0
VB-7	422.0	402.0
VB-8	452.5	441.0



DESIGNED BY: SB
DRAWN BY: JDD
DATE DRAWN: DEC 2011
CHECKED BY: SB

IRVINE RANCH
WATER DISTRICT

SAN JOAQUIN RESERVOIR
DRAWDOWN STUDY



PROJECT NUMBER

354-IRW

DATE

DECEMBER 2, 2011

SITE PLAN

FIGURE 1

Attachment 2

Durham Geo Slope Indicator (DGSI), “Transient Protection Module” Data Sheet.

Transient Protection Module

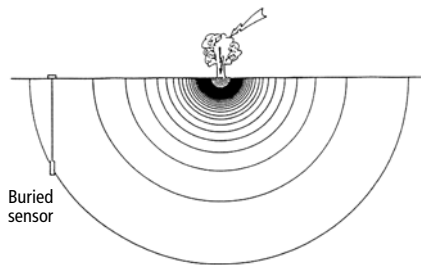
Application

Problems with noisy readings and bad sensors are more likely to be caused by voltage transients (such as lightning) than by poor quality or poor installation techniques.

Transient protection modules, when combined with other measures, such as minimizing the lengths of horizontal runs of cable, can help prevent these problems.

Transients and Buried Sensors

The drawing below shows lightning striking a tree. The concentric lines are iso-voltage levels at the instant of the strike. Each line represents a voltage difference of about 50 kV.



In the drawing above, the cable to the sensor cuts across part of one level, so there is about a 10 to 20 kV voltage gradient between the surface and the sensor.

Sensors and cables cannot withstand such high voltage differences. The typical result is arcing that can destroy the sensor and cable.

Even if the sensor is not destroyed, the cable jacket will have pinhole punctures. Water will enter through these punctures later, causing all the symptoms of a seal failure and a significant increase in noise and interference.

Protecting Buried Sensors

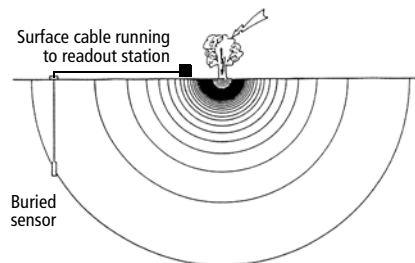
To protect buried sensors, we must try to eliminate voltage gradients that would affect the sensor and cable.

In the drawing above, the sensor cable is terminated at the surface and we must eliminate any gradient developing between the surface and



the sensor. This can be achieved by running a heavy gauge, bare grounding wire down the borehole, parallel to the sensor signal cable. The wire should extend several feet deeper than the sensor and should be isolated from the signal cable.

When signal cable is not terminated at the top of the borehole, but instead runs horizontally to a readout station or data logger, the simple grounding wire technique above is no longer effective. Now we must try to eliminate the voltage gradient between the readout station and the sensor.



One way to eliminate this gradient is to run a ground wire parallel to the horizontal signal cable and connect it to the grounding wire in the borehole. This is generally not cost-effective unless an existing grounding grid can be used.

One alternative is to place a transient protection module at the top of the borehole, between the horizontal and vertical runs of signal cable. The grounding lug of the protection mod-

ule is then connected to the grounding wire in the borehole.

With the protection module in place, transients on the horizontal run of signal cable are intercepted and shunted to the grounding wire in the borehole. This instantly raises the voltage levels around the sensor and signal cable, eliminating the voltage gradient that causes damage.

Note that the transient protection suggested above does not protect the horizontal runs of signal cable. These runs can be protected only by a conductor, such as grounding wire, a grounding grid, or a pipeline that runs parallel to the signal cable over its full length.

Protecting Data Loggers

Transient protection modules placed between signal cable and the data logger can protect the logger from transients arriving on the signal cable. In this case, the grounding lug on the module should be connected to the local facility ground, probably the same ground that the data logger is connected to.

Other measures to protect surface equipment include the use of isolated power supplies and optical isolation of communications lines.

TRANSIENT PROTECTION MODULE

Transient Protection Module. . . .52612520

Module includes 3-stage transient protection board and an enclosure with cable glands and grounding lug. Module protects four leads and shield.

Gas Discharge Tubes: Three tripolar gas discharge tubes with simultaneous sparkover of three electrodes for maximum efficiency. Sparkover at nominal 250 volts with impulse sparkover less than 600 volts. Handles 20 kA current.

Fast Response Transient Suppressors: Four 40V 1500 Watt suppressors protect four leads. Also two 15V 1500 Watt suppressors protect against voltage between leads.

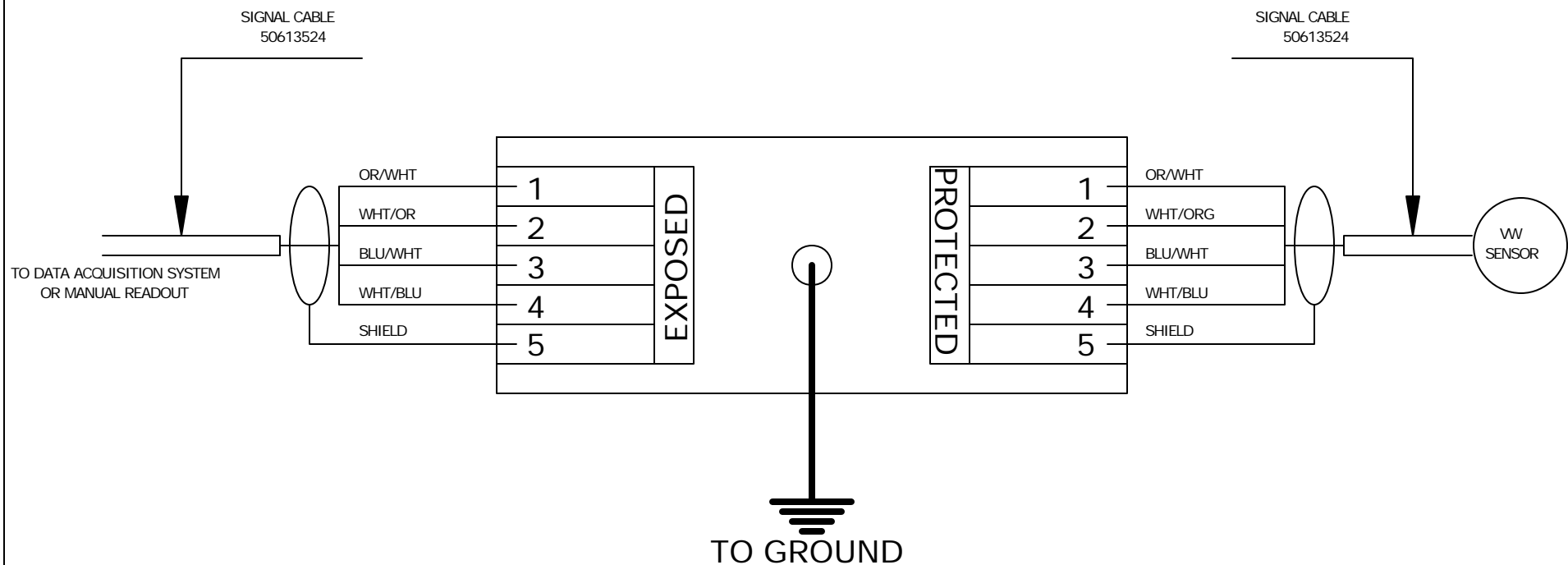
Isolation Fusing Resistors: Replaceable fusing resistors, nominally rated for 100 mA, provide isolation for sensor and cable if other devices are overpowered.

DISCLAIMER

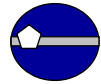
The suggestions in this datasheet for protecting sensors and cables are based the ideas presented in a paper by Dale Shoup titled "Sensors in the Real World," which is available on Slope Indicator's website.

Although there has been much research conducted on protection of buildings and equipment at the surface, there has not been much research conducted on protecting buried sensors. A search of the internet will verify this.

It is difficult to imagine all the variables that affect a particular site, and even more difficult to prescribe a sure solution that protects all buried sensors. Thus the suggestions in this datasheet should be viewed as an effort to be helpful, not as expert advice.



NOTE: Locate surge arrestor module as close to VW sensor as possible.
For borehole applications locate surge arrestor module at top of borehole.



Memorandum

To: Terry Shreiner – Irvine Ranch Water District

CC: Esteban Rendon – Irvine Ranch Water District

From: Douglas Wahl, PE, GE

Date: May 31, 2023

Re: Site Visit Memorandum – Piezometer Instrumentation System Repair – San Joaquin Reservoir

This memorandum documents our site visit on Wednesday, May 31, 2023. This work was performed in accordance with Irvine Ranch Water District's (IRWD's) Purchase Order No. 635364 dated April 27, 2023, and our proposal dated April 21, 2023, for piezometer instrumentation system repair services at IRWD's San Joaquin Reservoir.

On May 31, 2023 (Wednesday), Doug Wahl from GeoPentech visited the site and met with Terry Schreiner (Instrumentation Supervisor), and Esteban Rendon (Electrical/Instrumentation), both from the IRWD. The primary purpose of our visit was to perform repairs of part of the instrumentation system, specifically replacing a series of eight (8) surge arrestors in two existing enclosures at the crest of the dam. During our previous visit in March of 2023, we were able to inspect the system and identified potential problems with these components and recommended that they be replaced.

During our visit, we replaced the previous modules with new equipment within the existing enclosures. The new modules are manufactured by Geokon and are a functional equivalent to the previous (instruction manual can be accessed online: [https://www.geokon.com/content/manuals/4999-12L-LE\(LAB3\)_Surge_Module.pdf](https://www.geokon.com/content/manuals/4999-12L-LE(LAB3)_Surge_Module.pdf)). All eight instruments (two sensors per instrument) were reconnected to the new surge modules (photos attached). Resistance readings were taken of the vibrating wire sensors and ranged from about 294 ohms to 304 ohms, within the expected range indicating they are likely functional. We did not have a way to connect to the datalogger during our visit to verify function.

Note that the previous transient modules did not appear to be connected to earth ground, whereas the new modules have been connected to the ground wires entering each enclosure. It is not clear where these ground wires terminate. Furthermore, it does not appear that the main datalogger enclosure has a connection to earth ground.

Recommendations

At this time, we recommend allowing the system to collect measurements with the new equipment in place for at least a week or two and then re-evaluating the collected information to determine if further work may be necessary. We also suggest that installing a ground rod for the main datalogger may be beneficial to reduce some noise, though unlikely to be the main cause of previous system inconsistency. Note that this could also be combined with further troubleshooting of the datalogger itself if it is deemed necessary.

Please call if you have any questions or comments.



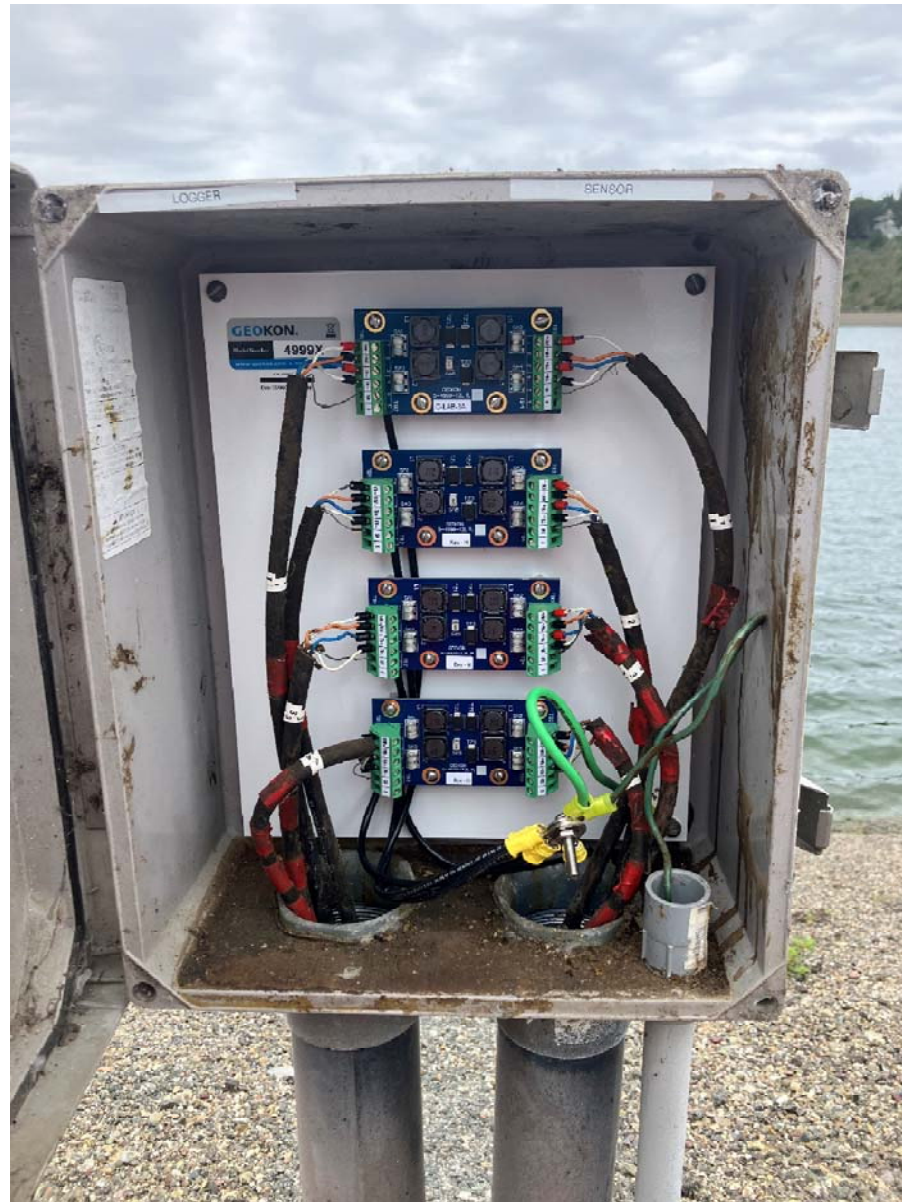
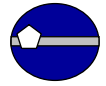


Figure 1: Newly Installed Modules at Left Abutment Junction Box (VB-1 through VB-4).

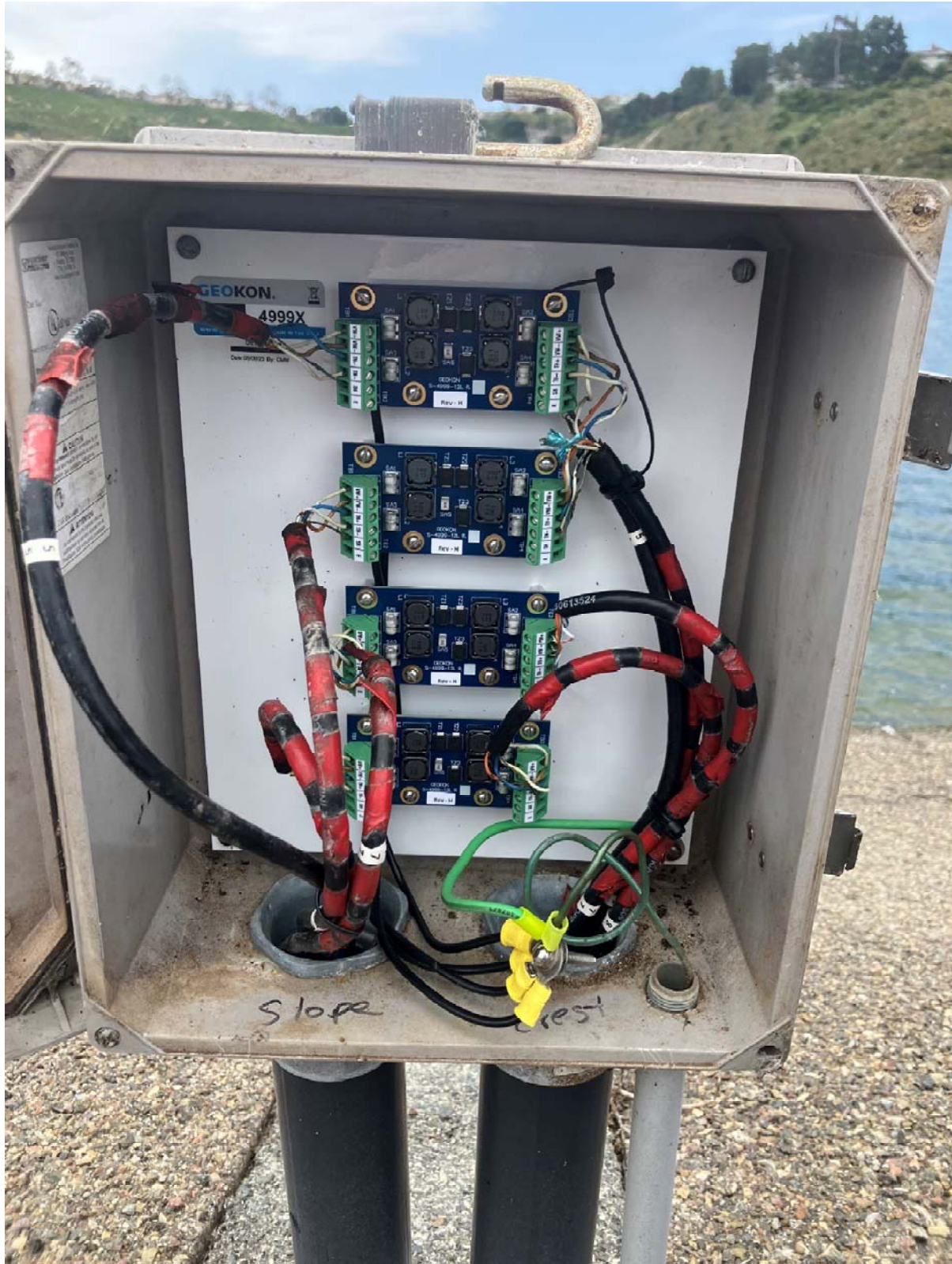


Figure 2: Newly Installed Modules at Right Abutment Junction Box (VB-5 through VB-8).