

Annual Surveillance Report
January 2018 through December 2018
San Joaquin Dam and Reservoir
DSOD Dam No. 1029-000
Newport Beach, CA
June 26, 2019



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**GENTERRA
CONSULTANTS, INC.**
ENGINEERING & GEOTECHNICAL SERVICES

**ANNUAL SURVEILLANCE REPORT
JANUARY 2018 THROUGH DECEMBER 2018
FOR
SAN JOAQUIN DAM AND RESERVOIR
DSOD DAM NO. 1029-000
NEWPORT BEACH, CALIFORNIA**

Submitted To:

**Irvine Ranch Water District
Field Operations Department
P. O. Box 57000
Irvine, CA 92619-7000**

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Project No. 397C-IRW

June 26, 2019

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Project No. 397C-IRW

Irvine Ranch Water District
Field Operations Department
P. O. Box 57000
Irvine, CA 92619-7000

Attention: Mr. Malcolm A. Cortez, P.E.

Subject: San Joaquin Dam and Reservoir, DSOD Dam No. 1029-000,
Annual Surveillance Report, January 2018 through December 2018

Dear Mr. Cortez:

GENTERRA Consultants, Inc. (GENTERRA) is pleased to submit this Annual Surveillance Report for San Joaquin Dam and Reservoir covering the period from January 2018 through December 2018. This report is part of the scope of work described in our proposal dated October 14, 2015, and as authorized by the Irvine Ranch Water District (District) in Purchase Order No. 527854 dated December 22, 2015.

We appreciate this opportunity to provide the District with our services during this annual surveillance program. Please contact either of the undersigned with any questions.

Sincerely,
GENTERRA CONSULTANTS, INC.



Douglas A. Harriman, P.E.
Principal Engineer
P.E. 55620



Joseph J. Kulikowski, P.E., G.E.
President and Senior Principal Engineer
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Enclosure

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SECTION 1: INTRODUCTION AND BACKGROUND

1.1 GENERAL

This report presents the results of the dam safety monitoring and surveillance program for the San Joaquin Dam and Reservoir, conducted by the Irvine Ranch Water District (District) and GENTERRA Consultants, Inc. (GENTERRA) for the 12-month period from January 2018 through December 2018. It includes a compilation of the field measurements, 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 performance of the dam. This report is being submitted as part of the jurisdictional requirements of the State of California, Department of Water Resources, Division of Safety of Dams (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, 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. 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 National Oceanic and Atmospheric Administration (NOAA) National Geodetic Survey (NGS) online program VERTCON, calculated an orthometric height difference (i.e. datum shift) of 2.375 feet that is to be added to elevations in NGVD 29 and rounded to the nearest hundredth of a foot to obtain elevations in NAVD 88 for the San Joaquin Dam and Reservoir. A list of key features of the dam with elevations in both NGVD 29 and NAVD 88 for reference is shown below.

| Feature | Elevation (NGVD 29) | Elevation (NAVD 88) |
|--------------------------|-------------------------------------|-------------------------------------|
| Dam Crest | 476.00 ft | 478.38 ft |
| Spillway Crests | 470.50 ft | 472.88 ft |
| Upstream Slope Bench | 420.00 ft | 422.38 ft |
| Downstream Slope Benches | 420.00 ft 360.00 ft 300.00 ft | 422.38 ft 362.38 ft 302.38 ft |

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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 (MWD). The District was the major owner and MWD was responsible for reservoir operations and dam safety.

The District subsequently acquired complete ownership of the dam and reservoir and converted it from a potable facility to a recycled water facility. The conversion project included the following dam and reservoir improvements:

- Place fill in the canyon to the east of Claystone Hill (referred to as Canyon “C” on Figure 2) to improve the configuration of the reservoir and minimize stagnant water areas.
- Line the reservoir on the eastern side with a geocomposite drain, geomembrane liner, and clay lining. The purpose of the lining is to minimize seepage from the reservoir and to reduce groundwater levels within the reservoir slope to below historical levels.
- Install eight monitoring wells: six wells to monitor groundwater levels on the eastern side of the reservoir; one well to monitor water levels within the Canyon “C” fill; and one well to monitor water levels within the Buttress Fill.
- Install eight vibrating wire piezometers in the upstream face of the dam to monitor pore water pressures within the upstream clay core.
- Repair and reseal the reservoir asphalt concrete surfacing.
- Construct a storm drain system along the east and southeast patrol road.
- Restore the patrol road along the eastern and southern sides of the reservoir.
- Install a domestic water line to the operations building.
- Refurbish the existing intake/outlet valves.
- Install a reservoir aeration system.
- Address miscellaneous items to improve the aesthetics and operational efficiency of the facility.

Construction of the conversion project began in January 2004. Engineering consultation during construction was provided by Berryman & Henigar, GENTERRA, and other firms. Completion of the reservoir improvements was achieved by November 2004. The final DSOD inspection was performed on December 9, 2004. The District began refilling the reservoir on December 27, 2004 and completed the refilling process on March 7, 2005.

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San Joaquin Dam is a zoned rockfill embankment dam located in Newport Beach, California. According to DSOD (2000) as well as as-built plans, the dam crest is at an elevation of 476.0 feet (NGVD 29), with a crest width of 30 feet. The height of the dam is 224 feet with a crest length of 873 feet. The dam crest is lined with asphalt concrete and had been constructed with a camber varying from 0 feet at the abutments to 3 feet at the center of the dam crest. The upstream face of the dam is lined with asphalt concrete, has a slope gradient of 3H:1V (Horizontal:Vertical), and a bench at Elevation 420.0 feet (NGVD 29). The downstream face has a slope gradient of 2.25H:1V with three benches at Elevations 420.0 feet, 360.0 feet, and 300.0 feet (NGVD 29). The reservoir has a storage capacity of 3,036 acre-feet. The reservoir has a drainage area of about 0.3 square miles. The reservoir storage capacity is reported as 3,036 acre-feet in the 2018 document titled “Dams within the Jurisdiction of the State of California” (DSOD, 2018). The reservoir is lined with a compacted impervious earthen material which ties into the impervious upstream zone of the dam.

1.3 SPILLWAY

The spillway consists of two overpour drop inlets, one located near each abutment. The inlets are comprised of a concrete drop structure with the spillway lip at an elevation of 470.5 feet (NGVD 29). Connected at the bottom of each drop structure is an outlet conduit that converges at the energy dissipation box located in the stream channel downstream of the toe of the dam.

1.4 OUTLET WORKS

The outlet works consists of an intake structure, an outlet conduit, and a blowoff structure. The intake structure consists of an inclined 60-inch-diameter mortar-lined, mortar-coated, welded steel pipe located beneath the reservoir slope southeast (right) of the dam. There are four intake valves: one 24-inch butterfly valve at Elevation 370 feet, and three 48-inch-diameter valves at Elevations 380, 415, and 450 feet. A 60-inch-diameter butterfly valve is located at the transition from the 60-inch-diameter steel intake pipe to the outlet conduit near the right upstream toe of the dam. The outlet conduit is a 60-inch-diameter mortar-lined, mortar-coated, welded steel pipe that extends through the dam to a concrete blowoff structure near the downstream toe of the dam and continues for about 100 feet to the Control Building. The blowoff structure consists of two 12-inch-diameter emergency blowoff valves located in-line to minimize the release of water when exercised. Water released from the blowoff valves drains into the east storm drain conduit.

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SECTION 2: FIELD MEASUREMENTS

2.1 RESERVOIR WATER LEVELS

The District completed the reservoir refilling process on March 7, 2005. The reservoir is considered full when its water surface is at an elevation of approximately 470.0 feet (NGVD 29). The crest of the dam is at Elevation 476.0 feet (NGVD 29) or 478.38 feet (NAVD 88), and the crest elevation of each of the two spillway inlets is at 470.5 feet (NGVD 29) or 472.88 feet (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 District operation at this reservoir.

The elevation of the water surface in the reservoir is usually recorded monthly, each time a field visit is made to collect instrumentation data. During this 12-month review period, the elevation of the water surface in the reservoir ranged from 405.3 feet to 463.8 feet (NAVD 88).

2.2 INSTRUMENTATION

Several types of instrumentation are being monitored at the dam and reservoir, including vibrating wire piezometers, pneumatic piezometers, open-well piezometers, monitoring wells, seepage monitoring stations, and survey monuments. All measurements and readings were made by District personnel. The following is a brief summary of the instrumentation at San Joaquin Dam and Reservoir:

1. Eight vibrating wire piezometers, identified as VB-1 through VB-8, were installed in 2004. The locations of these piezometers are shown on Figure 3. Readings are taken at the control panel located on the upstream edge of the dam crest.
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 shown on 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. The locations of the piezometers are shown on Figure 4.
4. Eight monitoring wells, identified as MW-1 through MW-8, were installed around the perimeter of the reservoir in 2004. The locations of these wells are shown on Figures 4 and 5.
5. Seepage flow rates are measured at eight seepage monitoring stations. The seepage monitoring consists of V-notch weirs that are located as shown on Figure 2. The first seven are identified as the East Drain, West Drain, Filter Drain, Upstream Collector Drain No. 1, Upstream Collector Drain No. 2, Downstream Toe Drain, and Floor Drain. The eighth seepage monitoring location was added at the outlet of the right groin drainpipe.

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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 are located along the upstream toe of the dam and there are no data available for this series because these monuments are usually submerged under the water. The SE series monuments are also located inside the reservoir and they cannot be surveyed while the water surface elevation is above 422.0 feet (NAVD 88). SA-4, SE-1, and SE-4 are no longer being surveyed because they were destroyed. Because eight of the 33 active monuments are usually under water, there are currently only 25 survey monuments being surveyed by the District on an annual basis. The locations of the survey monuments are shown on Figure 6.

2.3 PIEZOMETER AND MONITORING WELLS

Tabulated data for piezometer and monitoring well measurements are presented in Table 1 for the 10-year historical period from January 2009 through December 2018. Table 2 presents the vibrating water piezometer measurements for the 10-year historical period from January 2009 through December 2018. Table 3 contains the pneumatic piezometer measurements for the 10-year historical period from January 2009 through December 2018.

Figures 7A through 7E present graphs of measured water levels in the reservoir, piezometers, and monitoring wells during the 2-year period from January 2017 through December 2018. Figures 8A through 8E present graphs of measured water levels in the reservoir, piezometers, and monitoring wells for the 10-year historical period from January 2009 through December 2018.

Figures 9A and 9B are graphs of water levels based on the readings obtained from the vibrating wire piezometers during the 2-year period from January 2017 through December 2018. Figures 10A and 10B are graphs of water levels based on the readings obtained from the vibrating wire piezometers for the 10-year historical period from January 2009 through December 2018.

Figures 11A through 11E present graphs of water levels based on the readings obtained from the pneumatic piezometers during the 2-year period from January 2017 through December 2018. Figures 12A through 12E present graphs of water levels based on the readings obtained from the pneumatic piezometers for the 10-year historical period from January 2009 through December 2018.

2.3.1 OPEN-WELL PIEZOMETERS (CP-1A, CP-1B THROUGH CP-3A, CP-3B)

Data from the open-well piezometers labeled as CP-1A and CP-1B, CP-2A and CP-2B, and CP-3A and CP-3B are collected monthly by the District. Table 1 presents the water-level data collected from these piezometers over the 10-year historical period from January 2009 through December 2018. Figures 7A and 8A show graphs of the water levels in Piezometers CP-1A, CP-1B, CP-3A, and CP-3B. Similarly, Figures 7B and 8B present graphs for Piezometers CP-2A and CP-2B.

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During the 12-month review period, Piezometers CP-1A, CP-2A, and CP-3A showed slight responses to reservoir water level fluctuations, while Piezometers CP-1B, CP-2B and CP-3B showed little to no response.

2.3.2 MONITORING WELLS (MW-1 THROUGH MW-8)

The water levels in Monitoring Wells MW-1 through MW-8 were measured approximately once per month throughout the 12-month review period. Table 1 presents the water-level data obtained for these monitoring wells for the 10-year historical period from January 2009 through December 2018. Graphs of the water levels for the 2-year period from January 2017 through December 2018 are shown on Figures 7C, 7D, and 7E. Graphs of the water levels for the 10-year period from January 2009 through December 2018 are shown on Figures 8C, 8D, and 8E.

Monitoring Wells MW-3, MW-4, and MW-6 were typically dry during the 12-month review period, with occasional readings indicating a small amount of water at the bottom of the piezometers. The water levels in MW-1 and MW-2 remained fairly constant showing no correlation with the fluctuation of the reservoir water surface elevation during the 12-month review period. MW-5 appears to respond to changes in the reservoir water surface elevation. MW-7 and MW-8 are located far from the reservoir (to the east) along a street named Chambord, and their water levels appear to be not influenced by fluctuations in reservoir water surface elevation. Until 2016, water levels in MW-7 and MW-8 were showing downward trend, but since 2016 Monitoring Well MW-8 located at Chambord started to show a slight upward trend and therefore future readings should be carefully evaluated.

2.3.3 VIBRATING WIRE PIEZOMETERS (VB-1 THROUGH VB-8)

The vibrating wire piezometers within the upstream side of the dam embankment are read at a terminal station located on the crest of the dam. Data from the vibrating wire piezometers are being collected by the District approximately once per month. The water-level data based on the vibrating wire piezometer readings for the 10-year period from January 2009 through December 2018 can be found in Table 2. Graphs of water level elevations based on readings obtained from Vibrating Wire Piezometers VB-1, VB-2, VB-5, and VB-6 are shown on Figures 9A and 10A. Similar graphs for Vibrating Wire Piezometers VB-3, VB-4, VB-7, and VB-8 are shown on Figures 9B and 10B.

Erroneous temperature readings were obtained from the vibrating wire piezometers from December 28, 2005 through December 19, 2013. The District and GENTERRA conducted a review and evaluation of the historical temperature data, and as a result, a method was developed to estimate adjusted temperature values for use in the calculations. It was determined that the average temperature values recorded up through the December 28, 2005 readings would be used to replace any erroneous temperature values that were recorded after the December 28, 2005 readings through December 2013, when the District corrected the operator errors and replaced the lightning protection equipment. Reliable temperature readings have been obtained since January 2014 from all eight of the vibrating wire piezometers. Table 2 incorporates the revised temperature readings (shown in red

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for the period from January 2009 to December 2013) for the 10-year historical period ending December 2018.

The differences in the calculated water-level elevations using the erroneous temperature readings versus the revised temperature readings ranged from a maximum of 9.74 feet to a minimum of 0.31 feet. The adjusted elevations fit within the historical ranges that have been observed at the piezometers.

Vibrating Wire Piezometers VB-1, VB-2, VB-4, VB-5, and VB-6 generally respond to changes in the reservoir water surface elevation, but Vibrating Wire Piezometer VB-1 responds very slightly to changes in the reservoir water surface elevation. Vibrating Wire Piezometers VB-3 and VB-7 are not responding to changes in reservoir level, which is an indication that they are no longer functional. It was also noted that some of the readings obtained from VB-3 and VB-7 were below the piezometer tip elevation, further indicating that both of these piezometers are no longer providing reliable readings.

2.3.4 PNEUMATIC PIEZOMETERS (C, LA, LR, 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 being read by the District approximately once per month. The pneumatic piezometer data are provided in Table 3 for the 10-year historical period from January 2009 through December 2018. Plots of water-level elevations based on readings obtained from Pneumatic Piezometers C-1 through C-4 are shown on Figures 11A and 12A. Similar plots for Pneumatic Piezometers C-5 through C-8 are shown on Figures 11B and 12B. Figures 11C and 12C are graphs of water level elevations based on readings obtained from Pneumatic Piezometers C-9, RR-2, LR-1, LR-2, LR-3, and LR-4, and Figures 11D and 12D are similar graphs for Pneumatic Piezometers LA-1, LA-2, RA-1, RA-2, RA-3, and RA-4. As shown on Figure 12E, readings of RA-4 that had been discontinued as of February of 2008 were resumed in September 2011.

Pneumatic Piezometers C-4, LR-3, LR-4, RR-2, RA-1, RA-3, LA-1, and LA-2 generally respond to changes in the reservoir water surface elevation. Pneumatic Piezometers C-6, C-8, and RA-2 typically exhibit a subdued response to changes in the reservoir water surface elevation, while C-1, C-2, C-3, C-5, C-7, C-9, LR-1, and LR-2 show little or no response to changes in reservoir levels. Water levels indicated by Pneumatic Piezometer RA-4 appear to increase when the reservoir water surface is low, and then decrease when the reservoir water surface is high. The reliability of the data obtained from Piezometer RA-4 is questionable because the data appears to be erroneous.

2.3.5 REVIEW OF PIEZOMETER AND MONITORING WELL DATA

Based on GENTERRA's review of the water-level data obtained from the piezometers and monitoring wells, there are no indications of any adverse conditions in the dam embankment, abutments, or reservoir perimeter.

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2.4 SEEPAGE FLOW RATES

Seepage flow rates 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 Upstream 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 has been added at the outlet of the right groin drainpipe. The locations of the seepage monitoring weirs are shown on Figure 2.

Seepage flow data from the weirs are collected monthly by District personnel.

Measurable seepage flows were observed in the East Drain, West Drain, Filter Drain, Downstream Toe Drain, and Floor Drain. A flow rate of less than one gallon per minute is typically observed at the outlet of the right groin drainpipe. The two Upstream Collector Drains are generally dry. Tabulated data for the historical 10-year period from January 2009 through December 2018 are presented in Table 4. Figures 13A and 13B present graphs of seepage flow rates for the 2-year period from January 2017 through December 2018. Figures 14A and 14B present graphs of the seepage flow rates for the historical 10-year period from January 2009 through December 2018.

Based on GENTERRA's review of the seepage flow data, there are no indications of any adverse conditions at the dam.

2.4.1 SEDIMENT COLLECTION FROM EAST, WEST, AND FILTER DRAINS

During the 2010 review period, the District observed that there was sediment collecting in the East Drain weir box. As requested by the District in 2010, GENTERRA reviewed the test results of the black sediments from East Drain weir box (also identified as a stilling basin). The samples of black sediments from the East Drain weir box that were tested, had been collected by the District, and delivered to URS who was the Dam Safety Consultant to the District at that time. As requested by the District and DSOD, URS and TerraSense, LLC performed laboratory tests to assess the soil classification and whether or not the sediment is organic.

GENTERRA's initial evaluation of the results indicated that these sediments were unusual materials. According to the Unified Soil Classification System (USCS, per ASTM D 2487, "Standard Classification of Soils for Engineering Purposes" (Unified Soil Classification System)), the black sediments from the East Drain weir box can be classified as Organic Silt (OH). Liquid Limit and Plasticity Index values of the black sediments indicate that these sediments originated from bentonite type materials. These sediments were mainly composed of Montmorillonite minerals (bentonite) and organics.

A separate letter was submitted to the District and DSOD by GENTERRA dated June 30, 2010 discussing the issue of the black sediment and providing several recommendations for proceeding with the testing and observation of the black sediment.

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On May 29, 2012, the District provided GENTERRA with photographs of the black sediment taken on May 2, 2012. The District noted that approximately two cups of sediment were measured in the West Drain collection basin. Based on those observations, it appeared that there was no significant change in the quantity or color of the black sediment that was flowing out of the West Drain. Starting in April 2014, the District began measuring the depth (in inches) and weight of the silt (in pounds), the amount of seepage flow (in gallons per minute), and the reservoir water surface elevation (in feet) monthly for the West, East and Filter Drains.

Based on the review of the data provided by the District from the three subdrains, there has been no sediment observed in the East and Filter Drain since April 2014. Sediment had been observed only from the West Drain since April 2014. The depth and volume of sediment removed from the West Drain is presented in Table 5 along with the amount of seepage measured from the drain. The amount of sediment measured each month since 2014 had decreased to a consistent amount of about two pounds per month by May 2016. Monthly measurements continued through the end of November 2016. The results showed no increase in the amount of sediment accumulation. The District suspended the collection of sediment after November 2016. This is preferable to the District in order to minimize the number of times that personnel must enter and descend to the bottom of the vault, which is beneficial for maintaining the health and safety of District personnel.

2.5 MOVEMENT SURVEYS

The District had an initial survey of the horizontal and vertical movements of the dam done by Guida Surveying on December 20, 2004. This was prior to the 2005 refilling of the reservoir. Guida Surveying used the NGVD 29 vertical datum. Beginning in 2005, all surveys are now referenced to the NAVD 88 vertical datum. Three surveys were performed at the dam in the 2005 calendar year. Since 2005, surveys have been performed annually. Tabulated data for the surveying of horizontal and vertical movement for the period from 2004 through 2018 can be found in Table 6. The dam was not surveyed during 2017.

Figures 15A and 16A are graphs of the net horizontal displacement and vertical movement for survey monuments SA-1 through SA-3 for the period from 2005 through 2018. Figures 15B and 16B present the net horizontal displacement and vertical movement for survey monuments SB-1 through SB-7 for the period from 2005 through 2018. Figures 15C and 16C are graphs of the net horizontal displacement and vertical movement for survey monuments SC-1 through SC-8 for the period from 2005 through 2018. Figures 15D and 16D are graphs of the net horizontal displacement and vertical movement for survey monuments SD-1 through SD-7 for the period from 2005 through 2018. Survey monuments SE-2, SE-3, SE-5, SE-6 and SE-7 on the upstream face of the dam are not presented on graphs because these monuments are submerged in the water in the reservoir and therefore cannot be surveyed. Similarly, survey monuments SF-1, SF-2, and SF-3 on the bottom of the reservoir are submerged under the water, and therefore cannot be surveyed while there is water in the reservoir. Based on GENTERRA's review of the survey data, there are no indications of any adverse conditions at the dam.

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SECTION 3: FIELD EVALUATIONS

3.1 FIELD EVALUATION OF MAY 2, 2018

A field evaluation of Sand Canyon Dam on May 2, 2018 was performed by Douglas A. Harriman, P.E. and J. Will Kulikowski of GENTERRA; Steve Habiger and Tyler Dillman of the District; Philip Lee, P.E. of DSOD was also present. The reservoir water surface was at an elevation of approximately 449.0 feet (NAVD 88) during the field evaluation. Photographs were taken and are in the project files at GENTERRA for comparison with future field evaluations.

3.1.1 DAM

The upstream face of the dam is surfaced with the original asphalt concrete (AC) placed during the construction of the dam. During the period that the reservoir was empty from the late 1990's to 2005, the binding in the original AC had become extremely weathered. As a result, large cracks and potholes have formed, exposing the upstream core of the dam in some joints and holes. These cracks and potholes were located throughout the upstream face of the dam; had no vertical or horizontal offset; and varied in length, width, and depth. According to the District, minor repairs, such as patching cracks and potholes with new AC, have been performed in some areas on the AC. The District is planning to continue performing repairs annually to prevent erosion and loss of upstream core material from the dam. Based on visual observation and reports from District personnel, the number and severity of the crack and pothole formation increases every year. The District should consider completely replacing the original, weathered AC on the upstream face of the dam to prevent any significant damage to the upstream core material. No signs of settlement or instability were observed on the upstream slope of the dam.

The crest of the dam is surfaced with AC and was in satisfactory condition with no signs of settlement. Some minor surface cracking was observed along the AC at the crest of the dam.

The downstream face of the dam is covered with soil and grass in the upper-most 20 feet and riprap on the remaining sections of the dam. There are three benches, designated as the upper (Elevation 420.0 feet, NGVD 29), the middle (Elevation 360.0 feet, NGVD 29), and the lower (Elevation 300.0 feet, NGVD 29). No signs of settlement or instability were observed on the downstream slope of the dam. Some minor tire ruts were observed on the benches and the District should consider repairing these ruts at the benches. Vegetation is growing between the downstream lower bench and the downstream toe. The DSOD representative suggested removing this vegetation growth.

The left and right concrete V-ditch drains installed in the groins of the dam appeared to be in good structural condition. Sandbags have been placed in areas of the right V-ditch to prevent soil from the adjacent hillside from entering the V-ditch. Both drains were clear of debris.

3.1.2 SPILLWAY

The two spillway intake structures (which are located at the east and west sides of the upstream face of the dam), and the energy dissipator structure (located downstream of the dam) were in satisfactory

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condition at the time of this field evaluation. Heavy vegetation was growing immediately downstream of the energy dissipator. The District should consider clearing this vegetation to prevent the backup of spillway flow.

Minor erosion was observed downstream of the left side of the energy dissipator. This area should be monitored for further erosion.

3.1.3 RESERVOIR

Visible areas around the perimeter of the reservoir were observed during the field evaluation. The northwest portion of the interior slopes of the reservoir is lined with the original AC that was installed during the construction of the dam and reservoir. The AC lining in the northwest portion of the reservoir showed significant signs of distress in the form of various cracks and potholes similar to the distress observed on the upstream face the dam. Minor repairs, such as patching some of the cracks and potholes with new AC, are performed annually by the District. The crack repairs on the old existing AC have begun to show signs of deterioration. The District is planning to continue to perform additional repairs on an annual basis. The District should consider complete replacement of the original, weathered AC which lines the northwest portion of the interior slopes of the reservoir.

3.1.4 OUTLET WORKS

DSOD recommends that the outlet and the emergency blow-off valves be exercised, and the results are documented in a log at least once per year to confirm operability. DSOD requires that the valves be exercised once every three years in the presence of a DSOD representative.

There are five outlet valves located upstream of the dam in the reservoir area. Four of the five valves were below the water surface and were not visible. The five outlet valves had previously been exercised on April 5, 2017 in the presence of a DSOD representative. All five outlet valves were fully exercised through a 100% cycle on May 2, 2018 in the presence of a DSOD representative.

There are two 12-inch-diameter emergency blowoff valves located near the downstream toe of the dam, in the blowoff structure. These two valves are located in-line to minimize the release of water when exercised. Both valves were exercised through a full cycle on April 5, 2017 and in the presence of a DSOD representative. During this field evaluation on May 2, 2018, the two blowoff valves were not exercised.

3.1.5 SEEPAGE

Seepage water was observed flowing over the V-notch weirs of the Downstream Toe Drain and the Floor Drain, located adjacent to the energy dissipator structure. The observed seepage flow rates were within the historical range. Automated instrumentation is used to obtain measurements of the seepage flow rates. The District also obtains manual measurements of the seepage flow rates so that the calibration of the automated instruments can be confirmed, and adjustments can be made to the instrumentation, if needed.

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The seepage flow rate in the energy dissipator structure was not measured during this field evaluation.

3.1.6 INSTRUMENTATION

The instrumentation panels for the pneumatic piezometers were observed and appeared to be in satisfactory condition. Previous field evaluations and monitoring reports have indicated that some of the original pneumatic piezometers are no longer working properly. This is to be expected as the pneumatic piezometers have exceeded their anticipated lifespan.

Several of the monitoring wells and piezometers were visually observed during the field evaluation. The exposed portions of the wells and piezometers appeared to be in generally satisfactory condition.

The survey monuments generally appear to be in satisfactory condition. All instrumentation data is collected by the District and transferred to GENTERRA for inclusion in this report.

3.2 FIELD EVALUATION OF DECEMBER 20, 2018

A field evaluation of San Joaquin Dam and Reservoir on December 20, 2018 was performed by Soma Balachandran, Ph.D., G.E., P.E. and J. Will Kulikowski of GENTERRA; and Bill Wesson of the District. The reservoir water surface was at an elevation of approximately 437.0 feet (NAVD 88) during the field evaluation. Photographs were taken and are in the project files at GENTERRA for comparison with future field evaluations.

3.2.1 DAM

During this field evaluation on December 20, 2018, the AC reservoir liner showed continuing deterioration. Cracks that were observed during the previous field evaluation were observed during this field evaluation as well, and these cracks should be fixed. Some of the patch material placed on the upstream face of the dam was observed degrading since the previous field evaluation on May 2, 2018. No signs of settlement or instability were observed on the upstream slope of the dam. The District should consider completely replacing the original, weathered AC on the upstream face of the dam to prevent any significant damage to the upstream core material.

The crest of the dam is surfaced with AC and was in satisfactory condition with no signs of settlement.

The downstream face of the dam is covered with soil and grass in the upper-most 20 feet and rockfill on the remaining sections of the dam, except the lower portion does not have rockfill. No signs of settlement or instability were observed on the downstream slope of the dam. Localized sloughs in the lowest portion of the slope were observed. Erosion gullies were observed in the middle bench. Rockfill should be added to the middle bench area and first bench area near the right abutment.

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The left and right concrete V-ditch drains installed in the groins of the dam appeared to be in good structural condition, but groins should be cleaned and improved to prevent accumulation of debris. Also, erosion gullies on the left abutment should be repaired. Sandbags have been placed in areas of the right V-ditch to prevent soil from the adjacent hillside from entering the V-ditch. Existing trees and vegetation within 15 feet beyond the dam footprint should be cleared.

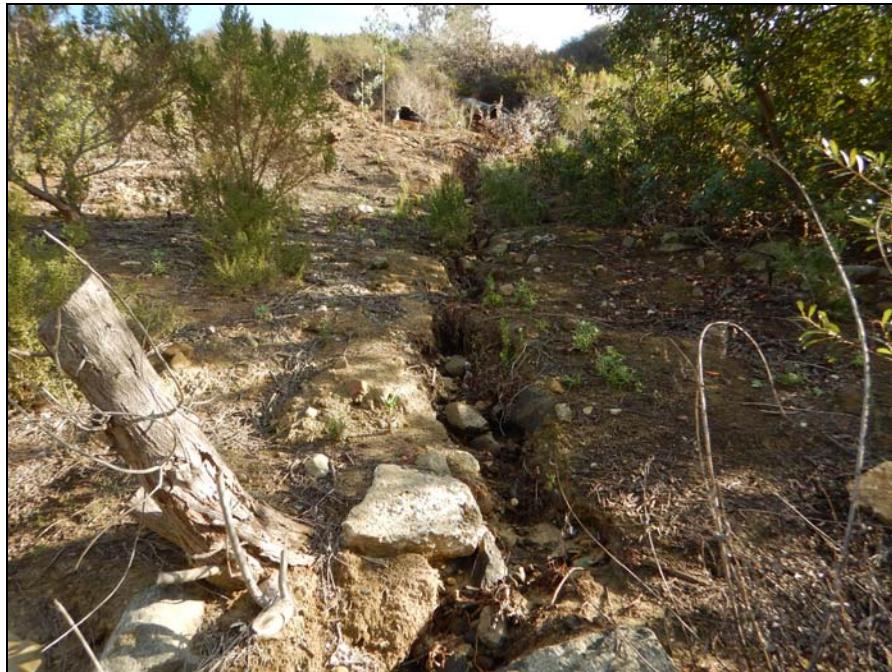


Photo 1. View of erosion gully on the left abutment.

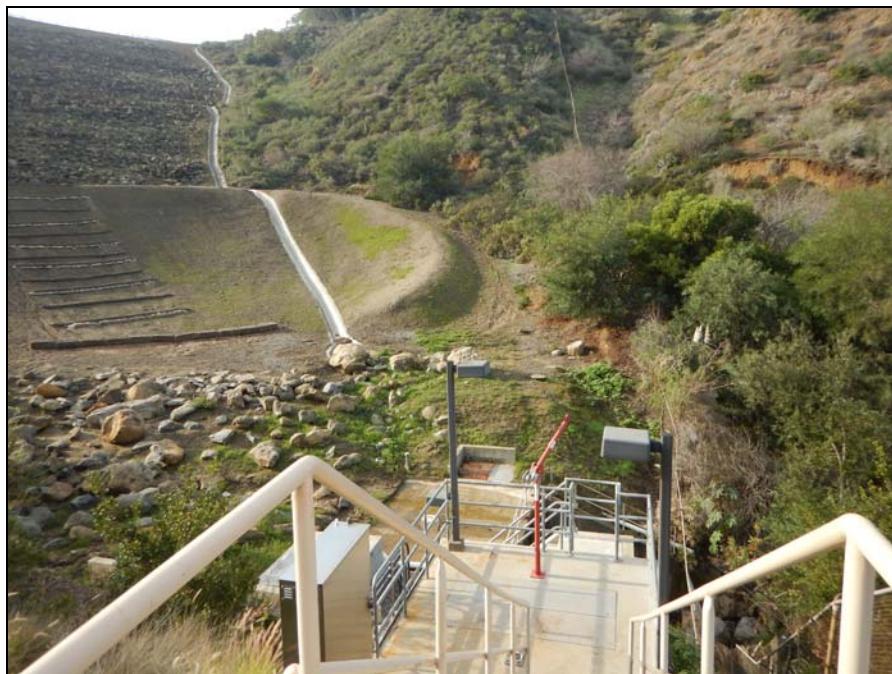


Photo 2. View of trees and vegetation within 15 feet beyond the dam footprint.

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3.2.2 SPILLWAY

The two spillway intake structures (which are located at the east and west sides of the upstream face of the dam), and the energy dissipator structure (located downstream of the dam) were in satisfactory condition. It was observed that heavy vegetation is continuing to grow immediately downstream of the energy dissipator since the previous field evaluation on May 2, 2018. The District should consider clearing this vegetation to prevent the backup of spillway flow. It is recommended that the stilling basin should be cleaned. Small perimeter wall or sandbags may prevent accumulation of sediments in the Stilling Basin. Erosion gullies around the energy dissipator should be repaired.



Photo 3. View of heavy vegetation growth immediately downstream of the energy dissipator.

3.2.3 RESERVOIR

Visible areas around the perimeter of the reservoir were observed during the field evaluation. The areas which have the AC that had been placed during the original construction of the dam and reservoir are showing significant distress and a gradual increase in the amount of linear cracking along the cold joints. No significant change has occurred since the previous field evaluation on May 2, 2018. Joints near the access ramp had vegetation growth, and vegetation growth should be controlled.

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Photo 4. View of vegetation growth along joints near the reservoir access ramp.

3.2.4 OUTLET WORKS

The upper intake valve (at Elevation 450 feet) was above the water surface and appeared to be in good condition. The controls for the outlet valves, located in a shed situated at the top of the reservoir slope along the perimeter road (right side of the dam), appeared to be in good condition. During this field evaluation on December 20, 2018, none of the outlet valves or blowoff valves were exercised. No change has occurred since the previous field evaluation.

3.2.5 SEEPAGE

Anticipated quantities of water based on historical records were observed flowing over the Downstream Toe Drain and the Floor Drain V-notch weirs located adjacent to the impact dissipator structure. The vault which houses these V-notch weirs makes it easier for field personnel to collect accurate manual readings of the flow rates. The District had also installed automated measurement devices to measure the flow through the two weirs.

The seepage flow rates in the impact dissipator structure were not measured during this evaluation but appeared to be within the range of recent measurements taken by the District. The most recent recorded values prior to the date of this field evaluation showed a flow of 2.23 gallons per minute (gpm) from the Downstream Toe Drain and a flow of 6.16 gpm from the Floor Drain.

At the time of this field evaluation, seepage flow rates at the West Drain, East Drain, and Filter Drain were 24.52 gpm, 25.52 gpm and 6.05 gpm, respectively.

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There is a seepage location where water is present between the energy dissipator structure and the stairs leading up to the entrance roadway. The amount of seepage appeared to be small. This seepage should continue to be observed for any changes.

3.2.6 INSTRUMENTATION

The instrumentation panels for the pneumatic piezometers were observed and appeared to be in satisfactory condition. Previous evaluations and monitoring reports have indicated that some of the original pneumatic piezometers are no longer working properly. This is to be expected as the pneumatic piezometers have exceeded their anticipated lifespan.

Several of the monitoring wells and piezometers were visually observed during the field evaluation. The exposed portions of the wells and piezometers appear to be in generally satisfactory condition.

The survey monuments generally appear to be in satisfactory condition. All instrumentation data are collected by the District and transferred to GENTERRA for inclusion in this report.

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SECTION 4: CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

- 4.1.1** Based on the available data, the dam appears to be performing satisfactorily.
- 4.1.2** Piezometer water-level fluctuations and seepage flow rates appear to be consistent with historical values.
- 4.1.3** The five outlet valves were last exercised on May 2, 2018 in the presence of a DSOD representative. The two blowoff valves were last exercised on September 20, 2018 but not in the presence of a DSOD representative.
- 4.1.4** Net horizontal displacement and vertical movement of the survey monuments appears to be normal and consistent with historical values and trends, as determined by survey data through 2018.
- 4.1.5** The asphalt concrete lining on the upstream face of the dam and interior slopes of the reservoir have continued to deteriorate, and the rate of deterioration has increased.
- 4.1.6** Several erosion gullies were observed on the middle bench of the downstream slope. Rockfill is missing in the middle bench area and first bench area near the right abutment.
- 4.1.7** In abutment areas, vegetation growth was observed within the 15-foot limit (i.e., 15 feet outside of the dam footprint) that should be free of vegetation growth. Also, erosion gullies on the left abutment were observed.
- 4.1.8** Minor vegetation growth was observed along joints near the access ramp in the reservoir.
- 4.1.9** A significant amount of vegetation is growing downstream of the energy dissipator structure. Erosion gullies were observed on the left side of the energy dissipator.
- 4.1.10** Seepage flow rates are measured by the District at eight seepage monitoring stations. In addition to these eight seepage locations, there is a seepage location where water is present between the energy dissipator structure and the stairs leading up to the entrance roadway. The amount of seepage appeared to be small.
- 4.1.11** Pneumatic Piezometer RA-4 does not provide reliable data. Vibrating Wire Piezometers VB-3 and VB-7 are no longer providing reliable readings. Piezometers CP-1B, CP-2B and CP-3B showed little to no response and therefore it may be beneficial to check and carefully clean these piezometers for proper functionality.

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Water levels in Monitoring Well MW-8 show a slight upward trend since 2016 and therefore future readings should be carefully evaluated.

4.2 RECOMMENDATIONS

- 4.2.1** Surveying of the existing survey monuments should be performed annually.
- 4.2.2** The District should continue monthly monitoring of the instrumentation at the dam.
- 4.2.3** GENTERRA recommends that the areas containing asphalt concrete lining distress should be investigated and repaired, and consideration should be given to replacing the asphalt concrete lining. Priority should be given for replacing the upstream slope asphalt concrete lining that protects the clay core of the dam.
- 4.2.4** Several erosion gullies on the middle bench of the downstream slope and left abutment should be repaired. Rockfill should be added where missing in the middle bench area and first bench area near the right abutment.
- 4.2.5** The District should discontinue the collection of readings from Pneumatic Piezometer RA-4 because that piezometer does not provide reliable data.
- 4.2.6** The District should consider replacement of Vibrating Wire Piezometers VB-3 and VB-7 since they are no longer providing reliable readings. This work could be done efficiently as part of the District's plans to replace the asphalt concrete lining on the upstream slope of the dam.
- 4.2.7** GENTERRA recommends that the District should consider inspecting Piezometers CP-1B, CP-2B and CP-3B and perform needed cleaning to improve functionality. Also, future readings of Monitoring Well MW-8 located at Chambord should be carefully evaluated since it started to show a slight upward trend since 2016.
- 4.2.8** Stilling basin should be cleaned. District can consider constructing a small perimeter wall or place sandbags to prevent accumulation of sediments in the Stilling Basin and to reduce maintenance interval.
- 4.2.9** The District should consider clearing the vegetation that is growing downstream of the energy dissipator structure to prevent the backup of spillway flow. The District should continue repairing erosion gullies on the left side of the energy dissipator.
- 4.2.10** The left and right concrete V-ditch drains in the groins should be cleaned and improved to prevent accumulation of debris.

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- 4.2.11** The District should consider clearing vegetation in abutment areas that are within 15 feet of the dam footprint.
- 4.2.12** The District should consider clearing vegetation in the joints near the access ramp in the reservoir.
- 4.2.13** The District should continue to observe for any changes in the amount of seepage near the energy dissipator structure.
- 4.2.14** The District should continue to implement its rodent abatement program to prevent rodent activity from occurring.
- 4.2.15** During the normal and routine daily, weekly, and monthly operations at the reservoir, District personnel should always be observing the condition of the dam and appurtenances, looking for signs of distress or movement, increased seepage, or other unusual conditions, and verifying that the critical facilities are functional. Any unusual observations should be reported immediately to a District supervisor and the District's Dam Safety Consultant under contract at the time.
- 4.2.16** GENTERRA recommends the District continue its program of performing a special evaluation of the dam immediately after any earthquake with a Magnitude of 4.5 or greater within a 50-mile radius of the dam, and/or any seismic event that would cause heavy furniture overturning in areas in the vicinity of the dam and reservoir.

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SECTION 5: LIMITATIONS

This report represents the results of our surveillance program for San Joaquin Dam, covering the period from January 2018 through December 2018. Professional services were provided to evaluate the performance of the existing dam based upon review of previous data, field evaluations, instrumentation readings, and surveys.

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

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7. GENTERRA, 2013, *Reservoir Slope Stability Evaluation for San Joaquin Dam and Reservoir, No. 1029-0, Newport Beach, California*; by GENTERRA; dated November 15, 2013.
8. GENTERRA, 2012, *Draft Drawdown Program Review Study for San Joaquin Dam and Reservoir, No. 1029-0, Newport Beach, California*; by GENTERRA; dated January 17, 2012.

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TABLES

TABLE 1
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Monitoring Well -----> | | | MW-1 | | | MW-2 | | | MW-3 | | | MW-4 | | | MW-5 | | |
|------------------------------|----------------------------|---------------------------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|
| Top of Well Elevation -----> | | | 487.8 | | | 489.0 | | | 509.0 | | | 489.9 | | | 489.4 | | |
| Well Bottom Elevation --> | | | 363.2 | | | 409.9 | | | 423.0 | | | 444.5 | | | 406.5 | | |
| Date | Reservoir Elevation (feet) | Monthly Rainfall (inches) | read. (feet) | elev. (feet) | comment |
| 1/28/2009 | 463.70 | 0.17 | 83.00 | 404.8 | | 61.00 | 428.00 | | 86.70 | 422.3 | | 45.20 | 444.7 | Dry | 67.80 | 421.6 | |
| 2/25/2009 | 470.10 | 3.35 | 82.60 | 405.2 | | 60.80 | 428.20 | | 85.40 | 423.6 | | 45.10 | 444.8 | Dry | 63.40 | 426.0 | |
| 3/26/2009 | 469.40 | 0.19 | 82.20 | 405.6 | | 60.60 | 428.40 | | 86.50 | 422.5 | Dry | 45.20 | 444.7 | Dry | 60.90 | 428.5 | |
| 4/29/2009 | 466.90 | 0.07 | 82.20 | 405.6 | | 60.70 | 428.30 | | 86.80 | 422.2 | Dry | 45.40 | 444.5 | Dry | 60.50 | 428.9 | |
| 5/18/2009 | 466.70 | 0.00 | 81.90 | 405.9 | | 60.70 | 428.30 | | 87.20 | 421.8 | Dry | 45.20 | 444.7 | Dry | 60.70 | 428.7 | |
| 5/29/2009 | 465.00 | 0.00 | 81.80 | 406.0 | | 60.60 | 428.40 | | 85.30 | 423.7 | | 45.30 | 444.6 | Dry | 60.80 | 428.6 | |
| 6/30/2009 | 460.20 | 0.00 | 81.30 | 406.5 | | 60.60 | 428.40 | | 87.00 | 422.0 | Dry | 45.40 | 444.5 | Dry | 62.20 | 427.2 | |
| 7/30/2009 | 451.10 | 0.00 | 81.20 | 406.6 | | 60.10 | 428.90 | | 87.00 | 422.0 | Dry | 45.20 | 444.7 | Dry | 63.70 | 425.7 | |
| 8/25/2009 | 440.10 | 0.00 | 81.00 | 406.8 | | 59.90 | 429.10 | | 86.40 | 422.6 | | 45.20 | 444.7 | Dry | 65.80 | 423.6 | |
| 9/30/2009 | 432.20 | 0.00 | 81.10 | 406.7 | | 59.85 | 429.15 | | 87.00 | 422.0 | | 45.20 | 444.7 | Dry | 68.00 | 421.4 | |
| 10/29/2009 | 431.40 | 0.53 | 81.20 | 406.6 | | 60.30 | 428.70 | | 87.04 | 422.0 | | 45.25 | 444.7 | Dry | 69.62 | 419.8 | |
| 12/1/2009 | 427.40 | 0.00 | 81.10 | 406.7 | | 60.90 | 428.10 | | 88.60 | 420.4 | Dry | 45.70 | 444.2 | Dry | 71.00 | 418.4 | |
| 12/29/2009 | 448.10 | 2.06 | 81.36 | 406.4 | | 61.30 | 427.70 | | 87.00 | 422.0 | | 45.25 | 444.7 | Dry | 71.36 | 418.0 | |
| 1/27/2010 | 465.60 | 4.62 | 80.90 | 406.9 | | 61.50 | 427.50 | | 88.60 | 420.4 | Dry | 45.00 | 444.9 | Dry | 67.20 | 422.2 | |
| 2/25/2010 | 470.20 | 2.51 | 81.40 | 406.4 | | 61.50 | 427.50 | | 87.00 | 422.0 | Dry | 45.20 | 444.7 | Dry | 62.60 | 426.8 | |
| 3/29/2010 | 465.70 | 0.99 | 80.60 | 407.2 | | 61.40 | 427.60 | | 87.20 | 421.8 | | 45.20 | 444.7 | Dry | 61.50 | 427.9 | |
| 4/4/2010 | 465.00 | | 80.50 | 407.3 | | 61.40 | 427.60 | | 87.10 | 421.9 | | 45.30 | 444.6 | Dry | 61.50 | 427.9 | |
| 4/27/2010 | 468.40 | 1.23 | 80.50 | 407.3 | | 61.20 | 427.80 | | 88.60 | 420.4 | Dry | 45.30 | 444.6 | Dry | 61.70 | 427.7 | |
| 5/27/2010 | 463.30 | 0.05 | 80.70 | 407.1 | | 61.60 | 427.40 | | 86.90 | 422.1 | Dry | 45.30 | 444.6 | Dry | 61.40 | 428.0 | |
| 6/30/2010 | 454.70 | 0.00 | 80.50 | 407.3 | | 61.60 | 427.40 | | 87.00 | 422.0 | | 45.00 | 444.9 | Dry | 62.80 | 426.6 | |
| 7/28/2010 | 445.60 | 0.00 | 80.60 | 407.2 | | 61.60 | 427.40 | | 87.10 | 421.9 | | 45.20 | 444.7 | Dry | 64.90 | 424.5 | |
| 8/31/2010 | 437.10 | 0.00 | 80.80 | 407.0 | | 62.20 | 426.80 | | 87.10 | 421.9 | | 45.30 | 444.6 | Dry | 67.20 | 422.2 | |
| 9/29/2010 | 422.70 | 0.00 | 80.60 | 407.2 | | 62.30 | 426.70 | | 87.00 | 422.0 | | 45.30 | 444.6 | Dry | 68.60 | 420.8 | |
| 10/27/2010 | 426.40 | 2.38 | 81.00 | 406.8 | | 62.80 | 426.20 | | 86.90 | 422.1 | Dry | 45.30 | 444.6 | Dry | 70.50 | 418.9 | |
| 11/29/2010 | 439.80 | 0.97 | 81.50 | 406.3 | | 63.40 | 425.60 | | 86.90 | 422.1 | Dry | 45.20 | 444.7 | Dry | 71.70 | 417.7 | |
| 12/30/2010 | 456.60 | 8.62 | 80.90 | 406.9 | | 63.10 | 425.90 | | 87.40 | 421.6 | Dry | 45.40 | 444.5 | Dry | 68.80 | 420.6 | |

Note:

Elevations are in feet relative to NAVD88 datum.

TABLE 1
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Monitoring Well -----> | | | MW-1 | | | MW-2 | | | MW-3 | | | MW-4 | | | MW-5 | | |
|------------------------------|----------------------------|---------------------------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|
| Top of Well Elevation -----> | | | 487.8 | | | 489.0 | | | 509.0 | | | 489.9 | | | 489.4 | | |
| Well Bottom Elevation --> | | | 363.2 | | | 409.9 | | | 423.0 | | | 444.5 | | | 406.5 | | |
| Date | Reservoir Elevation (feet) | Monthly Rainfall (inches) | read. (feet) | elev. (feet) | comment |
| 2/1/2011 | 468.90 | 0.92 | 80.60 | 407.2 | | 62.90 | 426.10 | | 87.00 | 422.0 | | 45.20 | 444.7 | | 63.40 | 426.0 | |
| 2/23/2011 | 469.00 | 0.99 | 80.60 | 407.2 | | 62.80 | 426.20 | | 87.10 | 421.9 | Dry | 45.25 | 444.7 | Dry | 62.18 | 427.2 | |
| 3/29/2011 | 470.30 | 2.93 | 80.50 | 407.3 | | 62.50 | 426.50 | | 87.30 | 421.7 | | 45.20 | 444.7 | Dry | 60.90 | 428.5 | |
| 4/27/2011 | 464.80 | 0.19 | 80.25 | 407.6 | | 62.55 | 426.45 | | 87.00 | 422.0 | Dry | 45.25 | 444.7 | Dry | 60.95 | 428.5 | |
| 5/26/2011 | 457.30 | 0.48 | 80.10 | 407.7 | | 62.60 | 426.40 | | 88.20 | 420.8 | Dry | 45.30 | 444.6 | Dry | 62.50 | 426.9 | |
| 6/28/2011 | 443.50 | 0.05 | 79.90 | 407.9 | | 62.70 | 426.30 | | 88.00 | 421.0 | Dry | 45.30 | 444.6 | Dry | 64.60 | 424.8 | |
| 7/29/2011 | 425.10 | 0.00 | 80.25 | 407.6 | | 62.80 | 426.20 | | 88.30 | 420.7 | Dry | 45.25 | 444.7 | Dry | 67.20 | 422.2 | |
| 8/24/2011 | 418.00 | 0.00 | 80.40 | 407.4 | | 62.90 | 426.10 | | 87.00 | 422.0 | Dry | 45.20 | 444.7 | Dry | 69.00 | 420.4 | |
| 9/27/2011 | 400.90 | 0.12 | 80.60 | 407.2 | | 63.30 | 425.70 | | 87.30 | 421.7 | Dry | 45.25 | 444.7 | Dry | 71.45 | 418.0 | |
| 10/26/2011 | 402.20 | 1.25 | 81.20 | 406.6 | | 63.90 | 425.10 | | 88.50 | 420.5 | Dry | 45.80 | 444.1 | | 73.20 | 416.2 | |
| 11/30/2011 | 425.10 | 1.38 | 81.30 | 406.5 | | 63.80 | 425.20 | | 87.00 | 422.0 | | 45.20 | 444.7 | | 73.00 | 416.4 | |
| 12/21/2011 | 435.70 | 0.32 | 81.50 | 406.3 | | 64.20 | 424.80 | | 88.30 | 420.7 | | 45.60 | 444.3 | | 73.60 | 415.8 | |
| 1/24/2012 | 441.40 | 0.53 | 81.70 | 406.1 | | 64.70 | 424.30 | | 87.00 | 422.0 | | 45.20 | 444.7 | | 70.10 | 419.3 | |
| 2/28/2012 | 448.40 | 0.42 | 82.10 | 405.7 | | 65.20 | 423.80 | | 88.20 | 420.8 | | 45.60 | 444.3 | | 68.40 | 421.0 | |
| 3/26/2012 | 452.70 | 1.06 | 81.80 | 406.0 | | 64.90 | 424.10 | | 86.90 | 422.1 | | 45.20 | 444.7 | | 67.50 | 421.9 | |
| 4/23/2012 | 463.40 | 1.32 | 81.40 | 406.4 | | 64.80 | 424.20 | | 86.30 | 422.7 | | 45.80 | 444.1 | | 64.40 | 425.0 | |
| 5/30/2012 | 457.30 | 0.02 | 81.50 | 406.3 | | 64.70 | 424.30 | | 86.60 | 422.4 | | 46.40 | 443.5 | | 62.70 | 426.7 | |
| 6/13/2012 | 452.90 | 0.02 | 81.30 | 406.5 | | 64.70 | 424.30 | | 86.60 | 422.4 | | 45.25 | 444.7 | | 63.00 | 426.4 | |
| 6/26/2012 | 450.20 | 0.00 | 81.40 | 406.4 | | 64.90 | 424.10 | | 89.50 | 419.5 | | 45.30 | 444.6 | | 63.80 | 425.6 | |
| 7/24/2012 | 439.80 | 0.00 | 81.60 | 406.2 | | 65.10 | 423.90 | | 88.80 | 420.2 | | 46.50 | 443.4 | | 65.90 | 423.5 | |
| 8/8/2012 | 437.60 | 0.12 | 81.50 | 406.3 | | 64.30 | 424.70 | | 88.80 | 420.2 | | 46.20 | 443.7 | | 66.80 | 422.6 | |
| 8/22/2012 | 433.40 | 0.00 | 81.55 | 406.3 | | 65.20 | 423.80 | | 86.90 | 422.1 | | 45.20 | 444.7 | | 67.70 | 421.7 | |
| 8/29/2012 | 431.30 | 0.00 | 81.50 | 406.3 | | 65.10 | 423.90 | | 86.10 | 422.9 | | 45.30 | 444.6 | | 67.90 | 421.5 | |
| 9/25/2012 | 420.80 | 0.00 | 81.75 | 406.1 | | 65.30 | 423.70 | | 87.00 | 422.0 | | 45.20 | 444.7 | | 68.00 | 421.4 | |
| 10/31/2012 | 412.30 | 0.26 | 82.30 | 405.5 | | 65.50 | 423.50 | | 89.40 | 419.6 | | 46.40 | 443.5 | | 72.10 | 417.3 | |
| 11/27/2012 | 420.80 | 0.58 | 82.90 | 404.9 | | 65.70 | 423.30 | | 86.90 | 422.1 | | 45.10 | 444.8 | | 73.40 | 416.0 | |
| 12/18/2012 | 448.00 | 1.44 | 82.30 | 405.5 | | 65.30 | 423.70 | | 86.80 | 422.2 | | 45.30 | 444.6 | | 72.40 | 417.0 | |

Note:

Elevations are in feet relative to NAVD88 datum.

TABLE 1
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Monitoring Well -----> | | | MW-1 | | | MW-2 | | | MW-3 | | | MW-4 | | | MW-5 | | |
|------------------------------|----------------------------|---------------------------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|
| Top of Well Elevation -----> | | | 487.8 | | | 489.0 | | | 509.0 | | | 489.9 | | | 489.4 | | |
| Well Bottom Elevation --> | | | 363.2 | | | 409.9 | | | 423.0 | | | 444.5 | | | 406.5 | | |
| Date | Reservoir Elevation (feet) | Monthly Rainfall (inches) | read. (feet) | elev. (feet) | comment |
| 1/29/2013 | 468.60 | 1.18 | 82.40 | 405.4 | | 65.50 | 423.50 | | 88.80 | 420.2 | | 46.50 | 443.4 | | 63.20 | 426.2 | |
| 2/28/2013 | 469.20 | 0.30 | 81.90 | 405.9 | | 64.80 | 424.20 | | 86.90 | 422.1 | | 46.70 | 443.2 | | 60.70 | 428.7 | |
| 3/27/2013 | 468.30 | 0.50 | 81.35 | 406.5 | | 64.70 | 424.30 | | 87.10 | 421.9 | | 45.20 | 444.7 | | 59.85 | 429.6 | |
| 4/25/2013 | 462.70 | 0.00 | 81.20 | 406.6 | | 64.60 | 424.40 | | 87.00 | 422.0 | | 45.25 | 444.7 | | 60.00 | 429.4 | |
| 5/21/2013 | 454.20 | 0.00 | 81.10 | 406.7 | | 64.60 | 424.40 | | 86.90 | 422.1 | | 45.20 | 444.7 | | 61.40 | 428.0 | |
| 6/25/2013 | 439.30 | 0.00 | 81.20 | 406.6 | | 64.75 | 424.25 | | 87.00 | 422.0 | | 45.20 | 444.7 | | 64.50 | 424.9 | |
| 7/23/2013 | 431.50 | 0.00 | 81.40 | 406.4 | | 64.80 | 424.20 | | 87.10 | 421.9 | Dry | 45.30 | 444.6 | Dry | 66.80 | 422.6 | |
| 8/21/2013 | 418.00 | 0.00 | 81.70 | 406.1 | | 64.90 | 424.10 | | 86.90 | 422.1 | Dry | 45.20 | 444.7 | Dry | 68.50 | 420.9 | |
| 9/24/2013 | 404.00 | 0.00 | 82.00 | 405.8 | | 65.00 | 424.00 | | 86.90 | 422.1 | Dry | 45.00 | 444.9 | Dry | 71.20 | 418.2 | |
| 10/29/2013 | 400.60 | 0.00 | 82.50 | 405.3 | | 65.40 | 423.60 | | 87.30 | 421.7 | Dry | 45.30 | 444.6 | Dry | 72.90 | 416.5 | |
| 11/26/2013 | 407.90 | 0.44 | 83.00 | 404.8 | | 69.70 | 419.30 | | 87.30 | 421.7 | Dry | 45.20 | 444.7 | Dry | 74.80 | 414.6 | |
| 12/19/2013 | 425.80 | 0.54 | 82.50 | 405.3 | | 66.40 | 422.60 | | 86.70 | 422.3 | Dry | 45.20 | 444.7 | Dry | 73.20 | 416.2 | |
| 1/28/2014 | 439.70 | 0.00 | 83.20 | 404.6 | | 66.50 | 422.50 | | 86.70 | 422.3 | Dry | 45.20 | 444.7 | Dry | 71.60 | 417.8 | |
| 2/25/2014 | 449.70 | 0.83 | 83.20 | 404.6 | | 66.70 | 422.30 | | 86.70 | 422.3 | Dry | 45.30 | 444.6 | | 69.10 | 420.3 | |
| 3/26/2014 | 465.10 | | 83.00 | 404.8 | | 66.80 | 422.20 | | 88.70 | 420.3 | Dry | 45.40 | 444.5 | Dry | 64.20 | 425.2 | |
| 3/28/2014 | 465.70 | 1.15 | 83.20 | 404.6 | | 66.90 | 422.10 | | 87.00 | 422.0 | | 45.20 | 444.7 | | 64.00 | 425.4 | |
| 4/29/2014 | 465.30 | 0.43 | 82.90 | 404.9 | | 66.90 | 422.10 | | 89.10 | 419.9 | Dry | 45.10 | 444.8 | Dry | 61.30 | 428.1 | |
| 5/28/2014 | 450.60 | 0.00 | 82.90 | 404.9 | | 66.90 | 422.10 | | 86.80 | 422.2 | | 45.20 | 444.7 | Dry | 62.60 | 426.8 | |
| 6/25/2014 | 440.10 | 0.00 | 82.80 | 405.0 | | 67.90 | 421.10 | | 86.90 | 422.1 | | 45.10 | 444.8 | | 65.00 | 424.4 | |
| 7/29/2014 | 431.20 | 0.00 | 83.00 | 404.8 | | 67.00 | 422.00 | | 88.30 | 420.7 | Dry | 45.30 | 444.6 | Dry | 67.40 | 422.0 | |
| 8/26/2014 | 419.50 | 0.02 | 83.20 | 404.6 | | 67.20 | 421.80 | | 86.90 | 422.1 | Dry | 45.20 | 444.7 | Dry | 69.10 | 420.3 | |
| 9/23/2014 | 405.30 | 0.00 | 83.30 | 404.5 | | 67.00 | 422.00 | | 86.80 | 422.2 | Dry | 44.60 | 445.3 | Dry | 71.20 | 418.2 | |
| 10/29/2014 | 400.90 | 0.00 | 83.60 | 404.2 | | 66.80 | 422.20 | | 88.10 | 420.9 | Dry | 45.30 | 444.6 | Dry | 73.30 | 416.1 | |
| 11/25/2014 | 410.90 | 0.25 | 84.20 | 403.6 | | 67.30 | 421.70 | | 86.80 | 422.2 | Dry | 45.20 | 444.7 | Dry | 75.50 | 413.9 | |
| 12/30/2014 | 430.60 | 2.94 | 83.80 | 404.0 | | 66.90 | 422.10 | | 86.80 | 422.2 | | 45.20 | 444.7 | Dry | 74.50 | 414.9 | |

Note:

Elevations are in feet relative to NAVD88 datum.

TABLE 1
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Monitoring Well -----> | | | MW-1 | | | MW-2 | | | MW-3 | | | MW-4 | | | MW-5 | | |
|------------------------------|----------------------------|---------------------------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|
| Top of Well Elevation -----> | | | 487.8 | | | 489.0 | | | 509.0 | | | 489.9 | | | 489.4 | | |
| Well Bottom Elevation --> | | | 363.2 | | | 409.9 | | | 423.0 | | | 444.5 | | | 406.5 | | |
| Date | Reservoir Elevation (feet) | Monthly Rainfall (inches) | read. (feet) | elev. (feet) | comment |
| 1/27/2015 | 466.70 | 0.83 | 83.70 | 404.1 | | 67.10 | 421.90 | | 88.30 | 420.7 | Dry | 45.30 | 444.6 | Dry | 64.80 | 424.6 | |
| 2/25/2015 | 468.90 | 0.69 | 83.40 | 404.4 | | 67.10 | 421.90 | | 86.80 | 422.2 | Dry | 45.20 | 444.7 | Dry | 60.50 | 428.9 | |
| 3/26/2015 | 465.90 | 0.61 | 83.10 | 404.7 | | 66.80 | 422.20 | | 86.90 | 422.1 | Dry | 45.10 | 444.8 | | 59.10 | 430.3 | |
| 4/28/2015 | 465.70 | 0.20 | 82.50 | 405.3 | | 66.50 | 422.50 | | 87.00 | 422.0 | Dry | 45.20 | 444.7 | Dry | 59.00 | 430.4 | |
| 5/28/2015 | 466.40 | 1.08 | 82.50 | 405.3 | | 66.30 | 422.70 | | 88.30 | 420.7 | Dry | 45.50 | 444.4 | Dry | 58.50 | 430.9 | |
| 6/30/2015 | 454.50 | 0.00 | 82.00 | 405.8 | | 66.10 | 422.90 | | 87.00 | 422.0 | | 45.20 | 444.7 | Dry | 59.70 | 429.7 | |
| 7/28/2015 | 445.60 | 0.00 | 82.20 | 405.6 | | 65.90 | 423.10 | | 86.90 | 422.1 | Dry | 45.20 | 444.7 | Dry | 62.60 | 426.8 | |
| 8/28/2015 | 437.60 | 0.00 | 82.20 | 405.6 | | 66.00 | 423.00 | | 86.90 | 422.1 | Dry | 45.00 | 444.9 | | 64.90 | 424.5 | |
| 9/24/2015 | 426.90 | 1.51 | 82.40 | 405.4 | | 65.80 | 423.20 | | 86.90 | 422.1 | Dry | 45.20 | 444.7 | Dry | 66.90 | 422.5 | |
| 10/27/2015 | 415.40 | 0.49 | 82.70 | 405.1 | | 66.00 | 423.00 | | 87.30 | 421.7 | Dry | 45.30 | 444.6 | Dry | 69.10 | 420.3 | |
| 11/19/2015 | 412.90 | 0.09 | 83.00 | 404.8 | | 66.70 | 422.30 | | 87.00 | 422.0 | Dry | 45.20 | 444.7 | | 70.60 | 418.8 | |
| 12/22/2015 | 425.50 | 0.69 | 83.10 | 404.7 | | 66.90 | 422.10 | | 87.80 | 421.2 | Dry | 45.50 | 444.4 | Dry | 71.60 | 417.8 | |
| 1/27/2016 | 463.60 | 2.86 | 83.10 | 404.7 | | 67.50 | 421.50 | | 87.00 | 422.0 | Dry | 45.30 | 444.6 | Dry | 67.60 | 421.8 | |
| 2/25/2016 | 468.90 | 0.25 | 83.50 | 404.3 | | 67.30 | 421.70 | | 87.20 | 421.8 | Dry | 44.80 | 445.1 | | 61.10 | 428.3 | |
| 3/30/2016 | 468.00 | 1.44 | 82.80 | 405.0 | | 62.20 | 426.80 | | 87.10 | 421.9 | | 45.30 | 444.6 | Dry | 58.80 | 430.6 | |
| 4/28/2016 | 461.30 | 0.30 | 82.70 | 405.1 | | 67.20 | 421.80 | | 88.30 | 420.7 | Dry | 44.40 | 445.5 | Dry | 58.90 | 430.5 | |
| 5/25/2016 | 451.30 | 0.18 | 82.85 | 405.0 | | 67.30 | 421.70 | | 87.00 | 422.0 | | 45.30 | 444.6 | Dry | 61.30 | 428.1 | |
| 6/28/2016 | 414.10 | 0.00 | 82.80 | 405.0 | | 67.30 | 421.70 | | 87.10 | 421.9 | | 45.20 | 444.7 | Dry | 63.40 | 426.0 | |
| 7/27/2016 | 434.20 | 0.00 | 82.80 | 405.0 | | 67.40 | 421.60 | | 87.20 | 421.8 | Dry | 45.40 | 444.5 | Dry | 65.50 | 423.9 | |
| 8/23/2016 | 418.60 | 0.00 | 83.30 | 404.5 | | 67.50 | 421.50 | | 86.80 | 422.2 | Dry | 45.20 | 444.7 | Dry | 67.90 | 421.5 | |
| 9/27/2016 | 406.40 | 0.00 | 83.40 | 404.4 | | 67.30 | 421.70 | | 87.20 | 421.8 | Dry | 45.40 | 444.5 | Dry | 69.80 | 419.6 | |
| 10/26/2016 | 404.00 | 0.48 | 84.00 | 403.8 | | 67.40 | 421.60 | | 86.30 | 422.7 | Dry | 45.30 | 444.6 | Dry | 72.00 | 417.4 | |
| 11/22/2016 | 413.60 | 1.13 | 84.40 | 403.4 | | 67.70 | 421.30 | | 88.30 | 420.7 | Dry | 45.40 | 444.5 | Dry | 73.20 | 416.2 | |
| 12/20/2016 | 441.10 | 3.48 | 84.60 | 403.2 | | 67.65 | 421.35 | | 88.30 | 420.7 | Dry | 45.30 | 444.6 | Dry | 72.40 | 417.0 | |

Note:

Elevations are in feet relative to NAVD88 datum.

TABLE 1
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Monitoring Well -----> | | | MW-1 | | | MW-2 | | | MW-3 | | | MW-4 | | | MW-5 | | |
|------------------------------|----------------------------|---------------------------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|
| Top of Well Elevation -----> | | | 487.8 | | | 489.0 | | | 509.0 | | | 489.9 | | | 489.4 | | |
| Well Bottom Elevation --> | | | 363.2 | | | 409.9 | | | 423.0 | | | 444.5 | | | 406.5 | | |
| Date | Reservoir Elevation (feet) | Monthly Rainfall (inches) | read. (feet) | elev. (feet) | comment |
| 1/26/2017 | 471.60 | 5.67 | 84.50 | 403.3 | | 67.70 | 421.30 | | 84.40 | 424.6 | | 45.20 | 444.7 | Dry | 61.80 | 427.6 | |
| 2/24/2017 | 472.05 | 3.95 | 84.10 | 403.7 | | 67.50 | 421.50 | | 88.30 | 420.7 | Dry | 45.30 | 444.6 | Dry | 57.60 | 431.8 | |
| 2/25/2017 | 472.00 | | 84.05 | 403.8 | | 67.45 | 421.55 | | 88.30 | 420.7 | Dry | 45.20 | 444.7 | Dry | 57.50 | 431.9 | |
| 2/26/2017 | 472.00 | | 84.10 | 403.7 | | 67.40 | 421.60 | | 88.30 | 420.7 | Dry | 45.20 | 444.7 | Dry | 57.25 | 432.2 | |
| 2/27/2017 | 472.00 | | 83.90 | 403.9 | | 67.50 | 421.50 | | 88.30 | 420.7 | Dry | 45.20 | 444.7 | Dry | 57.10 | 432.3 | |
| 2/28/2017 | 471.90 | | 83.90 | 403.9 | | 68.21 | 420.79 | | 88.00 | 421.0 | Dry | 45.30 | 444.6 | Dry | 57.25 | 432.2 | |
| 3/1/2017 | 471.90 | | 84.20 | 403.6 | | 67.60 | 421.40 | | 87.00 | 422.0 | Dry | 45.20 | 444.7 | Dry | 57.30 | 432.1 | |
| 3/2/2017 | 471.90 | | 84.00 | 403.8 | | 67.36 | 421.64 | | 86.90 | 422.1 | Dry | 45.30 | 444.6 | Dry | 57.20 | 432.2 | |
| 3/29/2017 | 467.90 | 0.10 | 83.70 | 404.1 | | 67.30 | 421.70 | | 87.20 | 421.8 | Dry | 45.10 | 444.8 | Dry | 56.90 | 432.5 | |
| 4/27/2017 | 457.60 | 0.04 | 83.30 | 404.5 | | 67.10 | 421.90 | | 86.90 | 422.1 | Dry | 45.10 | 444.8 | Dry | 58.30 | 431.1 | |
| 5/23/2017 | 453.50 | 0.43 | 83.40 | 404.4 | | 67.10 | 421.90 | | 88.30 | 420.7 | Dry | 45.30 | 444.6 | Dry | 60.50 | 428.9 | |
| 6/21/2017 | 447.40 | 0.00 | 83.20 | 404.6 | | 66.80 | 422.20 | | 87.10 | 421.9 | Dry | 45.20 | 444.7 | Dry | 61.60 | 427.8 | |
| 7/26/2017 | 435.10 | 0.00 | 83.40 | 404.4 | | 66.80 | 422.20 | | 87.70 | 421.3 | Dry | 45.30 | 444.6 | Dry | 64.50 | 424.9 | |
| 8/25/2017 | 420.10 | 0.00 | 83.40 | 404.4 | | 66.10 | 422.90 | | 86.90 | 422.1 | Dry | 45.20 | 444.7 | Dry | 66.70 | 422.7 | |
| 9/27/2017 | 407.10 | 0.00 | 83.60 | 404.2 | | 65.60 | 423.40 | | 86.70 | 422.3 | Dry | 45.30 | 444.6 | Dry | 69.20 | 420.2 | |
| 10/26/2017 | 395.00 | 0.00 | 83.80 | 404.0 | | 66.30 | 422.70 | | 86.80 | 422.2 | | 45.40 | 444.5 | Dry | 71.00 | 418.4 | |
| 11/28/2017 | 409.00 | 0.09 | 84.00 | 403.8 | | 66.20 | 422.80 | | 86.90 | 422.1 | Dry | 45.30 | 444.6 | Dry | 72.50 | 416.9 | |
| 12/20/2017 | 416.80 | 0.00 | 84.50 | 403.3 | | 66.60 | 422.40 | | 87.20 | 421.8 | | 45.00 | 444.9 | Dry | 73.40 | 416.0 | |
| 1/24/2018 | 434.50 | 1.31 | 84.40 | 403.4 | | 65.90 | 423.10 | | 88.50 | 420.5 | Dry | 45.70 | 444.2 | Dry | 72.30 | 417.1 | |
| 2/21/2018 | 443.10 | 0.29 | 84.20 | 403.6 | | 67.10 | 421.90 | | 84.20 | 424.8 | | 45.50 | 444.4 | | 69.60 | 419.8 | |
| 3/29/2018 | 453.00 | 1.28 | 84.10 | 403.7 | | 67.40 | 421.60 | | 86.50 | 422.5 | Wet | 45.00 | 444.9 | Dry | 66.10 | 423.3 | |
| 4/26/2018 | 449.10 | 0.05 | 84.00 | 403.8 | | 67.30 | 421.70 | | 88.30 | 420.7 | Dry | 45.30 | 444.6 | Dry | 65.30 | 424.1 | |
| 5/31/2018 | 453.10 | 0.20 | 83.80 | 404.0 | | 67.40 | 421.60 | | 87.20 | 421.8 | Dry | 45.20 | 444.7 | Dry | 64.80 | 424.6 | |
| 6/28/2018 | 448.20 | 0.00 | 83.70 | 404.1 | | 67.30 | 421.70 | | 86.90 | 422.1 | Dry | 45.10 | 444.8 | Dry | 64.60 | 424.8 | |
| 7/25/2018 | 440.40 | 0.00 | 83.60 | 404.2 | | 66.00 | 423.00 | | 70.60 | 438.4 | | 45.40 | 444.5 | Dry | 65.60 | 423.8 | |
| 8/22/2018 | 427.10 | 0.00 | 83.70 | 404.1 | | 66.90 | 422.10 | | 87.00 | 422.0 | | 45.30 | 444.6 | Dry | 67.70 | 421.7 | |
| 9/27/2018 | 439.60 | 0.00 | 84.30 | 403.5 | | 67.10 | 421.90 | | 87.00 | 422.0 | | 45.30 | 444.6 | Dry | 70.70 | 418.7 | |
| 10/18/2018 | 405.30 | 0.90 | 84.20 | 403.6 | | 67.30 | 421.70 | | 87.00 | 422.0 | Dry | 45.30 | 444.6 | Dry | 72.50 | 416.9 | |
| 11/28/2018 | 408.60 | 1.19 | 84.50 | 403.3 | | 67.80 | 421.20 | | 86.90 | 422.1 | Dry | 45.50 | 444.4 | Dry | 73.90 | 415.5 | |
| 12/19/2018 | 436.00 | 1.99 | 84.70 | 403.1 | | 67.50 | 421.50 | | 88.30 | 420.7 | | 45.20 | 444.7 | | 74.60 | 414.8 | |

Note:

Elevations are in feet relative to NAVD88 datum.

TABLE 1
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Monitoring Well -----> | | | MW-6 | | | MW-7 | | | MW-8 | | | CP-1A | | | CP-1B | | |
|--|----------------------------|---------------------------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|
| Top of Well Elevation -----> | | | 481.4 | | | 463.3 | | | 512.8 | | | 484.4 | | | 484.3 | | |
| Well Bottom Elevation --> | | | 404.9 | | | 397.3 | | | 419.8 | | | | | | | | |
| Date | Reservoir Elevation (feet) | Monthly Rainfall (inches) | read. (feet) | elev. (feet) | comment |
| 1/28/2009 | 463.70 | 0.17 | 76.40 | 405.0 | Dry | 17.50 | 445.8 | | 18.20 | 494.6 | | 38.20 | 446.2 | | 37.30 | 447.0 | dry |
| 2/25/2009 | 470.10 | 3.35 | 76.40 | 405.0 | | 17.00 | 446.3 | | 17.80 | 495.0 | | 38.00 | 446.4 | | 37.00 | 447.3 | dry |
| 3/26/2009 | 469.40 | 0.19 | 76.40 | 405.0 | Dry | 16.40 | 446.9 | | 17.80 | 495.0 | | 38.00 | 446.4 | | 37.30 | 447.0 | dry |
| 4/29/2009 | 466.90 | 0.07 | 76.40 | 405.0 | Dry | 17.20 | 446.1 | | 18.30 | 494.5 | | 38.10 | 446.3 | | 37.30 | 447.0 | dry |
| 5/18/2009 | 466.70 | 0.00 | 76.50 | 404.9 | Dry | 17.50 | 445.8 | | 18.50 | 494.3 | | 37.90 | 446.5 | | 37.20 | 447.1 | dry |
| 5/29/2009 | 465.00 | 0.00 | 76.30 | 405.1 | Dry | 17.70 | 445.6 | | 18.60 | 494.2 | | 37.90 | 446.5 | | 37.20 | 447.1 | |
| 6/30/2009 | 460.20 | 0.00 | 76.40 | 405.0 | Dry | 17.90 | 445.4 | | 18.60 | 494.2 | | 37.90 | 446.5 | | 37.40 | 446.9 | Dry |
| 7/30/2009 | 451.10 | 0.00 | 76.30 | 405.1 | Dry | 18.10 | 445.2 | | 19.50 | 493.3 | | 38.00 | 446.4 | | 37.20 | 447.1 | Dry |
| 8/25/2009 | 440.10 | 0.00 | 76.30 | 405.1 | Dry | 18.00 | 445.3 | | 19.80 | 493.0 | | 38.10 | 446.3 | | 37.20 | 447.1 | Dry |
| 9/30/2009 | 432.20 | 0.00 | 76.30 | 405.1 | Dry | 18.50 | 444.8 | | 19.80 | 493.0 | | 38.60 | 445.8 | | 37.20 | 447.1 | Dry |
| 10/29/2009 | 431.40 | 0.53 | 76.50 | 404.9 | Dry | 19.20 | 444.1 | | 19.50 | 493.3 | | 38.95 | 445.5 | | 37.25 | 447.1 | Dry |
| 12/1/2009 | 427.40 | 0.00 | 76.40 | 405.0 | Dry | 19.40 | 443.9 | | 19.80 | 493.0 | | 39.20 | 445.2 | | 37.30 | 447.0 | Dry |
| 12/29/2009 | 448.10 | 2.06 | 76.40 | 405.0 | Dry | 19.80 | 443.5 | | 19.81 | 493.0 | | 39.21 | 445.2 | | 37.25 | 447.1 | Dry |
| 1/27/2010 | 465.60 | 4.62 | 76.40 | 405.0 | Dry | 19.80 | 443.5 | | 19.80 | 493.0 | | 38.70 | 445.7 | | 37.20 | 447.1 | Dry |
| 2/25/2010 | 470.20 | 2.51 | 76.30 | 405.1 | Dry | 19.70 | 443.6 | | 18.30 | 494.5 | | 38.20 | 446.2 | | 37.30 | 447.0 | Dry |
| 3/29/2010 | 465.70 | 0.99 | 76.30 | 405.1 | Dry | 19.00 | 444.3 | | 18.30 | 494.5 | | 38.30 | 446.1 | | 37.10 | 447.2 | Dry |
| 4/4/2010 | 465.00 | | 76.30 | 405.1 | Dry | 18.80 | 444.5 | | 17.90 | 494.9 | | 38.10 | 446.3 | | 37.30 | 447.0 | Dry |
| 4/27/2010 | 468.40 | 1.23 | 76.30 | 405.1 | Dry | 18.80 | 444.5 | | 18.00 | 494.8 | | 38.00 | 446.4 | | 37.30 | 447.0 | Dry |
| 5/27/2010 | 463.30 | 0.05 | 76.30 | 405.1 | Dry | 18.90 | 444.4 | | 19.40 | 493.4 | | 38.00 | 446.4 | | 37.20 | 447.1 | Dry |
| 6/30/2010 | 454.70 | 0.00 | 76.30 | 405.1 | Dry | 19.00 | 444.3 | | 18.80 | 494.0 | | 38.10 | 446.3 | | 37.30 | 447.0 | Dry |
| 7/28/2010 | 445.60 | 0.00 | 76.30 | 405.1 | Dry | 19.50 | 443.8 | | 19.10 | 493.7 | | 38.50 | 445.9 | | 37.30 | 447.0 | Dry |
| 8/31/2010 | 437.10 | 0.00 | 76.30 | 405.1 | Dry | 19.60 | 443.7 | | 19.40 | 493.4 | | 38.90 | 445.5 | | 37.30 | 447.0 | Dry |
| 9/29/2010 | 422.70 | 0.00 | 76.30 | 405.1 | Dry | 19.70 | 443.6 | | 20.00 | 492.8 | | 39.20 | 445.2 | | 37.40 | 446.9 | Dry |
| 10/27/2010 | 426.40 | 2.38 | 76.30 | 405.1 | Dry | 20.00 | 443.3 | | 20.10 | 492.7 | | 39.50 | 444.9 | | 37.30 | 447.0 | Dry |
| 11/29/2010 | 439.80 | 0.97 | 76.30 | 405.1 | Dry | 20.70 | 442.6 | | 20.10 | 492.7 | | 39.70 | 444.7 | | 37.20 | 447.1 | Dry |
| 12/30/2010 | 456.60 | 8.62 | 83.90 | 397.5 | Dry | 19.00 | 444.3 | | 19.40 | 493.4 | | 38.80 | 445.6 | | 35.70 | 448.6 | |

Note:

Elevations are in feet relative to NAVD88 datum.

TABLE 1
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Monitoring Well -----> | | | MW-6 | | | MW-7 | | | MW-8 | | | CP-1A | | | CP-1B | | |
|--|----------------------------|---------------------------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|
| Top of Well Elevation -----> | | | 481.4 | | | 463.3 | | | 512.8 | | | 484.4 | | | 484.3 | | |
| Well Bottom Elevation --> | | | 404.9 | | | 397.3 | | | 419.8 | | | | | | | | |
| Date | Reservoir Elevation (feet) | Monthly Rainfall (inches) | read. (feet) | elev. (feet) | comment |
| 2/1/2011 | 468.90 | 0.92 | 76.40 | 405.0 | Dry | 18.30 | 445.0 | | 18.30 | 494.5 | | 38.30 | 446.1 | | 37.20 | 447.1 | |
| 2/23/2011 | 469.00 | 0.99 | 76.33 | 405.1 | Dry | 17.55 | 445.8 | | 18.18 | 494.6 | | 38.00 | 446.4 | | 37.25 | 447.1 | Dry |
| 3/29/2011 | 470.30 | 2.93 | 76.30 | 405.1 | Dry | 17.10 | 446.2 | | 17.60 | 495.2 | | 37.70 | 446.7 | | 36.80 | 447.5 | |
| 4/27/2011 | 464.80 | 0.19 | 76.30 | 405.1 | Dry | 16.65 | 446.7 | | 17.72 | 495.1 | | 37.52 | 446.9 | | 37.23 | 447.1 | Dry |
| 5/26/2011 | 457.30 | 0.48 | 76.30 | 405.1 | Dry | 16.70 | 446.6 | | 18.10 | 494.7 | | 37.60 | 446.8 | | 37.30 | 447.0 | Dry |
| 6/28/2011 | 443.50 | 0.05 | 76.30 | 405.1 | Dry | 16.90 | 446.4 | | 18.40 | 494.4 | | 37.80 | 446.6 | | 37.20 | 447.1 | Dry |
| 7/29/2011 | 425.10 | 0.00 | 76.20 | 405.2 | Dry | 17.40 | 445.9 | | 18.60 | 494.2 | | 38.15 | 446.3 | | 36.60 | 447.7 | Dry |
| 8/24/2011 | 418.00 | 0.00 | 76.30 | 405.1 | Dry | 17.70 | 445.6 | | 19.20 | 493.6 | | 38.40 | 446.0 | | 37.20 | 447.1 | Dry |
| 9/27/2011 | 400.90 | 0.12 | 76.30 | 405.1 | Dry | 17.90 | 445.4 | | 19.65 | 493.2 | | 38.80 | 445.6 | | 37.30 | 447.0 | Dry |
| 10/26/2011 | 402.20 | 1.25 | 76.50 | 404.9 | Dry | 18.30 | 445.0 | | 19.90 | 492.9 | | 38.80 | 445.6 | | 36.80 | 447.5 | |
| 11/30/2011 | 425.10 | 1.38 | 76.30 | 405.1 | Dry | 17.70 | 445.6 | | 19.30 | 493.5 | | 39.10 | 445.3 | | 36.60 | 447.7 | |
| 12/21/2011 | 435.70 | 0.32 | 76.30 | 405.1 | Dry | 18.00 | 445.3 | | 19.40 | 493.4 | | 39.50 | 444.9 | | 37.20 | 447.1 | |
| 1/24/2012 | 441.40 | 0.53 | 76.30 | 405.1 | Dry | 18.70 | 444.6 | | 19.50 | 493.3 | | 39.00 | 445.4 | | 37.20 | 447.1 | |
| 2/28/2012 | 448.40 | 0.42 | 76.30 | 405.1 | Dry | 19.40 | 443.9 | | 20.00 | 492.8 | | 39.20 | 445.2 | | 37.30 | 447.0 | |
| 3/26/2012 | 452.70 | 1.06 | 76.30 | 405.1 | Dry | 19.40 | 443.9 | | 19.90 | 492.9 | | 39.00 | 445.4 | | 37.20 | 447.1 | |
| 4/23/2012 | 463.40 | 1.32 | 76.30 | 405.1 | Dry | 19.20 | 444.1 | | 19.70 | 493.1 | | 38.60 | 445.8 | | 37.50 | 446.8 | |
| 5/30/2012 | 457.30 | 0.02 | 76.30 | 405.1 | Dry | 19.30 | 444.0 | | 19.50 | 493.3 | | 38.50 | 445.9 | | 37.30 | 447.0 | |
| 6/13/2012 | 452.90 | 0.02 | 76.30 | 405.1 | Dry | 19.20 | 444.1 | | 19.30 | 493.5 | | 38.40 | 446.0 | | 37.30 | 447.0 | |
| 6/26/2012 | 450.20 | 0.00 | 76.30 | 405.1 | Dry | 19.20 | 444.1 | | 19.30 | 493.5 | | 38.50 | 445.9 | | 37.40 | 446.9 | |
| 7/24/2012 | 439.80 | 0.00 | 76.30 | 405.1 | Dry | 19.40 | 443.9 | | 19.70 | 493.1 | | 38.90 | 445.5 | | 37.40 | 446.9 | |
| 8/8/2012 | 437.60 | 0.12 | 76.30 | 405.1 | Dry | 19.30 | 444.0 | | 19.60 | 493.2 | | 38.90 | 445.5 | | 37.40 | 446.9 | |
| 8/22/2012 | 433.40 | 0.00 | 76.30 | 405.1 | Dry | 19.30 | 444.0 | | 19.40 | 493.4 | | 39.10 | 445.3 | | 36.70 | 447.6 | |
| 8/29/2012 | 431.30 | 0.00 | 76.30 | 405.1 | Dry | 19.10 | 444.2 | | 19.20 | 493.6 | | 39.00 | 445.4 | | 37.20 | 447.1 | |
| 9/25/2012 | 420.80 | 0.00 | 76.30 | 405.1 | Dry | 19.10 | 444.2 | | 19.30 | 493.5 | | 39.10 | 445.3 | | 37.20 | 447.1 | |
| 10/31/2012 | 412.30 | 0.26 | 76.30 | 405.1 | Dry | 19.40 | 443.9 | | 20.10 | 492.7 | | 39.60 | 444.8 | | 37.40 | 446.9 | |
| 11/27/2012 | 420.80 | 0.58 | 76.30 | 405.1 | Dry | 19.40 | 443.9 | | 20.40 | 492.4 | | 39.90 | 444.5 | | 37.30 | 447.0 | |
| 12/18/2012 | 448.00 | 1.44 | 76.30 | 405.1 | Dry | 19.20 | 444.1 | | 20.45 | 492.4 | | 39.35 | 445.1 | | 37.00 | 447.3 | |

Note:

Elevations are in feet relative to NAVD88 datum.

TABLE 1
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Monitoring Well -----> | | | MW-6 | | | MW-7 | | | MW-8 | | | CP-1A | | | CP-1B | | |
|------------------------------|----------------------------|---------------------------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|
| Top of Well Elevation -----> | | | 481.4 | | | 463.3 | | | 512.8 | | | 484.4 | | | 484.3 | | |
| Well Bottom Elevation --> | | | 404.9 | | | 397.3 | | | 419.8 | | | | | | | | |
| Date | Reservoir Elevation (feet) | Monthly Rainfall (inches) | read. (feet) | elev. (feet) | comment |
| 1/29/2013 | 468.60 | 1.18 | 76.30 | 405.1 | Dry | 19.80 | 443.5 | | 21.10 | 491.7 | | 38.40 | 446.0 | | 37.40 | 446.9 | |
| 2/28/2013 | 469.20 | 0.30 | 76.30 | 405.1 | Dry | 19.80 | 443.5 | | 21.40 | 491.4 | | 38.00 | 446.4 | | 37.40 | 446.9 | |
| 3/27/2013 | 468.30 | 0.50 | 76.30 | 405.1 | Dry | 19.75 | 443.6 | | 21.55 | 491.3 | | 38.10 | 446.3 | | 37.25 | 447.1 | |
| 4/25/2013 | 462.70 | 0.00 | 76.60 | 404.8 | | 19.60 | 443.7 | | 21.60 | 491.2 | | 38.40 | 446.0 | | 37.30 | 447.0 | |
| 5/21/2013 | 454.20 | 0.00 | 76.60 | 404.8 | | 19.80 | 443.5 | | 21.70 | 491.1 | | 38.80 | 445.6 | | 37.30 | 447.0 | |
| 6/25/2013 | 439.30 | 0.00 | 76.60 | 404.8 | Dry | 20.00 | 443.3 | | 22.25 | 490.6 | | 39.30 | 445.1 | | 37.10 | 447.2 | |
| 7/23/2013 | 431.50 | 0.00 | 76.60 | 404.8 | Dry | 20.10 | 443.2 | | 22.35 | 490.5 | | 39.80 | 444.6 | | 36.60 | 447.7 | Dry |
| 8/21/2013 | 418.00 | 0.00 | 76.30 | 405.1 | Dry | 20.10 | 443.2 | | 22.40 | 490.4 | | 64.10 | 420.3 | | 37.50 | 446.8 | Dry |
| 9/24/2013 | 404.00 | 0.00 | 76.50 | 404.9 | Dry | 20.20 | 443.1 | | 22.40 | 490.4 | | 40.70 | 443.7 | | 37.20 | 447.1 | Dry |
| 10/29/2013 | 400.60 | 0.00 | 76.60 | 404.8 | Dry | 20.40 | 442.9 | | 22.65 | 490.2 | | 41.00 | 443.4 | | 37.20 | 447.1 | Dry |
| 11/26/2013 | 407.90 | 0.44 | 76.30 | 405.1 | Dry | 20.50 | 442.8 | | 23.40 | 489.4 | | 41.30 | 443.1 | | 37.20 | 447.1 | Dry |
| 12/19/2013 | 425.80 | 0.54 | 76.30 | 405.1 | Dry | 20.30 | 443.0 | | 23.60 | 489.2 | | 41.00 | 443.4 | | 37.40 | 446.9 | Dry |
| 1/28/2014 | 439.70 | 0.00 | 76.30 | 405.1 | Dry | 20.60 | 442.7 | | 23.60 | 489.2 | | 40.90 | 443.5 | | 37.40 | 446.9 | Dry |
| 2/25/2014 | 449.70 | 0.83 | 76.60 | 404.8 | Dry | 20.60 | 442.7 | | 23.50 | 489.3 | | 40.60 | 443.8 | | 37.25 | 447.1 | Dry |
| 3/26/2014 | 465.10 | | 76.60 | 404.8 | Dry | 20.55 | 442.8 | | 22.95 | 489.9 | | 39.90 | 444.5 | | 37.30 | 447.0 | Dry |
| 3/28/2014 | 465.70 | 1.15 | 76.30 | 405.1 | Dry | 20.70 | 442.6 | | 23.20 | 489.6 | | 39.90 | 444.5 | | 37.20 | 447.1 | Dry |
| 4/29/2014 | 465.30 | 0.43 | 76.40 | 405.0 | Dry | 20.50 | 442.8 | | 22.90 | 489.9 | | 39.70 | 444.7 | | 37.30 | 447.0 | Dry |
| 5/28/2014 | 450.60 | 0.00 | 76.50 | 404.9 | Dry | 20.70 | 442.6 | | 23.30 | 489.5 | | 39.80 | 444.6 | | 37.20 | 447.1 | Dry |
| 6/25/2014 | 440.10 | 0.00 | 76.30 | 405.1 | | 20.80 | 442.5 | | 23.80 | 489.0 | | 39.90 | 444.5 | | 37.10 | 447.2 | |
| 7/29/2014 | 431.20 | 0.00 | 76.50 | 404.9 | Dry | 21.00 | 442.3 | | 23.50 | 489.3 | | 40.30 | 444.1 | | 37.20 | 447.1 | Dry |
| 8/26/2014 | 419.50 | 0.02 | 76.30 | 405.1 | Dry | 20.90 | 442.4 | | 24.20 | 488.6 | | 40.50 | 443.9 | | 37.30 | 447.0 | Dry |
| 9/23/2014 | 405.30 | 0.00 | 76.30 | 405.1 | Dry | 20.90 | 442.4 | | 24.50 | 488.3 | | 40.60 | 443.8 | | 37.20 | 447.1 | Dry |
| 10/29/2014 | 400.90 | 0.00 | 76.60 | 404.8 | Dry | 21.30 | 442.0 | | 24.85 | 488.0 | | 41.30 | 443.1 | | 37.30 | 447.0 | Dry |
| 11/25/2014 | 410.90 | 0.25 | 76.40 | 405.0 | Dry | 21.50 | 441.8 | | 25.20 | 487.6 | | 41.60 | 442.8 | | 37.20 | 447.1 | Dry |
| 12/30/2014 | 430.60 | 2.94 | 76.30 | 405.1 | Dry | 21.35 | 442.0 | | 24.10 | 488.7 | | 41.10 | 443.3 | | 37.10 | 447.2 | Dry |

Note:

Elevations are in feet relative to NAVD88 datum.

TABLE 1
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Monitoring Well -----> | | | MW-6 | | | MW-7 | | | MW-8 | | | CP-1A | | | CP-1B | | |
|--|----------------------------|---------------------------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|
| Top of Well Elevation -----> | | | 481.4 | | | 463.3 | | | 512.8 | | | 484.4 | | | 484.3 | | |
| Well Bottom Elevation --> | | | 404.9 | | | 397.3 | | | 419.8 | | | | | | | | |
| Date | Reservoir Elevation (feet) | Monthly Rainfall (inches) | read. (feet) | elev. (feet) | comment |
| 1/27/2015 | 466.70 | 0.83 | 76.60 | 404.8 | Dry | 21.55 | 441.8 | | 25.00 | 487.8 | | 39.55 | 444.9 | | 37.20 | 447.1 | Dry |
| 2/25/2015 | 468.90 | 0.69 | 76.50 | 404.9 | Dry | 21.30 | 442.0 | | 25.20 | 487.6 | | 39.10 | 445.3 | | 37.30 | 447.0 | Dry |
| 3/26/2015 | 465.90 | 0.61 | 76.30 | 405.1 | Dry | 21.40 | 441.9 | | 25.60 | 487.2 | | 39.20 | 445.2 | | 37.30 | 447.0 | |
| 4/28/2015 | 465.70 | 0.20 | 76.30 | 405.1 | Dry | 21.00 | 442.3 | | 26.00 | 486.8 | | 39.00 | 445.4 | | 34.20 | 450.1 | |
| 5/28/2015 | 466.40 | 1.08 | 76.60 | 404.8 | Dry | 21.10 | 442.2 | | 25.80 | 487.0 | | 39.20 | 445.2 | | 37.30 | 447.0 | Dry |
| 6/30/2015 | 454.50 | 0.00 | 76.30 | 405.1 | Dry | 21.90 | 441.4 | | 26.30 | 486.5 | | 39.30 | 445.1 | | 37.20 | 447.1 | Dry |
| 7/28/2015 | 445.60 | 0.00 | 76.40 | 405.0 | Dry | 22.30 | 441.0 | | 26.70 | 486.1 | | 39.70 | 444.7 | | 37.30 | 447.0 | Dry |
| 8/28/2015 | 437.60 | 0.00 | 76.30 | 405.1 | Dry | 22.80 | 440.5 | | 27.20 | 485.6 | | 40.20 | 444.2 | | 37.30 | 447.0 | Dry |
| 9/24/2015 | 426.90 | 1.51 | 76.20 | 405.2 | Dry | 23.60 | 439.7 | | 27.40 | 485.4 | | 40.70 | 443.7 | | 37.20 | 447.1 | Dry |
| 10/27/2015 | 415.40 | 0.49 | 76.30 | 405.1 | Dry | 23.90 | 439.4 | | 27.60 | 485.2 | | 41.30 | 443.1 | | 37.20 | 447.1 | Dry |
| 11/19/2015 | 412.90 | 0.09 | 76.30 | 405.1 | Dry | 24.20 | 439.1 | | 27.90 | 484.9 | | 41.50 | 442.9 | | 37.30 | 447.0 | Dry |
| 12/22/2015 | 425.50 | 0.69 | 76.50 | 404.9 | Dry | 24.80 | 438.5 | | 28.30 | 484.5 | | 41.65 | 442.8 | | 37.30 | 447.0 | Dry |
| 1/27/2016 | 463.60 | 2.86 | 76.20 | 405.2 | | 25.80 | 437.5 | | 28.50 | 484.3 | | 40.50 | 443.9 | | 37.30 | 447.0 | Dry |
| 2/25/2016 | 468.90 | 0.25 | 76.60 | 404.8 | Dry | 25.10 | 438.2 | | 25.90 | 486.9 | | 39.80 | 444.6 | | 37.30 | 447.0 | Dry |
| 3/30/2016 | 468.00 | 1.44 | 76.30 | 405.1 | Wet | 24.90 | 438.4 | | 27.60 | 485.2 | | 39.70 | 444.7 | | 37.20 | 447.1 | Dry |
| 4/28/2016 | 461.30 | 0.30 | 76.60 | 404.8 | Dry | 25.00 | 438.3 | | 28.00 | 484.8 | | 39.90 | 444.5 | | 37.30 | 447.0 | Dry |
| 5/25/2016 | 451.30 | 0.18 | 76.30 | 405.1 | Dry | 24.80 | 438.5 | | 28.35 | 484.5 | | 40.28 | 444.1 | | 37.25 | 447.1 | Dry |
| 6/28/2016 | 414.10 | 0.00 | 76.40 | 405.0 | Dry | 24.40 | 438.9 | | 28.50 | 484.3 | | 40.60 | 443.8 | | 37.20 | 447.1 | Dry |
| 7/27/2016 | 434.20 | 0.00 | 76.20 | 405.2 | Dry | 24.30 | 439.0 | | 28.90 | 483.9 | | 41.20 | 443.2 | | 37.30 | 447.0 | Dry |
| 8/23/2016 | 418.60 | 0.00 | 76.20 | 405.2 | Dry | 24.50 | 438.8 | | 28.20 | 484.6 | | 41.80 | 442.6 | | 37.30 | 447.0 | Dry |
| 9/27/2016 | 406.40 | 0.00 | 76.50 | 404.9 | Dry | 24.80 | 438.5 | | 27.20 | 485.6 | | 42.50 | 441.9 | | 37.20 | 447.1 | Dry |
| 10/26/2016 | 404.00 | 0.48 | 76.30 | 405.1 | Dry | 25.40 | 437.9 | | 28.20 | 484.6 | | 42.80 | 441.6 | | 37.20 | 447.1 | Dry |
| 11/22/2016 | 413.60 | 1.13 | 76.60 | 404.8 | Dry | 25.70 | 437.6 | | 28.05 | 484.8 | | 43.40 | 441.0 | | 37.20 | 447.1 | Dry |
| 12/20/2016 | 441.10 | 3.48 | 76.60 | 404.8 | Dry | 25.65 | 437.7 | | 27.20 | 485.6 | | 42.95 | 441.5 | | 37.30 | 447.0 | Dry |

Note:

Elevations are in feet relative to NAVD88 datum.

TABLE 1
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Monitoring Well -----> | | | MW-6 | | | MW-7 | | | MW-8 | | | CP-1A | | | CP-1B | | |
|--|----------------------------|---------------------------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|
| Top of Well Elevation -----> | | | 481.4 | | | 463.3 | | | 512.8 | | | 484.4 | | | 484.3 | | |
| Well Bottom Elevation --> | | | 404.9 | | | 397.3 | | | 419.8 | | | | | | | | |
| Date | Reservoir Elevation (feet) | Monthly Rainfall (inches) | read. (feet) | elev. (feet) | comment |
| 1/26/2017 | 471.60 | 5.67 | 76.30 | 405.1 | Dry | 25.20 | 438.1 | | 25.10 | 487.7 | | 40.80 | 443.6 | | 37.20 | 447.1 | Dry |
| 2/24/2017 | 472.05 | 3.95 | 76.60 | 404.8 | Dry | 24.20 | 439.1 | | 24.10 | 488.7 | | 40.20 | 444.2 | | 37.20 | 447.1 | Dry |
| 2/25/2017 | 472.00 | | 76.60 | 404.8 | Dry | 24.05 | 439.3 | | 24.15 | 488.7 | | 40.15 | 444.3 | | 37.20 | 447.1 | Dry |
| 2/26/2017 | 472.00 | | 76.60 | 404.8 | Dry | 23.85 | 439.5 | | 24.20 | 488.6 | | 40.10 | 444.3 | | 37.20 | 447.1 | Dry |
| 2/27/2017 | 472.00 | | 76.40 | 405.0 | Dry | 23.90 | 439.4 | | 24.30 | 488.5 | | 40.10 | 444.3 | | 37.30 | 447.0 | Dry |
| 2/28/2017 | 471.90 | | 76.70 | 404.7 | Dry | 23.90 | 439.4 | | 24.10 | 488.7 | | 40.20 | 444.2 | | 37.30 | 447.0 | Dry |
| 3/1/2017 | 471.90 | | 76.50 | 404.9 | Dry | 23.90 | 439.4 | | 24.10 | 488.7 | | 40.20 | 444.2 | | 37.30 | 447.0 | Dry |
| 3/2/2017 | 471.90 | | 76.30 | 405.1 | Dry | 23.90 | 439.4 | | 24.00 | 488.8 | | 40.10 | 444.3 | | 37.20 | 447.1 | Dry |
| 3/29/2017 | 467.90 | 0.10 | 76.30 | 405.1 | Dry | 22.70 | 440.6 | | 23.10 | 489.7 | | 40.00 | 444.4 | | 37.20 | 447.1 | Dry |
| 4/27/2017 | 457.60 | 0.04 | 76.30 | 405.1 | Dry | 22.00 | 441.3 | | 23.10 | 489.7 | | 40.10 | 444.3 | | 37.20 | 447.1 | Dry |
| 5/23/2017 | 453.50 | 0.43 | 76.60 | 404.8 | Dry | 22.00 | 441.3 | | 23.30 | 489.5 | | 40.30 | 444.1 | | 37.20 | 447.1 | Dry |
| 6/21/2017 | 447.40 | 0.00 | 76.30 | 405.1 | Dry | 21.70 | 441.6 | | 23.30 | 489.5 | | 40.50 | 443.9 | | 37.20 | 447.1 | Dry |
| 7/26/2017 | 435.10 | 0.00 | 76.30 | 405.1 | Dry | 21.80 | 441.5 | | 23.30 | 489.5 | | 40.70 | 443.7 | | 37.20 | 447.1 | Dry |
| 8/25/2017 | 420.10 | 0.00 | 76.30 | 405.1 | Dry | 21.70 | 441.6 | | 23.10 | 489.7 | | 40.90 | 443.5 | | 37.10 | 447.2 | Dry |
| 9/27/2017 | 407.10 | 0.00 | 76.40 | 405.0 | Dry | 21.90 | 441.4 | | 23.30 | 489.5 | | 41.50 | 442.9 | | 37.30 | 447.0 | Dry |
| 10/26/2017 | 395.00 | 0.00 | 76.30 | 405.1 | Dry | 21.70 | 441.6 | | 23.50 | 489.3 | | 42.20 | 442.2 | | 37.20 | 447.1 | |
| 11/28/2017 | 409.00 | 0.09 | 76.60 | 404.8 | Dry | 22.00 | 441.3 | | 23.30 | 489.5 | | 42.30 | 442.1 | | 37.20 | 447.1 | Dry |
| 12/20/2017 | 416.80 | 0.00 | 76.20 | 405.2 | Dry | 22.30 | 441.0 | | 23.40 | 489.4 | | 42.10 | 442.3 | | 37.30 | 447.0 | Dry |
| 1/24/2018 | 434.50 | 1.31 | 78.50 | 402.9 | Dry | 22.10 | 441.2 | | 22.50 | 490.3 | | 41.70 | 442.7 | | 37.80 | 446.5 | |
| 2/21/2018 | 443.10 | 0.29 | 76.30 | 405.1 | Dry | 22.20 | 441.1 | | 22.40 | 490.4 | | 41.00 | 443.4 | | 37.20 | 447.1 | |
| 3/29/2018 | 453.00 | 1.28 | 76.60 | 404.8 | Dry | 22.20 | 441.1 | | 22.60 | 490.2 | | 40.40 | 444.0 | | 37.20 | 447.1 | |
| 4/26/2018 | 449.10 | 0.05 | 76.60 | 404.8 | Dry | 22.20 | 441.1 | | 22.80 | 490.0 | | 40.60 | 443.8 | | 37.30 | 447.0 | Dry |
| 5/31/2018 | 453.10 | 0.20 | 76.30 | 405.1 | Dry | 22.10 | 441.2 | | 22.70 | 490.1 | | 40.70 | 443.7 | | 37.20 | 447.1 | Dry |
| 6/28/2018 | 448.20 | 0.00 | 76.10 | 405.3 | Dry | 22.20 | 441.1 | | 22.90 | 489.9 | | 40.70 | 443.7 | | 37.30 | 447.0 | Dry |
| 7/25/2018 | 440.40 | 0.00 | 77.70 | 403.7 | | 22.00 | 441.3 | | 22.60 | 490.2 | | 40.60 | 443.8 | | 37.40 | 446.9 | |
| 8/22/2018 | 427.10 | 0.00 | 76.60 | 404.8 | Dry | 22.20 | 441.1 | | 22.50 | 490.3 | | 41.60 | 442.8 | | 37.30 | 447.0 | |
| 9/27/2018 | 439.60 | 0.00 | 76.30 | 405.1 | Dry | 22.20 | 441.1 | | 22.10 | 490.7 | | 42.50 | 441.9 | | 37.20 | 447.1 | |
| 10/18/2018 | 405.30 | 0.90 | 76.30 | 405.1 | Dry | 22.20 | 441.1 | | 21.40 | 491.4 | | 43.00 | 441.4 | | 37.30 | 447.0 | Dry |
| 11/28/2018 | 408.60 | 1.19 | 76.40 | 405.0 | Dry | 22.30 | 441.0 | | 21.30 | 491.5 | | 43.20 | 441.2 | | 37.40 | 446.9 | Dry |
| 12/19/2018 | 436.00 | 1.99 | 76.30 | 405.1 | Dry | 22.30 | 441.0 | | 20.80 | 492.0 | | 43.10 | 441.3 | | 37.10 | 447.2 | Dry |

Note:

Elevations are in feet relative to NAVD88 datum.

TABLE 1
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Monitoring Well -----> | | | CP-2A | | | CP-2B | | | CP-3A | | | CP-3B | | |
|------------------------------|----------------------------|---------------------------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|
| Top of Well Elevation -----> | | | 487.7 | | | 487.7 | | | 486.0 | | | 486.0 | | |
| Well Bottom Elevation --> | | | | | | | | | | | | | | |
| Date | Reservoir Elevation (feet) | Monthly Rainfall (inches) | read. (feet) | elev. (feet) | comment |
| 1/28/2009 | 463.70 | 0.17 | 30.80 | 456.9 | | 37.00 | 450.7 | | 15.30 | 470.7 | | 20.10 | 465.9 | |
| 2/25/2009 | 470.10 | 3.35 | 30.20 | 457.5 | | 36.00 | 451.7 | | 14.90 | 471.1 | | 19.00 | 467.0 | |
| 3/26/2009 | 469.40 | 0.19 | 30.70 | 457.0 | | 36.20 | 451.5 | | 14.60 | 471.4 | | 19.50 | 466.5 | |
| 4/29/2009 | 466.90 | 0.07 | 31.30 | 456.4 | | 36.60 | 451.1 | | 14.60 | 471.4 | | 19.70 | 466.3 | |
| 5/18/2009 | 466.70 | 0.00 | 31.20 | 456.5 | | 36.60 | 451.1 | | 14.40 | 471.6 | | 19.40 | 466.6 | |
| 5/29/2009 | 465.00 | 0.00 | 31.50 | 456.2 | | 36.60 | 451.1 | | 14.40 | 471.6 | | 19.40 | 466.6 | |
| 6/30/2009 | 460.20 | 0.00 | 32.10 | 455.6 | | 37.10 | 450.6 | | 14.50 | 471.5 | | 19.30 | 466.7 | |
| 7/30/2009 | 451.10 | 0.00 | 32.70 | 455.0 | | 37.30 | 450.4 | | 14.50 | 471.5 | | 19.30 | 466.7 | |
| 8/25/2009 | 440.10 | 0.00 | 33.20 | 454.5 | | 37.40 | 450.3 | | 14.50 | 471.5 | | 19.20 | 466.8 | |
| 9/30/2009 | 432.20 | 0.00 | 33.15 | 454.6 | | 37.60 | 450.1 | | 14.60 | 471.4 | | 19.30 | 466.7 | |
| 10/29/2009 | 431.40 | 0.53 | 32.74 | 455.0 | | 37.62 | 450.0 | | 14.69 | 471.3 | | 19.48 | 466.5 | |
| 12/1/2009 | 427.40 | 0.00 | 32.60 | 455.1 | | 37.70 | 450.0 | | 14.90 | 471.1 | | 19.80 | 466.2 | |
| 12/29/2009 | 448.10 | 2.06 | 30.66 | 457.0 | | 37.31 | 450.3 | | 14.72 | 471.3 | | 19.65 | 466.4 | |
| 1/27/2010 | 465.60 | 4.62 | 27.40 | 460.3 | | 36.60 | 451.1 | | 14.20 | 471.8 | | 19.40 | 466.6 | |
| 2/25/2010 | 470.20 | 2.51 | 27.70 | 460.0 | | 36.10 | 451.6 | | 13.80 | 472.2 | | 19.20 | 466.8 | |
| 3/29/2010 | 465.70 | 0.99 | 29.40 | 458.3 | | 36.50 | 451.2 | | 13.70 | 472.3 | | 18.00 | 468.0 | |
| 4/4/2010 | 465.00 | | 29.20 | 458.5 | | 36.40 | 451.3 | | 13.70 | 472.3 | | 18.40 | 467.6 | |
| 4/27/2010 | 468.40 | 1.23 | 28.60 | 459.1 | | 36.20 | 451.5 | | 13.60 | 472.4 | | 18.90 | 467.1 | |
| 5/27/2010 | 463.30 | 0.05 | 29.80 | 457.9 | | 36.40 | 451.3 | | 13.60 | 472.4 | | 18.80 | 467.2 | |
| 6/30/2010 | 454.70 | 0.00 | 30.50 | 457.2 | | 36.70 | 451.0 | | 13.60 | 472.4 | | 18.70 | 467.3 | |
| 7/28/2010 | 445.60 | 0.00 | 31.00 | 456.7 | | 37.00 | 450.7 | | 13.70 | 472.3 | | 18.90 | 467.1 | |
| 8/31/2010 | 437.10 | 0.00 | 31.30 | 456.4 | | 37.20 | 450.5 | | 14.00 | 472.0 | | 19.00 | 467.0 | |
| 9/29/2010 | 422.70 | 0.00 | 31.30 | 456.4 | | 37.20 | 450.5 | | 13.80 | 472.2 | | 18.90 | 467.1 | |
| 10/27/2010 | 426.40 | 2.38 | 31.20 | 456.5 | | 37.20 | 450.5 | | 13.90 | 472.1 | | 19.00 | 467.0 | |
| 11/29/2010 | 439.80 | 0.97 | 30.00 | 457.7 | | 37.10 | 450.6 | | 13.70 | 472.3 | | 19.20 | 466.8 | |
| 12/30/2010 | 456.60 | 8.62 | 25.70 | 462.0 | | 35.50 | 452.2 | | 12.60 | 473.4 | | 18.20 | 467.8 | |

Note:

Elevations are in feet relative to NAVD88 datum.

TABLE 1
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Monitoring Well -----> | | | CP-2A | | | CP-2B | | | CP-3A | | | CP-3B | | |
|--|----------------------------|---------------------------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|
| Top of Well Elevation -----> | | | 487.7 | | | 487.7 | | | 486.0 | | | 486.0 | | |
| Well Bottom Elevation --> | | | | | | | | | | | | | | |
| Date | Reservoir Elevation (feet) | Monthly Rainfall (inches) | read. (feet) | elev. (feet) | comment |
| 2/1/2011 | 468.90 | 0.92 | 26.00 | 461.7 | | 35.30 | 452.4 | | 11.90 | 474.1 | | 17.90 | 468.1 | |
| 2/23/2011 | 469.00 | 0.99 | 26.48 | 461.2 | | 35.58 | 452.1 | | 11.64 | 474.4 | | 17.81 | 468.2 | |
| 3/29/2011 | 470.30 | 2.93 | 26.50 | 461.2 | | 35.40 | 452.3 | | 11.10 | 474.9 | | 17.40 | 468.6 | |
| 4/27/2011 | 464.80 | 0.19 | 27.87 | 459.8 | | 35.67 | 452.0 | | 10.85 | 475.2 | | 17.00 | 469.0 | |
| 5/26/2011 | 457.30 | 0.48 | 28.60 | 459.1 | | 36.00 | 451.7 | | 10.80 | 475.2 | | 16.90 | 469.1 | |
| 6/28/2011 | 443.50 | 0.05 | 29.80 | 457.9 | | 36.30 | 451.4 | | 10.70 | 475.3 | | 16.70 | 469.3 | |
| 7/29/2011 | 425.10 | 0.00 | 30.35 | 457.4 | | 36.60 | 451.1 | | 10.80 | 475.2 | | 16.70 | 469.3 | |
| 8/24/2011 | 418.00 | 0.00 | 30.60 | 457.1 | | 36.70 | 451.0 | | 10.80 | 475.2 | | 16.70 | 469.3 | |
| 9/27/2011 | 400.90 | 0.12 | 30.60 | 457.1 | | 36.70 | 451.0 | | 11.00 | 475.0 | | 16.70 | 469.3 | |
| 10/26/2011 | 402.20 | 1.25 | 30.80 | 456.9 | | 36.90 | 450.8 | | 11.10 | 474.9 | | 17.20 | 468.8 | |
| 11/30/2011 | 425.10 | 1.38 | 29.50 | 458.2 | | 36.40 | 451.3 | | 10.80 | 475.2 | | 16.70 | 469.3 | |
| 12/21/2011 | 435.70 | 0.32 | 29.10 | 458.6 | | 36.60 | 451.1 | | 10.90 | 475.1 | | 16.90 | 469.1 | |
| 1/24/2012 | 441.40 | 0.53 | 28.50 | 459.2 | | 36.40 | 451.3 | | 10.50 | 475.5 | | 17.00 | 469.0 | |
| 2/28/2012 | 448.40 | 0.42 | 28.50 | 459.2 | | 36.60 | 451.1 | | 10.60 | 475.4 | | 17.40 | 468.6 | |
| 3/26/2012 | 452.70 | 1.06 | 27.80 | 459.9 | | 36.60 | 451.1 | | 10.50 | 475.5 | | 17.30 | 468.7 | |
| 4/23/2012 | 463.40 | 1.32 | 26.70 | 461.0 | | 35.70 | 452.0 | | 10.50 | 475.5 | | 17.40 | 468.6 | |
| 5/30/2012 | 457.30 | 0.02 | 28.30 | 459.4 | | 36.00 | 451.7 | | 10.40 | 475.6 | | 17.10 | 468.9 | |
| 6/13/2012 | 452.90 | 0.02 | 28.80 | 458.9 | | 36.00 | 451.7 | | 10.50 | 475.5 | | 17.00 | 469.0 | |
| 6/26/2012 | 450.20 | 0.00 | 29.10 | 458.6 | | 36.10 | 451.6 | | 10.60 | 475.4 | | 17.10 | 468.9 | |
| 7/24/2012 | 439.80 | 0.00 | 30.00 | 457.7 | | 36.70 | 451.0 | | 11.00 | 475.0 | | 17.80 | 468.2 | |
| 8/8/2012 | 437.60 | 0.12 | 29.80 | 457.9 | | 36.60 | 451.1 | | 11.10 | 474.9 | | 17.50 | 468.5 | |
| 8/22/2012 | 433.40 | 0.00 | 29.95 | 457.8 | | 36.50 | 451.2 | | 11.15 | 474.9 | | 17.55 | 468.5 | |
| 8/29/2012 | 431.30 | 0.00 | 30.00 | 457.7 | | 36.40 | 451.3 | | 11.20 | 474.8 | | 17.50 | 468.5 | |
| 9/25/2012 | 420.80 | 0.00 | 30.10 | 457.6 | | 36.40 | 451.3 | | 11.30 | 474.7 | | 17.60 | 468.4 | |
| 10/31/2012 | 412.30 | 0.26 | 30.60 | 457.1 | | 36.80 | 450.9 | | 11.80 | 474.2 | | 18.10 | 467.9 | |
| 11/27/2012 | 420.80 | 0.58 | 30.30 | 457.4 | | 36.80 | 450.9 | | 11.80 | 474.2 | | 18.20 | 467.8 | |
| 12/18/2012 | 448.00 | 1.44 | 27.90 | 459.8 | | 36.00 | 451.7 | | 11.65 | 474.4 | | 18.00 | 468.0 | |

Note:

Elevations are in feet relative to NAVD88 datum.

TABLE 1
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Monitoring Well -----> | | | CP-2A | | | CP-2B | | | CP-3A | | | CP-3B | | |
|------------------------------|----------------------------|---------------------------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|
| Top of Well Elevation -----> | | | 487.7 | | | 487.7 | | | 486.0 | | | 486.0 | | |
| Well Bottom Elevation --> | | | | | | | | | | | | | | |
| Date | Reservoir Elevation (feet) | Monthly Rainfall (inches) | read. (feet) | elev. (feet) | comment |
| 1/29/2013 | 468.60 | 1.18 | 26.20 | 461.5 | | 35.80 | 451.9 | | 11.30 | 474.7 | | 18.30 | 467.7 | |
| 2/28/2013 | 469.20 | 0.30 | 26.90 | 460.8 | | 35.50 | 452.2 | | 11.20 | 474.8 | | 18.20 | 467.8 | |
| 3/27/2013 | 468.30 | 0.50 | 27.50 | 460.2 | | 35.40 | 452.3 | | 11.20 | 474.8 | | 18.00 | 468.0 | |
| 4/25/2013 | 462.70 | 0.00 | 28.90 | 458.8 | | 35.80 | 451.9 | | 11.40 | 474.6 | | 18.20 | 467.8 | |
| 5/21/2013 | 454.20 | 0.00 | 29.70 | 458.0 | | 36.20 | 451.5 | | 11.90 | 474.1 | | 18.40 | 467.6 | |
| 6/25/2013 | 439.30 | 0.00 | 30.60 | 457.1 | | 36.50 | 451.2 | | 12.00 | 474.0 | | 18.65 | 467.4 | |
| 7/23/2013 | 431.50 | 0.00 | 30.70 | 457.0 | | 36.70 | 451.0 | | 12.40 | 473.6 | | 18.80 | 467.2 | |
| 8/21/2013 | 418.00 | 0.00 | 31.30 | 456.4 | | 36.80 | 450.9 | | 13.00 | 473.0 | | 19.10 | 466.9 | |
| 9/24/2013 | 404.00 | 0.00 | 31.20 | 456.5 | | 36.90 | 450.8 | | 13.00 | 473.0 | | 19.20 | 466.8 | |
| 10/29/2013 | 400.60 | 0.00 | 31.00 | 456.7 | | 36.70 | 451.0 | | 13.10 | 472.9 | | 19.40 | 466.6 | |
| 11/26/2013 | 407.90 | 0.44 | 30.90 | 456.8 | | 37.00 | 450.7 | | 13.20 | 472.8 | | 19.50 | 466.5 | |
| 12/19/2013 | 425.80 | 0.54 | 29.90 | 457.8 | | 36.50 | 451.2 | | 12.90 | 473.1 | | 19.20 | 466.8 | |
| 1/28/2014 | 439.70 | 0.00 | 29.00 | 458.7 | | 36.50 | 451.2 | | 12.70 | 473.3 | | 19.50 | 466.5 | |
| 2/25/2014 | 449.70 | 0.83 | 28.25 | 459.5 | | 36.20 | 451.5 | | 12.70 | 473.3 | | 19.60 | 466.4 | |
| 3/26/2014 | 465.10 | | 26.75 | 461.0 | | 35.70 | 452.0 | | 12.55 | 473.5 | | 19.60 | 466.4 | |
| 3/28/2014 | 465.70 | 1.15 | 26.80 | 460.9 | | 35.80 | 451.9 | | 12.60 | 473.4 | | 19.70 | 466.3 | |
| 4/29/2014 | 465.30 | 0.43 | 27.60 | 460.1 | | 35.80 | 451.9 | | 12.80 | 473.2 | | 19.60 | 466.4 | |
| 5/28/2014 | 450.60 | 0.00 | 29.80 | 457.9 | | 36.30 | 451.4 | | 13.10 | 472.9 | | 19.60 | 466.4 | |
| 6/25/2014 | 440.10 | 0.00 | 30.40 | 457.3 | | 36.50 | 451.2 | | 13.20 | 472.8 | | 19.80 | 466.2 | |
| 7/29/2014 | 431.20 | 0.00 | 30.70 | 457.0 | | 36.70 | 451.0 | | 13.50 | 472.5 | | 20.10 | 465.9 | |
| 8/26/2014 | 419.50 | 0.02 | 31.10 | 456.6 | | 36.80 | 450.9 | | 13.70 | 472.3 | | 20.30 | 465.7 | |
| 9/23/2014 | 405.30 | 0.00 | 31.30 | 456.4 | | 36.80 | 450.9 | | 13.80 | 472.2 | | 20.20 | 465.8 | |
| 10/29/2014 | 400.90 | 0.00 | 31.30 | 456.4 | | 36.90 | 450.8 | | 14.10 | 471.9 | | 20.50 | 465.5 | |
| 11/25/2014 | 410.90 | 0.25 | 31.20 | 456.5 | | 37.10 | 450.6 | | 14.30 | 471.7 | | 20.90 | 465.1 | |
| 12/30/2014 | 430.60 | 2.94 | 26.20 | 461.5 | | 36.65 | 451.0 | | 14.00 | 472.0 | | 20.50 | 465.5 | |

Note:

Elevations are in feet relative to NAVD88 datum.

TABLE 1
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Monitoring Well -----> | | | CP-2A | | | CP-2B | | | CP-3A | | | CP-3B | | |
|--|----------------------------|---------------------------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|
| Top of Well Elevation -----> | | | 487.7 | | | 487.7 | | | 486.0 | | | 486.0 | | |
| Well Bottom Elevation --> | | | | | | | | | | | | | | |
| Date | Reservoir Elevation (feet) | Monthly Rainfall (inches) | read. (feet) | elev. (feet) | comment |
| 1/27/2015 | 466.70 | 0.83 | 26.50 | 461.2 | | 35.70 | 452.0 | | 13.10 | 472.9 | | 20.30 | 465.7 | |
| 2/25/2015 | 468.90 | 0.69 | 27.00 | 460.7 | | 35.50 | 452.2 | | 12.70 | 473.3 | | 20.10 | 465.9 | |
| 3/26/2015 | 465.90 | 0.61 | 28.10 | 459.6 | | 35.60 | 452.1 | | 12.70 | 473.3 | | 19.90 | 466.1 | |
| 4/28/2015 | 465.70 | 0.20 | 28.00 | 459.7 | | 35.70 | 452.0 | | 12.80 | 473.2 | | 19.80 | 466.2 | |
| 5/28/2015 | 466.40 | 1.08 | 20.10 | 467.6 | | 35.70 | 452.0 | | 12.90 | 473.1 | | 20.00 | 466.0 | |
| 6/30/2015 | 454.50 | 0.00 | 29.80 | 457.9 | | 36.10 | 451.6 | | 13.10 | 472.9 | | 20.00 | 466.0 | |
| 7/28/2015 | 445.60 | 0.00 | 30.20 | 457.5 | | 36.30 | 451.4 | | 13.30 | 472.7 | | 20.10 | 465.9 | |
| 8/28/2015 | 437.60 | 0.00 | 30.50 | 457.2 | | 36.60 | 451.1 | | 13.60 | 472.4 | | 20.20 | 465.8 | |
| 9/24/2015 | 426.90 | 1.51 | 30.80 | 456.9 | | 36.70 | 451.0 | | 13.80 | 472.2 | | 20.50 | 465.5 | |
| 10/27/2015 | 415.40 | 0.49 | 30.90 | 456.8 | | 36.80 | 450.9 | | 14.10 | 471.9 | | 20.70 | 465.3 | |
| 11/19/2015 | 412.90 | 0.09 | 30.80 | 456.9 | | 36.80 | 450.9 | | 14.20 | 471.8 | | 20.80 | 465.2 | |
| 12/22/2015 | 425.50 | 0.69 | 29.90 | 457.8 | | 36.50 | 451.2 | | 14.40 | 471.6 | | 20.80 | 465.2 | |
| 1/27/2016 | 463.60 | 2.86 | 26.25 | 461.5 | | 36.15 | 451.5 | | 14.10 | 471.9 | | 21.10 | 464.9 | |
| 2/25/2016 | 468.90 | 0.25 | 26.70 | 461.0 | | 35.50 | 452.2 | | 14.20 | 471.8 | | 20.90 | 465.1 | |
| 3/30/2016 | 468.00 | 1.44 | 26.75 | 461.0 | | 35.10 | 452.6 | | 13.60 | 472.4 | | 20.80 | 465.2 | |
| 4/28/2016 | 461.30 | 0.30 | 28.20 | 459.5 | | 35.70 | 452.0 | | 13.80 | 472.2 | | 20.80 | 465.2 | |
| 5/25/2016 | 451.30 | 0.18 | 29.05 | 458.7 | | 36.20 | 451.5 | | 14.15 | 471.9 | | 21.05 | 465.0 | |
| 6/28/2016 | 414.10 | 0.00 | 29.30 | 458.4 | | 36.20 | 451.5 | | 14.40 | 471.6 | | 21.10 | 464.9 | |
| 7/27/2016 | 434.20 | 0.00 | 29.70 | 458.0 | | 36.40 | 451.3 | | 14.60 | 471.4 | | 21.30 | 464.7 | |
| 8/23/2016 | 418.60 | 0.00 | 30.30 | 457.4 | | 36.65 | 451.0 | | 14.90 | 471.1 | | 21.40 | 464.6 | |
| 9/27/2016 | 406.40 | 0.00 | 30.40 | 457.3 | | 36.70 | 451.0 | | 15.20 | 470.8 | | 21.50 | 464.5 | |
| 10/26/2016 | 404.00 | 0.48 | 30.30 | 457.4 | | 36.70 | 451.0 | | 15.50 | 470.5 | | 21.80 | 464.2 | |
| 11/22/2016 | 413.60 | 1.13 | 29.95 | 457.8 | | 36.80 | 450.9 | | 15.45 | 470.6 | | 21.95 | 464.1 | |
| 12/20/2016 | 441.10 | 3.48 | 28.10 | 459.6 | | 36.45 | 451.2 | | 15.35 | 470.7 | | 22.05 | 464.0 | |

Note:

Elevations are in feet relative to NAVD88 datum.

TABLE 1
SAN JOAQUIN DAM
PIEZOMETER AND MONITORING WELL WATER LEVEL MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Monitoring Well -----> | | | CP-2A | | | CP-2B | | | CP-3A | | | CP-3B | | |
|------------------------------|----------------------------|---------------------------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|--------------|--------------|---------|
| Top of Well Elevation -----> | | | 487.7 | | | 487.7 | | | 486.0 | | | 486.0 | | |
| Well Bottom Elevation --> | | | | | | | | | | | | | | |
| Date | Reservoir Elevation (feet) | Monthly Rainfall (inches) | read. (feet) | elev. (feet) | comment |
| 1/26/2017 | 471.60 | 5.67 | 24.10 | 463.6 | | 35.20 | 452.5 | | 14.20 | 471.8 | | 21.70 | 464.3 | |
| 2/24/2017 | 472.05 | 3.95 | 24.80 | 462.9 | | 34.60 | 453.1 | | 13.65 | 472.4 | | 21.10 | 464.9 | |
| 2/25/2017 | 472.00 | | 24.80 | 462.9 | | 34.45 | 453.2 | | 13.55 | 472.5 | | 21.00 | 465.0 | |
| 2/26/2017 | 472.00 | | 24.85 | 462.9 | | 34.40 | 453.3 | | 13.50 | 472.5 | | 20.90 | 465.1 | |
| 2/27/2017 | 472.00 | | 25.40 | 462.3 | | 34.40 | 453.3 | | 13.90 | 472.1 | | 20.40 | 465.6 | |
| 2/28/2017 | 471.90 | | 24.90 | 462.8 | | 34.50 | 453.2 | | 13.50 | 472.5 | | 21.00 | 465.0 | |
| 3/1/2017 | 471.90 | | 24.90 | 462.8 | | 34.40 | 453.3 | | 13.60 | 472.4 | | 21.20 | 464.8 | |
| 3/2/2017 | 471.90 | | 25.14 | 462.6 | | 34.70 | 453.0 | | 13.60 | 472.4 | | 21.10 | 464.9 | |
| 3/29/2017 | 467.90 | 0.10 | 26.30 | 461.4 | | 35.00 | 452.7 | | 13.40 | 472.6 | | 20.70 | 465.3 | |
| 4/27/2017 | 457.60 | 0.04 | 27.60 | 460.1 | | 35.70 | 452.0 | | 13.30 | 472.7 | | 20.30 | 465.7 | |
| 5/23/2017 | 453.50 | 0.43 | 27.80 | 459.9 | | 35.90 | 451.8 | | 13.40 | 472.6 | | 20.50 | 465.5 | |
| 6/21/2017 | 447.40 | 0.00 | 28.10 | 459.6 | | 35.90 | 451.8 | | 13.30 | 472.7 | | 20.40 | 465.6 | |
| 7/26/2017 | 435.10 | 0.00 | 28.70 | 459.0 | | 36.20 | 451.5 | | 13.50 | 472.5 | | 20.50 | 465.5 | |
| 8/25/2017 | 420.10 | 0.00 | 28.00 | 459.7 | | 36.20 | 451.5 | | 13.60 | 472.4 | | 20.40 | 465.6 | |
| 9/27/2017 | 407.10 | 0.00 | 29.10 | 458.6 | | 36.40 | 451.3 | | 13.80 | 472.2 | | 20.60 | 465.4 | |
| 10/26/2017 | 395.00 | 0.00 | 29.20 | 458.5 | | 36.30 | 451.4 | | 14.10 | 471.9 | | 20.60 | 465.4 | |
| 11/28/2017 | 409.00 | 0.09 | 28.60 | 459.1 | | 36.30 | 451.4 | | 13.70 | 472.3 | | 20.70 | 465.3 | |
| 12/20/2017 | 416.80 | 0.00 | 28.50 | 459.2 | | 36.40 | 451.3 | | 13.80 | 472.2 | | 20.90 | 465.1 | |
| 1/24/2018 | 434.50 | 1.31 | 27.10 | 460.6 | | 36.00 | 451.7 | | 13.30 | 472.7 | | 20.50 | 465.5 | |
| 2/21/2018 | 443.10 | 0.29 | 26.50 | 461.2 | | 35.90 | 451.8 | | 13.00 | 473.0 | | 20.40 | 465.6 | |
| 3/29/2018 | 453.00 | 1.28 | 25.90 | 461.8 | | 35.60 | 452.1 | | 12.50 | 473.5 | | 20.20 | 465.8 | |
| 4/26/2018 | 449.10 | 0.05 | 26.20 | 461.5 | | 35.80 | 451.9 | | 12.50 | 473.5 | | 20.10 | 465.9 | |
| 5/31/2018 | 453.10 | 0.20 | 26.40 | 461.3 | | 35.80 | 451.9 | | 12.30 | 473.7 | | 20.00 | 466.0 | |
| 6/28/2018 | 448.20 | 0.00 | 27.40 | 460.3 | | 35.90 | 451.8 | | 12.50 | 473.5 | | 20.00 | 466.0 | |
| 7/25/2018 | 440.40 | 0.00 | 28.00 | 459.7 | | 35.90 | 451.8 | | 12.60 | 473.4 | | 19.20 | 466.8 | |
| 8/22/2018 | 427.10 | 0.00 | 28.80 | 458.9 | | 36.20 | 451.5 | | 13.10 | 472.9 | | 20.10 | 465.9 | |
| 9/27/2018 | 439.60 | 0.00 | 29.40 | 458.3 | | 36.40 | 451.3 | | 13.40 | 472.6 | | 20.50 | 465.5 | |
| 10/18/2018 | 405.30 | 0.90 | 29.50 | 458.2 | | 36.40 | 451.3 | | 13.50 | 472.5 | | 20.70 | 465.3 | |
| 11/28/2018 | 408.60 | 1.19 | 29.30 | 458.4 | | 36.50 | 451.2 | | 13.80 | 472.2 | | 21.40 | 464.6 | |
| 12/19/2018 | 436.00 | 1.99 | 37.80 | 449.9 | | 36.10 | 451.6 | | 13.60 | 472.4 | | 21.00 | 465.0 | |

Note:

Elevations are in feet relative to NAVD88 datum.

TABLE 2
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Vibrating Wire Piezo. ----> | | VB-1 | | | VB-2 | | | VB-3 | | | VB-4 | | |
|-----------------------------|----------------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|
| Top of AC Elevation -----> | | 371.0 | | | 407.0 | | | 421.5 | | | 448.0 | | |
| Piezo. Tip Elevation -----> | | 357.0 | | | 392.0 | | | 399.5 | | | 441.0 | | |
| Date | Reservoir Elevation (feet) | read. (ft) | temp. (°C) | elevation (ft) | read. (Hz) | temp. (°C) | elevation (ft) | read. (Hz) | temp. (°C) | elevation (ft) | read. (Hz) | temp. (°C) | elevation (ft) |
| 1/28/2009 | 463.70 | 3010.10 | 22.30 | 390.64 | 2951.70 | 23.0 | 419.54 | 3162.40 | 21.40 | 398.53 | 3003.20 | 21.20 | 457.82 |
| 2/25/2009 | 470.10 | 2988.80 | 22.30 | 395.96 | 2912.40 | 23.0 | 428.20 | 3162.90 | 21.30 | 398.39 | 2965.70 | 20.80 | 466.56 |
| 3/26/2009 | 469.40 | 2973.50 | 22.30 | 399.76 | 2903.20 | 23.0 | 430.21 | 3163.70 | 21.10 | 398.17 | 2967.20 | 20.50 | 466.19 |
| 4/29/2009 | 466.90 | 2938.80 | 22.30 | 408.30 | 2903.10 | 23.0 | 430.24 | 3163.10 | 20.90 | 398.33 | 2975.50 | 20.60 | 464.27 |
| 5/18/2009 | 466.70 | 2938.00 | 19.90 | 408.41 | 2904.00 | 23.0 | 430.04 | 3163.00 | 20.80 | 398.35 | 2977.00 | 20.60 | 463.92 |
| 5/29/2009 | 465.00 | 2941.80 | 22.30 | 407.57 | 2907.10 | 23.0 | 429.36 | 3163.60 | 20.80 | 398.19 | 2987.80 | 20.70 | 461.41 |
| 6/30/2009 | 460.20 | 2947.30 | 22.30 | 406.22 | 2914.70 | 23.0 | 427.70 | 3163.80 | 20.70 | 398.13 | 3004.30 | 20.80 | 457.54 |
| 7/30/2009 | 451.10 | 2960.50 | 20.00 | 402.89 | 2929.70 | 23.0 | 424.40 | 3163.60 | 20.60 | 398.18 | 3034.00 | 21.30 | 450.55 |
| 8/25/2009 | 440.10 | 2979.90 | 19.80 | 398.08 | 2950.40 | 23.0 | 419.83 | 3163.50 | 20.70 | 398.21 | 3056.30 | 21.60 | 445.25 |
| 9/30/2009 | 432.20 | 2996.20 | 22.30 | 394.12 | 2970.30 | 23.0 | 415.41 | 3163.80 | 20.80 | 398.14 | 3063.20 | 22.70 | 443.65 |
| 10/29/2009 | 431.40 | 3003.20 | 20.10 | 392.29 | 2979.70 | 23.0 | 413.31 | 3163.40 | 21.00 | 398.25 | 3067.90 | 22.70 | 442.52 |
| 12/1/2009 | 427.40 | 3014.10 | 20.90 | 389.58 | 2990.70 | 23.0 | 410.85 | 3163.60 | 21.20 | 398.20 | 3072.10 | 23.90 | 441.57 |
| 12/29/2009 | 448.10 | 3000.70 | 22.30 | 392.99 | 2971.40 | 23.0 | 415.16 | 3163.30 | 21.30 | 398.28 | 3069.10 | 21.50 | 442.18 |
| 1/27/2010 | 465.60 | 2978.90 | 22.30 | 398.42 | 2927.90 | 23.0 | 424.79 | 3163.90 | 21.30 | 398.12 | 2989.70 | 21.00 | 460.98 |
| 2/25/2010 | 470.20 | 2957.30 | 22.30 | 403.76 | 2899.70 | 23.0 | 430.98 | 3162.80 | 21.20 | 398.42 | 2961.30 | 20.60 | 467.57 |
| 3/29/2010 | 465.70 | 2963.60 | 20.10 | 402.13 | 2901.20 | 23.0 | 430.65 | 3163.50 | 21.00 | 398.22 | 2977.80 | 20.40 | 463.73 |
| 4/4/2010 | 465.00 | 2965.40 | 22.30 | 401.76 | 2902.50 | 23.0 | 430.37 | 3163.40 | 20.90 | 398.25 | 2980.60 | 20.40 | 463.07 |
| 4/27/2010 | 468.40 | 2964.60 | 22.30 | 401.96 | 2899.00 | 23.0 | 431.13 | 3163.50 | 22.6 | 398.27 | 2968.40 | 22.2 | 465.99 |
| 5/27/2010 | 463.30 | 2972.00 | 22.30 | 400.13 | 2903.00 | 23.0 | 430.26 | 3163.00 | 20.60 | 398.35 | 2986.00 | 20.30 | 461.81 |
| 6/30/2010 | 454.70 | 2988.10 | 22.30 | 396.14 | 2923.60 | 23.0 | 425.74 | 3163.50 | 20.50 | 398.21 | 3028.10 | 20.60 | 451.92 |
| 7/28/2010 | 445.60 | 2996.90 | 20.00 | 393.86 | 2936.90 | 23.0 | 422.81 | 3163.30 | 20.50 | 398.26 | 3045.70 | 21.00 | 447.76 |
| 8/31/2010 | 437.10 | 3008.70 | 22.30 | 390.99 | 2957.90 | 23.0 | 418.16 | 3163.50 | 20.60 | 398.21 | 3057.70 | 21.80 | 444.93 |
| 9/29/2010 | 422.70 | 3024.50 | 22.30 | 387.01 | 2983.40 | 23.0 | 412.48 | 3163.80 | 20.70 | 398.13 | 3062.10 | 21.80 | 443.87 |
| 10/27/2010 | 426.40 | 3027.60 | 22.30 | 386.23 | 2995.00 | 23.0 | 409.89 | 3163.40 | 20.80 | 398.24 | 3067.00 | 21.80 | 442.70 |
| 11/29/2010 | 439.80 | 3021.40 | 22.30 | 387.80 | 2982.50 | 23.0 | 412.68 | 3162.20 | 20.90 | 398.57 | 3068.60 | 21.70 | 442.31 |
| 12/30/2010 | 456.60 | 3003.30 | 22.30 | 392.34 | 2948.30 | 23.0 | 420.29 | 3164.10 | 21.00 | 398.06 | 3032.30 | 21.00 | 450.94 |

Notes:

(1) Elevations are in feet relative to NAVD88 datum.

(2) Temperature values listed in red are adjusted for temperature reading errors.

TABLE 2
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Vibrating Wire Piezo. ----> | | VB-1 | | | VB-2 | | | VB-3 | | | VB-4 | | |
|---------------------------------------|----------------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|
| Top of AC Elevation -----> | | 371.0 | | | 407.0 | | | 421.5 | | | 448.0 | | |
| Piezo. Tip Elevation -----> | | 357.0 | | | 392.0 | | | 399.5 | | | 441.0 | | |
| Date | Reservoir Elevation (feet) | read. (ft) | temp. (°C) | elevation (ft) | read. (Hz) | temp. (°C) | elevation (ft) | read. (Hz) | temp. (°C) | elevation (ft) | read. (Hz) | temp. (°C) | elevation (ft) |
| 2/1/2011 | 468.90 | 2964.00 | 22.30 | 402.11 | 2903.00 | 23.0 | 430.26 | 3163.00 | 21.00 | 398.36 | 2968.00 | 20.50 | 466.01 |
| 2/23/2011 | 469.00 | 2960.70 | 22.30 | 402.92 | 2896.00 | 23.0 | 431.79 | 3162.80 | 20.90 | 398.41 | 2964.10 | 20.10 | 466.90 |
| 3/29/2011 | 470.30 | 2959.90 | 22.30 | 403.12 | 2891.90 | 23.0 | 432.68 | 3162.90 | 20.70 | 398.37 | 2957.70 | 20.60 | 468.40 |
| 4/27/2011 | 464.80 | 2967.20 | 19.60 | 401.22 | 2897.80 | 23.0 | 431.40 | 3163.10 | 20.50 | 398.32 | 2979.30 | 19.80 | 463.35 |
| 5/26/2011 | 457.30 | 2983.40 | 19.60 | 397.21 | 2911.70 | 23.0 | 428.35 | 3162.80 | 20.30 | 398.39 | 3007.40 | 20.20 | 456.79 |
| 6/28/2011 | 443.50 | 3003.20 | 22.30 | 392.37 | 2935.90 | 23.0 | 423.03 | 3163.60 | 20.20 | 398.17 | 3045.90 | 20.40 | 447.68 |
| 7/29/2011 | 425.10 | 3020.90 | 22.30 | 387.92 | 2965.90 | 23.0 | 416.38 | 3163.10 | 20.20 | 398.31 | 3055.70 | 21.30 | 445.38 |
| 8/24/2011 | 418.00 | 3037.00 | 19.90 | 383.77 | 2996.50 | 23.0 | 409.55 | 3163.40 | 20.30 | 398.23 | 3059.30 | 22.30 | 444.57 |
| 9/27/2011 | 400.90 | 3051.00 | 20.10 | 380.22 | 3021.30 | 23.0 | 403.97 | 3163.10 | 20.50 | 398.32 | 3064.10 | 23.60 | 443.48 |
| 10/26/2011 | 402.20 | 3054.30 | 22.30 | 379.46 | 3031.70 | 23.0 | 401.62 | 3163.40 | 20.80 | 398.24 | 3066.60 | 21.10 | 442.76 |
| 11/30/2011 | 425.10 | 3044.00 | 22.30 | 382.08 | 3023.20 | 23.0 | 403.54 | 3163.60 | 20.90 | 398.19 | 3068.80 | 21.60 | 442.26 |
| 12/21/2011 | 435.70 | 3037.90 | 22.30 | 383.63 | 3009.50 | 23.0 | 406.63 | 3163.00 | 21.00 | 398.36 | 3071.70 | 21.20 | 441.54 |
| 1/24/2012 | 441.40 | 3033.00 | 22.30 | 384.87 | 2985.60 | 23.0 | 411.99 | 3162.70 | 21.10 | 398.44 | 3071.10 | 21.00 | 441.68 |
| 2/28/2012 | 448.40 | 3024.00 | 22.30 | 387.14 | 2957.40 | 23.0 | 418.27 | 3162.70 | 20.80 | 398.43 | 3053.20 | 20.60 | 445.95 |
| 3/26/2012 | 452.70 | 3020.60 | 22.30 | 388.00 | 2947.20 | 23.0 | 420.53 | 3162.50 | 20.70 | 398.48 | 3042.10 | 20.40 | 448.59 |
| 4/23/2012 | 463.40 | 2997.40 | 22.30 | 393.82 | 2919.70 | 23.0 | 426.60 | 3162.80 | 20.40 | 398.39 | 2991.30 | 20.00 | 460.56 |
| 5/30/2012 | 457.30 | 2993.10 | 22.30 | 394.89 | 2915.50 | 23.0 | 427.52 | 3162.60 | 20.30 | 398.44 | 3009.00 | 20.40 | 456.42 |
| 6/13/2012 | 452.90 | 2990.80 | 22.30 | 395.46 | 2992.90 | 23.0 | 410.36 | 3163.40 | 20.30 | 398.23 | 3022.80 | 20.40 | 453.16 |
| 6/26/2012 | 450.20 | 3001.00 | 22.30 | 392.92 | 2928.70 | 23.0 | 424.62 | 3163.10 | 20.20 | 398.31 | 3031.80 | 20.60 | 451.04 |
| 7/24/2012 | 439.80 | 3013.40 | 22.30 | 389.81 | 2947.10 | 23.0 | 420.56 | 3162.60 | 21.10 | 398.47 | 3050.90 | 21.10 | 446.52 |
| 8/8/2012 | 437.60 | 3016.90 | 22.30 | 388.93 | 2954.90 | 23.0 | 418.83 | 3163.10 | 21.10 | 398.33 | 3051.90 | 21.90 | 446.32 |
| 8/22/2012 | 433.40 | 3021.00 | 22.30 | 387.90 | 2963.10 | 23.0 | 417.01 | 3162.90 | 20.30 | 398.36 | 3056.50 | 24.10 | 445.32 |
| 8/29/2012 | 431.30 | 3023.40 | 22.30 | 387.29 | 2967.60 | 23.0 | 416.01 | 3163.30 | 20.30 | 398.26 | 3058.20 | 24.20 | 444.92 |
| 9/25/2012 | 420.80 | 3025.20 | 22.30 | 386.84 | 2971.50 | 23.0 | 415.14 | 3163.60 | 20.90 | 398.19 | 3062.20 | 21.60 | 443.84 |
| 10/31/2012 | 412.30 | 3042.30 | 22.30 | 382.51 | 3006.10 | 23.0 | 407.39 | 3162.30 | 20.70 | 398.54 | 3066.70 | 25.90 | 442.96 |
| 11/27/2012 | 420.80 | 3041.20 | 22.30 | 382.79 | 3010.60 | 23.0 | 406.38 | 3161.80 | 22.70 | 398.73 | 3070.00 | 22.80 | 442.02 |
| 12/18/2012 | 448.00 | 3025.00 | 22.30 | 386.89 | 2985.80 | 23.0 | 411.95 | 3162.70 | 21.10 | 398.44 | 3068.10 | 20.40 | 442.37 |

Notes:

(1) Elevations are in feet relative to NAVD88 datum.

(2) Temperature values listed in red are adjusted for temperature reading errors.

TABLE 2
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Vibrating Wire Piezo. ----> | | VB-1 | | | VB-2 | | | VB-3 | | | VB-4 | | |
|---------------------------------------|----------------------------|----------------------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|
| Top of AC Elevation -----> | | 371.0 | | | 407.0 | | | 421.5 | | | 448.0 | | |
| Piezo. Tip Elevation -----> | | 357.0 | | | 392.0 | | | 399.5 | | | 441.0 | | |
| Date | Reservoir Elevation (feet) | read. (ft) | temp. (°C) | elevation (ft) | read. (Hz) | temp. (°C) | elevation (ft) | read. (Hz) | temp. (°C) | elevation (ft) | read. (Hz) | temp. (°C) | elevation (ft) |
| 1/29/2013 | 468.60 | 2956.00 | 22.30 | 404.08 | 2909.30 | 23.0 | 428.88 | 3161.70 | 21.10 | 398.71 | 2966.90 | 20.70 | 466.27 |
| 2/28/2013 | 469.20 | 2943.50 | 22.30 | 407.15 | 2893.60 | 23.0 | 432.31 | 3162.30 | 21.10 | 398.55 | 2960.20 | 19.90 | 467.79 |
| 3/27/2013 | 468.30 | 2944.50 | 22.30 | 406.91 | 2891.40 | 23.0 | 432.79 | 3162.40 | 21.00 | 398.52 | 2963.50 | 19.90 | 467.03 |
| 4/25/2013 | 462.70 | 2960.30 | 22.30 | 403.02 | 2894.70 | 23.0 | 432.07 | 3162.20 | 20.80 | 398.57 | 2981.10 | 19.60 | 462.92 |
| 5/21/2013 | 454.20 | 2982.70 | 22.30 | 397.48 | 2909.30 | 23.0 | 428.88 | 3162.40 | 20.30 | 398.50 | 3016.70 | 20.20 | 454.60 |
| 6/25/2013 | 439.30 | 3008.30 | 22.30 | 391.09 | 2936.10 | 23.0 | 422.99 | 3162.20 | 20.40 | 398.55 | 3053.00 | 21.10 | 446.02 |
| 7/23/2013 | 431.50 | 3018.50 | 22.30 | 388.53 | 2951.40 | 23.0 | 419.60 | 3162.00 | 20.40 | 398.61 | 3057.70 | 21.80 | 444.93 |
| 8/21/2013 | 418.00 | 3032.20 | 22.30 | 385.07 | 2973.60 | 23.0 | 414.67 | 3162.30 | 20.50 | 398.53 | 3060.90 | 22.90 | 444.21 |
| 9/24/2013 | 404.00 | 3047.20 | 22.30 | 381.27 | 2997.00 | 23.0 | 409.44 | 3162.50 | 20.70 | 398.48 | 3064.50 | 23.60 | 443.38 |
| 10/29/2013 | 400.60 | 3052.30 | 22.30 | 379.97 | 3005.50 | 23.0 | 407.53 | 3162.10 | 21.00 | 398.60 | 3069.00 | 25.10 | 442.37 |
| 11/26/2013 | 407.90 | wires unplugged for repair | | | 3010.30 | 23.0 | 406.45 | 3161.50 | 21.20 | 398.77 | 3072.60 | 22.20 | 441.37 |
| 12/19/2013 | 425.80 | wires unplugged for repair | | | 3007.70 | 23.0 | 407.03 | 3162.90 | 22.30 | 398.42 | 3075.30 | 22.40 | 440.73 |
| 1/28/2014 | 439.70 | 3035.60 | 20.50 | 384.14 | 2970.70 | 20.8 | 415.29 | 3161.80 | 20.80 | 398.67 | 3074.00 | 21.10 | 440.99 |
| 2/25/2014 | 449.70 | 3027.90 | 20.30 | 386.08 | 2944.10 | 20.4 | 421.19 | 3162.00 | 20.70 | 398.62 | 3058.30 | 20.80 | 444.74 |
| 3/26/2014 | 465.10 | 2989.60 | 20.10 | 395.68 | 2898.30 | 20.3 | 431.25 | 3161.80 | 20.40 | 398.66 | 2984.10 | 20.50 | 462.26 |
| 3/28/2014 | 465.70 | 2985.70 | 20.30 | 396.66 | 2894.60 | 20.3 | 432.06 | 3161.20 | 20.40 | 398.82 | 2980.00 | 20.50 | 463.22 |
| 4/29/2014 | 465.30 | 2972.90 | 20.00 | 399.83 | 2878.70 | 20.1 | 435.52 | 3161.90 | 20.30 | 398.63 | 2977.00 | 20.50 | 463.92 |
| 5/28/2014 | 450.60 | 3001.50 | 20.00 | 392.71 | 2900.40 | 20.1 | 430.79 | 3162.00 | 20.20 | 398.60 | 3030.60 | 20.40 | 451.32 |
| 6/25/2014 | 440.10 | 3015.30 | 20.10 | 389.25 | 2921.90 | 20.2 | 426.08 | 3162.00 | 20.30 | 398.61 | 3052.60 | 20.70 | 446.10 |
| 7/29/2014 | 431.20 | 3024.20 | 20.30 | 387.02 | 2942.30 | 20.5 | 421.59 | 3161.50 | 20.50 | 398.75 | 3058.40 | 21.60 | 444.75 |
| 8/26/2014 | 419.50 | 3034.00 | 20.70 | 384.56 | 2964.10 | 20.8 | 416.76 | 3161.80 | 20.90 | 398.68 | 3061.80 | 26.40 | 444.16 |
| 9/23/2014 | 405.30 | 3046.60 | 20.80 | 381.36 | 2988.60 | 21.6 | 411.30 | 3161.60 | 21.00 | 398.73 | 3064.50 | 27.60 | 443.56 |
| 10/29/2014 | 400.90 | 3052.40 | 21.30 | 379.91 | 3001.90 | 21.5 | 408.32 | 3161.50 | 21.50 | 398.77 | 3070.50 | 27.30 | 442.11 |
| 11/25/2014 | 410.90 | 3050.00 | 21.50 | 380.52 | 3007.00 | 21.7 | 407.18 | 3160.20 | 21.80 | 399.13 | 3074.80 | 22.40 | 440.85 |
| 12/30/2014 | 430.60 | 3039.70 | 22.60 | 383.18 | 2997.90 | 22.9 | 409.23 | 3161.60 | 23.40 | 398.80 | 3078.60 | 24.50 | 440.03 |

Notes:

(1) Elevations are in feet relative to NAVD88 datum.

(2) Temperature values listed in red are adjusted for temperature reading errors.

TABLE 2
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Vibrating Wire Piezo. ----> | | VB-1 | | | VB-2 | | | VB-3 | | | VB-4 | | |
|-----------------------------|----------------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|
| Top of AC Elevation -----> | | 371.0 | | | 407.0 | | | 421.5 | | | 448.0 | | |
| Piezo. Tip Elevation -----> | | 357.0 | | | 392.0 | | | 399.5 | | | 441.0 | | |
| Date | Reservoir Elevation (feet) | read. (ft) | temp. (°C) | elevation (ft) | read. (Hz) | temp. (°C) | elevation (ft) | read. (Hz) | temp. (°C) | elevation (ft) | read. (Hz) | temp. (°C) | elevation (ft) |
| 1/27/2015 | 466.70 | 3006.70 | 21.30 | 391.45 | 2913.00 | 21.5 | 428.05 | 3161.10 | 21.60 | 398.88 | 2978.20 | 21.70 | 463.69 |
| 2/25/2015 | 468.90 | 2998.80 | 21.10 | 393.42 | 2878.80 | 21.2 | 435.51 | 3160.90 | 21.40 | 398.93 | 2963.50 | 21.40 | 467.09 |
| 3/26/2015 | 465.90 | 2988.70 | 21.00 | 395.94 | 2874.00 | 21.1 | 436.55 | 3161.10 | 21.30 | 398.88 | 2974.10 | 21.30 | 464.63 |
| 4/28/2015 | 465.70 | 2995.50 | 20.70 | 394.23 | 2874.30 | 21.1 | 436.49 | 3161.60 | 21.50 | 398.75 | 2976.20 | 21.40 | 464.14 |
| 5/28/2015 | 466.40 | 2996.10 | 21.30 | 394.11 | 2871.30 | 21.5 | 437.14 | 3161.40 | 21.50 | 398.80 | 2973.70 | 21.50 | 464.73 |
| 6/30/2015 | 454.50 | 3005.00 | 20.70 | 391.86 | 2889.10 | 21.1 | 433.27 | 3161.60 | 21.30 | 398.74 | 3017.10 | 22.20 | 454.59 |
| 7/28/2015 | 445.60 | 3012.70 | 20.80 | 389.93 | 2910.80 | 21.0 | 428.53 | 3161.40 | 21.10 | 398.79 | 3047.50 | 21.70 | 447.36 |
| 8/28/2015 | 437.60 | 3018.60 | 21.80 | 388.48 | 2928.90 | 21.7 | 424.56 | 3161.10 | 21.60 | 398.88 | 3057.60 | 21.90 | 444.96 |
| 9/24/2015 | 426.90 | 3027.00 | 22.80 | 386.40 | 2951.00 | 23.2 | 419.69 | 3161.00 | 23.50 | 398.96 | 3061.00 | 25.60 | 444.31 |
| 10/27/2015 | 415.40 | 3036.60 | 21.70 | 383.93 | 2974.20 | 21.8 | 414.52 | 3161.30 | 21.80 | 398.84 | 3086.60 | 27.60 | 438.24 |
| 11/19/2015 | 412.90 | 3040.70 | 21.90 | 382.90 | 2986.30 | 22.0 | 411.82 | 3160.50 | 22.00 | 399.06 | 3090.70 | 22.50 | 437.02 |
| 12/22/2015 | 425.50 | 3038.60 | 21.80 | 383.43 | 2987.07 | 22.8 | 411.66 | 3161.68 | 21.90 | 398.74 | 3094.29 | 23.70 | 436.21 |
| 1/27/2016 | 463.60 | 3017.96 | 21.40 | 388.63 | 2931.15 | 21.8 | 424.06 | 3160.29 | 21.90 | 399.11 | 3018.88 | 21.50 | 454.14 |
| 2/25/2016 | 468.90 | 3009.78 | 21.10 | 390.67 | 2885.40 | 21.4 | 434.08 | 3160.87 | 21.90 | 398.95 | 2985.15 | 20.80 | 462.03 |
| 3/30/2016 | 468.00 | 3005.78 | 20.80 | 391.67 | 2870.78 | 21.0 | 437.25 | 3161.26 | 21.60 | 398.84 | 2984.84 | 20.70 | 462.10 |
| 4/28/2016 | 461.30 | 3007.99 | 20.70 | 391.11 | 2878.68 | 20.9 | 435.53 | 3161.56 | 21.50 | 398.76 | 3012.59 | 20.80 | 455.59 |
| 5/25/2016 | 451.30 | 3013.12 | 20.60 | 389.82 | 2898.47 | 20.8 | 431.22 | 3160.43 | 21.30 | 399.06 | 3049.04 | 21.20 | 446.97 |
| 6/28/2016 | 414.10 | 3017.70 | 20.60 | 388.67 | 2917.70 | 20.8 | 427.01 | 3161.03 | 21.20 | 398.89 | 3070.88 | 22.30 | 441.79 |
| 7/27/2016 | 434.20 | 3024.70 | 20.70 | 386.91 | 2936.50 | 21.0 | 422.87 | 3160.80 | 21.20 | 398.95 | 3078.30 | 24.90 | 440.12 |
| 8/23/2016 | 418.60 | 3035.41 | 20.80 | 384.20 | 2964.24 | 21.3 | 416.73 | 3160.65 | 21.20 | 398.99 | 3082.53 | 26.40 | 439.17 |
| 9/27/2016 | 406.40 | 3047.11 | 21.10 | 381.25 | 2990.48 | 21.8 | 410.88 | 3160.63 | 21.40 | 399.00 | 3087.44 | 26.50 | 437.99 |
| 10/26/2016 | 404.00 | 3051.02 | 21.40 | 380.26 | 3003.23 | 22.1 | 408.03 | 3160.50 | 21.60 | 399.05 | 3090.40 | 26.40 | 437.27 |
| 11/22/2016 | 413.60 | 3048.07 | 21.50 | 381.02 | 3006.57 | 22.3 | 407.28 | 3160.67 | 21.80 | 399.01 | 3092.04 | 25.70 | 436.84 |
| 12/20/2016 | 441.10 | 3033.41 | 21.50 | 384.73 | 2981.77 | 22.3 | 412.84 | 3159.80 | 22.00 | 399.24 | 3093.59 | 23.50 | 436.37 |

Notes:

(1) Elevations are in feet relative to NAVD88 datum.

(2) Temperature values listed in red are adjusted for temperature reading errors.

TABLE 2
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Vibrating Wire Piezo. ----> | | VB-1 | | | VB-2 | | | VB-3 | | | VB-4 | | |
|-----------------------------|----------------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|
| Top of AC Elevation -----> | | 371.0 | | | 407.0 | | | 421.5 | | | 448.0 | | |
| Piezo. Tip Elevation -----> | | 357.0 | | | 392.0 | | | 399.5 | | | 441.0 | | |
| Date | Reservoir Elevation (feet) | read. (ft) | temp. (°C) | elevation (ft) | read. (Hz) | temp. (°C) | elevation (ft) | read. (Hz) | temp. (°C) | elevation (ft) | read. (Hz) | temp. (°C) | elevation (ft) |
| 1/26/2017 | 471.60 | 3011.61 | 21.30 | 390.22 | 2900.67 | 22.0 | 430.76 | 3159.30 | 22.00 | 399.38 | 2976.99 | 21.80 | 463.98 |
| 2/24/2017 | 472.05 | 3007.20 | 21.10 | 391.32 | 2872.81 | 21.6 | 436.82 | 3160.02 | 22.00 | 399.19 | 2971.88 | 20.70 | 465.12 |
| 2/25/2017 | 472.00 | 3007.04 | 21.10 | 391.36 | 2872.45 | 21.7 | 436.90 | 3159.68 | 21.90 | 399.27 | 2971.58 | 20.70 | 465.19 |
| 2/26/2017 | 472.00 | 3007.17 | 21.10 | 391.33 | 2872.02 | 21.6 | 436.99 | 3160.09 | 21.90 | 399.16 | 2971.99 | 20.70 | 465.09 |
| 2/27/2017 | 472.00 | 3007.06 | 21.10 | 391.36 | 2872.13 | 21.6 | 436.96 | 3160.10 | 21.90 | 399.16 | 2971.99 | 20.07 | 465.06 |
| 2/28/2017 | 471.90 | 3007.02 | 21.10 | 391.37 | 2871.54 | 21.6 | 437.09 | 3160.84 | 21.90 | 398.96 | 2972.98 | 20.60 | 464.86 |
| 3/1/2017 | 471.90 | 3007.11 | 21.10 | 391.34 | 2871.54 | 21.6 | 437.09 | 3160.24 | 21.90 | 399.12 | 2971.86 | 20.07 | 465.09 |
| 3/2/2017 | 471.90 | 3006.69 | 21.10 | 391.45 | 2870.57 | 21.6 | 437.30 | 3159.45 | 21.90 | 399.34 | 2971.67 | 20.50 | 465.16 |
| 3/29/2017 | 467.90 | 3007.03 | 20.80 | 391.35 | 2871.74 | 21.2 | 437.04 | 3160.28 | 21.80 | 399.11 | 2987.31 | 20.10 | 461.49 |
| 4/27/2017 | 457.60 | 3011.00 | 20.60 | 390.35 | 2888.70 | 20.9 | 433.35 | 3160.50 | 21.50 | 399.04 | 3026.10 | 20.30 | 452.38 |
| 5/23/2017 | 453.50 | 3013.77 | 20.50 | 389.65 | 2901.51 | 20.8 | 430.56 | 3160.48 | 21.40 | 399.04 | 3117.73 | 20.90 | 430.38 |
| 6/21/2017 | 447.40 | 3016.94 | 20.50 | 388.85 | 2913.05 | 20.8 | 428.03 | 3161.03 | 21.30 | 398.89 | 3063.65 | 21.60 | 443.49 |
| 7/26/2017 | 435.10 | 3024.22 | 20.60 | 387.02 | 2937.66 | 21.0 | 422.62 | 3159.94 | 21.20 | 399.18 | 3078.88 | 24.30 | 439.96 |
| 8/25/2017 | 420.10 | 3035.09 | 20.70 | 384.28 | 2966.31 | 21.3 | 416.27 | 3160.80 | 21.20 | 398.95 | 3083.07 | 25.80 | 439.01 |
| 9/27/2017 | 407.10 | 3044.81 | 21.00 | 381.83 | 2988.98 | 21.7 | 411.22 | 3161.46 | 21.40 | 398.78 | 3088.29 | 26.60 | 437.79 |
| 10/26/2017 | 395.00 | 3058.99 | 21.30 | 378.23 | 3004.20 | 22.0 | 407.81 | 3161.31 | 21.60 | 398.83 | 3090.24 | 26.30 | 437.31 |
| 11/28/2017 | 409.00 | 3053.41 | 21.50 | 379.66 | 3013.87 | 22.5 | 405.64 | 3161.01 | 21.90 | 398.92 | 3096.24 | 25.10 | 435.80 |
| 12/20/2017 | 416.80 | 3046.72 | 21.40 | 381.36 | 3010.17 | 22.5 | 406.47 | 3160.51 | 22.10 | 399.06 | 3099.02 | 23.80 | 435.07 |
| 1/24/2018 | 434.50 | 3039.95 | 21.30 | 383.07 | 2997.62 | 22.2 | 409.29 | 3160.37 | 22.10 | 399.09 | 3099.64 | 22.70 | 434.87 |
| 2/21/2018 | 443.10 | 3034.97 | 21.00 | 384.32 | 2971.51 | 21.8 | 415.12 | 3160.56 | 22.10 | 399.04 | 3096.22 | 22.90 | 435.70 |
| 3/29/2018 | 453.00 | 3027.73 | 20.80 | 386.15 | 2943.47 | 21.3 | 421.34 | 3160.64 | 21.90 | 399.02 | 3066.36 | 22.10 | 442.87 |
| 4/26/2018 | 449.10 | 3027.18 | 20.60 | 386.28 | 2931.40 | 21.1 | 424.00 | 3160.65 | 21.70 | 399.01 | 3066.28 | 21.60 | 442.86 |
| 5/31/2018 | 453.10 | 3072.64 | 20.50 | 374.70 | 2922.64 | 20.9 | 425.93 | 3161.37 | 21.50 | 398.81 | 3055.75 | 21.90 | 445.40 |
| 6/28/2018 | 448.20 | 3022.94 | 20.50 | 387.34 | 2922.72 | 21.0 | 425.91 | 3136.14 | 21.40 | 405.56 | 3066.57 | 22.50 | 442.83 |
| 7/25/2018 | 440.40 | 3025.51 | 20.70 | 386.70 | 2934.39 | 21.1 | 423.34 | 3160.88 | 24.40 | 399.02 | 3076.99 | 21.30 | 440.28 |
| 8/22/2018 | 427.10 | 3031.31 | 20.80 | 385.24 | 2953.63 | 21.4 | 419.09 | 3160.67 | 21.40 | 398.99 | 3082.41 | 26.40 | 439.20 |
| 9/27/2018 | 439.60 | 3044.77 | 21.10 | 381.84 | 2986.66 | 21.9 | 411.74 | 3161.01 | 21.50 | 398.91 | 3087.28 | 27.00 | 438.05 |
| 10/18/2018 | 405.30 | 3049.15 | 21.40 | 380.74 | 3003.92 | 22.2 | 407.87 | 3161.04 | 21.80 | 398.91 | 3092.63 | 26.20 | 436.72 |
| 11/28/2018 | 408.60 | 3049.77 | 21.60 | 380.59 | 3010.53 | 22.4 | 406.39 | 3160.58 | 21.90 | 399.03 | 3096.07 | 25.20 | 435.84 |
| 12/19/2018 | 436.00 | 3036.44 | 21.60 | 383.97 | 2997.81 | 22.4 | 409.25 | 3160.04 | 22.10 | 399.18 | 3097.94 | 23.60 | 435.32 |

Notes:

(1) Elevations are in feet relative to NAVD88 datum.

(2) Temperature values listed in red are adjusted for temperature reading errors.

TABLE 2
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Vibrating Wire Piezo. ----> | | VB-5 | | | VB-6 | | | VB-7 | | | VB-8 | | |
|-----------------------------|----------------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|
| Top of AC Elevation -----> | | 402.0 | | | 408.0 | | | 422.0 | | | 452.5 | | |
| Piezo. Tip Elevation -----> | | 392.8 | | | 392.0 | | | 402.0 | | | 441.0 | | |
| Date | Reservoir Elevation (feet) | read. (Hz) | temp. (°C) | elevation (ft) |
| 1/28/2009 | 463.70 | 2807.60 | 20.90 | 457.09 | 2990.00 | 22.40 | 424.05 | 3083.20 | 22.4 | 400.93 | 3055.40 | 22.50 | 442.22 |
| 2/25/2009 | 470.10 | 2774.50 | 20.50 | 464.02 | 2946.10 | 22.40 | 433.93 | 3083.30 | 22.4 | 400.91 | 3035.40 | 21.80 | 446.91 |
| 3/26/2009 | 469.40 | 2776.20 | 19.50 | 463.63 | 2936.10 | 22.40 | 436.16 | 3083.50 | 22.4 | 400.86 | 3024.60 | 21.20 | 449.41 |
| 4/29/2009 | 466.90 | 2784.60 | 20.20 | 461.90 | 2936.30 | 22.40 | 436.12 | 3083.50 | 22.4 | 400.86 | 3020.60 | 20.80 | 450.33 |
| 5/18/2009 | 466.70 | 2786.00 | 20.40 | 461.61 | 2937.00 | 22.40 | 435.96 | 3082.00 | 22.4 | 401.22 | 3021.00 | 20.70 | 450.23 |
| 5/29/2009 | 465.00 | 2797.20 | 20.50 | 459.26 | 2941.10 | 22.40 | 435.05 | 3083.70 | 22.4 | 400.81 | 3022.20 | 20.80 | 449.95 |
| 6/30/2009 | 460.20 | 2814.40 | 20.70 | 455.64 | 2949.90 | 22.40 | 433.09 | 3083.90 | 20.70 | 400.74 | 3027.00 | 20.80 | 448.83 |
| 7/30/2009 | 451.10 | 2851.00 | 21.20 | 447.85 | 2966.50 | 22.40 | 429.36 | 3083.90 | 20.70 | 400.74 | 3034.20 | 20.90 | 447.14 |
| 8/25/2009 | 440.10 | 2895.60 | 22.00 | 438.21 | 2988.20 | 21.80 | 424.46 | 3084.00 | 21.60 | 400.73 | 3038.40 | 21.60 | 446.19 |
| 9/30/2009 | 432.20 | 2929.20 | 23.00 | 430.86 | 3008.60 | 22.70 | 419.82 | 3084.10 | 22.30 | 400.72 | 3042.30 | 22.40 | 445.32 |
| 10/29/2009 | 431.40 | 2935.00 | 23.00 | 429.57 | 3018.70 | 21.50 | 417.50 | 3083.90 | 21.40 | 400.75 | 3045.90 | 22.00 | 444.44 |
| 12/1/2009 | 427.40 | 2953.90 | 21.80 | 425.32 | 3029.40 | 21.70 | 415.04 | 3083.70 | 21.60 | 400.80 | 3050.20 | 23.90 | 443.54 |
| 12/29/2009 | 448.10 | 2873.30 | 21.50 | 443.04 | 3012.70 | 22.40 | 418.88 | 3083.40 | 21.60 | 400.87 | 3054.20 | 22.40 | 442.50 |
| 1/27/2010 | 465.60 | 2796.20 | 20.80 | 459.49 | 2966.40 | 22.40 | 429.39 | 3083.40 | 21.50 | 400.87 | 3050.60 | 21.80 | 443.32 |
| 2/25/2010 | 470.20 | 2772.60 | 20.40 | 464.41 | 2936.00 | 20.50 | 436.16 | 3083.30 | 20.70 | 400.89 | 3029.40 | 21.60 | 448.31 |
| 3/29/2010 | 465.70 | 2790.40 | 19.40 | 460.65 | 2938.20 | 20.00 | 435.67 | 3083.40 | 20.30 | 400.86 | 3023.50 | 20.50 | 449.63 |
| 4/4/2010 | 465.00 | 2792.60 | 19.30 | 460.18 | 2939.80 | 22.40 | 435.34 | 3083.40 | 21.00 | 400.87 | 3023.80 | 20.90 | 449.58 |
| 4/27/2010 | 468.40 | 2779.20 | 22.1 | 463.11 | 2936.10 | 20.00 | 436.13 | 3083.30 | 20.10 | 400.88 | 3021.30 | 20.20 | 450.13 |
| 5/27/2010 | 463.30 | 2800.00 | 20.10 | 458.66 | 2940.00 | 20.10 | 435.27 | 3083.00 | 20.20 | 400.95 | 3021.00 | 20.20 | 450.20 |
| 6/30/2010 | 454.70 | 2847.10 | 20.50 | 448.65 | 2963.10 | 20.30 | 430.10 | 3083.60 | 20.40 | 400.81 | 3031.70 | 20.50 | 447.71 |
| 7/28/2010 | 445.60 | 2873.20 | 21.00 | 443.04 | 2977.10 | 20.80 | 426.96 | 3083.60 | 20.80 | 400.82 | 3036.30 | 20.80 | 446.64 |
| 8/31/2010 | 437.10 | 2910.10 | 22.20 | 435.04 | 2998.30 | 21.80 | 422.16 | 3083.70 | 21.60 | 400.80 | 3040.50 | 21.60 | 445.70 |
| 9/29/2010 | 422.70 | 2967.70 | 23.10 | 422.28 | 3023.70 | 22.70 | 416.36 | 3083.90 | 22.40 | 400.76 | 3043.30 | 22.40 | 445.08 |
| 10/27/2010 | 426.40 | 2962.60 | 22.10 | 423.38 | 3035.00 | 21.80 | 413.75 | 3083.70 | 21.70 | 400.80 | 3045.80 | 21.80 | 444.46 |
| 11/29/2010 | 439.80 | 2908.50 | 21.80 | 435.37 | 3025.20 | 21.70 | 416.01 | 3083.10 | 21.60 | 400.95 | 3049.00 | 21.70 | 443.70 |
| 12/30/2010 | 456.60 | 2836.60 | 20.90 | 450.92 | 2991.90 | 21.00 | 423.61 | 3083.10 | 21.00 | 400.94 | 3050.30 | 21.20 | 443.36 |

Notes:

(1) Elevations are in feet relative to NAVD88 datum.

(2) Temperature values listed in red are adjusted for temperature reading errors.

TABLE 2
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Vibrating Wire Piezo. ----> | | VB-5 | | | VB-6 | | | VB-7 | | | VB-8 | | |
|---------------------------------------|----------------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|
| Top of AC Elevation -----> | | 402.0 | | | 408.0 | | | 422.0 | | | 452.5 | | |
| Piezo. Tip Elevation -----> | | 392.8 | | | 392.0 | | | 402.0 | | | 441.0 | | |
| Date | Reservoir Elevation (feet) | read. (Hz) | temp. (°C) | elevation (ft) |
| 2/1/2011 | 468.90 | 2782.00 | 20.30 | 462.45 | 2942.50 | 20.40 | 434.71 | 3083.00 | 20.50 | 400.96 | 3032.00 | 20.60 | 447.64 |
| 2/23/2011 | 469.00 | 2776.70 | 19.90 | 463.54 | 2936.80 | 20.00 | 435.98 | 3082.80 | 20.20 | 401.00 | 3023.60 | 20.30 | 449.60 |
| 3/29/2011 | 470.30 | 2770.70 | 19.80 | 464.79 | 2931.60 | 19.80 | 437.13 | 3082.90 | 19.80 | 400.97 | 3014.70 | 19.90 | 451.66 |
| 4/27/2011 | 464.80 | 2794.60 | 19.50 | 459.77 | 2938.10 | 19.50 | 435.68 | 3088.20 | 19.60 | 399.69 | 3014.30 | 19.70 | 451.74 |
| 5/26/2011 | 457.30 | 2824.80 | 20.00 | 453.40 | 2953.30 | 20.00 | 432.30 | 3083.10 | 19.90 | 400.92 | 3020.80 | 19.90 | 450.23 |
| 6/28/2011 | 443.50 | 2881.70 | 20.20 | 441.17 | 2977.90 | 20.00 | 426.77 | 3083.40 | 20.10 | 400.85 | 3027.90 | 20.10 | 448.58 |
| 7/29/2011 | 425.10 | 2941.90 | 21.40 | 427.98 | 3008.30 | 21.10 | 419.87 | 3083.70 | 20.90 | 400.79 | 3029.60 | 20.90 | 448.22 |
| 8/24/2011 | 418.00 | 3001.00 | 22.00 | 414.71 | 3037.90 | 21.60 | 413.08 | 3083.60 | 21.40 | 400.82 | 3029.10 | 21.40 | 448.37 |
| 9/27/2011 | 400.90 | 3048.20 | 23.70 | 403.97 | 3060.70 | 23.30 | 407.81 | 3083.40 | 22.90 | 400.89 | 3027.20 | 22.80 | 448.89 |
| 10/26/2011 | 402.20 | 3053.40 | 22.20 | 402.70 | 3069.60 | 22.00 | 405.72 | 3083.10 | 21.80 | 400.95 | 3028.20 | 22.00 | 448.61 |
| 11/30/2011 | 425.10 | 2982.10 | 21.60 | 418.98 | 3064.70 | 21.60 | 406.86 | 3082.70 | 21.50 | 401.04 | 3031.00 | 21.70 | 447.94 |
| 12/21/2011 | 435.70 | 2933.30 | 20.90 | 429.86 | 3056.20 | 21.00 | 408.83 | 3082.60 | 21.20 | 401.06 | 3033.70 | 21.20 | 447.28 |
| 1/24/2012 | 441.40 | 2900.60 | 20.80 | 437.07 | 3030.10 | 20.70 | 414.87 | 3083.20 | 20.80 | 400.91 | 3036.90 | 21.00 | 446.51 |
| 2/28/2012 | 448.40 | 2866.20 | 20.20 | 444.53 | 2999.00 | 20.10 | 421.98 | 3083.60 | 20.30 | 400.81 | 3038.60 | 20.40 | 446.08 |
| 3/26/2012 | 452.70 | 2849.60 | 20.00 | 448.10 | 2988.80 | 19.90 | 424.30 | 3083.70 | 20.90 | 400.79 | 3038.20 | 21.00 | 446.21 |
| 4/23/2012 | 463.40 | 2804.70 | 19.70 | 457.65 | 2959.30 | 19.60 | 430.95 | 3083.80 | 19.80 | 400.75 | 3030.70 | 19.90 | 447.91 |
| 5/30/2012 | 457.30 | 2825.80 | 20.20 | 453.20 | 2955.20 | 20.10 | 431.87 | 3083.90 | 20.10 | 400.73 | 3020.20 | 20.20 | 450.39 |
| 6/13/2012 | 452.90 | 2845.10 | 20.30 | 449.08 | 2963.40 | 20.10 | 430.03 | 3084.10 | 20.10 | 400.69 | 3021.50 | 20.30 | 450.09 |
| 6/26/2012 | 450.20 | 2856.30 | 20.40 | 446.67 | 2969.40 | 20.20 | 428.68 | 3084.20 | 20.10 | 400.66 | 3022.40 | 20.20 | 449.87 |
| 7/24/2012 | 439.80 | 2898.30 | 21.00 | 437.58 | 2988.60 | 21.10 | 424.36 | 3084.10 | 21.50 | 400.70 | 3024.10 | 21.80 | 449.57 |
| 8/8/2012 | 437.60 | 2909.30 | 21.70 | 435.19 | 2996.40 | 21.30 | 422.59 | 3084.20 | 20.40 | 400.67 | 3025.00 | 21.40 | 449.33 |
| 8/22/2012 | 433.40 | 2925.70 | 22.40 | 431.61 | 3004.60 | 22.10 | 420.73 | 3084.30 | 22.00 | 400.66 | 3025.40 | 22.00 | 449.27 |
| 8/29/2012 | 431.30 | 2934.70 | 22.90 | 429.64 | 3009.00 | 22.10 | 419.72 | 3084.40 | 21.90 | 400.64 | 3025.50 | 22.00 | 449.25 |
| 9/25/2012 | 420.80 | 2982.10 | 21.60 | 418.98 | 3021.40 | 21.60 | 416.88 | 3084.00 | 21.50 | 400.73 | 3027.00 | 22.4 | 448.92 |
| 10/31/2012 | 412.30 | 3008.40 | 23.20 | 413.08 | 3046.60 | 22.50 | 411.08 | 3084.10 | 22.30 | 400.72 | 3028.30 | 22.40 | 448.61 |
| 11/27/2012 | 420.80 | 2991.70 | 21.90 | 416.82 | 3051.30 | 23.40 | 410.00 | 3083.60 | 23.80 | 400.86 | 3031.10 | 24.50 | 448.08 |
| 12/18/2012 | 448.00 | 2883.10 | 21.40 | 440.91 | 3030.40 | 21.40 | 414.81 | 3083.40 | 21.40 | 400.87 | 3033.90 | 21.50 | 447.25 |

Notes:

(1) Elevations are in feet relative to NAVD88 datum.

(2) Temperature values listed in red are adjusted for temperature reading errors.

TABLE 2
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Vibrating Wire Piezo. ----> | | VB-5 | | | VB-6 | | | VB-7 | | | VB-8 | | |
|-----------------------------|----------------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|
| Top of AC Elevation -----> | | 402.0 | | | 408.0 | | | 422.0 | | | 452.5 | | |
| Piezo. Tip Elevation -----> | | 392.8 | | | 392.0 | | | 402.0 | | | 441.0 | | |
| Date | Reservoir Elevation (feet) | read. (Hz) | temp. (°C) | elevation (ft) |
| 1/29/2013 | 468.60 | 2781.70 | 20.80 | 462.53 | 2949.20 | 20.90 | 433.22 | 3083.00 | 20.90 | 400.96 | 3018.10 | 21.00 | 450.93 |
| 2/28/2013 | 469.20 | 2777.10 | 20.10 | 463.46 | 2933.30 | 20.30 | 436.76 | 3093.10 | 20.40 | 398.52 | 3004.30 | 20.50 | 454.12 |
| 3/27/2013 | 468.30 | 2780.30 | 19.30 | 462.76 | 2931.00 | 19.30 | 437.26 | 3083.40 | 19.40 | 400.85 | 2998.80 | 19.50 | 455.34 |
| 4/25/2013 | 462.70 | 2798.30 | 19.40 | 458.99 | 2938.70 | 19.60 | 435.55 | 3083.60 | 19.80 | 400.80 | 2699.30 | 19.90 | 521.34 |
| 5/21/2013 | 454.20 | 2836.60 | 20.30 | 450.90 | 2954.90 | 20.50 | 431.94 | 3083.60 | 20.50 | 400.81 | 3007.80 | 20.40 | 453.30 |
| 6/25/2013 | 439.30 | 2894.60 | 20.00 | 438.35 | 2986.00 | 20.00 | 424.93 | 3084.10 | 20.10 | 400.69 | 3015.90 | 20.30 | 451.40 |
| 7/23/2013 | 431.50 | 2926.20 | 21.70 | 431.47 | 3004.70 | 21.40 | 420.70 | 3084.10 | 21.20 | 400.70 | 3019.20 | 21.30 | 450.69 |
| 8/21/2013 | 418.00 | 2978.40 | 22.60 | 419.85 | 3029.70 | 22.30 | 414.98 | 3084.10 | 20.60 | 400.69 | 3021.60 | 21.70 | 450.15 |
| 9/24/2013 | 404.00 | 3033.80 | 23.10 | 407.26 | 3055.10 | 22.70 | 409.11 | 3084.00 | 21.40 | 400.73 | 3023.50 | 22.20 | 449.73 |
| 10/29/2013 | 400.60 | 3047.90 | 23.70 | 404.04 | 3066.20 | 23.30 | 406.53 | 3083.80 | 22.90 | 400.80 | 3026.40 | 23.00 | 449.09 |
| 11/26/2013 | 407.90 | 3036.10 | 22.40 | 406.70 | 3071.80 | 22.20 | 405.21 | 3083.30 | 22.10 | 400.90 | 3029.70 | 22.20 | 448.27 |
| 12/19/2013 | 425.80 | 2973.50 | 22.40 | 420.95 | 3063.50 | 22.60 | 407.15 | 3083.30 | 23.10 | 400.92 | 3032.80 | 23.50 | 447.62 |
| 1/28/2014 | 439.70 | 2904.80 | 21.10 | 436.16 | 3039.50 | 21.10 | 412.70 | 3083.10 | 21.10 | 400.94 | 3036.90 | 21.20 | 446.52 |
| 2/25/2014 | 449.70 | 2860.40 | 20.70 | 445.80 | 3009.40 | 20.70 | 419.62 | 3083.10 | 20.80 | 400.94 | 3038.00 | 20.90 | 446.25 |
| 3/26/2014 | 465.10 | 2793.50 | 20.50 | 460.04 | 2960.10 | 20.40 | 430.78 | 3082.90 | 20.50 | 400.98 | 3027.30 | 20.60 | 448.75 |
| 3/28/2014 | 465.70 | 2789.00 | 20.50 | 460.99 | 2956.20 | 20.50 | 431.65 | 3083.00 | 20.50 | 400.96 | 3024.90 | 20.60 | 449.31 |
| 4/29/2014 | 465.30 | 2788.40 | 20.30 | 461.10 | 2939.20 | 20.30 | 435.45 | 3083.20 | 20.40 | 400.91 | 3010.20 | 20.50 | 452.74 |
| 5/28/2014 | 450.60 | 2850.30 | 20.50 | 447.97 | 2962.10 | 20.50 | 430.33 | 3083.20 | 20.50 | 400.91 | 3016.20 | 20.60 | 451.35 |
| 6/25/2014 | 440.10 | 2893.50 | 20.80 | 438.62 | 2983.70 | 20.80 | 425.46 | 3083.40 | 20.80 | 400.86 | 3019.70 | 20.80 | 450.54 |
| 7/29/2014 | 431.20 | 2929.30 | 21.80 | 430.79 | 3003.60 | 21.70 | 420.95 | 3083.40 | 21.60 | 400.87 | 3022.20 | 21.70 | 450.01 |
| 8/26/2014 | 419.50 | 2974.50 | 24.60 | 420.81 | 3024.40 | 23.40 | 416.21 | 3083.40 | 22.70 | 400.89 | 3023.40 | 22.70 | 449.78 |
| 9/23/2014 | 405.30 | 3028.00 | 27.70 | 408.78 | 3048.00 | 21.40 | 410.74 | 3083.40 | 21.10 | 400.87 | 3024.50 | 25.00 | 449.65 |
| 10/29/2014 | 400.90 | 3049.10 | 23.70 | 403.76 | 3060.90 | 23.40 | 407.76 | 3083.10 | 23.10 | 400.97 | 3026.50 | 23.20 | 449.08 |
| 11/25/2014 | 410.90 | 3027.90 | 22.70 | 408.60 | 3065.70 | 22.60 | 406.64 | 3082.70 | 22.50 | 401.05 | 3029.40 | 22.70 | 448.37 |
| 12/30/2014 | 430.60 | 2960.20 | 23.20 | 423.97 | 3055.70 | 23.50 | 408.98 | 3082.70 | 24.10 | 401.08 | 3032.20 | 25.10 | 447.85 |

Notes:

(1) Elevations are in feet relative to NAVD88 datum.

(2) Temperature values listed in red are adjusted for temperature reading errors.

TABLE 2
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Vibrating Wire Piezo. ----> | | VB-5 | | | VB-6 | | | VB-7 | | | VB-8 | | |
|-----------------------------|----------------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|
| Top of AC Elevation -----> | | 402.0 | | | 408.0 | | | 422.0 | | | 452.5 | | |
| Piezo. Tip Elevation -----> | | 392.8 | | | 392.0 | | | 402.0 | | | 441.0 | | |
| Date | Reservoir Elevation (feet) | read. (Hz) | temp. (°C) | elevation (ft) |
| 1/27/2015 | 466.70 | 2789.20 | 21.70 | 460.99 | 2971.80 | 21.70 | 428.16 | 3082.20 | 21.80 | 401.17 | 3025.20 | 22.00 | 449.32 |
| 2/25/2015 | 468.90 | 2775.60 | 21.40 | 463.83 | 2937.10 | 21.40 | 435.93 | 3082.40 | 21.50 | 401.11 | 3008.20 | 21.70 | 453.28 |
| 3/26/2015 | 465.90 | 2787.40 | 21.20 | 461.35 | 2932.70 | 21.20 | 436.90 | 3082.50 | 21.20 | 401.09 | 3001.40 | 21.30 | 454.84 |
| 4/28/2015 | 465.70 | 2788.70 | 20.40 | 461.05 | 2932.70 | 21.30 | 436.90 | 3082.70 | 21.50 | 401.04 | 2999.60 | 21.60 | 455.28 |
| 5/28/2015 | 466.40 | 2786.70 | 21.50 | 461.51 | 2929.00 | 21.70 | 437.73 | 3082.70 | 21.80 | 401.05 | 2996.90 | 21.90 | 455.92 |
| 6/30/2015 | 454.50 | 2836.10 | 22.00 | 451.07 | 2947.30 | 21.10 | 433.65 | 3082.70 | 21.50 | 401.04 | 3005.20 | 22.00 | 453.99 |
| 7/28/2015 | 445.60 | 2873.70 | 21.70 | 442.97 | 2969.60 | 21.70 | 428.66 | 3082.00 | 21.70 | 401.21 | 3012.30 | 21.70 | 452.32 |
| 8/28/2015 | 437.60 | 2905.10 | 22.10 | 436.13 | 2987.30 | 22.10 | 424.66 | 3082.70 | 22.00 | 401.05 | 3015.80 | 22.10 | 451.53 |
| 9/24/2015 | 426.90 | 2950.00 | 22.90 | 426.23 | 3009.00 | 22.20 | 419.72 | 3082.00 | 22.70 | 401.23 | 3018.00 | 24.70 | 451.16 |
| 10/27/2015 | 415.40 | 2995.10 | 26.30 | 416.23 | 3030.80 | 24.80 | 414.75 | 3082.70 | 23.90 | 401.07 | 3021.20 | 23.90 | 450.36 |
| 11/19/2015 | 412.90 | 3012.80 | 22.90 | 412.06 | 3043.80 | 22.80 | 411.73 | 3082.70 | 22.70 | 401.06 | 3023.70 | 22.80 | 449.72 |
| 12/22/2015 | 425.50 | 2973.77 | 21.80 | 420.86 | 3043.85 | 22.20 | 411.71 | 3082.21 | 22.20 | 401.17 | 3029.19 | 24.60 | 448.53 |
| 1/27/2016 | 463.60 | 2810.16 | 20.80 | 456.54 | 2992.70 | 21.90 | 423.44 | 3081.63 | 22.20 | 401.31 | 3030.50 | 23.20 | 448.14 |
| 2/25/2016 | 468.90 | 2778.86 | 20.30 | 463.10 | 2941.28 | 21.60 | 435.00 | 3081.70 | 22.00 | 401.29 | 3012.31 | 22.40 | 452.36 |
| 3/30/2016 | 468.00 | 2778.46 | 20.10 | 463.18 | 2925.94 | 21.60 | 438.41 | 3081.96 | 21.70 | 401.22 | 2999.64 | 21.80 | 455.28 |
| 4/28/2016 | 461.30 | 2809.03 | 20.10 | 456.75 | 2934.25 | 21.00 | 436.56 | 3082.13 | 21.50 | 401.18 | 3001.02 | 21.50 | 454.94 |
| 5/25/2016 | 451.30 | 2850.06 | 20.30 | 448.01 | 2954.44 | 20.90 | 432.05 | 3082.16 | 21.40 | 401.17 | 3009.91 | 21.50 | 452.87 |
| 6/28/2016 | 414.10 | 2884.16 | 20.70 | 440.65 | 2973.70 | 20.90 | 427.72 | 3081.49 | 21.30 | 401.33 | 3016.37 | 21.90 | 451.38 |
| 7/27/2016 | 434.20 | 2922.10 | 21.30 | 432.36 | 2992.17 | 21.00 | 423.55 | 3082.40 | 21.30 | 401.11 | 3018.40 | 23.00 | 450.97 |
| 8/23/2016 | 418.60 | 2980.42 | 22.10 | 419.38 | 3018.64 | 21.20 | 417.51 | 3082.90 | 21.30 | 400.99 | 3019.75 | 24.10 | 450.72 |
| 9/27/2016 | 406.40 | 3033.58 | 22.70 | 407.30 | 3044.78 | 21.60 | 411.49 | 3082.08 | 21.60 | 401.19 | 3022.43 | 25.00 | 450.14 |
| 10/26/2016 | 404.00 | 3048.70 | 22.70 | 403.81 | 3055.10 | 21.90 | 409.10 | 3081.90 | 21.90 | 401.24 | 3025.10 | 25.20 | 449.52 |
| 11/22/2016 | 413.60 | 3023.53 | 22.50 | 409.59 | 3058.41 | 26.20 | 408.38 | 3081.70 | 22.10 | 401.29 | 3028.17 | 25.10 | 448.80 |
| 12/20/2016 | 441.10 | 2918.66 | 22.00 | 433.15 | 3040.23 | 22.30 | 412.55 | 3081.55 | 22.30 | 401.33 | 3031.56 | 24.50 | 447.97 |

Notes:

(1) Elevations are in feet relative to NAVD88 datum.

(2) Temperature values listed in red are adjusted for temperature reading errors.

TABLE 2
SAN JOAQUIN DAM
VIBRATING WIRE PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Vibrating Wire Piezo. ----> | | VB-5 | | | VB-6 | | | VB-7 | | | VB-8 | | |
|-----------------------------|----------------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|
| Top of AC Elevation -----> | | 402.0 | | | 408.0 | | | 422.0 | | | 452.5 | | |
| Piezo. Tip Elevation -----> | | 392.8 | | | 392.0 | | | 402.0 | | | 441.0 | | |
| Date | Reservoir Elevation (feet) | read. (Hz) | temp. (°C) | elevation (ft) |
| 1/26/2017 | 471.60 | 2771.84 | 21.10 | 464.60 | 2953.45 | 22.00 | 432.29 | 3081.10 | 22.30 | 401.44 | 3014.56 | 23.20 | 451.88 |
| 2/24/2017 | 472.05 | 2767.24 | 20.50 | 465.54 | 2925.06 | 21.70 | 438.60 | 3081.04 | 22.10 | 401.45 | 2999.46 | 22.40 | 455.35 |
| 2/25/2017 | 472.00 | 2767.01 | 20.50 | 465.58 | 2924.57 | 21.80 | 438.71 | 3081.08 | 22.10 | 401.44 | 2998.95 | 22.40 | 455.47 |
| 2/26/2017 | 472.00 | 2767.46 | 20.40 | 465.49 | 2924.16 | 21.70 | 438.80 | 3081.09 | 22.10 | 401.44 | 2992.11 | 22.30 | 457.05 |
| 2/27/2017 | 472.00 | 2767.31 | 20.40 | 465.52 | 2924.02 | 21.80 | 438.83 | 3081.09 | 22.10 | 401.44 | 2992.67 | 22.30 | 456.92 |
| 2/28/2017 | 471.90 | 2768.30 | 20.40 | 465.31 | 2923.73 | 21.70 | 438.90 | 3081.21 | 22.10 | 401.41 | 2998.07 | 22.30 | 455.67 |
| 3/1/2017 | 471.90 | 2767.52 | 20.40 | 465.47 | 2924.67 | 21.80 | 438.69 | 3081.14 | 22.10 | 401.42 | 2996.94 | 22.40 | 455.94 |
| 3/2/2017 | 471.90 | 2767.23 | 20.40 | 465.53 | 2922.65 | 21.70 | 439.14 | 3080.93 | 22.10 | 401.47 | 2997.18 | 22.20 | 455.87 |
| 3/29/2017 | 467.90 | 2784.31 | 19.90 | 461.95 | 2924.16 | 21.40 | 438.80 | 3080.93 | 21.80 | 401.47 | 2995.28 | 21.60 | 456.28 |
| 4/27/2017 | 457.60 | 2826.30 | 19.80 | 453.07 | 2941.70 | 21.10 | 434.90 | 3081.00 | 21.60 | 401.45 | 3003.50 | 21.20 | 454.35 |
| 5/23/2017 | 453.50 | 2846.14 | 20.10 | 448.84 | 2954.91 | 20.90 | 431.95 | 3081.02 | 21.40 | 401.44 | 3010.76 | 21.20 | 452.65 |
| 6/21/2017 | 447.40 | 2872.23 | 20.50 | 443.23 | 2966.15 | 20.80 | 429.42 | 3081.04 | 21.30 | 401.44 | 3015.40 | 21.50 | 451.59 |
| 7/26/2017 | 435.10 | 2922.05 | 21.20 | 432.37 | 2990.05 | 20.90 | 424.03 | 3080.91 | 21.20 | 401.47 | 3018.38 | 22.70 | 450.96 |
| 8/25/2017 | 420.10 | 2981.67 | 22.10 | 419.09 | 3012.74 | 21.20 | 418.86 | 3080.63 | 21.30 | 401.54 | 3019.85 | 23.80 | 450.68 |
| 9/27/2017 | 407.10 | 3027.11 | 22.70 | 408.78 | 3040.78 | 21.50 | 412.41 | 3081.57 | 21.50 | 401.31 | 3019.85 | 24.70 | 450.73 |
| 10/26/2017 | 395.00 | 3063.05 | 22.80 | 400.49 | 3054.84 | 21.90 | 409.16 | 3080.57 | 21.80 | 401.56 | 3025.12 | 25.00 | 449.51 |
| 11/28/2017 | 409.00 | 2828.52 | 22.80 | 452.72 | 3060.62 | 22.20 | 407.81 | 3080.87 | 22.20 | 401.49 | 3028.84 | 24.90 | 448.63 |
| 12/20/2017 | 416.80 | 2998.56 | 22.10 | 415.27 | 3055.46 | 22.40 | 409.02 | 3079.92 | 22.30 | 401.72 | 3031.95 | 24.40 | 447.87 |
| 1/24/2018 | 434.50 | 2943.98 | 21.10 | 427.50 | 3046.11 | 22.20 | 411.19 | 3079.20 | 22.40 | 401.89 | 3035.62 | 23.60 | 446.96 |
| 2/21/2018 | 443.10 | 2901.14 | 20.60 | 436.94 | 3030.22 | 21.90 | 414.85 | 3079.49 | 22.30 | 401.82 | 3037.59 | 23.20 | 446.47 |
| 3/29/2018 | 453.00 | 2855.13 | 20.10 | 446.91 | 2995.99 | 21.50 | 422.68 | 3079.41 | 22.00 | 401.84 | 3038.89 | 22.80 | 446.14 |
| 4/26/2018 | 449.10 | 2828.01 | 20.10 | 452.72 | 2881.36 | 21.20 | 448.19 | 3079.56 | 21.80 | 401.80 | 3039.02 | 22.50 | 446.10 |
| 5/31/2018 | 453.10 | 2852.89 | 20.40 | 447.41 | 2973.27 | 21.00 | 427.82 | 3079.88 | 21.50 | 401.72 | 3036.50 | 22.70 | 446.70 |
| 6/28/2018 | 448.20 | 2872.28 | 20.00 | 443.20 | 2972.82 | 21.90 | 427.93 | 3066.95 | 21.40 | 404.82 | 3036.75 | 22.00 | 446.60 |
| 7/25/2018 | 440.40 | 2904.83 | 21.10 | 436.15 | 2983.70 | 21.10 | 425.47 | 3080.05 | 21.40 | 401.68 | 3033.11 | 23.40 | 447.54 |
| 8/22/2018 | 427.10 | 2950.76 | 22.10 | 426.03 | 3002.00 | 21.30 | 421.31 | 3080.07 | 21.50 | 401.67 | 3031.48 | 24.40 | 447.98 |
| 9/27/2018 | 439.60 | 3023.87 | 22.90 | 409.53 | 3035.05 | 21.70 | 413.74 | 3080.05 | 21.70 | 401.68 | 3031.53 | 25.30 | 448.02 |
| 10/18/2018 | 405.30 | 3046.04 | 22.90 | 404.43 | 3051.05 | 22.00 | 410.04 | 3162.28 | 22.00 | 381.69 | 3033.61 | 22.50 | 447.37 |
| 11/28/2018 | 408.60 | 3039.88 | 22.50 | 405.84 | 3055.58 | 22.30 | 408.99 | 3162.26 | 22.20 | 381.70 | 3036.07 | 25.20 | 446.95 |
| 12/19/2018 | 436.00 | 2951.35 | 21.90 | 425.89 | 3042.36 | 22.30 | 412.05 | 3162.26 | 22.30 | 381.70 | 3037.87 | 24.70 | 446.49 |

Notes:

(1) Elevations are in feet relative to NAVD88 datum.

(2) Temperature values listed in red are adjusted for temperature reading errors.

TABLE 3
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Pneumatic Piezo. No. -- | | C-1 | | | C-2 | | | C-3 | | | C-4 | | | C-5 | | |
|----------------------------|----------------------------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|
| Piezo. Tip Elevation ----- | | 357.1 | | | 339.8 | | | 363.3 | | | 392.8 | | | 379.4 | | |
| Zero Gage Reading ----- | | 52.0 | | | 35.3 | | | 58.8 | | | 27.7 | | | 14.9 | | |
| Date | Reservoir Elevation (feet) | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment |
| 1/28/2009 | 463.70 | 52.00 | 357.1 | | 38.00 | 342.5 | | 58.00 | 362.5 | | 93.00 | 458.1 | | 12.00 | 376.5 | |
| 2/25/2009 | 470.10 | 52.00 | 357.1 | | 37.00 | 341.5 | | 58.00 | 362.5 | | 100.00 | 465.1 | | 12.00 | 376.5 | |
| 3/26/2009 | 469.40 | 54.00 | 359.1 | | 40.00 | 344.5 | | 60.00 | 364.5 | | 100.00 | 465.1 | | 12.50 | 377.0 | |
| 4/29/2009 | 466.90 | 54.00 | 359.1 | | 40.00 | 344.5 | | 60.00 | 364.5 | | 98.00 | 463.1 | | 12.00 | 376.5 | |
| 5/18/2009 | 466.70 | 54.00 | 359.1 | | 40.00 | 344.5 | | 59.00 | 363.5 | | 97.00 | 462.1 | | 13.00 | 377.5 | |
| 5/29/2009 | 465.00 | 52.00 | 357.1 | | 36.00 | 340.5 | | 59.00 | 363.5 | | 95.00 | 460.1 | | 12.00 | 376.5 | |
| 6/30/2009 | 460.20 | 54.00 | 359.1 | | 40.00 | 344.5 | | 59.00 | 363.5 | | 90.00 | 455.1 | | 13.00 | 377.5 | |
| 7/30/2009 | 451.10 | 55.00 | 360.1 | | 40.00 | 344.5 | | 60.00 | 364.5 | | 82.00 | 447.1 | | 14.00 | 378.5 | |
| 8/25/2009 | 440.10 | 54.00 | 359.1 | | 40.00 | 344.5 | | 59.00 | 363.5 | | 71.00 | 436.1 | | 12.00 | 376.5 | |
| 9/30/2009 | 432.20 | 54.00 | 359.1 | | 38.00 | 342.5 | | 58.00 | 362.5 | | 63.00 | 428.1 | | 12.00 | 376.5 | |
| 10/29/2009 | 431.40 | 52.00 | 357.1 | | 40.00 | 344.5 | | 59.00 | 363.5 | | 63.00 | 428.1 | | 13.00 | 377.5 | |
| 12/1/2009 | 427.40 | 53.00 | 358.1 | | 39.00 | 343.5 | | 58.00 | 362.5 | | 59.00 | 424.1 | | 13.00 | 377.5 | |
| 12/29/2009 | 448.10 | 54.00 | 359.1 | | 39.00 | 343.5 | | 58.00 | 362.5 | | 78.00 | 443.1 | | 13.00 | 377.5 | |
| 1/27/2010 | 465.60 | 52.00 | 357.1 | | 39.00 | 343.5 | | 58.00 | 362.5 | | 95.00 | 460.1 | | 14.00 | 378.5 | |
| 2/25/2010 | 470.20 | 56.00 | 361.1 | | 40.00 | 344.5 | | 59.00 | 363.5 | | 100.00 | 465.1 | | 14.00 | 378.5 | |
| 3/29/2010 | 465.70 | 54.00 | 359.1 | | 40.00 | 344.5 | | 58.00 | 362.5 | | 96.00 | 461.1 | | 13.00 | 377.5 | |
| 4/4/2010 | 465.00 | 55.00 | 360.1 | | 40.00 | 344.5 | | 60.00 | 364.5 | | 96.00 | 461.1 | | 14.00 | 378.5 | |
| 4/27/2010 | 468.40 | 55.00 | 360.1 | | 40.00 | 344.5 | | 59.00 | 363.5 | | 99.00 | 464.1 | | 14.00 | 378.5 | |
| 5/27/2010 | 463.30 | 56.00 | 361.1 | | 40.00 | 344.5 | | 60.00 | 364.5 | | 94.00 | 459.1 | | 15.00 | 379.5 | |
| 6/30/2010 | 454.70 | 56.00 | 361.1 | | 40.00 | 344.5 | | 59.00 | 363.5 | | 86.00 | 451.1 | | 14.00 | 378.5 | |
| 7/28/2010 | 445.60 | 56.00 | 361.1 | | 40.00 | 344.5 | | 60.00 | 364.5 | | 78.00 | 443.1 | | 14.00 | 378.5 | |
| 8/31/2010 | 437.10 | 56.00 | 361.1 | | 41.00 | 345.5 | | 59.00 | 363.5 | | 68.00 | 433.1 | | 14.00 | 378.5 | |
| 9/29/2010 | 422.70 | 55.00 | 360.1 | | 40.00 | 344.5 | | 58.00 | 362.5 | | 56.00 | 421.1 | | 14.00 | 378.5 | |
| 10/27/2010 | 426.40 | 56.00 | 361.1 | | 40.00 | 344.5 | | 60.00 | 364.5 | | 56.00 | 421.1 | | 14.00 | 378.5 | |
| 11/29/2010 | 439.80 | 55.00 | 360.1 | | 41.00 | 345.5 | | 59.00 | 363.5 | | 70.00 | 435.1 | | 14.00 | 378.5 | |
| 12/30/2010 | 456.60 | 56.00 | 361.1 | | 40.00 | 344.5 | | 59.00 | 363.5 | | 85.00 | 450.1 | | 16.00 | 380.5 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

TABLE 3
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Pneumatic Piezo. No. -- | | C-1 | | | C-2 | | | C-3 | | | C-4 | | | C-5 | | |
|----------------------------|----------------------------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|
| Piezo. Tip Elevation ----- | | 357.1 | | | 339.8 | | | 363.3 | | | 392.8 | | | 379.4 | | |
| Zero Gage Reading ----- | | 52.0 | | | 35.3 | | | 58.8 | | | 27.7 | | | 14.9 | | |
| Date | Reservoir Elevation (feet) | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment |
| 2/1/2011 | 468.90 | 56.00 | 361.1 | | 41.00 | 345.5 | | 60.00 | 364.5 | | 99.00 | 464.1 | | 15.00 | 379.5 | |
| 2/23/2011 | 469.00 | 56.00 | 361.1 | | 41.00 | 345.5 | | 60.00 | 364.5 | | 100.00 | 465.1 | | 17.00 | 381.5 | |
| 3/29/2011 | 470.30 | 55.00 | 360.1 | | 40.00 | 344.5 | | 60.00 | 364.5 | | 100.00 | 465.1 | | 16.00 | 380.5 | |
| 4/27/2011 | 464.80 | 56.00 | 361.1 | | 41.00 | 345.5 | | 60.00 | 364.5 | | 96.00 | 461.1 | | 17.00 | 381.5 | |
| 5/26/2011 | 457.30 | 54.00 | 359.1 | | 42.00 | 346.5 | | 60.00 | 364.5 | | 89.00 | 454.1 | | 17.00 | 381.5 | |
| 6/28/2011 | 443.50 | 54.00 | 359.1 | | 41.00 | 345.5 | | 60.00 | 364.5 | | 75.00 | 440.1 | | 17.00 | 381.5 | |
| 7/29/2011 | 425.10 | 54.00 | 359.1 | | 40.00 | 344.5 | | 60.00 | 364.5 | | 60.00 | 425.1 | | 16.00 | 380.5 | |
| 8/24/2011 | 418.00 | 52.00 | 357.1 | | 41.00 | 345.5 | | 59.00 | 363.5 | | 46.00 | 411.1 | | 16.00 | 380.5 | |
| 9/27/2011 | 400.90 | 51.00 | 356.1 | | 40.00 | 344.5 | | 58.00 | 362.5 | | 34.00 | 399.1 | | 16.00 | 380.5 | |
| 10/26/2011 | 402.20 | 50.00 | 355.1 | | 38.00 | 342.5 | | 59.00 | 363.5 | | 32.00 | 397.1 | | 14.00 | 378.5 | |
| 11/30/2011 | 425.10 | 51.00 | 356.1 | | 40.00 | 344.5 | | 58.00 | 362.5 | | 55.00 | 420.1 | | 16.00 | 380.5 | |
| 12/21/2011 | 435.70 | 51.00 | 356.1 | | 40.00 | 344.5 | | 58.00 | 362.5 | | 66.00 | 431.1 | | 18.00 | 382.5 | |
| 1/24/2012 | 441.40 | 50.00 | 355.1 | | 39.00 | 343.5 | | 58.00 | 362.5 | | 51.00 | 416.1 | | 17.00 | 381.5 | |
| 2/28/2012 | 448.40 | 44.00 | 349.1 | | 39.00 | 343.5 | | 59.00 | 363.5 | | 80.00 | 445.1 | | 14.00 | 378.5 | |
| 3/26/2012 | 452.70 | 49.00 | 354.1 | | 40.00 | 344.5 | | 58.00 | 362.5 | | 82.00 | 447.1 | | 17.00 | 381.5 | |
| 4/23/2012 | 463.40 | 48.00 | 353.1 | | 40.00 | 344.5 | | 58.00 | 362.5 | | 92.00 | 457.1 | | 18.00 | 382.5 | |
| 5/30/2012 | 457.30 | 49.00 | 354.1 | | 40.00 | 344.5 | | 59.00 | 363.5 | | 88.00 | 453.1 | | 18.00 | 382.5 | |
| 6/13/2012 | 452.90 | 48.00 | 353.1 | | 40.00 | 344.5 | | 58.00 | 362.5 | | 84.00 | 449.1 | | 17.00 | 381.5 | |
| 6/26/2012 | 450.20 | 50.00 | 355.1 | | 40.00 | 344.5 | | 60.00 | 364.5 | | 80.00 | 445.1 | | 18.00 | 382.5 | |
| 7/24/2012 | 439.80 | 48.00 | 353.1 | | 40.00 | 344.5 | | 59.00 | 363.5 | | 70.00 | 435.1 | | 18.00 | 382.5 | |
| 8/8/2012 | 437.60 | 48.00 | 353.1 | | 40.00 | 344.5 | | 58.00 | 362.5 | | 70.00 | 435.1 | | 18.00 | 382.5 | |
| 8/22/2012 | 433.40 | 48.00 | 353.1 | | 40.00 | 344.5 | | 59.00 | 363.5 | | 66.00 | 431.1 | | 18.00 | 382.5 | |
| 8/29/2012 | 431.30 | 49.00 | 354.1 | | 40.00 | 344.5 | | 60.00 | 364.5 | | 63.00 | 428.1 | | 18.00 | 382.5 | |
| 9/25/2012 | 420.80 | 49.00 | 354.1 | | 40.00 | 344.5 | | 58.00 | 362.5 | | 55.00 | 420.1 | | 17.00 | 381.5 | |
| 10/31/2012 | 412.30 | 47.00 | 352.1 | | 40.00 | 344.5 | | 58.00 | 362.5 | | 44.00 | 409.1 | | 17.00 | 381.5 | |
| 11/27/2012 | 420.80 | 48.00 | 353.1 | | 40.00 | 344.5 | | 59.00 | 363.5 | | 50.00 | 415.1 | | 17.00 | 381.5 | |
| 12/18/2012 | 448.00 | 48.00 | 353.1 | | 40.00 | 344.5 | | 60.00 | 364.5 | | 76.00 | 441.1 | | 17.00 | 381.5 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

TABLE 3
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Pneumatic Piezo. No. -- | | C-1 | | | C-2 | | | C-3 | | | C-4 | | | C-5 | | |
|----------------------------|----------------------------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|
| Piezo. Tip Elevation ----- | | 357.1 | | | 339.8 | | | 363.3 | | | 392.8 | | | 379.4 | | |
| Zero Gage Reading ----- | | 52.0 | | | 35.3 | | | 58.8 | | | 27.7 | | | 14.9 | | |
| Date | Reservoir Elevation (feet) | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment |
| 1/29/2013 | 468.60 | 49.00 | 354.1 | | 40.00 | 344.5 | | 59.00 | 363.5 | | 98.00 | 463.1 | | 18.00 | 382.5 | |
| 2/28/2013 | 469.20 | 50.00 | 355.1 | | 40.00 | 344.5 | | 60.00 | 364.5 | | 100.00 | 465.1 | | 19.00 | 383.5 | |
| 3/27/2013 | 468.30 | 50.00 | 355.1 | | 41.00 | 345.5 | | 60.00 | 364.5 | | 99.00 | 464.1 | | 18.00 | 382.5 | |
| 4/25/2013 | 462.70 | 49.00 | 354.1 | | 38.00 | 342.5 | | 58.00 | 362.5 | | 94.00 | 459.1 | | 18.00 | 382.5 | |
| 5/21/2013 | 454.20 | 49.00 | 354.1 | | 40.00 | 344.5 | | 59.00 | 363.5 | | 86.00 | 451.1 | | 18.00 | 382.5 | |
| 6/25/2013 | 439.30 | 49.00 | 354.1 | | 40.00 | 344.5 | | 59.00 | 363.5 | | 70.00 | 435.1 | | 18.00 | 382.5 | |
| 7/23/2013 | 431.50 | 49.00 | 354.1 | | 40.00 | 344.5 | | 60.00 | 364.5 | | 62.00 | 427.1 | | 18.00 | 382.5 | |
| 8/21/2013 | 418.00 | 49.00 | 354.1 | | 40.00 | 344.5 | | 59.00 | 363.5 | | 50.00 | 415.1 | | 18.00 | 382.5 | |
| 9/24/2013 | 404.00 | 48.00 | 353.1 | | 41.00 | 345.5 | | 59.00 | 363.5 | | 37.00 | 402.1 | | 18.00 | 382.5 | |
| 10/29/2013 | 400.60 | 45.00 | 350.1 | | 40.00 | 344.5 | | 57.00 | 361.5 | | 33.00 | 398.1 | | 18.00 | 382.5 | |
| 11/26/2013 | 407.90 | 44.00 | 349.1 | | 39.00 | 343.5 | | 56.00 | 360.5 | | 36.00 | 401.1 | | 18.00 | 382.5 | |
| 12/19/2013 | 425.80 | 45.00 | 350.1 | | 40.00 | 344.5 | | 56.00 | 360.5 | | 55.00 | 420.1 | | 18.00 | 382.5 | |
| 1/28/2014 | 439.70 | 45.00 | 350.1 | | 39.00 | 343.5 | | 57.00 | 361.5 | | 70.00 | 435.1 | | 18.00 | 382.5 | |
| 2/25/2014 | 449.70 | 45.00 | 350.1 | | 40.00 | 344.5 | | 57.00 | 361.5 | | 80.00 | 445.1 | | 18.00 | 382.5 | |
| 3/26/2014 | 465.10 | 46.00 | 351.1 | | 40.00 | 344.5 | | 58.00 | 362.5 | | 95.00 | 460.1 | | 19.00 | 383.5 | |
| 3/28/2014 | 465.70 | 45.00 | 350.1 | | 40.00 | 344.5 | | 58.00 | 362.5 | | 96.00 | 461.1 | | 19.00 | 383.5 | |
| 4/29/2014 | 465.30 | 46.00 | 351.1 | | 40.00 | 344.5 | | 58.00 | 362.5 | | 96.00 | 461.1 | | 20.00 | 384.5 | |
| 5/28/2014 | 450.60 | 44.00 | 349.1 | | 40.00 | 344.5 | | 57.00 | 361.5 | | 82.00 | 447.1 | | 19.00 | 383.5 | |
| 6/25/2014 | 440.10 | 45.00 | 350.1 | | 41.00 | 345.5 | | 58.00 | 362.5 | | 72.00 | 437.1 | | 19.00 | 383.5 | |
| 7/29/2014 | 431.20 | 44.00 | 349.1 | | 40.00 | 344.5 | | 57.00 | 361.5 | | 63.00 | 428.1 | | 19.00 | 383.5 | |
| 8/26/2014 | 419.50 | 44.00 | 349.1 | | 40.00 | 344.5 | | 58.00 | 362.5 | | 52.00 | 417.1 | | 18.00 | 382.5 | |
| 9/23/2014 | 405.30 | 42.00 | 347.1 | | 37.00 | 341.5 | | 56.00 | 360.5 | | 38.00 | 403.1 | | 18.00 | 382.5 | |
| 10/29/2014 | 400.90 | 42.00 | 347.1 | | 40.00 | 344.5 | | 56.00 | 360.5 | | 33.00 | 398.1 | | 18.00 | 382.5 | |
| 11/25/2014 | 410.90 | 41.00 | 346.1 | | 39.00 | 343.5 | | 56.00 | 360.5 | | 40.00 | 405.1 | | 18.00 | 382.5 | |
| 12/30/2014 | 430.60 | 41.00 | 346.1 | | 38.00 | 342.5 | | 57.00 | 361.5 | | 59.00 | 424.1 | | 18.00 | 382.5 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

TABLE 3
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Pneumatic Piezo. No. -- | | C-1 | | | C-2 | | | C-3 | | | C-4 | | | C-5 | | |
|----------------------------|----------------------------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|
| Piezo. Tip Elevation ----- | | 357.1 | | | 339.8 | | | 363.3 | | | 392.8 | | | 379.4 | | |
| Zero Gage Reading ----- | | 52.0 | | | 35.3 | | | 58.8 | | | 27.7 | | | 14.9 | | |
| Date | Reservoir Elevation (feet) | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment |
| 1/27/2015 | 466.70 | 43.00 | 348.1 | | 40.00 | 344.5 | | 57.00 | 361.5 | | 96.00 | 461.1 | | 20.00 | 384.5 | |
| 2/25/2015 | 468.90 | 43.00 | 348.1 | | 40.00 | 344.5 | | 57.00 | 361.5 | | 99.00 | 464.1 | | 19.00 | 383.5 | |
| 3/26/2015 | 465.90 | 44.00 | 349.1 | | 42.00 | 346.5 | | 58.00 | 362.5 | | 97.00 | 462.1 | | 20.00 | 384.5 | |
| 4/28/2015 | 465.70 | 43.00 | 348.1 | | 41.00 | 345.5 | | 57.00 | 361.5 | | 97.00 | 462.1 | | 20.00 | 384.5 | |
| 5/28/2015 | 466.40 | 42.00 | 347.1 | | 41.00 | 345.5 | | 57.00 | 361.5 | | 97.00 | 462.1 | | 19.00 | 383.5 | |
| 6/30/2015 | 454.50 | 43.00 | 348.1 | | 42.00 | 346.5 | | 58.00 | 362.5 | | 86.00 | 451.1 | | 19.00 | 383.5 | |
| 7/28/2015 | 445.60 | 42.00 | 347.1 | | 41.00 | 345.5 | | 57.00 | 361.5 | | 78.00 | 443.1 | | 19.00 | 383.5 | |
| 8/28/2015 | 437.60 | 43.00 | 348.1 | | 42.00 | 346.5 | | 57.00 | 361.5 | | 70.00 | 435.1 | | 18.00 | 382.5 | |
| 9/24/2015 | 426.90 | 42.00 | 347.1 | | 41.00 | 345.5 | | 57.00 | 361.5 | | 59.00 | 424.1 | | 19.00 | 383.5 | |
| 10/27/2015 | 415.40 | 42.00 | 347.1 | | 41.00 | 345.5 | | 57.00 | 361.5 | | 48.00 | 413.1 | | 19.00 | 383.5 | |
| 11/19/2015 | 412.90 | 39.00 | 344.1 | | 40.00 | 344.5 | | 56.00 | 360.5 | | 43.00 | 408.1 | | 18.00 | 382.5 | |
| 12/22/2015 | 425.50 | 37.00 | 342.1 | | 41.00 | 345.5 | | 57.00 | 361.5 | | 55.00 | 420.1 | | 18.00 | 382.5 | |
| 1/27/2016 | 463.60 | 39.00 | 344.1 | | 41.00 | 345.5 | | 57.00 | 361.5 | | 93.00 | 458.1 | | 19.00 | 383.5 | |
| 2/25/2016 | 468.90 | 39.00 | 344.1 | | 42.00 | 346.5 | | 57.00 | 361.5 | | 100.00 | 465.1 | | 20.00 | 384.5 | |
| 3/30/2016 | 468.00 | 38.00 | 343.1 | | 43.00 | 347.5 | | 58.00 | 362.5 | | 100.00 | 465.1 | | 20.00 | 384.5 | |
| 4/28/2016 | 461.30 | 39.00 | 344.1 | | 42.00 | 346.5 | | 58.00 | 362.5 | | 92.00 | 457.1 | | 20.00 | 384.5 | |
| 5/25/2016 | 451.30 | 38.00 | 343.1 | | 42.00 | 346.5 | | 58.00 | 362.5 | | 84.00 | 449.1 | | 20.00 | 384.5 | |
| 6/28/2016 | 414.10 | 38.00 | 343.1 | | 42.00 | 346.5 | | 57.00 | 361.5 | | 76.00 | 441.1 | | 18.00 | 382.5 | |
| 7/27/2016 | 434.20 | 38.00 | 343.1 | | 42.00 | 346.5 | | 57.00 | 361.5 | | 66.00 | 431.1 | | 20.00 | 384.5 | |
| 8/23/2016 | 418.60 | 36.00 | 341.1 | | 42.00 | 346.5 | | 57.00 | 361.5 | | 51.00 | 416.1 | | 20.00 | 384.5 | |
| 9/27/2016 | 406.40 | 36.00 | 341.1 | | 42.00 | 346.5 | | 57.00 | 361.5 | | 40.00 | 405.1 | | 20.00 | 384.5 | |
| 10/26/2016 | 404.00 | 34.00 | 339.1 | | 41.00 | 345.5 | | 57.00 | 361.5 | | 36.00 | 401.1 | | 19.00 | 383.5 | |
| 11/22/2016 | 413.60 | 32.00 | 337.1 | | 41.00 | 345.5 | | 56.00 | 360.5 | | 42.00 | 407.1 | | 19.00 | 383.5 | |
| 12/20/2016 | 441.10 | 35.00 | 340.1 | | 40.00 | 344.5 | | 56.00 | 360.5 | | 70.00 | 435.1 | | 19.00 | 383.5 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

TABLE 3
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Pneumatic Piezo. No. -- | | C-1 | | | C-2 | | | C-3 | | | C-4 | | | C-5 | | |
|----------------------------|----------------------------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|
| Piezo. Tip Elevation ----- | | 357.1 | | | 339.8 | | | 363.3 | | | 392.8 | | | 379.4 | | |
| Zero Gage Reading ----- | | 52.0 | | | 35.3 | | | 58.8 | | | 27.7 | | | 14.9 | | |
| Date | Reservoir Elevation (feet) | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment |
| 1/26/2017 | 471.60 | 38.00 | 343.1 | | 41.00 | 345.5 | | 57.00 | 361.5 | | 101.00 | 466.1 | | 20.00 | 384.5 | |
| 2/24/2017 | 472.05 | 37.00 | 342.1 | | 42.00 | 346.5 | | 58.00 | 362.5 | | 103.00 | 468.1 | | 20.00 | 384.5 | |
| 2/25/2017 | 472.00 | | | | | | | | | | | | | | | |
| 2/26/2017 | 472.00 | | | | | | | | | | | | | | | |
| 2/27/2017 | 472.00 | 37.00 | 342.1 | | 42.00 | 346.5 | | 58.00 | 362.5 | | 102.00 | 467.1 | | 20.00 | 384.5 | |
| 2/28/2017 | 471.90 | 39.00 | 344.1 | | 43.00 | 347.5 | | 58.00 | 362.5 | | 103.00 | 468.1 | | 20.00 | 384.5 | |
| 3/1/2017 | 471.90 | 37.00 | 342.1 | | 42.00 | 346.5 | | 58.00 | 362.5 | | 103.00 | 468.1 | | 20.00 | 384.5 | |
| 3/2/2017 | 471.90 | 37.00 | 342.1 | | 43.00 | 347.5 | | 58.00 | 362.5 | | 102.00 | 467.1 | | 20.00 | 384.5 | |
| 3/29/2017 | 467.90 | 38.00 | 343.1 | | 44.00 | 348.5 | | 58.00 | 362.5 | | 100.00 | 465.1 | | 20.00 | 384.5 | |
| 4/27/2017 | 457.60 | 37.00 | 342.1 | | 43.00 | 347.5 | | 58.00 | 362.5 | | 89.00 | 454.1 | | 20.00 | 384.5 | |
| 5/23/2017 | 453.50 | 36.00 | 341.1 | | 42.00 | 346.5 | | 58.00 | 362.5 | | 85.00 | 450.1 | | 20.00 | 384.5 | |
| 6/21/2017 | 447.40 | 38.00 | 343.1 | | 44.00 | 348.5 | | 58.00 | 362.5 | | 80.00 | 445.1 | | 20.00 | 384.5 | |
| 7/26/2017 | 435.10 | 36.00 | 341.1 | | 43.00 | 347.5 | | 58.00 | 362.5 | | 67.00 | 432.1 | | 20.00 | 384.5 | |
| 8/25/2017 | 420.10 | 35.00 | 340.1 | | 42.00 | 346.5 | | 57.00 | 361.5 | | 51.00 | 416.1 | | 19.00 | 383.5 | |
| 9/27/2017 | 407.10 | 34.00 | 339.1 | | 42.00 | 346.5 | | 57.00 | 361.5 | | 40.00 | 405.1 | | 20.00 | 384.5 | |
| 10/26/2017 | 395.00 | 33.00 | 338.1 | | 41.00 | 345.5 | | 56.00 | 360.5 | | 29.00 | 394.1 | | 19.00 | 383.5 | |
| 11/28/2017 | 409.00 | 32.00 | 337.1 | | 41.00 | 345.5 | | 57.00 | 361.5 | | 39.00 | 404.1 | | 19.00 | 383.5 | |
| 12/20/2017 | 416.80 | 32.00 | 337.1 | | 40.00 | 344.5 | | 55.00 | 359.5 | | 46.00 | 411.1 | | 18.00 | 382.5 | |
| 1/24/2018 | 434.50 | 36.00 | 341.1 | | 42.00 | 346.5 | | 58.00 | 362.5 | | 64.00 | 429.1 | | 18.00 | 382.5 | |
| 2/21/2018 | 443.10 | 22.00 | 327.1 | | 42.00 | 346.5 | | 56.00 | 360.5 | | 73.00 | 438.1 | | 20.00 | 384.5 | |
| 3/29/2018 | 453.00 | 34.00 | 339.1 | | 42.00 | 346.5 | | 56.00 | 360.5 | | 84.00 | 449.1 | | 20.00 | 384.5 | |
| 4/26/2018 | 449.10 | 31.00 | 336.1 | | 42.00 | 346.5 | | 57.00 | 361.5 | | 80.00 | 445.1 | | 20.00 | 384.5 | |
| 5/31/2018 | 453.10 | 32.00 | 337.1 | | 42.00 | 346.5 | | 57.00 | 361.5 | | 84.00 | 449.1 | | 20.00 | 384.5 | |
| 6/28/2018 | 448.20 | 32.00 | 337.1 | | 42.00 | 346.5 | | 57.00 | 361.5 | | 80.00 | 445.1 | | 20.00 | 384.5 | |
| 7/25/2018 | 440.40 | 32.00 | 337.1 | | 42.00 | 346.5 | | 57.00 | 361.5 | | 71.00 | 436.1 | | 20.00 | 384.5 | |
| 8/22/2018 | 427.10 | 32.00 | 337.1 | | 41.00 | 345.5 | | 57.00 | 361.5 | | 60.00 | 425.1 | | 20.00 | 384.5 | |
| 9/27/2018 | 439.60 | 32.00 | 337.1 | | 42.00 | 346.5 | | 57.00 | 361.5 | | 42.00 | 407.1 | | 20.00 | 384.5 | |
| 10/18/2018 | 405.30 | 30.00 | 335.1 | | 42.00 | 346.5 | | 57.00 | 361.5 | | 37.00 | 402.1 | | 19.00 | 383.5 | |
| 11/28/2018 | 408.60 | 30.00 | 335.1 | | 42.00 | 346.5 | | 56.00 | 360.5 | | 40.00 | 405.1 | | 19.00 | 383.5 | |
| 12/19/2018 | 436.00 | 33.00 | 338.1 | | 44.00 | 348.5 | | 57.00 | 361.5 | | 66.00 | 431.1 | | 20.00 | 384.5 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

TABLE 3
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Pneumatic Piezo. No. -- | | C-6 | | | C-7 | | | C-8 | | | C-9 | | | RR-2 | | |
|----------------------------|----------------------------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|
| Piezo. Tip Elevation ----- | | 392.0 | | | 324.9 | | | 440.6 | | | 357.0 | | | 393.2 | | |
| Zero Gage Reading ----- | | 27.5 | | | 21.0 | | | 17.5 | | | 53.1 | | | 29.9 | | |
| Date | Reservoir Elevation (feet) | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment |
| 1/28/2009 | 463.70 | 43.00 | 407.5 | | 18.00 | 321.9 | | 20.00 | 443.1 | | 58.00 | 361.9 | | 86.00 | 449.3 | |
| 2/25/2009 | 470.10 | 50.00 | 414.5 | | 18.00 | 321.9 | | 27.00 | 450.1 | | 58.00 | 361.9 | | 90.00 | 453.3 | |
| 3/26/2009 | 469.40 | 55.00 | 419.5 | | 19.00 | 322.9 | | 31.00 | 454.1 | | 60.00 | 363.9 | | 92.00 | 455.3 | |
| 4/29/2009 | 466.90 | 56.00 | 420.5 | | 19.00 | 322.9 | | 32.00 | 455.1 | | 59.00 | 362.9 | | 91.00 | 454.3 | |
| 5/18/2009 | 466.70 | 56.00 | 420.5 | | 19.00 | 322.9 | | 32.00 | 455.1 | | 59.00 | 362.9 | | 92.00 | 455.3 | |
| 5/29/2009 | 465.00 | 55.00 | 419.5 | | 20.00 | 323.9 | | 30.00 | 453.1 | | 59.00 | 362.9 | | 90.00 | 453.3 | |
| 6/30/2009 | 460.20 | 55.00 | 419.5 | | 19.00 | 322.9 | | 30.00 | 453.1 | | 60.00 | 363.9 | | 85.00 | 448.3 | |
| 7/30/2009 | 451.10 | 53.00 | 417.5 | | 19.00 | 322.9 | | 28.00 | 451.1 | | 60.00 | 363.9 | | 79.00 | 442.3 | |
| 8/25/2009 | 440.10 | 48.00 | 412.5 | | 18.00 | 321.9 | | 25.00 | 448.1 | | 59.00 | 362.9 | | 69.00 | 432.3 | |
| 9/30/2009 | 432.20 | 45.00 | 409.5 | | 18.00 | 321.9 | | 22.00 | 445.1 | | 58.00 | 361.9 | | 61.00 | 424.3 | |
| 10/29/2009 | 431.40 | 44.00 | 408.5 | | 19.00 | 322.9 | | 22.00 | 445.1 | | 59.00 | 362.9 | | 60.00 | 423.3 | |
| 12/1/2009 | 427.40 | 41.00 | 405.5 | | 19.00 | 322.9 | | 20.00 | 443.1 | | 58.00 | 361.9 | | 56.00 | 419.3 | |
| 12/29/2009 | 448.10 | 43.00 | 407.5 | | 19.00 | 322.9 | | 20.00 | 443.1 | | 58.00 | 361.9 | | 74.00 | 437.3 | |
| 1/27/2010 | 465.60 | 47.00 | 411.5 | | 18.00 | 321.9 | | 22.00 | 445.1 | | 58.00 | 361.9 | | 90.00 | 453.3 | |
| 2/25/2010 | 470.20 | 54.00 | 418.5 | | 19.00 | 322.9 | | 30.00 | 453.1 | | 58.00 | 361.9 | | 94.00 | 457.3 | |
| 3/29/2010 | 465.70 | 55.00 | 419.5 | | 18.00 | 321.9 | | 31.00 | 454.1 | | 58.00 | 361.9 | | 91.00 | 454.3 | |
| 4/4/2010 | 465.00 | 56.00 | 420.5 | | 18.00 | 321.9 | | 32.00 | 455.1 | | 58.00 | 361.9 | | 90.00 | 453.3 | |
| 4/27/2010 | 468.40 | 55.00 | 419.5 | | 19.00 | 322.9 | | 31.00 | 454.1 | | 59.00 | 362.9 | | 93.00 | 456.3 | |
| 5/27/2010 | 463.30 | 56.00 | 420.5 | | 18.00 | 321.9 | | 32.00 | 455.1 | | 58.00 | 361.9 | | 90.00 | 453.3 | |
| 6/30/2010 | 454.70 | 53.00 | 417.5 | | 18.00 | 321.9 | | 28.00 | 451.1 | | 58.00 | 361.9 | | 82.00 | 445.3 | |
| 7/28/2010 | 445.60 | 51.00 | 415.5 | | 18.00 | 321.9 | | 26.00 | 449.1 | | 58.00 | 361.9 | | 74.00 | 437.3 | |
| 8/31/2010 | 437.10 | 47.00 | 411.5 | | 19.00 | 322.9 | | 24.00 | 447.1 | | 59.00 | 362.9 | | 67.00 | 430.3 | |
| 9/29/2010 | 422.70 | 42.00 | 406.5 | | 19.00 | 322.9 | | 22.00 | 445.1 | | 53.00 | 356.9 | | 52.00 | 415.3 | |
| 10/27/2010 | 426.40 | 42.00 | 406.5 | | 19.00 | 322.9 | | 21.00 | 444.1 | | 58.00 | 361.9 | | 56.00 | 419.3 | |
| 11/29/2010 | 439.80 | 42.00 | 406.5 | | 19.00 | 322.9 | | 22.00 | 445.1 | | 58.00 | 361.9 | | 66.00 | 429.3 | |
| 12/30/2010 | 456.60 | 45.00 | 409.5 | | 20.00 | 323.9 | | 21.00 | 444.1 | | 58.00 | 361.9 | | 80.00 | 443.3 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

TABLE 3
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Pneumatic Piezo. No. -- | | C-6 | | | C-7 | | | C-8 | | | C-9 | | | RR-2 | | |
|----------------------------|----------------------------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|
| Piezo. Tip Elevation ----- | | 392.0 | | | 324.9 | | | 440.6 | | | 357.0 | | | 393.2 | | |
| Zero Gage Reading ----- | | 27.5 | | | 21.0 | | | 17.5 | | | 53.1 | | | 29.9 | | |
| Date | Reservoir Elevation (feet) | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment |
| 2/1/2011 | 468.90 | 51.00 | 415.5 | | 19.00 | 322.9 | | 28.00 | 451.1 | | 57.00 | 360.9 | | 91.00 | 454.3 | |
| 2/23/2011 | 469.00 | 55.00 | 419.5 | | 19.00 | 322.9 | | 30.00 | 453.1 | | 58.00 | 361.9 | | 93.00 | 456.3 | |
| 3/29/2011 | 470.30 | 56.00 | 420.5 | | 18.00 | 321.9 | | 34.00 | 457.1 | | 56.00 | 359.9 | | 94.00 | 457.3 | |
| 4/27/2011 | 464.80 | 56.00 | 420.5 | | 20.00 | 323.9 | | 33.00 | 456.1 | | 58.00 | 361.9 | | 90.00 | 453.3 | |
| 5/26/2011 | 457.30 | 54.00 | 418.5 | | 19.00 | 322.9 | | 30.00 | 453.1 | | 58.00 | 361.9 | | 84.00 | 447.3 | |
| 6/28/2011 | 443.50 | 51.00 | 415.5 | | 19.00 | 322.9 | | 26.00 | 449.1 | | 58.00 | 361.9 | | 73.00 | 436.3 | |
| 7/29/2011 | 425.10 | 46.00 | 410.5 | | 18.00 | 321.9 | | 25.00 | 448.1 | | 57.00 | 360.9 | | 58.00 | 421.3 | |
| 8/24/2011 | 418.00 | 42.00 | 406.5 | | 19.00 | 322.9 | | 25.00 | 448.1 | | 58.00 | 361.9 | | 46.00 | 409.3 | |
| 9/27/2011 | 400.90 | 38.00 | 402.5 | | 20.00 | 323.9 | | 24.00 | 447.1 | | 58.00 | 361.9 | | 34.00 | 397.3 | |
| 10/26/2011 | 402.20 | 36.00 | 400.5 | | 18.00 | 321.9 | | 21.00 | 444.1 | | 57.00 | 360.9 | | 32.00 | 395.3 | |
| 11/30/2011 | 425.10 | 36.00 | 400.5 | | 19.00 | 322.9 | | 20.00 | 443.1 | | 58.00 | 361.9 | | 52.00 | 415.3 | |
| 12/21/2011 | 435.70 | 38.00 | 402.5 | | 19.00 | 322.9 | | 20.00 | 443.1 | | 57.00 | 360.9 | | 62.00 | 425.3 | |
| 1/24/2012 | 441.40 | 39.00 | 403.5 | | 19.00 | 322.9 | | 20.00 | 443.1 | | 56.00 | 359.9 | | 67.00 | 430.3 | |
| 2/28/2012 | 448.40 | 40.00 | 404.5 | | 19.00 | 322.9 | | 18.00 | 441.1 | | 47.00 | 350.9 | | 72.00 | 435.3 | |
| 3/26/2012 | 452.70 | 44.00 | 408.5 | | 19.00 | 322.9 | | 19.00 | 442.1 | | 46.00 | 349.9 | | 76.00 | 439.3 | |
| 4/23/2012 | 463.40 | 50.00 | 414.5 | | 18.00 | 321.9 | | 22.00 | 445.1 | | 55.00 | 358.9 | | 87.00 | 450.3 | |
| 5/30/2012 | 457.30 | 52.00 | 416.5 | | 19.00 | 322.9 | | 27.00 | 450.1 | | 56.00 | 359.9 | | 82.00 | 445.3 | |
| 6/13/2012 | 452.90 | 51.00 | 415.5 | | 18.00 | 321.9 | | 25.00 | 448.1 | | 55.00 | 358.9 | | 78.00 | 441.3 | |
| 6/26/2012 | 450.20 | 52.00 | 416.5 | | 19.00 | 322.9 | | 25.00 | 448.1 | | 56.00 | 359.9 | | 78.00 | 441.3 | |
| 7/24/2012 | 439.80 | 50.00 | 414.5 | | 20.00 | 323.9 | | 24.00 | 447.1 | | 55.00 | 358.9 | | 69.00 | 432.3 | |
| 8/8/2012 | 437.60 | 48.00 | 412.5 | | 19.00 | 322.9 | | 24.00 | 447.1 | | 56.00 | 359.9 | | 67.00 | 430.3 | |
| 8/22/2012 | 433.40 | 47.00 | 411.5 | | 19.00 | 322.9 | | 24.00 | 447.1 | | 56.00 | 359.9 | | 63.00 | 426.3 | |
| 8/29/2012 | 431.30 | 46.00 | 410.5 | | 20.00 | 323.9 | | 24.00 | 447.1 | | 56.00 | 359.9 | | 61.00 | 424.3 | |
| 9/25/2012 | 420.80 | 46.00 | 410.5 | | 19.00 | 322.9 | | 22.00 | 445.1 | | 56.00 | 359.9 | | 61.00 | 424.3 | |
| 10/31/2012 | 412.30 | 40.00 | 404.5 | | 20.00 | 323.9 | | 22.00 | 445.1 | | 56.00 | 359.9 | | 44.00 | 407.3 | |
| 11/27/2012 | 420.80 | 39.00 | 403.5 | | 18.00 | 321.9 | | 20.00 | 443.1 | | 56.00 | 359.9 | | 49.00 | 412.3 | |
| 12/18/2012 | 448.00 | 42.00 | 406.5 | | 20.00 | 323.9 | | 20.00 | 443.1 | | 57.00 | 360.9 | | 79.00 | 442.3 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

TABLE 3
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Pneumatic Piezo. No. -- | | C-6 | | | C-7 | | | C-8 | | | C-9 | | | RR-2 | | |
|----------------------------|----------------------------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|
| Piezo. Tip Elevation ----- | | 392.0 | | | 324.9 | | | 440.6 | | | 357.0 | | | 393.2 | | |
| Zero Gage Reading ----- | | 27.5 | | | 21.0 | | | 17.5 | | | 53.1 | | | 29.9 | | |
| Date | Reservoir Elevation (feet) | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment |
| 1/29/2013 | 468.60 | 50.00 | 414.5 | | 20.00 | 323.9 | | 27.00 | 450.1 | | 56.00 | 359.9 | | 91.00 | 454.3 | |
| 2/28/2013 | 469.20 | 55.00 | 419.5 | | 20.00 | 323.9 | | 32.00 | 455.1 | | 56.00 | 359.9 | | 92.00 | 455.3 | |
| 3/27/2013 | 468.30 | 57.00 | 421.5 | | 20.00 | 323.9 | | 33.00 | 456.1 | | 55.00 | 358.9 | | 92.00 | 455.3 | |
| 4/25/2013 | 462.70 | 56.00 | 420.5 | | 18.00 | 321.9 | | 32.00 | 455.1 | | 54.00 | 357.9 | | 88.00 | 451.3 | |
| 5/21/2013 | 454.20 | 55.00 | 419.5 | | 19.00 | 322.9 | | 29.00 | 452.1 | | 56.00 | 359.9 | | 80.00 | 443.3 | |
| 6/25/2013 | 439.30 | 50.00 | 414.5 | | 19.00 | 322.9 | | 26.00 | 449.1 | | 55.00 | 358.9 | | 68.00 | 431.3 | |
| 7/23/2013 | 431.50 | 46.00 | 410.5 | | 19.00 | 322.9 | | 24.00 | 447.1 | | 55.00 | 358.9 | | 61.00 | 424.3 | |
| 8/21/2013 | 418.00 | 42.00 | 406.5 | | 20.00 | 323.9 | | 24.00 | 447.1 | | 56.00 | 359.9 | | 50.00 | 413.3 | |
| 9/24/2013 | 404.00 | 39.00 | 403.5 | | 19.00 | 322.9 | | 24.00 | 447.1 | | 55.00 | 358.9 | | 38.00 | 401.3 | |
| 10/29/2013 | 400.60 | 36.00 | 400.5 | | 19.00 | 322.9 | | 22.00 | 445.1 | | 52.00 | 355.9 | | 33.00 | 396.3 | |
| 11/26/2013 | 407.90 | 35.00 | 399.5 | | 18.00 | 321.9 | | 21.00 | 444.1 | | 51.00 | 354.9 | | 38.00 | 401.3 | |
| 12/19/2013 | 425.80 | 36.00 | 400.5 | | 19.00 | 322.9 | | 21.00 | 444.1 | | 52.00 | 355.9 | | 53.00 | 416.3 | |
| 1/28/2014 | 439.70 | 38.00 | 402.5 | | 19.00 | 322.9 | | 20.00 | 443.1 | | 52.00 | 355.9 | | 66.00 | 429.3 | |
| 2/25/2014 | 449.70 | 40.00 | 404.5 | | 20.00 | 323.9 | | 20.00 | 443.1 | | 52.00 | 355.9 | | 75.00 | 438.3 | |
| 3/26/2014 | 465.10 | 47.00 | 411.5 | | 20.00 | 323.9 | | 24.00 | 447.1 | | 52.00 | 355.9 | | 88.00 | 451.3 | |
| 3/28/2014 | 465.70 | 47.00 | 411.5 | | 19.00 | 322.9 | | 24.00 | 447.1 | | 51.00 | 354.9 | | 89.00 | 452.3 | |
| 4/29/2014 | 465.30 | 54.00 | 418.5 | | 19.00 | 322.9 | | 30.00 | 453.1 | | 52.00 | 355.9 | | 90.00 | 453.3 | |
| 5/28/2014 | 450.60 | 52.00 | 416.5 | | 19.00 | 322.9 | | 26.00 | 449.1 | | 51.00 | 354.9 | | 76.00 | 439.3 | |
| 6/25/2014 | 440.10 | 50.00 | 414.5 | | 19.00 | 322.9 | | 25.00 | 448.1 | | 52.00 | 355.9 | | 68.00 | 431.3 | |
| 7/29/2014 | 431.20 | 46.00 | 410.5 | | 19.00 | 322.9 | | 24.00 | 447.1 | | 52.00 | 355.9 | | 60.00 | 423.3 | |
| 8/26/2014 | 419.50 | 43.00 | 407.5 | | 19.00 | 322.9 | | 24.00 | 447.1 | | 52.00 | 355.9 | | 50.00 | 413.3 | |
| 9/23/2014 | 405.30 | 39.00 | 403.5 | | 19.00 | 322.9 | | 24.00 | 447.1 | | 52.00 | 355.9 | | 38.00 | 401.3 | |
| 10/29/2014 | 400.90 | 37.00 | 401.5 | | 20.00 | 323.9 | | 23.00 | 446.1 | | 52.00 | 355.9 | | 33.00 | 396.3 | |
| 11/25/2014 | 410.90 | 36.00 | 400.5 | | 19.00 | 322.9 | | 21.00 | 444.1 | | 51.00 | 354.9 | | 40.00 | 403.3 | |
| 12/30/2014 | 430.60 | 37.00 | 401.5 | | 19.00 | 322.9 | | 20.00 | 443.1 | | 51.00 | 354.9 | | 57.00 | 420.3 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

TABLE 3
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Pneumatic Piezo. No. -- | | C-6 | | | C-7 | | | C-8 | | | C-9 | | | RR-2 | | |
|----------------------------|----------------------------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|
| Piezo. Tip Elevation ----- | | 392.0 | | | 324.9 | | | 440.6 | | | 357.0 | | | 393.2 | | |
| Zero Gage Reading ----- | | 27.5 | | | 21.0 | | | 17.5 | | | 53.1 | | | 29.9 | | |
| Date | Reservoir Elevation (feet) | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment |
| 1/27/2015 | 466.70 | 44.00 | 408.5 | | 20.00 | 323.9 | | 24.00 | 447.1 | | 51.00 | 354.9 | | 88.00 | 451.3 | |
| 2/25/2015 | 468.90 | 52.00 | 416.5 | | 19.00 | 322.9 | | 31.00 | 454.1 | | 50.00 | 353.9 | | 90.00 | 453.3 | |
| 3/26/2015 | 465.90 | 55.00 | 419.5 | | 20.00 | 323.9 | | 32.00 | 455.1 | | 51.00 | 354.9 | | 99.00 | 462.3 | |
| 4/28/2015 | 465.70 | 57.00 | 421.5 | | 19.00 | 322.9 | | 32.00 | 455.1 | | 51.00 | 354.9 | | 90.00 | 453.3 | |
| 5/28/2015 | 466.40 | 56.00 | 420.5 | | 19.00 | 322.9 | | 32.00 | 455.1 | | 50.00 | 353.9 | | 90.00 | 453.3 | |
| 6/30/2015 | 454.50 | 55.00 | 419.5 | | 19.00 | 322.9 | | 31.00 | 454.1 | | 51.00 | 354.9 | | 80.00 | 443.3 | |
| 7/28/2015 | 445.60 | 51.00 | 415.5 | | 19.00 | 322.9 | | 26.00 | 449.1 | | 50.00 | 353.9 | | 72.00 | 435.3 | |
| 8/28/2015 | 437.60 | 48.00 | 412.5 | | 19.00 | 322.9 | | 25.00 | 448.1 | | 50.00 | 353.9 | | 66.00 | 429.3 | |
| 9/24/2015 | 426.90 | 44.00 | 408.5 | | 19.00 | 322.9 | | 25.00 | 448.1 | | 50.00 | 353.9 | | 57.00 | 420.3 | |
| 10/27/2015 | 415.40 | 42.00 | 406.5 | | 19.00 | 322.9 | | 24.00 | 447.1 | | 51.00 | 354.9 | | 46.00 | 409.3 | |
| 11/19/2015 | 412.90 | 39.00 | 403.5 | | 19.00 | 322.9 | | 23.00 | 446.1 | | 50.00 | 353.9 | | 43.00 | 406.3 | |
| 12/22/2015 | 425.50 | 39.00 | 403.5 | | 19.00 | 322.9 | | 21.00 | 444.1 | | 50.00 | 353.9 | | 54.00 | 417.3 | |
| 1/27/2016 | 463.60 | 44.00 | 408.5 | | 20.00 | 323.9 | | 20.00 | 443.1 | | 49.00 | 352.9 | | 86.00 | 449.3 | |
| 2/25/2016 | 468.90 | 50.00 | 414.5 | | 19.00 | 322.9 | | 30.00 | 453.1 | | 50.00 | 353.9 | | 91.00 | 454.3 | |
| 3/30/2016 | 468.00 | 55.00 | 419.5 | | 18.00 | 321.9 | | 34.00 | 457.1 | | 49.00 | 352.9 | | 92.00 | 455.3 | |
| 4/28/2016 | 461.30 | 56.00 | 420.5 | | 18.00 | 321.9 | | 32.00 | 455.1 | | 49.00 | 352.9 | | 86.00 | 449.3 | |
| 5/25/2016 | 451.30 | 54.00 | 418.5 | | 20.00 | 323.9 | | 28.00 | 451.1 | | 30.00 | 333.9 | | 76.00 | 439.3 | |
| 6/28/2016 | 414.10 | 50.00 | 414.5 | | 18.00 | 321.9 | | 25.00 | 448.1 | | 48.00 | 351.9 | | 71.00 | 434.3 | |
| 7/27/2016 | 434.20 | 48.00 | 412.5 | | 18.00 | 321.9 | | 25.00 | 448.1 | | 50.00 | 353.9 | | 62.00 | 425.3 | |
| 8/23/2016 | 418.60 | 44.00 | 408.5 | | 20.00 | 323.9 | | 24.00 | 447.1 | | 49.00 | 352.9 | | 50.00 | 413.3 | |
| 9/27/2016 | 406.40 | 40.00 | 404.5 | | 20.00 | 323.9 | | 24.00 | 447.1 | | 50.00 | 353.9 | | 38.00 | 401.3 | |
| 10/26/2016 | 404.00 | 37.00 | 401.5 | | 19.00 | 322.9 | | 22.00 | 445.1 | | 49.00 | 352.9 | | 35.00 | 398.3 | |
| 11/22/2016 | 413.60 | 36.00 | 400.5 | | 19.00 | 322.9 | | 22.00 | 445.1 | | 48.00 | 351.9 | | 43.00 | 406.3 | |
| 12/20/2016 | 441.10 | 39.00 | 403.5 | | 20.00 | 323.9 | | 21.00 | 444.1 | | 49.00 | 352.9 | | 67.00 | 430.3 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

TABLE 3
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Pneumatic Piezo. No. -- | | C-6 | | | C-7 | | | C-8 | | | C-9 | | | RR-2 | | |
|----------------------------|----------------------------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|
| Piezo. Tip Elevation ----- | | 392.0 | | | 324.9 | | | 440.6 | | | 357.0 | | | 393.2 | | |
| Zero Gage Reading ----- | | 27.5 | | | 21.0 | | | 17.5 | | | 53.1 | | | 29.9 | | |
| Date | Reservoir Elevation (feet) | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment |
| 1/26/2017 | 471.60 | 45.00 | 409.5 | | 19.00 | 322.9 | | 29.00 | 452.1 | | 49.00 | 352.9 | | 91.00 | 454.3 | |
| 2/24/2017 | 472.05 | 54.00 | 418.5 | | 18.00 | 321.9 | | 34.00 | 457.1 | | 49.00 | 352.9 | | 92.00 | 455.3 | |
| 2/25/2017 | 472.00 | | | | | | | | | | | | | | | |
| 2/26/2017 | 472.00 | | | | | | | | | | | | | | | |
| 2/27/2017 | 472.00 | 54.00 | 418.5 | | 19.00 | 322.9 | | 34.00 | 457.1 | | 49.00 | 352.9 | | 92.00 | 455.3 | |
| 2/28/2017 | 471.90 | 55.00 | 419.5 | | 19.00 | 322.9 | | 34.00 | 457.1 | | 50.00 | 353.9 | | 93.00 | 456.3 | |
| 3/1/2017 | 471.90 | 55.00 | 419.5 | | 19.00 | 322.9 | | 34.00 | 457.1 | | 50.00 | 353.9 | | 93.00 | 456.3 | |
| 3/2/2017 | 471.90 | 55.00 | 419.5 | | 18.00 | 321.9 | | 38.00 | 461.1 | | 49.00 | 352.9 | | 92.00 | 455.3 | |
| 3/29/2017 | 467.90 | 57.00 | 421.5 | | 19.00 | 322.9 | | 36.00 | 459.1 | | 50.00 | 353.9 | | 89.00 | 452.3 | |
| 4/27/2017 | 457.60 | 56.00 | 420.5 | | 19.00 | 322.9 | | 32.00 | 455.1 | | 50.00 | 353.9 | | 82.00 | 445.3 | |
| 5/23/2017 | 453.50 | 53.00 | 417.5 | | 18.00 | 321.9 | | 28.00 | 451.1 | | 49.00 | 352.9 | | 77.00 | 440.3 | |
| 6/21/2017 | 447.40 | 53.00 | 417.5 | | 18.00 | 321.9 | | 28.00 | 451.1 | | 49.00 | 352.9 | | 70.00 | 433.3 | |
| 7/26/2017 | 435.10 | 49.00 | 413.5 | | 19.00 | 322.9 | | 26.00 | 449.1 | | 50.00 | 353.9 | | 63.00 | 426.3 | |
| 8/25/2017 | 420.10 | 43.00 | 407.5 | | 19.00 | 322.9 | | 24.00 | 447.1 | | 49.00 | 352.9 | | 50.00 | 413.3 | |
| 9/27/2017 | 407.10 | 42.00 | 406.5 | | 20.00 | 323.9 | | 24.00 | 447.1 | | 50.00 | 353.9 | | 38.00 | 401.3 | |
| 10/26/2017 | 395.00 | 36.00 | 400.5 | | 19.00 | 322.9 | | 24.00 | 447.1 | | 49.00 | 352.9 | | 30.00 | 393.3 | |
| 11/28/2017 | 409.00 | 36.00 | 400.5 | | 19.00 | 322.9 | | 21.00 | 444.1 | | 49.00 | 352.9 | | 38.00 | 401.3 | |
| 12/20/2017 | 416.80 | 35.00 | 399.5 | | 18.00 | 321.9 | | 21.00 | 444.1 | | 48.00 | 351.9 | | 44.00 | 407.3 | |
| 1/24/2018 | 434.50 | 36.00 | 400.5 | | 20.00 | 323.9 | | 20.00 | 443.1 | | 48.00 | 351.9 | | 56.00 | 419.3 | |
| 2/21/2018 | 443.10 | 38.00 | 402.5 | | 19.00 | 322.9 | | 20.00 | 443.1 | | 49.00 | 352.9 | | 68.00 | 431.3 | |
| 3/29/2018 | 453.00 | 42.00 | 406.5 | | 18.00 | 321.9 | | 20.00 | 443.1 | | 48.00 | 351.9 | | 74.00 | 437.3 | |
| 4/26/2018 | 449.10 | 44.00 | 408.5 | | 18.00 | 321.9 | | 19.00 | 442.1 | | 48.00 | 351.9 | | 74.00 | 437.3 | |
| 5/31/2018 | 453.10 | 48.00 | 412.5 | | 20.00 | 323.9 | | 20.00 | 443.1 | | 49.00 | 352.9 | | 77.00 | 440.3 | |
| 6/28/2018 | 448.20 | 48.00 | 412.5 | | 20.00 | 323.9 | | 21.00 | 444.1 | | 49.00 | 352.9 | | 74.00 | 437.3 | |
| 7/25/2018 | 440.40 | 48.00 | 412.5 | | 18.00 | 321.9 | | 21.00 | 444.1 | | 48.00 | 351.9 | | 68.00 | 431.3 | |
| 8/22/2018 | 427.10 | 45.00 | 409.5 | | 19.00 | 322.9 | | 20.00 | 443.1 | | 48.00 | 351.9 | | 56.00 | 419.3 | |
| 9/27/2018 | 439.60 | 40.00 | 404.5 | | 18.00 | 321.9 | | 22.00 | 445.1 | | 48.00 | 351.9 | | 36.00 | 399.3 | |
| 10/18/2018 | 405.30 | 38.00 | 402.5 | | 19.00 | 322.9 | | 21.00 | 444.1 | | 49.00 | 352.9 | | 36.00 | 399.3 | |
| 11/28/2018 | 408.60 | 38.00 | 402.5 | | 20.00 | 323.9 | | 20.00 | 443.1 | | 48.00 | 351.9 | | 38.00 | 401.3 | |
| 12/19/2018 | 436.00 | 38.00 | 402.5 | | 20.00 | 323.9 | | 22.00 | 445.1 | | 48.00 | 351.9 | | 60.00 | 423.3 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

TABLE 3
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Pneumatic Piezo. No. -- | | LA-1 | | | LA-2 | | | RA-1 | | | RA-2 | | | RA-3 | | |
|----------------------------|----------------------------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|
| Piezo. Tip Elevation ----- | | 391.2 | | | 440.3 | | | 364.5 | | | 354.3 | | | 390.8 | | |
| Zero Gage Reading ----- | | 27.3 | | | 17.6 | | | 61.0 | | | 51.0 | | | 26.9 | | |
| Date | Reservoir Elevation (feet) | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment |
| 1/28/2009 | 463.70 | 94.00 | 457.9 | | 31.00 | 453.7 | | 112.00 | 415.5 | | 102.00 | 405.3 | | 84.50 | 448.4 | |
| 2/25/2009 | 470.10 | 100.00 | 463.9 | | 39.00 | 461.7 | | 118.00 | 421.5 | | 106.00 | 409.3 | | 90.00 | 453.9 | |
| 3/26/2009 | 469.40 | 100.00 | 463.9 | | 40.00 | 462.7 | | 118.00 | 421.5 | | 108.00 | 411.3 | | 90.00 | 453.9 | |
| 4/29/2009 | 466.90 | 98.00 | 461.9 | | 36.00 | 458.7 | | 118.00 | 421.5 | | 108.00 | 411.3 | | 89.00 | 452.9 | |
| 5/18/2009 | 466.70 | 97.00 | 460.9 | | 37.00 | 459.7 | | 118.00 | 421.5 | | 108.00 | 411.3 | | 89.00 | 452.9 | |
| 5/29/2009 | 465.00 | 95.00 | 458.9 | | 32.00 | 454.7 | | 119.00 | 422.5 | | 108.00 | 411.3 | | 88.00 | 451.9 | |
| 6/30/2009 | 460.20 | 91.00 | 454.9 | | 31.00 | 453.7 | | 116.00 | 419.5 | | 108.00 | 411.3 | | 84.00 | 447.9 | |
| 7/30/2009 | 451.10 | 81.00 | 444.9 | | 22.00 | 444.7 | | 113.00 | 416.5 | | 106.00 | 409.3 | | 78.00 | 441.9 | |
| 8/25/2009 | 440.10 | 70.00 | 433.9 | | 16.00 | 438.7 | | 106.00 | 409.5 | | 101.00 | 404.3 | | 67.00 | 430.9 | |
| 9/30/2009 | 432.20 | 61.00 | 424.9 | | 14.00 | 436.7 | | 102.00 | 405.5 | | 99.00 | 402.3 | | 59.00 | 422.9 | |
| 10/29/2009 | 431.40 | 62.00 | 425.9 | | 15.00 | 437.7 | | 99.00 | 402.5 | | 97.00 | 400.3 | | 59.00 | 422.9 | |
| 12/1/2009 | 427.40 | 57.00 | 420.9 | | 15.00 | 437.7 | | 96.00 | 399.5 | | 94.00 | 397.3 | | 54.00 | 417.9 | |
| 12/29/2009 | 448.10 | 79.00 | 442.9 | | 16.00 | 438.7 | | 102.00 | 405.5 | | 98.00 | 401.3 | | 72.00 | 435.9 | |
| 1/27/2010 | 465.60 | 96.00 | 459.9 | | 34.00 | 456.7 | | 113.00 | 416.5 | | 104.00 | 407.3 | | 84.00 | 447.9 | |
| 2/25/2010 | 470.20 | 101.00 | 464.9 | | 40.00 | 462.7 | | 119.00 | 422.5 | | 108.00 | 411.3 | | 92.00 | 455.9 | |
| 3/29/2010 | 465.70 | 96.00 | 459.9 | | 37.00 | 459.7 | | 117.00 | 420.5 | | 107.00 | 410.3 | | 88.00 | 451.9 | |
| 4/4/2010 | 465.00 | 96.00 | 459.9 | | 36.00 | 458.7 | | 117.00 | 420.5 | | 116.00 | 419.3 | | 88.00 | 451.9 | |
| 4/27/2010 | 468.40 | 98.00 | 461.9 | | 38.00 | 460.7 | | 119.00 | 422.5 | | 107.00 | 410.3 | | 90.00 | 453.9 | |
| 5/27/2010 | 463.30 | 94.00 | 457.9 | | 34.00 | 456.7 | | 117.00 | 420.5 | | 107.00 | 410.3 | | 87.00 | 450.9 | |
| 6/30/2010 | 454.70 | 84.00 | 447.9 | | 26.00 | 448.7 | | 114.00 | 417.5 | | 106.00 | 409.3 | | 79.00 | 442.9 | |
| 7/28/2010 | 445.60 | 78.00 | 441.9 | | 19.00 | 441.7 | | 109.00 | 412.5 | | 102.00 | 405.3 | | 72.00 | 435.9 | |
| 8/31/2010 | 437.10 | 67.00 | 430.9 | | 16.00 | 438.7 | | 104.00 | 407.5 | | 100.00 | 403.3 | | 65.00 | 428.9 | |
| 9/29/2010 | 422.70 | 54.00 | 417.9 | | 16.00 | 438.7 | | 98.00 | 401.5 | | 97.00 | 400.3 | | 52.00 | 415.9 | |
| 10/27/2010 | 426.40 | 57.50 | 421.4 | | 15.50 | 438.2 | | 94.00 | 397.5 | | 94.00 | 397.3 | | 54.00 | 417.9 | |
| 11/29/2010 | 439.80 | 70.00 | 433.9 | | 13.00 | 435.7 | | 99.00 | 402.5 | | 96.00 | 399.3 | | 65.00 | 428.9 | |
| 12/30/2010 | 456.60 | 84.00 | 447.9 | | 25.00 | 447.7 | | 106.00 | 409.5 | | 100.00 | 403.3 | | 80.00 | 443.9 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

TABLE 3
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Pneumatic Piezo. No. -- | | LA-1 | | | LA-2 | | | RA-1 | | | RA-2 | | | RA-3 | | |
|----------------------------|----------------------------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|
| Piezo. Tip Elevation ----- | | 391.2 | | | 440.3 | | | 364.5 | | | 354.3 | | | 390.8 | | |
| Zero Gage Reading ----- | | 27.3 | | | 17.6 | | | 61.0 | | | 51.0 | | | 26.9 | | |
| Date | Reservoir Elevation (feet) | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment |
| 2/1/2011 | 468.90 | 98.00 | 461.9 | | 39.00 | 461.7 | | 115.00 | 418.5 | | 106.00 | 409.3 | | 89.00 | 452.9 | |
| 2/23/2011 | 469.00 | 99.00 | 462.9 | | 39.00 | 461.7 | | 118.00 | 421.5 | | 107.00 | 410.3 | | 91.00 | 454.9 | |
| 3/29/2011 | 470.30 | 100.00 | 463.9 | | 40.00 | 462.7 | | 118.00 | 421.5 | | 107.00 | 410.3 | | 92.00 | 455.9 | |
| 4/27/2011 | 464.80 | 96.00 | 459.9 | | 36.00 | 458.7 | | 120.00 | 423.5 | | 108.00 | 411.3 | | 88.00 | 451.9 | |
| 5/26/2011 | 457.30 | 88.00 | 451.9 | | 29.00 | 451.7 | | 117.00 | 420.5 | | 106.00 | 409.3 | | 82.00 | 445.9 | |
| 6/28/2011 | 443.50 | 74.00 | 437.9 | | 18.00 | 440.7 | | 108.00 | 411.5 | | 101.00 | 404.3 | | 71.00 | 434.9 | |
| 7/29/2011 | 425.10 | 59.00 | 422.9 | | 16.00 | 438.7 | | 99.00 | 402.5 | | 96.00 | 399.3 | | 57.00 | 420.9 | |
| 8/24/2011 | 418.00 | 44.00 | 407.9 | | 16.00 | 438.7 | | 90.00 | 393.5 | | 90.00 | 393.3 | | 44.00 | 407.9 | |
| 9/27/2011 | 400.90 | 31.00 | 394.9 | | 15.00 | 437.7 | | 84.00 | 387.5 | | 86.00 | 389.3 | | 34.00 | 397.9 | |
| 10/26/2011 | 402.20 | 32.00 | 395.9 | | 13.00 | 435.7 | | 82.00 | 385.5 | | 84.00 | 387.3 | | 32.00 | 395.9 | |
| 11/30/2011 | 425.10 | 55.00 | 418.9 | | 15.00 | 437.7 | | 91.00 | 394.5 | | 88.00 | 391.3 | | 52.00 | 415.9 | |
| 12/21/2011 | 435.70 | 66.00 | 429.9 | | 16.00 | 438.7 | | 97.00 | 400.5 | | 92.00 | 395.3 | | 60.00 | 423.9 | |
| 1/24/2012 | 441.40 | 72.00 | 435.9 | | 15.00 | 437.7 | | 97.00 | 400.5 | | 93.00 | 396.3 | | 66.00 | 429.9 | |
| 2/28/2012 | 448.40 | 78.00 | 441.9 | | 16.00 | 438.7 | | 102.00 | 405.5 | | 96.00 | 399.3 | | 70.00 | 433.9 | |
| 3/26/2012 | 452.70 | 82.00 | 445.9 | | 21.00 | 443.7 | | 104.00 | 407.5 | | 98.00 | 401.3 | | 76.00 | 439.9 | |
| 4/23/2012 | 463.40 | 95.00 | 458.9 | | 32.00 | 454.7 | | 113.00 | 416.5 | | 102.00 | 405.3 | | 86.00 | 449.9 | |
| 5/30/2012 | 457.30 | 89.00 | 452.9 | | 29.00 | 451.7 | | 114.00 | 417.5 | | 104.00 | 407.3 | | 82.00 | 445.9 | |
| 6/13/2012 | 452.90 | 84.00 | 447.9 | | 24.00 | 446.7 | | 111.00 | 414.5 | | 102.00 | 405.3 | | 78.00 | 441.9 | |
| 6/26/2012 | 450.20 | 80.00 | 443.9 | | 22.00 | 444.7 | | 110.00 | 413.5 | | 102.00 | 405.3 | | 78.00 | 441.9 | |
| 7/24/2012 | 439.80 | 70.00 | 433.9 | | 16.00 | 438.7 | | 104.00 | 407.5 | | 98.00 | 401.3 | | 68.00 | 431.9 | |
| 8/8/2012 | 437.60 | 68.00 | 431.9 | | 16.00 | 438.7 | | 103.00 | 406.5 | | 98.00 | 401.3 | | 66.00 | 429.9 | |
| 8/22/2012 | 433.40 | 69.00 | 432.9 | | 16.00 | 438.7 | | 101.00 | 404.5 | | 96.00 | 399.3 | | 62.00 | 425.9 | |
| 8/29/2012 | 431.30 | 62.00 | 425.9 | | 16.00 | 438.7 | | 100.00 | 403.5 | | 96.00 | 399.3 | | 60.00 | 423.9 | |
| 9/25/2012 | 420.80 | 60.00 | 423.9 | | 15.00 | 437.7 | | 91.00 | 394.5 | | 88.00 | 391.3 | | 52.00 | 415.9 | |
| 10/31/2012 | 412.30 | 44.00 | 407.9 | | 16.00 | 438.7 | | 88.00 | 391.5 | | 90.00 | 393.3 | | 43.00 | 406.9 | |
| 11/27/2012 | 420.80 | 51.00 | 414.9 | | 15.00 | 437.7 | | 89.00 | 392.5 | | 89.00 | 392.3 | | 49.00 | 412.9 | |
| 12/18/2012 | 448.00 | 80.00 | 443.9 | | 16.00 | 438.7 | | 104.00 | 407.5 | | 97.00 | 400.3 | | 72.00 | 435.9 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

TABLE 3
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Pneumatic Piezo. No. -- | | LA-1 | | | LA-2 | | | RA-1 | | | RA-2 | | | RA-3 | | |
|----------------------------|----------------------------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|
| Piezo. Tip Elevation ----- | | 391.2 | | | 440.3 | | | 364.5 | | | 354.3 | | | 390.8 | | |
| Zero Gage Reading ----- | | 27.3 | | | 17.6 | | | 61.0 | | | 51.0 | | | 26.9 | | |
| Date | Reservoir Elevation (feet) | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment |
| 1/29/2013 | 468.60 | 100.00 | 463.9 | | 38.00 | 460.7 | | 118.00 | 421.5 | | 105.00 | 408.3 | | 90.00 | 453.9 | |
| 2/28/2013 | 469.20 | 100.00 | 463.9 | | 40.00 | 462.7 | | 120.00 | 423.5 | | 106.00 | 409.3 | | 91.00 | 454.9 | |
| 3/27/2013 | 468.30 | 98.00 | 461.9 | | 39.00 | 461.7 | | 120.00 | 423.5 | | 107.00 | 410.3 | | 90.00 | 453.9 | |
| 4/25/2013 | 462.70 | 94.00 | 457.9 | | 34.00 | 456.7 | | 118.00 | 421.5 | | 106.00 | 409.3 | | 86.00 | 449.9 | |
| 5/21/2013 | 454.20 | 84.00 | 447.9 | | 25.00 | 447.7 | | 113.00 | 416.5 | | 104.00 | 407.3 | | 79.00 | 442.9 | |
| 6/25/2013 | 439.30 | 69.00 | 432.9 | | 16.00 | 438.7 | | 103.00 | 406.5 | | 99.00 | 402.3 | | 66.00 | 429.9 | |
| 7/23/2013 | 431.50 | 63.00 | 426.9 | | 16.00 | 438.7 | | 100.00 | 403.5 | | 96.00 | 399.3 | | 60.00 | 423.9 | |
| 8/21/2013 | 418.00 | 49.00 | 412.9 | | 16.00 | 438.7 | | 92.00 | 395.5 | | 92.00 | 395.3 | | 49.00 | 412.9 | |
| 9/24/2013 | 404.00 | 35.00 | 398.9 | | 15.00 | 437.7 | | 84.00 | 387.5 | | 85.00 | 388.3 | | 37.00 | 400.9 | |
| 10/29/2013 | 400.60 | 32.00 | 395.9 | | 14.00 | 436.7 | | 81.00 | 384.5 | | 84.00 | 387.3 | | 34.00 | 397.9 | |
| 11/26/2013 | 407.90 | 39.00 | 402.9 | | 14.00 | 436.7 | | 81.00 | 384.5 | | 84.00 | 387.3 | | 38.00 | 401.9 | |
| 12/19/2013 | 425.80 | 56.00 | 419.9 | | 14.00 | 436.7 | | 90.00 | 393.5 | | 88.00 | 391.3 | | 53.00 | 416.9 | |
| 1/28/2014 | 439.70 | 70.00 | 433.9 | | 14.00 | 436.7 | | 97.00 | 400.5 | | 91.00 | 394.3 | | 65.00 | 428.9 | |
| 2/25/2014 | 449.70 | 80.00 | 443.9 | | 18.00 | 440.7 | | 104.00 | 407.5 | | 96.00 | 399.3 | | 74.00 | 437.9 | |
| 3/26/2014 | 465.10 | 95.00 | 458.9 | | 24.00 | 446.7 | | 115.00 | 418.5 | | 103.00 | 406.3 | | 87.00 | 450.9 | |
| 3/28/2014 | 465.70 | 96.00 | 459.9 | | 34.00 | 456.7 | | 116.00 | 419.5 | | 103.00 | 406.3 | | 88.00 | 451.9 | |
| 4/29/2014 | 465.30 | 96.00 | 459.9 | | 36.00 | 458.7 | | 119.00 | 422.5 | | 106.00 | 409.3 | | 88.00 | 451.9 | |
| 5/28/2014 | 450.60 | 80.00 | 443.9 | | 23.00 | 445.7 | | 111.00 | 414.5 | | 102.00 | 405.3 | | 78.00 | 441.9 | |
| 6/25/2014 | 440.10 | 70.00 | 433.9 | | 15.00 | 437.7 | | 104.00 | 407.5 | | 98.00 | 401.3 | | 67.00 | 430.9 | |
| 7/29/2014 | 431.20 | 62.00 | 425.9 | | 15.00 | 437.7 | | 100.00 | 403.5 | | 96.00 | 399.3 | | 60.00 | 423.9 | |
| 8/26/2014 | 419.50 | 50.00 | 413.9 | | 15.00 | 437.7 | | 93.00 | 396.5 | | 92.00 | 395.3 | | 50.00 | 413.9 | |
| 9/23/2014 | 405.30 | 36.00 | 399.9 | | 15.00 | 437.7 | | 84.00 | 387.5 | | 86.00 | 389.3 | | 38.00 | 401.9 | |
| 10/29/2014 | 400.90 | 31.00 | 394.9 | | 14.00 | 436.7 | | 82.00 | 385.5 | | 85.00 | 388.3 | | 44.00 | 407.9 | |
| 11/25/2014 | 410.90 | 41.00 | 404.9 | | 14.00 | 436.7 | | 82.00 | 385.5 | | 85.00 | 388.3 | | 40.00 | 403.9 | |
| 12/30/2014 | 430.60 | 59.00 | 422.9 | | 15.00 | 437.7 | | 94.00 | 397.5 | | 89.00 | 392.3 | | 56.00 | 419.9 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

TABLE 3
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Pneumatic Piezo. No. -- | | LA-1 | | | LA-2 | | | RA-1 | | | RA-2 | | | RA-3 | | |
|----------------------------|----------------------------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|
| Piezo. Tip Elevation ----- | | 391.2 | | | 440.3 | | | 364.5 | | | 354.3 | | | 390.8 | | |
| Zero Gage Reading ----- | | 27.3 | | | 17.6 | | | 61.0 | | | 51.0 | | | 26.9 | | |
| Date | Reservoir Elevation (feet) | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment |
| 1/27/2015 | 466.70 | 97.00 | 460.9 | | 36.00 | 458.7 | | 117.00 | 420.5 | | 104.00 | 407.3 | | 88.00 | 451.9 | |
| 2/25/2015 | 468.90 | 100.00 | 463.9 | | 38.00 | 460.7 | | 120.00 | 423.5 | | 105.00 | 408.3 | | 90.00 | 453.9 | |
| 3/26/2015 | 465.90 | 97.00 | 460.9 | | 37.00 | 459.7 | | 119.00 | 422.5 | | 105.00 | 408.3 | | 88.00 | 451.9 | |
| 4/28/2015 | 465.70 | 97.00 | 460.9 | | 36.00 | 458.7 | | 120.00 | 423.5 | | 106.00 | 409.3 | | 89.00 | 452.9 | |
| 5/28/2015 | 466.40 | 97.00 | 460.9 | | 36.00 | 458.7 | | 118.00 | 421.5 | | 106.00 | 409.3 | | 88.00 | 451.9 | |
| 6/30/2015 | 454.50 | 85.00 | 448.9 | | 27.00 | 449.7 | | 116.00 | 419.5 | | 105.00 | 408.3 | | 80.00 | 443.9 | |
| 7/28/2015 | 445.60 | 77.00 | 440.9 | | 18.00 | 440.7 | | 109.00 | 412.5 | | 101.00 | 404.3 | | 71.00 | 434.9 | |
| 8/28/2015 | 437.60 | 69.00 | 432.9 | | 16.00 | 438.7 | | 105.00 | 408.5 | | 99.00 | 402.3 | | 65.00 | 428.9 | |
| 9/24/2015 | 426.90 | 58.00 | 421.9 | | 17.00 | 439.7 | | 98.00 | 401.5 | | 94.00 | 397.3 | | 56.00 | 419.9 | |
| 10/27/2015 | 415.40 | 48.00 | 411.9 | | 15.00 | 437.7 | | 91.00 | 394.5 | | 91.00 | 394.3 | | 46.00 | 409.9 | |
| 11/19/2015 | 412.90 | 42.00 | 405.9 | | 14.00 | 436.7 | | 87.00 | 390.5 | | 88.00 | 391.3 | | 43.00 | 406.9 | |
| 12/22/2015 | 425.50 | 56.00 | 419.9 | | 14.00 | 436.7 | | 92.00 | 395.5 | | 90.00 | 393.3 | | 54.00 | 417.9 | |
| 1/27/2016 | 463.60 | 94.00 | 457.9 | | 32.00 | 454.7 | | 116.00 | 419.5 | | 102.00 | 405.3 | | 85.00 | 448.9 | |
| 2/25/2016 | 468.90 | 100.00 | 463.9 | | 38.00 | 460.7 | | 122.00 | 425.5 | | 105.00 | 408.3 | | 91.00 | 454.9 | |
| 3/30/2016 | 468.00 | 100.00 | 463.9 | | 39.00 | 461.7 | | 122.00 | 425.5 | | 106.00 | 409.3 | | 90.00 | 453.9 | |
| 4/28/2016 | 461.30 | 92.00 | 455.9 | | 33.00 | 455.7 | | 120.00 | 423.5 | | 104.00 | 407.3 | | 84.00 | 447.9 | |
| 5/25/2016 | 451.30 | 80.00 | 443.9 | | 23.00 | 445.7 | | 114.00 | 417.5 | | 102.00 | 405.3 | | 76.00 | 439.9 | |
| 6/28/2016 | 414.10 | 73.00 | 436.9 | | 17.00 | 439.7 | | 108.00 | 411.5 | | 100.00 | 403.3 | | 70.00 | 433.9 | |
| 7/27/2016 | 434.20 | 66.00 | 429.9 | | 16.00 | 438.7 | | 103.00 | 406.5 | | 97.00 | 400.3 | | 62.00 | 425.9 | |
| 8/23/2016 | 418.60 | 50.00 | 413.9 | | 15.00 | 437.7 | | 83.00 | 386.5 | | 91.00 | 394.3 | | 49.00 | 412.9 | |
| 9/27/2016 | 406.40 | 36.00 | 399.9 | | 16.00 | 438.7 | | 86.00 | 389.5 | | 86.00 | 389.3 | | 38.00 | 401.9 | |
| 10/26/2016 | 404.00 | 33.00 | 396.9 | | 16.00 | 438.7 | | 82.00 | 385.5 | | 83.00 | 386.3 | | 34.00 | 397.9 | |
| 11/22/2016 | 413.60 | 44.00 | 407.9 | | 14.00 | 436.7 | | 86.00 | 389.5 | | 85.00 | 388.3 | | 42.00 | 405.9 | |
| 12/20/2016 | 441.10 | 71.00 | 434.9 | | 14.00 | 436.7 | | 102.00 | 405.5 | | 93.00 | 396.3 | | 66.00 | 429.9 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

TABLE 3
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Pneumatic Piezo. No. -- | | LA-1 | | | LA-2 | | | RA-1 | | | RA-2 | | | RA-3 | | |
|----------------------------|----------------------------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|
| Piezo. Tip Elevation ----- | | 391.2 | | | 440.3 | | | 364.5 | | | 354.3 | | | 390.8 | | |
| Zero Gage Reading ----- | | 27.3 | | | 17.6 | | | 61.0 | | | 51.0 | | | 26.9 | | |
| Date | Reservoir Elevation (feet) | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment |
| 1/26/2017 | 471.60 | 102.00 | 465.9 | | 41.00 | 463.7 | | 123.00 | 426.5 | | 104.00 | 407.3 | | 91.00 | 454.9 | |
| 2/24/2017 | 472.05 | 104.00 | 467.9 | | 42.00 | 464.7 | | 125.00 | 428.5 | | 106.00 | 409.3 | | 92.00 | 455.9 | |
| 2/25/2017 | 472.00 | | | | | | | | | | | | | | | |
| 2/26/2017 | 472.00 | | | | | | | | | | | | | | | |
| 2/27/2017 | 472.00 | 103.00 | 466.9 | | 42.00 | 464.7 | | 125.00 | 428.5 | | 106.00 | 409.3 | | 92.00 | 455.9 | |
| 2/28/2017 | 471.90 | 104.00 | 467.9 | | 42.00 | 464.7 | | 125.00 | 428.5 | | 106.00 | 409.3 | | 92.00 | 455.9 | |
| 3/1/2017 | 471.90 | 104.00 | 467.9 | | 42.00 | 464.7 | | 126.00 | 429.5 | | 106.00 | 409.3 | | 93.00 | 456.9 | |
| 3/2/2017 | 471.90 | 104.00 | 467.9 | | 40.00 | 462.7 | | 126.00 | 429.5 | | 106.00 | 409.3 | | 92.00 | 455.9 | |
| 3/29/2017 | 467.90 | 100.00 | 463.9 | | 38.00 | 460.7 | | 124.00 | 427.5 | | 106.00 | 409.3 | | 90.00 | 453.9 | |
| 4/27/2017 | 457.60 | 89.00 | 452.9 | | 29.00 | 451.7 | | 118.00 | 421.5 | | 104.00 | 407.3 | | 82.00 | 445.9 | |
| 5/23/2017 | 453.50 | 85.00 | 448.9 | | 25.00 | 447.7 | | 105.00 | 408.5 | | 102.00 | 405.3 | | 78.00 | 441.9 | |
| 6/21/2017 | 447.40 | 80.00 | 443.9 | | 17.00 | 439.7 | | 111.00 | 414.5 | | 102.00 | 405.3 | | 70.00 | 433.9 | |
| 7/26/2017 | 435.10 | 67.00 | 430.9 | | 16.00 | 438.7 | | 103.00 | 406.5 | | 97.00 | 400.3 | | 63.00 | 426.9 | |
| 8/25/2017 | 420.10 | 50.00 | 413.9 | | 15.00 | 437.7 | | 93.00 | 396.5 | | 91.00 | 394.3 | | 49.00 | 412.9 | |
| 9/27/2017 | 407.10 | 40.00 | 403.9 | | 15.00 | 437.7 | | 86.00 | 389.5 | | 87.00 | 390.3 | | 38.00 | 401.9 | |
| 10/26/2017 | 395.00 | 24.00 | 387.9 | | 15.00 | 437.7 | | 77.00 | 380.5 | | 80.00 | 383.3 | | 27.00 | 390.9 | |
| 11/28/2017 | 409.00 | 39.00 | 402.9 | | 13.00 | 435.7 | | 82.00 | 385.5 | | 82.00 | 385.3 | | 38.00 | 401.9 | |
| 12/20/2017 | 416.80 | 47.00 | 410.9 | | 14.00 | 436.7 | | 87.00 | 390.5 | | 84.00 | 387.3 | | 44.00 | 407.9 | |
| 1/24/2018 | 434.50 | 64.00 | 427.9 | | 12.00 | 434.7 | | 98.00 | 401.5 | | 90.00 | 393.3 | | 56.00 | 419.9 | |
| 2/21/2018 | 443.10 | 75.00 | 438.9 | | 13.00 | 435.7 | | 103.00 | 406.5 | | 92.00 | 395.3 | | 68.00 | 431.9 | |
| 3/29/2018 | 453.00 | 84.00 | 447.9 | | 20.00 | 442.7 | | 110.00 | 413.5 | | 96.00 | 399.3 | | 75.00 | 438.9 | |
| 4/26/2018 | 449.10 | 81.00 | 444.9 | | 20.00 | 442.7 | | 110.00 | 413.5 | | 97.00 | 400.3 | | 73.00 | 436.9 | |
| 5/31/2018 | 453.10 | 86.00 | 449.9 | | 22.00 | 444.7 | | 112.00 | 415.5 | | 99.00 | 402.3 | | 77.00 | 440.9 | |
| 6/28/2018 | 448.20 | 80.00 | 443.9 | | 20.00 | 442.7 | | 110.00 | 413.5 | | 98.00 | 401.3 | | 74.00 | 437.9 | |
| 7/25/2018 | 440.40 | 71.00 | 434.9 | | 17.00 | 439.7 | | 106.00 | 409.5 | | 97.00 | 400.3 | | 67.00 | 430.9 | |
| 8/22/2018 | 427.10 | 59.00 | 422.9 | | 14.00 | 436.7 | | 99.00 | 402.5 | | 93.00 | 396.3 | | 56.00 | 419.9 | |
| 9/27/2018 | 439.60 | 38.00 | 401.9 | | 12.00 | 434.7 | | 85.00 | 388.5 | | 87.00 | 390.3 | | 38.00 | 401.9 | |
| 10/18/2018 | 405.30 | 36.00 | 399.9 | | 14.00 | 436.7 | | 83.00 | 386.5 | | 85.00 | 388.3 | | 36.00 | 399.9 | |
| 11/28/2018 | 408.60 | 40.00 | 403.9 | | 14.00 | 436.7 | | 82.00 | 385.5 | | 85.00 | 388.3 | | 38.00 | 401.9 | |
| 12/19/2018 | 436.00 | 66.00 | 429.9 | | 10.00 | 432.7 | | 100.00 | 403.5 | | 92.00 | 395.3 | | 60.00 | 423.9 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

TABLE 3
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Pneumatic Piezo. No. -- | | RA-4 | | | LR-1 | | | LR-2 | | | LR-3 | | | LR-4 | | |
|----------------------------|----------------------------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|
| Piezo. Tip Elevation ----- | | 441.0 | | | 356.3 | | | 340.3 | | | 390.1 | | | 440.0 | | |
| Zero Gage Reading ----- | | 18.0 | | | 53.6 | | | 37.6 | | | 26.8 | | | 17.0 | | |
| Date | Reservoir Elevation (feet) | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment |
| 1/28/2009 | 463.70 | | | | 60.50 | 363.2 | | 48.00 | 350.7 | | 98.00 | 461.3 | | 34.00 | 457.0 | |
| 2/25/2009 | 470.10 | | | | 61.00 | 363.7 | | 49.00 | 351.7 | | 105.00 | 468.3 | | 36.00 | 459.0 | |
| 3/26/2009 | 469.40 | | | | 62.00 | 364.7 | | 50.00 | 352.7 | | 105.00 | 468.3 | | 40.50 | 463.5 | |
| 4/29/2009 | 466.90 | | | | 62.00 | 364.7 | | 49.00 | 351.7 | | 102.00 | 465.3 | | 38.00 | 461.0 | |
| 5/18/2009 | 466.70 | | | | 63.00 | 365.7 | | 50.00 | 352.7 | | 102.00 | 465.3 | | 38.00 | 461.0 | |
| 5/29/2009 | 465.00 | | | | 60.00 | 362.7 | | 50.00 | 352.7 | | 100.00 | 463.3 | | 35.00 | 458.0 | |
| 6/30/2009 | 460.20 | | | | 62.00 | 364.7 | | 50.00 | 352.7 | | 95.00 | 458.3 | | 31.00 | 454.0 | |
| 7/30/2009 | 451.10 | | | | 63.00 | 365.7 | | 51.00 | 353.7 | | 86.00 | 449.3 | | 22.00 | 445.0 | |
| 8/25/2009 | 440.10 | | | | 62.00 | 364.7 | | 51.00 | 353.7 | | 74.00 | 437.3 | | 14.00 | 437.0 | |
| 9/30/2009 | 432.20 | | | | 62.00 | 364.7 | | 50.00 | 352.7 | | 64.00 | 427.3 | | 11.00 | 434.0 | |
| 10/29/2009 | 431.40 | | | | 64.00 | 366.7 | | 51.00 | 353.7 | | 65.00 | 428.3 | | 12.00 | 435.0 | |
| 12/1/2009 | 427.40 | | | | 63.00 | 365.7 | | 50.00 | 352.7 | | 60.00 | 423.3 | | 11.00 | 434.0 | |
| 12/29/2009 | 448.10 | | | | 64.00 | 366.7 | | 50.00 | 352.7 | | 82.00 | 445.3 | | 16.00 | 439.0 | |
| 1/27/2010 | 465.60 | | | | 64.00 | 366.7 | | 51.00 | 353.7 | | 102.00 | 465.3 | | 36.00 | 459.0 | |
| 2/25/2010 | 470.20 | | | | 64.00 | 366.7 | | 51.00 | 353.7 | | 106.00 | 469.3 | | 37.00 | 460.0 | |
| 3/29/2010 | 465.70 | | | | 65.00 | 367.7 | | 51.00 | 353.7 | | 101.00 | 464.3 | | 37.00 | 460.0 | |
| 4/4/2010 | 465.00 | | | | 65.00 | 367.7 | | 52.00 | 354.7 | | 100.00 | 463.3 | | 36.00 | 459.0 | |
| 4/27/2010 | 468.40 | | | | 64.00 | 366.7 | | 51.00 | 353.7 | | 103.00 | 466.3 | | 36.00 | 459.0 | |
| 5/27/2010 | 463.30 | | | | 64.00 | 366.7 | | 52.00 | 354.7 | | 99.00 | 462.3 | | 34.00 | 457.0 | |
| 6/30/2010 | 454.70 | | | | 64.00 | 366.7 | | 52.00 | 354.7 | | 89.00 | 452.3 | | 24.00 | 447.0 | |
| 7/28/2010 | 445.60 | | | | 65.00 | 367.7 | | 52.00 | 354.7 | | 80.00 | 443.3 | | 16.00 | 439.0 | |
| 8/31/2010 | 437.10 | | | | 65.00 | 367.7 | | 52.00 | 354.7 | | 71.00 | 434.3 | | 12.00 | 435.0 | |
| 9/29/2010 | 422.70 | | | | 65.00 | 367.7 | | 51.00 | 353.7 | | 56.00 | 419.3 | | 12.00 | 435.0 | |
| 10/27/2010 | 426.40 | | | | 65.00 | 367.7 | | 52.00 | 354.7 | | 60.00 | 423.3 | | 12.00 | 435.0 | |
| 11/29/2010 | 439.80 | | | | 64.00 | 366.7 | | 51.00 | 353.7 | | 74.00 | 437.3 | | 10.00 | 433.0 | |
| 12/30/2010 | 456.60 | | | | 65.00 | 367.7 | | 52.00 | 354.7 | | 92.00 | 455.3 | | 26.00 | 449.0 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

TABLE 3
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Pneumatic Piezo. No. -- | | RA-4 | | | LR-1 | | | LR-2 | | | LR-3 | | | LR-4 | | |
|----------------------------|----------------------------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|
| Piezo. Tip Elevation ----- | | 441.0 | | | 356.3 | | | 340.3 | | | 390.1 | | | 440.0 | | |
| Zero Gage Reading ----- | | 18.0 | | | 53.6 | | | 37.6 | | | 26.8 | | | 17.0 | | |
| Date | Reservoir Elevation (feet) | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment |
| 2/1/2011 | 468.90 | | | | 67.00 | 369.7 | | 52.00 | 354.7 | | 102.00 | 465.3 | | 37.00 | 460.0 | |
| 2/23/2011 | 469.00 | | | | 67.00 | 369.7 | | 52.00 | 354.7 | | 105.00 | 468.3 | | 38.00 | 461.0 | |
| 3/29/2011 | 470.30 | | | | 66.00 | 368.7 | | 52.00 | 354.7 | | 106.00 | 469.3 | | 40.00 | 463.0 | |
| 4/27/2011 | 464.80 | | | | 67.00 | 369.7 | | 52.00 | 354.7 | | 100.00 | 463.3 | | 36.00 | 459.0 | |
| 5/26/2011 | 457.30 | | | | 67.00 | 369.7 | | 53.00 | 355.7 | | 92.00 | 455.3 | | 29.00 | 452.0 | |
| 6/28/2011 | 443.50 | | | | 67.00 | 369.7 | | 53.00 | 355.7 | | 78.00 | 441.3 | | 16.00 | 439.0 | |
| 7/29/2011 | 425.10 | | | | 66.00 | 368.7 | | 52.00 | 354.7 | | 62.00 | 425.3 | | 10.00 | 433.0 | |
| 8/24/2011 | 418.00 | | | | 66.00 | 368.7 | | 51.00 | 353.7 | | 44.00 | 407.3 | | 12.00 | 435.0 | |
| 9/27/2011 | 400.90 | 16.00 | 439.0 | | 64.00 | 366.7 | | 50.00 | 352.7 | | 32.00 | 395.3 | | 12.00 | 435.0 | |
| 10/26/2011 | 402.20 | 10.00 | 433.0 | | 64.00 | 366.7 | | 50.00 | 352.7 | | 32.00 | 395.3 | | 10.00 | 433.0 | |
| 11/30/2011 | 425.10 | 11.00 | 434.0 | | 63.00 | 365.7 | | 51.00 | 353.7 | | 58.00 | 421.3 | | 12.00 | 435.0 | |
| 12/21/2011 | 435.70 | 13.00 | 436.0 | | 64.00 | 366.7 | | 51.00 | 353.7 | | 69.00 | 432.3 | | 12.00 | 435.0 | |
| 1/24/2012 | 441.40 | 10.00 | 433.0 | | 64.00 | 366.7 | | 50.00 | 352.7 | | 75.00 | 438.3 | | 11.00 | 434.0 | |
| 2/28/2012 | 448.40 | 14.00 | 437.0 | | 62.00 | 364.7 | | 50.00 | 352.7 | | 80.00 | 443.3 | | 16.00 | 439.0 | |
| 3/26/2012 | 452.70 | 15.00 | 438.0 | | 64.00 | 366.7 | | 50.00 | 352.7 | | 83.00 | 446.3 | | 21.00 | 444.0 | |
| 4/23/2012 | 463.40 | 0.00 | 423.0 | | 64.00 | 366.7 | | 50.00 | 352.7 | | 99.00 | 462.3 | | 30.00 | 453.0 | |
| 5/30/2012 | 457.30 | 0.00 | 423.0 | | 65.00 | 367.7 | | 51.00 | 353.7 | | 92.00 | 455.3 | | 28.00 | 451.0 | |
| 6/13/2012 | 452.90 | 0.00 | 423.0 | | 65.00 | 367.7 | | 50.00 | 352.7 | | 88.00 | 451.3 | | 24.00 | 447.0 | |
| 6/26/2012 | 450.20 | 0.00 | 423.0 | | 64.00 | 366.7 | | 50.00 | 352.7 | | 86.00 | 449.3 | | 22.00 | 445.0 | |
| 7/24/2012 | 439.80 | 0.00 | 423.0 | | 64.00 | 366.7 | | 50.00 | 352.7 | | 75.00 | 438.3 | | 14.00 | 437.0 | |
| 8/8/2012 | 437.60 | 0.00 | 423.0 | | 64.00 | 366.7 | | 51.00 | 353.7 | | 72.00 | 435.3 | | 12.00 | 435.0 | |
| 8/22/2012 | 433.40 | 0.00 | 423.0 | | 65.00 | 367.7 | | 50.00 | 352.7 | | 67.00 | 430.3 | | 16.00 | 439.0 | |
| 8/29/2012 | 431.30 | 0.00 | 423.0 | | 65.00 | 367.7 | | 50.00 | 352.7 | | 66.00 | 429.3 | | 12.00 | 435.0 | |
| 9/25/2012 | 420.80 | 11.00 | 434.0 | | 63.00 | 365.7 | | 51.00 | 353.7 | | 58.00 | 421.3 | | 12.00 | 435.0 | |
| 10/31/2012 | 412.30 | 14.00 | 437.0 | | 64.00 | 366.7 | | 50.00 | 352.7 | | 44.00 | 407.3 | | 12.00 | 435.0 | |
| 11/27/2012 | 420.80 | 15.00 | 438.0 | | 62.00 | 364.7 | | 50.00 | 352.7 | | 51.00 | 414.3 | | 11.00 | 434.0 | |
| 12/18/2012 | 448.00 | 11.00 | 434.0 | | 64.00 | 366.7 | | 50.00 | 352.7 | | 81.00 | 444.3 | | 15.00 | 438.0 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

TABLE 3
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Pneumatic Piezo. No. -- | | RA-4 | | | LR-1 | | | LR-2 | | | LR-3 | | | LR-4 | | |
|----------------------------|----------------------------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|
| Piezo. Tip Elevation ----- | | 441.0 | | | 356.3 | | | 340.3 | | | 390.1 | | | 440.0 | | |
| Zero Gage Reading ----- | | 18.0 | | | 53.6 | | | 37.6 | | | 26.8 | | | 17.0 | | |
| Date | Reservoir Elevation (feet) | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment |
| 1/29/2013 | 468.60 | 0.00 | 423.0 | | 66.00 | 368.7 | | 50.00 | 352.7 | | 104.00 | 467.3 | | 38.00 | 461.0 | |
| 2/28/2013 | 469.20 | 0.00 | 423.0 | | 67.00 | 369.7 | | 52.00 | 354.7 | | 105.00 | 468.3 | | 39.00 | 462.0 | |
| 3/27/2013 | 468.30 | 0.00 | 423.0 | | 66.00 | 368.7 | | 51.00 | 353.7 | | 104.00 | 467.3 | | 38.00 | 461.0 | |
| 4/25/2013 | 462.70 | 0.00 | 423.0 | | 64.00 | 366.7 | | 50.00 | 352.7 | | 98.00 | 461.3 | | 34.00 | 457.0 | |
| 5/21/2013 | 454.20 | 0.00 | 423.0 | | 66.00 | 368.7 | | 52.00 | 354.7 | | 89.00 | 452.3 | | 26.00 | 449.0 | |
| 6/25/2013 | 439.30 | 0.00 | 423.0 | | 66.00 | 368.7 | | 51.00 | 353.7 | | 74.00 | 437.3 | | 12.00 | 435.0 | |
| 7/23/2013 | 431.50 | 0.00 | 423.0 | | 66.00 | 368.7 | | 51.00 | 353.7 | | 65.00 | 428.3 | | 10.00 | 433.0 | |
| 8/21/2013 | 418.00 | 0.00 | 423.0 | | 66.00 | 368.7 | | 51.00 | 353.7 | | 52.00 | 415.3 | | 11.00 | 434.0 | |
| 9/24/2013 | 404.00 | 17.00 | 440.0 | | 64.00 | 366.7 | | 50.00 | 352.7 | | 37.00 | 400.3 | | 11.00 | 434.0 | |
| 10/29/2013 | 400.60 | 16.00 | 439.0 | | 64.00 | 366.7 | | 50.00 | 352.7 | | 33.00 | 396.3 | | 10.00 | 433.0 | |
| 11/26/2013 | 407.90 | 14.00 | 437.0 | | 63.00 | 365.7 | | 48.00 | 350.7 | | 40.00 | 403.3 | | 11.00 | 434.0 | |
| 12/19/2013 | 425.80 | 11.00 | 434.0 | | 63.00 | 365.7 | | 50.00 | 352.7 | | 59.00 | 422.3 | | 11.00 | 434.0 | |
| 1/28/2014 | 439.70 | 12.00 | 435.0 | | 64.00 | 366.7 | | 50.00 | 352.7 | | 73.00 | 436.3 | | 10.00 | 433.0 | |
| 2/25/2014 | 449.70 | 16.00 | 439.0 | | 63.00 | 365.7 | | 50.00 | 352.7 | | 84.00 | 447.3 | | 20.00 | 443.0 | |
| 3/26/2014 | 465.10 | 0.00 | 423.0 | | 65.00 | 367.7 | | 51.00 | 353.7 | | 100.00 | 463.3 | | 37.00 | 460.0 | |
| 3/28/2014 | 465.70 | 0.00 | 423.0 | | 65.00 | 367.7 | | 50.00 | 352.7 | | 101.00 | 464.3 | | 38.00 | 461.0 | |
| 4/29/2014 | 465.30 | 0.00 | 423.0 | | 66.00 | 368.7 | | 51.00 | 353.7 | | 102.00 | 465.3 | | 38.00 | 461.0 | |
| 5/28/2014 | 450.60 | 0.00 | 423.0 | | 65.00 | 367.7 | | 51.00 | 353.7 | | 86.00 | 449.3 | | 24.00 | 447.0 | |
| 6/25/2014 | 440.10 | 0.00 | 423.0 | | 65.00 | 367.7 | | 50.00 | 352.7 | | 77.00 | 440.3 | | 14.00 | 437.0 | |
| 7/29/2014 | 431.20 | 0.00 | 423.0 | | 65.00 | 367.7 | | 50.00 | 352.7 | | 65.00 | 428.3 | | 11.00 | 434.0 | |
| 8/26/2014 | 419.50 | 0.00 | 423.0 | | 66.00 | 368.7 | | 50.00 | 352.7 | | 53.00 | 416.3 | | 11.00 | 434.0 | |
| 9/23/2014 | 405.30 | 15.00 | 438.0 | | 65.00 | 367.7 | | 49.00 | 351.7 | | 37.00 | 400.3 | | 10.00 | 433.0 | |
| 10/29/2014 | 400.90 | 16.00 | 439.0 | | 64.00 | 366.7 | | 50.00 | 352.7 | | 33.00 | 396.3 | | 10.00 | 433.0 | |
| 11/25/2014 | 410.90 | 18.00 | 441.0 | | 63.00 | 365.7 | | 49.00 | 351.7 | | 43.00 | 406.3 | | 10.00 | 433.0 | |
| 12/30/2014 | 430.60 | 11.00 | 434.0 | | 63.00 | 365.7 | | 49.00 | 351.7 | | 62.00 | 425.3 | | 10.00 | 433.0 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

TABLE 3
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Pneumatic Piezo. No. -- | | RA-4 | | | LR-1 | | | LR-2 | | | LR-3 | | | LR-4 | | |
|----------------------------|----------------------------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|
| Piezo. Tip Elevation ----- | | 441.0 | | | 356.3 | | | 340.3 | | | 390.1 | | | 440.0 | | |
| Zero Gage Reading ----- | | 18.0 | | | 53.6 | | | 37.6 | | | 26.8 | | | 17.0 | | |
| Date | Reservoir Elevation (feet) | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment |
| 1/27/2015 | 466.70 | 0.00 | 423.0 | | 65.00 | 367.7 | | 50.00 | 352.7 | | 101.00 | 464.3 | | 36.00 | 459.0 | |
| 2/25/2015 | 468.90 | 0.00 | 423.0 | | 66.00 | 368.7 | | 50.00 | 352.7 | | 103.00 | 466.3 | | 42.00 | 465.0 | |
| 3/26/2015 | 465.90 | 0.00 | 423.0 | | 66.00 | 368.7 | | 51.00 | 353.7 | | 101.00 | 464.3 | | 39.00 | 462.0 | |
| 4/28/2015 | 465.70 | 0.00 | 423.0 | | 66.00 | 368.7 | | 51.00 | 353.7 | | 102.00 | 465.3 | | 39.00 | 462.0 | |
| 5/28/2015 | 466.40 | 0.00 | 423.0 | | 66.00 | 368.7 | | 52.00 | 354.7 | | 102.00 | 465.3 | | 38.00 | 461.0 | |
| 6/30/2015 | 454.50 | 0.00 | 423.0 | | 67.00 | 369.7 | | 52.00 | 354.7 | | 90.00 | 453.3 | | 27.00 | 450.0 | |
| 7/28/2015 | 445.60 | 0.00 | 423.0 | | 65.00 | 367.7 | | 51.00 | 353.7 | | 80.00 | 443.3 | | 19.00 | 442.0 | |
| 8/28/2015 | 437.60 | 0.00 | 423.0 | | 67.00 | 369.7 | | 52.00 | 354.7 | | 73.00 | 436.3 | | 12.00 | 435.0 | |
| 9/24/2015 | 426.90 | 0.00 | 423.0 | | 65.00 | 367.7 | | 51.00 | 353.7 | | 60.00 | 423.3 | | 10.00 | 433.0 | |
| 10/27/2015 | 415.40 | 0.00 | 423.0 | | 66.00 | 368.7 | | 52.00 | 354.7 | | 48.00 | 411.3 | | 11.00 | 434.0 | |
| 11/19/2015 | 412.90 | 17.00 | 440.0 | | 65.00 | 367.7 | | 51.00 | 353.7 | | 45.00 | 408.3 | | 10.00 | 433.0 | |
| 12/22/2015 | 425.50 | 12.00 | 435.0 | | 65.00 | 367.7 | | 51.00 | 353.7 | | 59.00 | 422.3 | | 10.00 | 433.0 | |
| 1/27/2016 | 463.60 | 0.00 | 423.0 | | 66.00 | 368.7 | | 52.00 | 354.7 | | 99.00 | 462.3 | | 36.00 | 459.0 | |
| 2/25/2016 | 468.90 | 0.00 | 423.0 | | 66.00 | 368.7 | | 52.00 | 354.7 | | 105.00 | 468.3 | | 42.00 | 465.0 | |
| 3/30/2016 | 468.00 | 0.00 | 423.0 | | 66.00 | 368.7 | | 52.00 | 354.7 | | 104.00 | 467.3 | | 42.00 | 465.0 | |
| 4/28/2016 | 461.30 | 0.00 | 423.0 | | 66.00 | 368.7 | | 52.00 | 354.7 | | 96.00 | 459.3 | | 34.00 | 457.0 | |
| 5/25/2016 | 451.30 | 0.00 | 423.0 | | 66.00 | 368.7 | | 52.00 | 354.7 | | 86.00 | 449.3 | | 24.00 | 447.0 | |
| 6/28/2016 | 414.10 | 0.00 | 423.0 | | 66.00 | 368.7 | | 52.00 | 354.7 | | 78.00 | 441.3 | | 17.00 | 440.0 | |
| 7/27/2016 | 434.20 | 0.00 | 423.0 | | 65.00 | 367.7 | | 52.00 | 354.7 | | 68.00 | 431.3 | | 11.00 | 434.0 | |
| 8/23/2016 | 418.60 | 0.00 | 423.0 | | 66.00 | 368.7 | | 52.00 | 354.7 | | 52.00 | 415.3 | | 10.00 | 433.0 | |
| 9/27/2016 | 406.40 | 12.00 | 435.0 | | 66.00 | 368.7 | | 51.00 | 353.7 | | 39.00 | 402.3 | | 10.00 | 433.0 | |
| 10/26/2016 | 404.00 | 14.00 | 437.0 | | 64.00 | 366.7 | | 54.00 | 356.7 | | 36.00 | 399.3 | | 8.00 | 431.0 | |
| 11/22/2016 | 413.60 | 14.00 | 437.0 | | 64.00 | 366.7 | | 50.00 | 352.7 | | 46.00 | 409.3 | | 7.00 | 430.0 | |
| 12/20/2016 | 441.10 | 16.00 | 439.0 | | 64.00 | 366.7 | | 51.00 | 353.7 | | 75.00 | 438.3 | | 8.00 | 431.0 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

TABLE 3
SAN JOAQUIN DAM
PNEUMATIC PIEZOMETER MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Pneumatic Piezo. No. -- | | RA-4 | | | LR-1 | | | LR-2 | | | LR-3 | | | LR-4 | | |
|----------------------------|----------------------------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|-----------------------------------|-------------------|---------|
| Piezo. Tip Elevation ----- | | 441.0 | | | 356.3 | | | 340.3 | | | 390.1 | | | 440.0 | | |
| Zero Gage Reading ----- | | 18.0 | | | 53.6 | | | 37.6 | | | 26.8 | | | 17.0 | | |
| Date | Reservoir Elevation (feet) | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment | read. (ft of H ₂ O) | elevation (ft) | comment |
| 1/26/2017 | 471.60 | 0.00 | 423.0 | | 66.00 | 368.7 | | 51.00 | 353.7 | | 105.00 | 468.3 | | 41.00 | 464.0 | |
| 2/24/2017 | 472.05 | 0.00 | 423.0 | | 66.00 | 368.7 | | 52.00 | 354.7 | | 108.00 | 471.3 | | 44.00 | 467.0 | |
| 2/25/2017 | 472.00 | | | | | | | | | | | | | | | |
| 2/26/2017 | 472.00 | | | | | | | | | | | | | | | |
| 2/27/2017 | 472.00 | 0.00 | 423.0 | | 67.00 | 369.7 | | 52.00 | 354.7 | | 107.00 | 470.3 | | 43.00 | 466.0 | |
| 2/28/2017 | 471.90 | 0.00 | 423.0 | | 67.00 | 369.7 | | 53.00 | 355.7 | | 107.00 | 470.3 | | 44.00 | 467.0 | |
| 3/1/2017 | 471.90 | 0.00 | 423.0 | | 67.00 | 369.7 | | 52.00 | 354.7 | | 108.00 | 471.3 | | 43.00 | 466.0 | |
| 3/2/2017 | 471.90 | 0.00 | 423.0 | | 67.00 | 369.7 | | 52.00 | 354.7 | | 108.00 | 471.3 | | 43.00 | 466.0 | |
| 3/29/2017 | 467.90 | 0.00 | 423.0 | | 67.00 | 369.7 | | 53.00 | 355.7 | | 102.00 | 465.3 | | 38.00 | 461.0 | |
| 4/27/2017 | 457.60 | 0.00 | 423.0 | | 67.00 | 369.7 | | 53.00 | 355.7 | | 93.00 | 456.3 | | 28.00 | 451.0 | |
| 5/23/2017 | 453.50 | 0.00 | 423.0 | | 66.00 | 368.7 | | 52.00 | 354.7 | | 88.00 | 451.3 | | 23.00 | 446.0 | |
| 6/21/2017 | 447.40 | 0.00 | 423.0 | | 64.00 | 366.7 | | 52.00 | 354.7 | | 80.00 | 443.3 | | 15.00 | 438.0 | |
| 7/26/2017 | 435.10 | 0.00 | 423.0 | | 67.00 | 369.7 | | 52.00 | 354.7 | | 70.00 | 433.3 | | 10.00 | 433.0 | |
| 8/25/2017 | 420.10 | 0.00 | 423.0 | | 66.00 | 368.7 | | 52.00 | 354.7 | | 53.00 | 416.3 | | 9.00 | 432.0 | |
| 9/27/2017 | 407.10 | 0.00 | 423.0 | | 66.00 | 368.7 | | 52.00 | 354.7 | | 40.00 | 403.3 | | 8.00 | 431.0 | |
| 10/26/2017 | 395.00 | 14.00 | 437.0 | | 65.00 | 367.7 | | 51.00 | 353.7 | | 24.00 | 387.3 | | 6.00 | 429.0 | |
| 11/28/2017 | 409.00 | 12.00 | 435.0 | | 62.00 | 364.7 | | 50.00 | 352.7 | | 41.00 | 404.3 | | 5.00 | 428.0 | |
| 12/20/2017 | 416.80 | 13.00 | 436.0 | | 64.00 | 366.7 | | 50.00 | 352.7 | | 46.00 | 409.3 | | 6.00 | 429.0 | |
| 1/24/2018 | 434.50 | 12.00 | 435.0 | | 60.00 | 362.7 | | 50.00 | 352.7 | | 64.00 | 427.3 | | 2.00 | 425.0 | |
| 2/21/2018 | 443.10 | 13.00 | 436.0 | | 64.00 | 366.7 | | 51.00 | 353.7 | | 77.00 | 440.3 | | 9.00 | 432.0 | |
| 3/29/2018 | 453.00 | 0.00 | 423.0 | | 62.00 | 364.7 | | 50.00 | 352.7 | | 84.00 | 447.3 | | 21.00 | 444.0 | |
| 4/26/2018 | 449.10 | 0.00 | 423.0 | | 64.00 | 366.7 | | 51.00 | 353.7 | | 84.00 | 447.3 | | 18.00 | 441.0 | |
| 5/31/2018 | 453.10 | 0.00 | 423.0 | | 65.00 | 367.7 | | 51.00 | 353.7 | | 88.00 | 451.3 | | 21.00 | 444.0 | |
| 6/28/2018 | 448.20 | 0.00 | 423.0 | | 65.00 | 367.7 | | 52.00 | 354.7 | | 84.00 | 447.3 | | 17.00 | 440.0 | |
| 7/25/2018 | 440.40 | 0.00 | 423.0 | | 64.00 | 366.7 | | 51.00 | 353.7 | | 76.00 | 439.3 | | 12.00 | 435.0 | |
| 8/22/2018 | 427.10 | 0.00 | 423.0 | | 65.00 | 367.7 | | 51.00 | 353.7 | | 61.00 | 424.3 | | 10.00 | 433.0 | |
| 9/27/2018 | 439.60 | 14.00 | 437.0 | | 62.00 | 364.7 | | 49.00 | 351.7 | | 39.00 | 402.3 | | 4.00 | 427.0 | |
| 10/18/2018 | 405.30 | 13.00 | 436.0 | | 65.00 | 367.7 | | 50.00 | 352.7 | | 37.00 | 400.3 | | 4.00 | 427.0 | |
| 11/28/2018 | 408.60 | 12.00 | 435.0 | | 65.00 | 367.7 | | 50.00 | 352.7 | | 40.00 | 403.3 | | 3.00 | 426.0 | |
| 12/19/2018 | 436.00 | 14.00 | 437.0 | | 62.00 | 364.7 | | 50.00 | 352.7 | | 68.00 | 431.3 | | 2.00 | 425.0 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

TABLE 4
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Seepage Weir -----> | | East Drain | | | West Drain | | | Filter Drain | | | U/S Collector Drain #1 | | | U/S Collector Drain #2 | | |
|---------------------|----------------------------|---------------|---------------|---------|---------------|---------------|---------|---------------|---------------|---------|------------------------|---------------|---------|------------------------|---------------|---------|
| Date | Reservoir Elevation (feet) | read. (ft) | flow (gpm) | comment | read. (ft) | flow (gpm) | comment | read. (ft) | flow (gpm) | comment | read. (ft) | flow (gpm) | comment | read. (ft) | flow (gpm) | comment |
| 1/28/2009 | 463.70 | | 105.70 | | | 79.30 | | | 9.90 | | 0.00 | 0.00 | Dry | 0.00 | 0.00 | Dry |
| 2/25/2009 | 470.10 | | 52.30 | | | 53.63 | | | 10.10 | | 0.00 | 0.00 | Dry | 0.00 | 0.00 | Dry |
| 3/26/2009 | 469.40 | | 63.40 | | | 79.30 | | | 12.29 | | 0.00 | 0.00 | Dry | 0.00 | 0.00 | Dry |
| 4/29/2009 | 466.90 | | 46.09 | | | 81.12 | | | 11.03 | | 0.00 | 0.00 | Dry | 0.00 | 0.00 | Dry |
| 5/18/2009 | 466.70 | | 60.00 | | | 75.00 | | | 12.00 | | 0.00 | 0.00 | Dry | 0.00 | 0.00 | Dry |
| 5/29/2009 | 465.00 | | 61.30 | | | 72.30 | | | 12.30 | | 0.00 | 0.00 | Dry | 0.00 | 0.00 | Dry |
| 6/30/2009 | 460.20 | | 55.10 | | | 69.60 | | | 12.50 | | 0.00 | 0.00 | Dry | 0.00 | 0.00 | Dry |
| 7/30/2009 | 451.10 | | 44.95 | | | 59.40 | | | 12.75 | | | 0.13 | | 0.00 | 0.00 | Dry |
| 8/25/2009 | 440.10 | | 34.11 | | | 50.70 | | | 13.19 | | 0.00 | 0.00 | Dry | 0.00 | 0.00 | Dry |
| 9/30/2009 | 432.20 | | 26.10 | | | 41.20 | | | 12.20 | | 0.00 | 0.00 | Dry | 0.00 | 0.00 | Dry |
| 10/29/2009 | 431.40 | | 22.36 | | | 37.12 | | | 11.05 | | 0.00 | 0.00 | Dry | 0.00 | 0.00 | Dry |
| 12/1/2009 | 427.40 | | 19.67 | | | 32.43 | | | 11.31 | | 0.00 | 0.00 | Dry | 0.00 | 0.00 | Dry |
| 12/29/2009 | 448.10 | | 32.52 | | | 43.41 | | | 10.38 | | 0.00 | 0.00 | Dry | 0.00 | 0.00 | Dry |
| 1/27/2010 | 465.60 | | 54.82 | | | 67.12 | | | 11.55 | | 0.00 | 0.00 | Dry | 0.00 | 0.00 | Dry |
| 2/25/2010 | 470.20 | | 61.60 | | | 76.90 | | | 12.20 | | 0.00 | 0.00 | Dry | 0.00 | 0.00 | Dry |
| 3/29/2010 | 465.70 | | 56.91 | | | 71.73 | | | 12.14 | | 0.00 | 0.00 | Dry | | 0.20 | |
| 4/4/2010 | 465.00 | | 55.00 | | | 69.40 | | | 11.20 | | | 0.26 | | | 0.00 | Dry |
| 4/27/2010 | 468.40 | | 62.10 | | | 70.70 | | | 11.90 | | 0.00 | 0.00 | Dry | | 0.00 | Dry |
| 5/27/2010 | 463.30 | | 47.80 | | | 65.00 | | | 11.90 | | | 0.55 | | | 0.00 | Dry |
| 6/30/2010 | 454.70 | | 54.37 | | | 63.75 | | | 12.25 | | | 0.50 | | | 0.00 | Dry |
| 7/28/2010 | 445.60 | | 44.00 | | | 55.00 | | | 13.00 | | | 0.40 | | | 0.00 | Dry |
| 8/31/2010 | 437.10 | | 38.94 | | | 47.95 | | | 12.49 | | | 0.27 | | | 0.00 | Dry |
| 9/29/2010 | 422.70 | | 28.10 | | | 38.00 | | | 11.40 | | | 0.23 | | | 0.00 | Dry |
| 10/27/2010 | 426.40 | | 26.50 | | | 37.00 | | | 11.40 | | | 0.15 | | | 0.00 | Dry |
| 11/29/2010 | 439.80 | | 34.27 | | | 41.64 | | | 10.67 | | | 0.00 | Dry | | 0.00 | Dry |
| 12/30/2010 | 456.60 | | 34.00 | | | 46.00 | | | 11.00 | | | 0.00 | Dry | | 0.00 | Dry |

Notes:

Elevations are in feet relative to NAVD88 datum.

ft = feet; gpm = gallons per minute.

TABLE 4
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Seepage Weir -----> | | East Drain | | | West Drain | | | Filter Drain | | | U/S Collector Drain #1 | | | U/S Collector Drain #2 | | |
|---------------------|----------------------------|---------------|---------------|---------|---------------|---------------|---------|---------------|---------------|---------|------------------------|---------------|---------|------------------------|---------------|---------|
| Date | Reservoir Elevation (feet) | read. (ft) | flow (gpm) | comment | read. (ft) | flow (gpm) | comment | read. (ft) | flow (gpm) | comment | read. (ft) | flow (gpm) | comment | read. (ft) | flow (gpm) | comment |
| 2/1/2011 | 468.90 | | 58.00 | | | 71.00 | | | 11.50 | | | 0.26 | | | 0.00 | Dry |
| 2/23/2011 | 469.00 | | 60.03 | | | 71.80 | | | 12.66 | | | 0.26 | | | 0.00 | Dry |
| 3/29/2011 | 470.30 | | 61.50 | | | 74.90 | | | 12.90 | | | 0.53 | | | 0.00 | Dry |
| 4/27/2011 | 464.80 | | 39.94 | | | 58.62 | | | 9.98 | | | 0.70 | | | 0.00 | Dry |
| 5/26/2011 | 457.30 | | 34.00 | | | 51.20 | | | 9.93 | | | 0.61 | | | 0.00 | Dry |
| 6/28/2011 | 443.50 | | 26.50 | | | 43.91 | | | 10.35 | | | 0.52 | | | 0.00 | Dry |
| 7/29/2011 | 425.10 | | 18.96 | | | 35.15 | | | 10.34 | | | 0.40 | | | 0.00 | Dry |
| 8/24/2011 | 418.00 | | 13.42 | | | 27.08 | | | 10.37 | | | 0.00 | Dry | | 0.20 | |
| 9/27/2011 | 400.90 | | 9.18 | | | 20.55 | | | 10.18 | | | 0.07 | | | 0.00 | Dry |
| 10/26/2011 | 402.20 | | 8.14 | | | 18.73 | | | 9.58 | | | 0.00 | Dry | | 0.00 | Dry |
| 11/30/2011 | 425.10 | | 13.11 | | | 26.33 | | | 9.28 | | | 0.00 | Dry | | 0.00 | Dry |
| 12/21/2011 | 435.70 | | 18.45 | | | 32.30 | | | 9.09 | | | 0.00 | Dry | | 0.00 | Dry |
| 1/24/2012 | 441.40 | | 19.51 | | | 37.32 | | | 8.90 | | | 0.00 | Dry | | 0.00 | Dry |
| 2/28/2012 | 448.40 | | 21.40 | | | 40.90 | | | 8.60 | | | 0.00 | Dry | | 0.00 | Dry |
| 3/26/2012 | 452.70 | | 23.14 | | | 43.41 | | | 8.65 | | | 0.00 | Dry | | 0.00 | Dry |
| 4/23/2012 | 463.40 | | 39.54 | | | 56.48 | | | 8.34 | | | 0.00 | Dry | | 0.00 | Dry |
| 5/30/2012 | 457.30 | | 35.45 | | | 55.39 | | | 8.72 | | | 0.00 | Dry | | 0.00 | Dry |
| 6/13/2012 | 452.90 | | 31.31 | | | 51.82 | | | 8.53 | | | 0.00 | Dry | | 0.00 | Dry |
| 6/26/2012 | 450.20 | | 29.30 | | | 49.60 | | | 8.90 | | | 0.00 | Dry | | 0.00 | Dry |
| 7/24/2012 | 439.80 | | 22.25 | | | 42.76 | | | 8.79 | | | 0.00 | Dry | | 0.00 | Dry |
| 8/8/2012 | 437.60 | | 20.94 | | | 40.38 | | | 8.91 | | | 0.00 | Dry | | 0.00 | Dry |
| 8/22/2012 | 433.40 | | 19.79 | | | 35.01 | | | 9.23 | | | 0.00 | Dry | | 0.00 | Dry |
| 8/29/2012 | 431.30 | | 19.10 | | | 32.62 | | | 8.10 | | | 0.00 | Dry | | 0.00 | Dry |
| 9/25/2012 | 420.80 | | 15.38 | | | 26.33 | | | 7.90 | | | 0.00 | Dry | | 0.00 | Dry |
| 10/31/2012 | 412.30 | | 10.48 | | | 21.63 | | | 7.77 | | | 0.00 | Dry | | 0.00 | Dry |
| 11/27/2012 | 420.80 | | 12.00 | | | 24.50 | | | 8.00 | | | 0.00 | Dry | | 0.00 | Dry |
| 12/18/2012 | 448.00 | | 31.81 | | | 27.29 | | | 8.07 | | | 0.00 | Dry | | 0.00 | Dry |

Notes:

Elevations are in feet relative to NAVD88 datum.

ft = feet; gpm = gallons per minute.

TABLE 4
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Seepage Weir -----> | | East Drain | | | West Drain | | | Filter Drain | | | U/S Collector Drain #1 | | | U/S Collector Drain #2 | | | |
|---------------------|----------------------------|---------------|---------------|---------|---------------|---------------|---------|---------------|---------------|---------|------------------------|---------------|---------|------------------------|---------------|---------|-----|
| Date | Reservoir Elevation (feet) | read. (ft) | flow (gpm) | comment | read. (ft) | flow (gpm) | comment | read. (ft) | flow (gpm) | comment | read. (ft) | flow (gpm) | comment | read. (ft) | flow (gpm) | comment | |
| 1/29/2013 | 468.60 | | 60.00 | | | 56.70 | | | 8.00 | | | 0.00 | Dry | | | 0.00 | Dry |
| 2/28/2013 | 469.20 | | 62.57 | | | 60.52 | | | 8.46 | | | 0.00 | Dry | | | 0.00 | Dry |
| 3/27/2013 | 468.30 | | 56.89 | | | 67.68 | | | 8.54 | | | 0.00 | Dry | | | 0.00 | Dry |
| 4/25/2013 | 462.70 | | 51.59 | | | 59.13 | | | 8.57 | | | 0.00 | Dry | | | 0.00 | Dry |
| 5/21/2013 | 454.20 | | 40.10 | | | 46.50 | | | 8.70 | | | 0.00 | Dry | | | 0.00 | Dry |
| 6/25/2013 | 439.30 | | 27.97 | | | 36.61 | | | 8.66 | | | 0.00 | Dry | | | 0.00 | Dry |
| 7/23/2013 | 431.50 | | 22.44 | | | 30.45 | | | 9.56 | | | 0.00 | Dry | | | 0.00 | Dry |
| 8/21/2013 | 418.00 | | 15.80 | | | 23.60 | | | 9.15 | | | 0.00 | Dry | | | 0.00 | Dry |
| 9/24/2013 | 404.00 | | 11.15 | | | 19.46 | | | 7.81 | | | 0.00 | Dry | | | 0.00 | Dry |
| 10/29/2013 | 400.60 | | 8.70 | | | 16.17 | | | 7.81 | | | 0.00 | Dry | | | 0.00 | Dry |
| 11/26/2013 | 407.90 | | 8.19 | | | 15.80 | | | 7.34 | | | 0.00 | Dry | | | 0.00 | Dry |
| 12/19/2013 | 425.80 | | 16.15 | | | 22.45 | | | 7.70 | | | 0.00 | Dry | | | 0.00 | Dry |
| 1/28/2014 | 439.70 | | 24.89 | | | 31.46 | | | 7.76 | | | 0.00 | Dry | | | 0.00 | Dry |
| 2/25/2014 | 449.70 | | 30.84 | | | 38.79 | | | 7.73 | | | 0.00 | Dry | | | 0.00 | Dry |
| 3/26/2014 | 465.10 | | 48.97 | | | 55.26 | | | 8.10 | | | 0.00 | Dry | | | 0.00 | Dry |
| 3/28/2014 | 465.70 | | 48.66 | | | 55.41 | | | 7.70 | | | 0.00 | Dry | | | 0.00 | Dry |
| 4/29/2014 | 465.30 | | 50.10 | | | 57.60 | | | 9.04 | | | 0.00 | Dry | | | 0.00 | Dry |
| 5/28/2014 | 450.60 | | 34.05 | | | 46.03 | | | 8.18 | | | 0.00 | Dry | | | 0.00 | Dry |
| 6/25/2014 | 440.10 | | 30.19 | | | 39.64 | | | 8.80 | | | 0.00 | Dry | | | 0.00 | Dry |
| 7/29/2014 | 431.20 | | 24.97 | | | 33.85 | | | 8.16 | | | 0.00 | Dry | | | 0.00 | Dry |
| 8/26/2014 | 419.50 | | 19.12 | | | 27.02 | | | 8.02 | | | 0.00 | Dry | | | 0.00 | Dry |
| 9/23/2014 | 405.30 | | 13.04 | | | 21.32 | | | 8.00 | | | 0.00 | Dry | | | 0.00 | Dry |
| 10/29/2014 | 400.90 | | 10.06 | | | 18.54 | | | 7.85 | | | 0.00 | Dry | | | 0.00 | Dry |
| 11/25/2014 | 410.90 | | 10.75 | | | 18.60 | | | 7.00 | | | 0.00 | Dry | | | 0.00 | Dry |
| 12/30/2014 | 430.60 | | 23.26 | | | 26.64 | | | 7.54 | | | 0.00 | Dry | | | 0.00 | Dry |

Notes:

Elevations are in feet relative to NAVD88 datum.

ft = feet; gpm = gallons per minute.

TABLE 4
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Seepage Weir -----> | | East Drain | | | West Drain | | | Filter Drain | | | U/S Collector Drain #1 | | | U/S Collector Drain #2 | | | |
|---------------------|----------------------------|---------------|---------------|---------|---------------|---------------|---------|---------------|---------------|---------|------------------------|---------------|---------|------------------------|---------------|---------|-----|
| Date | Reservoir Elevation (feet) | read. (ft) | flow (gpm) | comment | read. (ft) | flow (gpm) | comment | read. (ft) | flow (gpm) | comment | read. (ft) | flow (gpm) | comment | read. (ft) | flow (gpm) | comment | |
| 1/27/2015 | 466.70 | | 61.45 | | | 60.49 | | | 8.24 | | | 0.00 | Dry | | | 0.00 | Dry |
| 2/25/2015 | 468.90 | | 63.90 | | | 64.50 | | | 8.33 | | | 0.00 | Dry | | | 0.00 | Dry |
| 3/26/2015 | 465.90 | | 62.14 | | | 63.40 | | | 9.04 | | | 0.00 | Dry | | | 0.00 | Dry |
| 4/28/2015 | 465.70 | | 60.10 | | | 59.60 | | | 9.85 | | | 0.00 | Dry | | | 0.00 | Dry |
| 5/28/2015 | 466.40 | | 54.04 | | | 49.61 | | | 7.35 | | | 0.00 | Dry | | | 0.00 | Dry |
| 6/30/2015 | 454.50 | | 44.81 | | | 43.46 | | | 8.25 | | | 0.00 | Dry | | | 0.00 | Dry |
| 7/28/2015 | 445.60 | | 35.40 | | | 35.90 | | | 6.70 | | | 0.00 | Dry | | | 0.00 | Dry |
| 8/28/2015 | 437.60 | | 29.20 | | | 30.40 | | | 7.09 | | | 0.00 | Dry | | | 0.00 | Dry |
| 9/24/2015 | 426.90 | | 23.50 | | | 25.10 | | | 7.10 | | | 0.00 | Dry | | | 0.00 | Dry |
| 10/27/2015 | 415.40 | | 16.90 | | | 18.70 | | | 6.90 | | | 0.00 | Dry | | | 0.00 | Dry |
| 11/19/2015 | 412.90 | | 14.23 | | | 16.38 | | | 6.42 | | | 0.00 | Dry | | | 0.00 | Dry |
| 12/22/2015 | 425.50 | | 19.50 | | | 19.40 | | | 6.68 | | | 0.00 | Dry | | | 0.00 | Dry |
| 1/27/2016 | 463.60 | | 53.20 | | | 42.08 | | | 6.77 | | | 0.00 | Dry | | | 0.00 | Dry |
| 2/25/2016 | 468.90 | | 59.37 | | | 50.05 | | | 6.58 | | | 0.00 | Dry | | | 0.00 | Dry |
| 3/30/2016 | 468.00 | | 56.40 | | | 50.90 | | | 6.20 | | | 0.00 | Dry | | | 0.00 | Dry |
| 4/28/2016 | 461.30 | | 50.83 | | | 46.75 | | | 6.73 | | | 0.00 | Dry | | | 0.00 | Dry |
| 5/25/2016 | 451.30 | | 43.06 | | | 40.29 | | | 7.17 | | | 0.00 | Dry | | | 0.00 | Dry |
| 6/28/2016 | 414.10 | | 34.98 | | | 34.83 | | | 6.68 | | | 0.00 | Dry | | | 0.00 | Dry |
| 7/27/2016 | 434.20 | | 28.20 | | | 29.30 | | | 6.60 | | | 0.00 | Dry | | | 0.00 | Dry |
| 8/23/2016 | 418.60 | | 18.96 | | | 20.95 | | | 6.53 | | | 0.00 | Dry | | | 0.00 | Dry |
| 9/27/2016 | 406.40 | | 13.04 | | | 15.91 | | | 5.90 | | | 0.00 | Dry | | | 0.00 | Dry |
| 10/26/2016 | 404.00 | | 10.92 | | | 13.95 | | | 5.85 | | | 0.00 | Dry | | | 0.00 | Dry |
| 11/22/2016 | 413.60 | | 12.01 | | | 14.80 | | | 6.17 | | | 0.00 | Dry | | | 0.00 | Dry |
| 12/20/2016 | 441.10 | | 29.72 | | | 25.63 | | | 6.15 | | | 0.00 | Dry | | | 0.00 | Dry |

Notes:

Elevations are in feet relative to NAVD88 datum.

ft = feet; gpm = gallons per minute.

TABLE 4
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Seepage Weir -----> | | East Drain | | | West Drain | | | Filter Drain | | | U/S Collector Drain #1 | | | U/S Collector Drain #2 | | | |
|---------------------|----------------------------|---------------|---------------|---------|---------------|---------------|---------|---------------|---------------|---------|------------------------|---------------|---------|------------------------|---------------|---------|-----|
| Date | Reservoir Elevation (feet) | read. (ft) | flow (gpm) | comment | read. (ft) | flow (gpm) | comment | read. (ft) | flow (gpm) | comment | read. (ft) | flow (gpm) | comment | read. (ft) | flow (gpm) | comment | |
| 1/26/2017 | 471.60 | | 58.70 | | | 51.40 | | | 6.50 | | | 0.00 | Dry | | | 0.00 | Dry |
| 2/24/2017 | 472.05 | | 57.36 | | | 60.38 | | | 7.41 | | | 0.00 | Dry | | | 0.00 | Dry |
| 2/25/2017 | 472.00 | | 57.55 | | | 60.35 | | | 7.44 | | | 0.00 | Dry | | | 0.00 | Dry |
| 2/26/2017 | 472.00 | | 56.81 | | | 60.38 | | | 7.39 | | | 0.00 | Dry | | | 0.00 | Dry |
| 2/27/2017 | 472.00 | | 56.90 | | | 60.40 | | | 7.34 | | | 0.00 | Dry | | | 0.00 | Dry |
| 2/28/2017 | 471.90 | | 56.32 | | | 60.15 | | | 7.14 | | | 0.00 | Dry | | | 0.00 | Dry |
| 3/1/2017 | 471.90 | | 55.80 | | | 59.70 | | | 7.02 | | | 0.00 | Dry | | | 0.00 | Dry |
| 3/2/2017 | 471.90 | | 56.34 | | | 59.71 | | | 7.04 | | | 0.00 | Dry | | | 0.00 | Dry |
| 3/29/2017 | 467.90 | | 51.95 | | | 56.32 | | | 7.34 | | | 0.00 | Dry | | | 0.00 | Dry |
| 4/27/2017 | 457.60 | | 44.35 | | | 47.55 | | | 7.65 | | | 0.00 | Dry | | | 0.02 | |
| 5/23/2017 | 453.50 | | 38.22 | | | 41.80 | | | 7.76 | | | 0.00 | Dry | | | 0.00 | Dry |
| 6/21/2017 | 447.40 | | 34.25 | | | 39.20 | | | 7.61 | | | 0.00 | Dry | | | 0.00 | Dry |
| 7/26/2017 | 435.10 | | 29.68 | | | 32.46 | | | 7.54 | | | 0.00 | Dry | | | 0.00 | Dry |
| 8/25/2017 | 420.10 | | 22.90 | | | 24.30 | | | 7.70 | | | 0.00 | Dry | | | 0.00 | Dry |
| 9/27/2017 | 407.10 | | 16.00 | | | 18.94 | | | 7.44 | | | 0.00 | Dry | | | 0.00 | Dry |
| 10/26/2017 | 395.00 | | 10.73 | | | 14.80 | | | 7.19 | | | 0.00 | Dry | | | 0.00 | Dry |
| 11/28/2017 | 409.00 | | 13.48 | | | 16.68 | | | 7.45 | | | 0.00 | Dry | | | 0.00 | Dry |
| 12/20/2017 | 416.80 | | 15.28 | | | 18.42 | | | 7.17 | | | 0.00 | Dry | | | 0.00 | Dry |
| 1/24/2018 | 434.50 | | 27.22 | | | 26.47 | | | 7.11 | | | 0.00 | Dry | | | 0.00 | Dry |
| 2/21/2018 | 443.10 | | 32.75 | | | 32.39 | | | 6.80 | | | 0.00 | Dry | | | 0.00 | Dry |
| 3/29/2018 | 453.00 | | 39.88 | | | 42.15 | | | 7.01 | | | 0.00 | Dry | | | 0.00 | Dry |
| 4/26/2018 | 449.10 | | 36.60 | | | 39.21 | | | 6.97 | | | 0.00 | Dry | | | 0.00 | Dry |
| 5/31/2018 | 453.10 | | 39.70 | | | 40.77 | | | 7.66 | | | 0.00 | Dry | | | 0.00 | Dry |
| 6/28/2018 | 448.20 | | 36.70 | | | 38.50 | | | 8.04 | | | 0.00 | Dry | | | 0.00 | Dry |
| 7/25/2018 | 440.40 | | 33.48 | | | 35.20 | | | 7.76 | | | 0.00 | Dry | | | 0.00 | Dry |
| 8/22/2018 | 427.10 | | 23.07 | | | 28.26 | | | 7.82 | | | 0.00 | Dry | | | 0.00 | Dry |
| 9/27/2018 | 439.60 | | 13.85 | | | 19.09 | | | 7.53 | | | 0.00 | Dry | | | 0.00 | Dry |
| 10/18/2018 | 405.30 | | 10.95 | | | 15.38 | | | 6.79 | | | 0.00 | Dry | | | 0.00 | Dry |
| 11/28/2018 | 408.60 | | 10.60 | | | 14.80 | | | 5.90 | | | 0.00 | Dry | | | 0.00 | Dry |
| 12/19/2018 | 436.00 | | 24.80 | | | 23.10 | | | 5.80 | | | 0.00 | Dry | | | 0.00 | Dry |

Notes:

Elevations are in feet relative to NAVD88 datum.

ft = feet; gpm = gallons per minute.

TABLE 4
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Seepage Weir -----> | | D/S Toe Drain | | | Floor Drain | | | Right Groin Drain | | |
|-------------------------------|---------------------------------------|----------------------|-----------------------|----------------|--------------------|-----------------------|----------------|--------------------------|-----------------------|----------------|
| Date | Reservoir Elevation (feet) | read. | flow (gpm) | comment | read. | flow (gpm) | comment | read. | flow (gpm) | comment |
| 1/28/2009 | 463.70 | | 2.00 | | | 10.60 | | | 0.00 | |
| 2/25/2009 | 470.10 | | 2.12 | | | 9.46 | | | 0.00 | |
| 3/26/2009 | 469.40 | | 2.19 | | | 9.30 | | | 0.05 | |
| 4/29/2009 | 466.90 | | 1.98 | | | 9.84 | | | 0.23 | |
| 5/18/2009 | 466.70 | | 1.00 | | | 10.00 | | | 0.13 | |
| 5/29/2009 | 465.00 | | | | | | | | 0.16 | |
| 6/30/2009 | 460.20 | | 1.90 | | | 10.30 | | | 0.10 | |
| 7/30/2009 | 451.10 | | 1.93 | | | 10.56 | | | 0.00 | |
| 8/25/2009 | 440.10 | | 2.09 | | | 7.90 | | | 0.00 | |
| 9/30/2009 | 432.20 | | 1.52 | | | 16.00 | | | 0.13 | |
| 10/29/2009 | 431.40 | | | | | | | | 0.14 | |
| 12/1/2009 | 427.40 | | | | | | | | 0.00 | |
| 12/29/2009 | 448.10 | | | | | | | | 0.17 | |
| 1/27/2010 | 465.60 | | 2.43 | | | 6.34 | | | 0.62 | |
| 2/25/2010 | 470.20 | | 2.94 | | | 10.56 | | | 0.61 | |
| 3/29/2010 | 465.70 | | 2.40 | | | 16.00 | | | 0.00 | |
| 4/4/2010 | 465.00 | | 1.00 | | | 16.00 | | | | |
| 4/27/2010 | 468.40 | | 2.40 | | | 10.56 | | | 0.00 | |
| 5/27/2010 | 463.30 | | 2.50 | | | 10.00 | | | 1.50 | |
| 6/30/2010 | 454.70 | | 2.11 | | | 9.18 | | | 1.10 | |
| 7/28/2010 | 445.60 | | 2.40 | | | 10.56 | | | 0.99 | |
| 8/31/2010 | 437.10 | | 2.08 | | | 9.51 | | | 1.07 | |
| 9/29/2010 | 422.70 | | 2.11 | | | 6.34 | | | 0.72 | |
| 10/27/2010 | 426.40 | | 2.20 | | | 7.80 | | | 0.11 | |
| 11/29/2010 | 439.80 | | 2.26 | | | 7.92 | | | 0.27 | |
| 12/30/2010 | 456.60 | | 4.00 | | | 16.00 | | | 2.00 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

ft = feet; gpm = gallons per minute.

TABLE 4
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Seepage Weir -----> | | D/S Toe Drain | | | Floor Drain | | | Right Groin Drain | | |
|-------------------------------|-----------------------------------|----------------------|-------------------|----------------|--------------------|-------------------|----------------|--------------------------|-------------------|----------------|
| Date | Reservoir Elevation (feet) | read. | flow (gpm) | comment | read. | flow (gpm) | comment | read. | flow (gpm) | comment |
| 2/1/2011 | 468.90 | | 4.00 | | | 8.00 | | | 2.30 | |
| 2/23/2011 | 469.00 | | 3.51 | | | 7.92 | | | 0.95 | |
| 3/29/2011 | 470.30 | | 3.17 | | | 7.90 | | | 0.38 | |
| 4/27/2011 | 464.80 | | 2.60 | | | 5.20 | | | 0.71 | |
| 5/26/2011 | 457.30 | | 2.70 | | | 9.50 | | | 0.00 | |
| 6/28/2011 | 443.50 | | 2.50 | | | 8.90 | | | 0.00 | |
| 7/29/2011 | 425.10 | | 2.43 | | | 6.34 | | | 0.00 | |
| 8/24/2011 | 418.00 | | 2.43 | | | 7.92 | | | 0.25 | |
| 9/27/2011 | 400.90 | | 2.26 | | | 7.92 | | | 0.20 | |
| 10/26/2011 | 402.20 | | 2.26 | | | 7.05 | | | 0.27 | |
| 11/30/2011 | 425.10 | | 2.56 | | | 7.93 | | | 0.31 | |
| 12/21/2011 | 435.70 | | 2.26 | | | 7.93 | | | 0.29 | |
| 1/24/2012 | 441.40 | | 2.38 | | | 7.92 | | | 0.36 | |
| 2/28/2012 | 448.40 | | 2.11 | | | 6.34 | | | 0.34 | |
| 3/26/2012 | 452.70 | | 2.29 | | | 7.79 | | | 0.35 | |
| 4/23/2012 | 463.40 | | 2.43 | | | 7.92 | | | 0.31 | |
| 5/30/2012 | 457.30 | | 2.11 | | | 6.34 | | | 0.26 | |
| 6/13/2012 | 452.90 | | 2.26 | | | 7.92 | | | 0.31 | |
| 6/26/2012 | 450.20 | | 1.58 | | | 10.56 | | | 0.21 | |
| 7/24/2012 | 439.80 | | 1.58 | | | 10.56 | | | 0.21 | |
| 8/8/2012 | 437.60 | | 1.58 | | | 10.56 | | | 0.15 | |
| 8/22/2012 | 433.40 | | 1.98 | | | 7.92 | | | 0.24 | |
| 8/29/2012 | 431.30 | | 1.58 | | | 10.56 | | | 0.13 | |
| 9/25/2012 | 420.80 | | 2.56 | | | 7.93 | | | 0.10 | |
| 10/31/2012 | 412.30 | | 2.11 | | | 6.34 | | | 0.14 | |
| 11/27/2012 | 420.80 | | 2.11 | | | 7.92 | | | 0.16 | |
| 12/18/2012 | 448.00 | | 2.28 | | | 7.37 | | | 0.19 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

ft = feet; gpm = gallons per minute.

TABLE 4
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Seepage Weir -----> | | D/S Toe Drain | | | Floor Drain | | | Right Groin Drain | | |
|-------------------------------|-----------------------------------|----------------------|-------------------|----------------|--------------------|-------------------|----------------|--------------------------|-------------------|----------------|
| Date | Reservoir Elevation (feet) | read. | flow (gpm) | comment | read. | flow (gpm) | comment | read. | flow (gpm) | comment |
| 1/29/2013 | 468.60 | | 2.11 | | | 7.90 | | | 0.26 | |
| 2/28/2013 | 469.20 | | 2.11 | | | 7.92 | | | 0.24 | |
| 3/27/2013 | 468.30 | | 2.26 | | | 7.92 | | | 0.25 | |
| 4/25/2013 | 462.70 | | 2.16 | | | 7.92 | | | 0.25 | |
| 5/21/2013 | 454.20 | | 2.26 | | | 7.92 | | | 0.26 | |
| 6/25/2013 | 439.30 | | 2.34 | | | 7.51 | | | 0.21 | |
| 7/23/2013 | 431.50 | | 2.12 | | | 7.04 | | | 0.19 | |
| 8/21/2013 | 418.00 | | 2.11 | | | 6.34 | | | 0.17 | |
| 9/24/2013 | 404.00 | | 1.98 | | | 6.34 | | | 0.16 | |
| 10/29/2013 | 400.60 | | 2.13 | | | 6.89 | | | 0.19 | |
| 11/26/2013 | 407.90 | | 2.16 | | | 6.34 | | | 0.20 | |
| 12/19/2013 | 425.80 | | 2.26 | | | 5.28 | | | 0.22 | |
| 1/28/2014 | 439.70 | | 2.11 | | | 7.90 | | | 0.16 | |
| 2/25/2014 | 449.70 | | 2.17 | | | 7.20 | | | 0.19 | |
| 3/26/2014 | 465.10 | | 1.66 | | | 7.92 | | | 0.52 | |
| 3/28/2014 | 465.70 | | 2.09 | | | 6.44 | | | 0.18 | |
| 4/29/2014 | 465.30 | | 2.16 | | | 7.51 | | | 0.21 | |
| 5/28/2014 | 450.60 | | 1.90 | | | 7.08 | | | 0.21 | |
| 6/25/2014 | 440.10 | | 2.26 | | | 6.34 | | | 0.17 | |
| 7/29/2014 | 431.20 | | 2.03 | | | 6.49 | | | 0.15 | |
| 8/26/2014 | 419.50 | | 1.98 | | | 10.56 | | | 0.16 | |
| 9/23/2014 | 405.30 | | 2.11 | | | 6.30 | | | 0.13 | |
| 10/29/2014 | 400.90 | | 2.07 | | | 6.15 | | | 0.14 | |
| 11/25/2014 | 410.90 | | 1.90 | | | 6.34 | | | 0.14 | |
| 12/30/2014 | 430.60 | | 1.80 | | | 6.34 | | | 0.23 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

ft = feet; gpm = gallons per minute.

TABLE 4
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Seepage Weir -----> | | D/S Toe Drain | | | Floor Drain | | | Right Groin Drain | | |
|-------------------------------|-----------------------------------|----------------------|-------------------|----------------|--------------------|-------------------|----------------|--------------------------|-------------------|----------------|
| Date | Reservoir Elevation (feet) | read. | flow (gpm) | comment | read. | flow (gpm) | comment | read. | flow (gpm) | comment |
| 1/27/2015 | 466.70 | | 2.26 | | | 7.04 | | | 0.96 | |
| 2/25/2015 | 468.90 | | 2.11 | | | 6.30 | | | 0.15 | |
| 3/26/2015 | 465.90 | | 2.12 | | | 7.20 | | | 0.24 | |
| 4/28/2015 | 465.70 | | 2.29 | | | 5.70 | | | 0.15 | |
| 5/28/2015 | 466.40 | | 1.90 | | | 5.34 | | | 0.14 | |
| 6/30/2015 | 454.50 | | 1.50 | | | 4.30 | | | 0.52 | |
| 7/28/2015 | 445.60 | | 1.90 | | | 6.30 | | | 0.19 | |
| 8/28/2015 | 437.60 | | 2.10 | | | 6.30 | | | 0.15 | |
| 9/24/2015 | 426.90 | | 2.20 | | | 6.34 | | | 0.19 | |
| 10/27/2015 | 415.40 | | 2.00 | | | 6.30 | | | 0.16 | |
| 11/19/2015 | 412.90 | | 2.21 | | | 6.56 | | | 0.17 | |
| 12/22/2015 | 425.50 | | 2.53 | | | 5.86 | | | 0.19 | |
| 1/27/2016 | 463.60 | | 2.43 | | | 6.34 | | | 0.25 | |
| 2/25/2016 | 468.90 | | 2.53 | | | 7.33 | | | 0.22 | |
| 3/30/2016 | 468.00 | | 2.29 | | | 5.38 | | | 0.23 | |
| 4/28/2016 | 461.30 | | 2.10 | | | 7.30 | | | 0.23 | |
| 5/25/2016 | 451.30 | | 1.90 | | | 5.60 | | | 0.20 | |
| 6/28/2016 | 414.10 | | 1.70 | | | 6.00 | | | 0.15 | |
| 7/27/2016 | 434.20 | | 1.90 | | | 6.30 | | | 0.13 | |
| 8/23/2016 | 418.60 | | 2.06 | | | 6.40 | | | 0.09 | |
| 9/27/2016 | 406.40 | | 1.53 | | | 4.61 | | | 0.10 | |
| 10/26/2016 | 404.00 | | 2.21 | | | 6.34 | | | 0.17 | |
| 11/22/2016 | 413.60 | | 2.17 | | | 5.77 | | | 0.15 | |
| 12/20/2016 | 441.10 | | 2.23 | | | 6.16 | | | 0.15 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

ft = feet; gpm = gallons per minute.

TABLE 4
SAN JOAQUIN DAM
SEEPAGE WEIR MEASUREMENTS
JANUARY 2009 THROUGH DECEMBER 2018

| Seepage Weir -----> | | D/S Toe Drain | | | Floor Drain | | | Right Groin Drain | | |
|-------------------------------|-----------------------------------|----------------------|-------------------|----------------|--------------------|-------------------|----------------|--------------------------|-------------------|----------------|
| Date | Reservoir Elevation (feet) | read. | flow (gpm) | comment | read. | flow (gpm) | comment | read. | flow (gpm) | comment |
| 1/26/2017 | 471.60 | | 3.50 | | | 6.30 | | | 0.15 | |
| 2/24/2017 | 472.05 | | 3.15 | | | 6.30 | | | 0.15 | |
| 2/25/2017 | 472.00 | | 3.15 | | | 6.30 | | | 0.15 | |
| 2/26/2017 | 472.00 | | 3.15 | | | 6.30 | | | 0.15 | |
| 2/27/2017 | 472.00 | | 3.17 | | | 6.30 | | | 0.15 | |
| 2/28/2017 | 471.90 | | 3.15 | | | 6.40 | | | 0.16 | |
| 3/1/2017 | 471.90 | | 3.17 | | | 6.30 | | | 0.16 | |
| 3/2/2017 | 471.90 | | 3.36 | | | 7.90 | | | 0.15 | |
| 3/29/2017 | 467.90 | | 3.18 | | | 6.70 | | | 0.15 | |
| 4/27/2017 | 457.60 | | 2.50 | | | 6.30 | | | 0.39 | |
| 5/23/2017 | 453.50 | | 2.40 | | | 6.30 | | | 0.41 | |
| 6/21/2017 | 447.40 | | 2.30 | | | 5.60 | | | 0.20 | |
| 7/26/2017 | 435.10 | | 2.50 | | | 6.30 | | | 0.25 | |
| 8/25/2017 | 420.10 | | 2.26 | | | 5.20 | | | 0.24 | |
| 9/27/2017 | 407.10 | | 2.26 | | | 5.20 | | | 0.19 | |
| 10/26/2017 | 395.00 | | 2.50 | | | 5.80 | | | 0.22 | |
| 11/28/2017 | 409.00 | | 2.06 | | | 4.20 | | | 0.39 | |
| 12/20/2017 | 416.80 | | 2.32 | | | 4.51 | | | 0.17 | |
| 1/24/2018 | 434.50 | | 1.86 | | | 4.81 | | | 0.15 | |
| 2/21/2018 | 443.10 | | 2.40 | | | 5.70 | | | 0.08 | |
| 3/29/2018 | 453.00 | | 3.85 | | | 9.30 | | | 0.22 | |
| 4/26/2018 | 449.10 | | 2.26 | | | 6.34 | | | 0.20 | |
| 5/31/2018 | 453.10 | | 2.54 | | | 6.34 | | | 0.11 | |
| 6/28/2018 | 448.20 | | 2.11 | | | 5.28 | | | 0.21 | |
| 7/25/2018 | 440.40 | | 2.21 | | | 6.30 | | | 0.17 | |
| 8/22/2018 | 427.10 | | 2.21 | | | 6.10 | | | 0.13 | |
| 9/27/2018 | 439.60 | | 2.24 | | | 5.70 | | | 0.12 | |
| 10/18/2018 | 405.30 | | 2.37 | | | 5.46 | | | 0.18 | |
| 11/28/2018 | 408.60 | | 2.26 | | | 4.80 | | | 0.15 | |
| 12/19/2018 | 436.00 | | 2.56 | | | 5.10 | | | 0.28 | |

Notes:

Elevations are in feet relative to NAVD88 datum.

ft = feet; gpm = gallons per minute.

TABLE 5
SAN JOAQUIN DAM
SEDIMENT COLLECTION
APRIL 2014 THROUGH NOVEMBER 2016

| Date | Reservoir Elevation (feet) | West Drain | | | East Drain | | | Filter Drain | | | Comments |
|------------|----------------------------|------------------|-------------------|------------|------------------|-------------------|------------|------------------|-------------------|------------|---|
| | | Silt Depth (in.) | Silt Volume (lbs) | Flow (gpm) | Silt Depth (in.) | Silt Volume (lbs) | Flow (gpm) | Silt Depth (in.) | Silt Volume (lbs) | Flow (gpm) | |
| 4/30/2014 | 465.3 | 1.5 | 6.47 | 57 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 9.0 | |
| 5/28/2014 | 450.6 | 0.5 | 1.85 | 46.03 | 0.0 | 0.0 | 34.1 | 0.0 | 0.0 | 8.2 | |
| 7/17/2014 | 436.4 | 1.6 | 5.14 | 36.19 | 0.0 | 0.0 | 27.4 | 0.0 | 0.0 | 7.9 | 10 day hold at 438' from 7/1/14 to 7/14/14. |
| 7/29/2014 | 431.2 | 0.5 | 2.69 | 33.88 | 0.0 | 0.0 | 25.0 | 0.0 | 0.0 | 8.2 | |
| 8/28/2014 | 419.5 | 0.1 | 3.54 | 27.02 | 0.0 | 0.0 | 19.1 | 0.0 | 0.0 | 8.0 | |
| 9/23/2014 | 405.3 | 0.3 | 3.14 | 21.32 | 0.0 | 0.0 | 13.0 | 0.0 | 0.0 | 8.0 | |
| 10/30/2014 | 400.9 | 0.1 | 3.21 | 18.5 | 0.0 | 0.0 | 10.1 | 0.0 | 0.0 | 7.9 | West Drain has a lot of foam. |
| 11/25/2014 | 410.9 | 0.1 | 3.88 | 18.6 | 0.0 | 0.0 | 10.8 | 0.0 | 0.0 | 7.0 | |
| 12/30/2014 | 430.6 | 0.3 | 3.61 | 26.64 | 0.0 | 0.0 | 23.3 | 0.0 | 0.0 | 7.5 | |
| 1/27/2015 | 466.7 | 0.5 | 8.71 | 60.49 | 0.0 | 0.0 | 61.5 | 0.0 | 0.0 | 8.2 | |
| 3/5/2015 | 470.1 | 0.3 | 4.30 | 64.1 | 0.0 | 0.0 | 64.2 | 0.0 | 0.0 | 8.0 | |
| 3/26/2015 | 465.9 | 0.1 | 2.73 | 63.4 | 0.0 | 0.0 | 62.1 | 0.0 | 0.0 | 9.0 | |
| 4/28/2015 | 465.7 | 0.1 | 2.41 | 59.6 | 0.0 | 0.0 | 60.1 | 0.0 | 0.0 | 9.9 | |
| 5/28/2015 | 466.4 | 0.1 | 2.33 | 49.61 | 0.0 | 0.0 | 54.0 | 0.0 | 0.0 | 7.4 | |
| 6/30/2015 | 454.5 | 0.3 | 2.47 | 43.46 | 0.0 | 0.0 | 44.8 | 0.0 | 0.0 | 8.3 | |
| 7/28/2015 | 445.6 | 0.1 | 2.08 | 35.9 | 0.0 | 0.0 | 35.4 | 0.0 | 0.0 | 6.7 | |
| 8/28/2015 | 473.6 | 0.3 | 2.13 | 30.4 | 0.0 | 0.0 | 29.2 | 0.0 | 0.0 | 7.1 | |
| 9/24/2015 | 426.9 | 0.1 | 2.04 | 25.1 | 0.0 | 0.0 | 23.5 | 0.0 | 0.0 | 7.10 | |
| 10/27/2015 | 415.4 | 0.3 | 2.11 | 18.7 | 0.0 | 0.0 | 16.9 | 0.0 | 0.0 | 6.90 | |
| 11/19/2015 | 412.9 | 0.1 | 2.02 | 16.38 | 0.0 | 0.0 | 14.2 | 0.0 | 0.0 | 6.4 | |
| 12/22/2015 | 425.5 | 0.1 | 2.04 | 19.4 | 0.0 | 0.0 | 19.5 | 0.0 | 0.0 | 6.7 | |
| 1/27/2016 | 463.6 | 0.3 | 2.47 | 42.08 | 0.0 | 0.0 | 53.2 | 0.0 | 0.0 | 6.5 | |
| 2/25/2016 | 468.9 | 0.5 | 3.72 | 50.05 | 0.0 | 0.0 | 53.4 | 0.0 | 0.0 | 6.6 | |
| 3/30/2016 | 468.0 | 0.3 | 2.61 | 50.9 | 0.0 | 0.0 | 56.4 | 0.0 | 0.0 | 6.2 | |
| 4/28/2016 | 461.3 | 0.3 | 2.43 | 46.75 | 0.0 | 0.0 | 50.8 | 0.0 | 0.0 | 6.7 | |
| 5/25/2016 | 451.3 | 0.1 | 2.09 | 40.29 | 0.0 | 0.0 | 43.1 | 0.0 | 0.0 | 7.2 | |
| 6/28/2016 | 414.1 | 0.1 | 2.11 | 34.83 | 0.0 | 0.0 | 35.0 | 0.0 | 0.0 | 6.7 | |
| 7/27/2016 | 434.2 | 0.1 | 2.27 | 29.3 | 0.0 | 0.0 | 28.2 | 0.0 | 0.0 | 6.6 | 10 day hold from 7/11/16 to 7/21/16. |
| 8/23/2016 | 418.6 | 0.1 | 2.04 | 20.95 | 0.0 | 0.0 | 19.0 | 0.0 | 0.0 | 6.5 | 5 day hold from 8/23/16 to 8/28/16. |
| 9/27/2016 | 406.4 | 0.1 | 2.06 | 15.91 | 0.0 | 0.0 | 13.0 | 0.0 | 0.0 | 5.7 | 10 day hold from 9/30/16 to 10/10/16. |
| 10/26/2016 | 404.0 | 0.3 | 2.07 | 13.95 | 0.0 | 0.0 | 10.9 | 0.0 | 0.0 | 5.9 | |
| 11/22/2016 | 413.6 | 0.3 | 2.13 | 14.8 | 0.0 | 0.0 | 12.0 | 0.0 | 0.0 | 6.2 | |

Notes:

- 1) Elevations are in feet relative to NAVD88 datum.
- 2) In 2017 the District suspended the collection of sediment.

TABLE 6
SAN JOAQUIN DAM
HORIZONTAL AND VERTICAL MOVEMENT SURVEY DATA
2004 THROUGH 2018

| Date | Reservoir Elevation (feet) | Horizontal Displacement Since Initial Survey (Feet) Positive = North (Downstream); Negative = South (Upstream) | | | | | | | | | Comments |
|------------|----------------------------------|---|--------|--------|--------|--------|-------|-------|-------|--------|-------------------|
| | | SA-1 | SA-2 | SA-3 | SB-1 | SB-2 | SB-3 | SB-4 | SB-5 | SB-6 | |
| 12/20/2004 | 370.10 | 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 | |
| 10/26/2005 | 411.70 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 11/4/2005 | 414.50 | -0.020 | 0.000 | -0.030 | -0.005 | 0.005 | 0.020 | 0.020 | 0.015 | 0.000 | 0.005 |
| 6/2/2006 | 467.50 | -0.020 | 0.000 | -0.040 | -0.005 | 0.010 | 0.030 | 0.030 | 0.025 | 0.000 | 0.010 |
| 5/30/2007 | 460.60 | -0.020 | 0.000 | -0.035 | -0.005 | 0.010 | 0.025 | 0.025 | 0.020 | -0.005 | 0.010 |
| 6/6/2008 | 462.10 | -0.020 | 0.000 | -0.025 | 0.005 | 0.020 | 0.030 | 0.030 | 0.025 | 0.000 | 0.020 |
| 6/10/2009 | 462.60 | -0.035 | -0.005 | -0.035 | -0.005 | 0.010 | 0.025 | 0.025 | 0.020 | 0.000 | 0.015 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| | | | | | | | | | | | No survey in 2017 |
| 6/14/2018 | 451.80 | -0.040 | -0.010 | -0.040 | -0.025 | -0.005 | 0.015 | 0.020 | 0.025 | 0.000 | 0.020 |

Notes:

- 1) Elevations are in feet relative to NAVD88 datum.
- 2) SA-4, SE-1, and SE-4 were destroyed (see Figure 6).

TABLE 6
SAN JOAQUIN DAM
HORIZONTAL AND VERTICAL MOVEMENT SURVEY DATA
2004 THROUGH 2018

| Date | Reservoir Elevation (feet) | Horizontal Displacement Since Initial Survey (Feet) Positive = North (Downstream); Negative = South (Upstream) | | | | | | | | | | | | | | Comments |
|------------|----------------------------|---|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|--------|-------------------|
| | | SC-1 | SC-2 | SC-3 | SC-4 | SC-5 | SC-6 | SC-7 | SC-8 | SD-1 | SD-2 | SD-3 | SD-4 | SD-5 | SD-6 | SD-7 |
| 12/20/2004 | 370.10 | 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 | |
| 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 | |
| 11/4/2005 | 414.50 | -0.035 | -0.045 | -0.050 | -0.070 | -0.085 | -0.105 | -0.125 | -0.120 | 0.000 | 0.000 | 0.000 | 0.065 | 0.045 | -0.010 | -0.005 |
| 6/2/2006 | 467.50 | -0.035 | -0.045 | -0.045 | -0.070 | -0.085 | -0.105 | -0.125 | -0.120 | -0.005 | 0.000 | 0.000 | 0.075 | 0.045 | -0.015 | -0.005 |
| 5/30/2007 | 460.60 | | | | | | | | | | | | | | | |
| 6/6/2008 | 462.10 | -0.045 | -0.040 | -0.045 | -0.070 | -0.090 | -0.110 | -0.120 | -0.120 | -0.005 | 0.000 | 0.000 | 0.080 | 0.045 | -0.015 | 0.000 |
| 6/10/2009 | 462.60 | -0.065 | -0.060 | -0.055 | -0.080 | -0.095 | -0.110 | -0.130 | -0.125 | -0.010 | 0.000 | 0.000 | 0.085 | 0.040 | -0.015 | -0.005 |
| 5/27/2010 | 463.30 | -0.065 | -0.050 | -0.050 | -0.080 | -0.095 | -0.105 | -0.130 | -0.125 | -0.010 | 0.000 | 0.000 | 0.080 | 0.045 | -0.020 | -0.005 |
| 5/26/2011 | 457.20 | -0.065 | -0.050 | -0.050 | -0.075 | -0.095 | -0.105 | -0.130 | -0.130 | -0.010 | 0.005 | 0.010 | 0.090 | 0.055 | -0.015 | -0.005 |
| 5/24/2012 | 457.20 | -0.065 | -0.050 | -0.050 | -0.080 | -0.105 | -0.110 | -0.135 | -0.135 | -0.010 | 0.005 | 0.010 | 0.090 | 0.055 | -0.015 | -0.005 |
| 6/20/2013 | 441.40 | -0.060 | -0.055 | -0.055 | -0.080 | -0.105 | -0.115 | -0.135 | -0.135 | -0.010 | 0.015 | 0.015 | 0.095 | 0.060 | -0.010 | 0.005 |
| 5/2/2014 | 465.10 | -0.050 | -0.050 | -0.050 | -0.080 | -0.090 | -0.115 | -0.135 | -0.130 | -0.015 | 0.000 | 0.005 | 0.080 | 0.040 | -0.015 | -0.005 |
| 6/10/2015 | 463.20 | -0.060 | -0.055 | -0.045 | -0.075 | -0.095 | -0.115 | -0.130 | -0.130 | -0.005 | 0.010 | 0.015 | 0.090 | 0.055 | -0.010 | 0.005 |
| 8/1/2016 | 430.80 | -0.065 | -0.055 | -0.050 | -0.075 | -0.095 | -0.115 | -0.125 | -0.125 | -0.010 | 0.010 | 0.015 | 0.085 | 0.055 | -0.010 | 0.005 |
| | | | | | | | | | | | | | | | | No survey in 2017 |
| 6/14/2018 | 451.80 | -0.070 | -0.060 | -0.050 | -0.070 | -0.100 | -0.115 | -0.135 | -0.140 | -0.010 | 0.010 | 0.020 | 0.085 | 0.055 | -0.010 | 0.000 |

Notes:

- 1) Elevations are in feet relative to NAVD88 datum.
- 2) SA-4, SE-1, and SE-4 were destroyed (see Figure 6).

TABLE 6
SAN JOAQUIN DAM
HORIZONTAL AND VERTICAL MOVEMENT SURVEY DATA
2004 THROUGH 2018

| Date | Reservoir Elevation (feet) | Horizontal Displacement Since Initial Survey (Feet) Positive = North (Downstream); Negative = South (Upstream) | | | | | |
|------------|----------------------------|---|-------|-------|-------|---------|---|
| | | SE-2 | SE-3 | SE-5 | SE-6 | SE-7 | Comments |
| 12/20/2004 | 370.10 | 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 | |
| 10/26/2005 | 411.70 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 11/4/2005 | 414.50 | 0.025 | 0.040 | 0.055 | 0.025 | -25.340 | |
| 6/2/2006 | 467.50 | | | | | | |
| 5/30/2007 | 460.60 | | | | | | The "SE" Survey Monument Points are located on the upstream face of the dam and cannot be surveyed while the reservoir elevation is above 422 feet. |
| 6/6/2008 | 462.10 | | | | | | |
| 6/10/2009 | 462.60 | | | | | | |
| 5/27/2010 | 463.30 | | | | | | |
| 5/26/2011 | 457.20 | | | | | | |
| 5/24/2012 | 457.20 | | | | | | |
| 6/20/2013 | 441.40 | | | | | | |
| 5/2/2014 | 465.10 | | | | | | |
| 6/10/2015 | 463.20 | | | | | | |
| 8/1/2016 | 430.80 | | | | | | |
| | | | | | | | No survey in 2017 |
| 6/14/2018 | 451.80 | | | | | | |

Notes:

- 1) Elevations are in feet relative to NAVD88 datum.
- 2) SA-4, SE-1, and SE-4 were destroyed (see Figure 6).

TABLE 6
SAN JOAQUIN DAM
HORIZONTAL AND VERTICAL MOVEMENT SURVEY DATA
2004 THROUGH 2018

| Date | Reservoir Elevation (feet) | Vertical Movement Since Initial Reading (Feet) | | | | | | | | | Comments |
|-------------|---|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------------|
| | | SA-1 | SA-2 | SA-3 | SB-1 | SB-2 | SB-3 | SB-4 | SB-5 | SB-6 | |
| 12/20/2004 | 370.10 | 302.401 | 302.296 | 302.329 | 362.278 | 362.786 | 362.602 | 362.663 | 362.415 | 362.336 | 363.085 |
| 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 |
| 10/26/2005 | 411.70 | | | | | | | | | | |
| 11/4/2005 | 414.50 | | | | | | | | | | |
| 6/2/2006 | 467.50 | 302.374 | 302.264 | 302.294 | 362.264 | 362.769 | 362.584 | 362.639 | 362.404 | 362.299 | 363.072 |
| 5/30/2007 | 460.60 | 302.362 | 302.258 | 302.291 | 362.244 | 362.751 | 362.564 | 362.619 | 362.383 | 362.283 | 363.054 |
| 6/6/2008 | 462.10 | 302.359 | 302.254 | 302.288 | 362.246 | 362.756 | 362.571 | 362.626 | 362.391 | 362.291 | 363.061 |
| 6/10/2009 | 462.60 | 302.353 | 302.246 | 302.281 | 362.254 | 362.764 | 362.574 | 362.629 | 362.394 | 362.294 | 363.064 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |
| | | | | | | | | | | | No survey in 2017 |
| 6/14/2018 | 451.80 | 302.339 | 302.234 | 302.269 | 362.254 | 362.764 | 362.574 | 362.629 | 362.394 | 362.299 | 363.069 |

Notes:

- 1) Elevations are in feet relative to NAVD88 datum.
- 2) SA-4, SE-1, and SE-4 were destroyed (see Figure 6).

TABLE 6
SAN JOAQUIN DAM
HORIZONTAL AND VERTICAL MOVEMENT SURVEY DATA
2004 THROUGH 2018

| Date | Reservoir Elevation (feet) | Vertical Movement Since Initial Reading (Feet) | | | | | | | | | | | | | | Comments | |
|-------------|-----------------------------------|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------------|--|
| | | SC-1 | SC-2 | SC-3 | SC-4 | SC-5 | SC-6 | SC-7 | SC-8 | SD-1 | SD-2 | SD-3 | SD-4 | SD-5 | SD-6 | SD-7 | |
| 12/20/2004 | 370.10 | 422.215 | 421.907 | 422.114 | 421.675 | 421.626 | 421.685 | 421.927 | 422.561 | 478.174 | 478.795 | 479.724 | 480.586 | 479.705 | 479.076 | 478.466 | |
| 9/27/2005 | 422.80 | 422.200 | 421.876 | 422.082 | 421.643 | 421.593 | 421.655 | 421.897 | 422.525 | 478.151 | 478.767 | 479.699 | 480.556 | 479.664 | 479.038 | 478.418 | |
| 10/26/2005 | 411.70 | | | | | | | | | | | | | | | | |
| 11/4/2005 | 414.50 | | | | | | | | | | | | | | | | |
| 6/2/2006 | 467.50 | 422.225 | 421.900 | 422.105 | 421.665 | 421.615 | 421.676 | 421.915 | 422.543 | 478.158 | 478.773 | 479.698 | 480.553 | 479.663 | 479.033 | 478.408 | |
| 5/30/2007 | 460.60 | 422.197 | 421.875 | 422.081 | 421.641 | 421.592 | 421.654 | 421.895 | 422.524 | 478.144 | 478.758 | 479.688 | 480.540 | 479.650 | 479.023 | 478.405 | |
| 6/6/2008 | 462.10 | 422.198 | 421.888 | 422.093 | 421.653 | 421.608 | 421.668 | 421.908 | 422.538 | 478.156 | 478.771 | 479.701 | 480.556 | 479.661 | 479.036 | 478.421 | |
| 6/10/2009 | 462.60 | 422.194 | 421.884 | 422.089 | 421.649 | 421.599 | 421.664 | 421.909 | 422.539 | 478.164 | 478.779 | 479.709 | 480.564 | 479.674 | 479.049 | 478.434 | |
| 5/27/2010 | 463.30 | 422.209 | 421.894 | 422.099 | 421.659 | 421.609 | 421.674 | 421.919 | 422.549 | 478.174 | 478.784 | 479.714 | 480.569 | 479.679 | 479.054 | 478.439 | |
| 5/26/2011 | 457.20 | 422.209 | 421.889 | 422.094 | 421.654 | 421.604 | 421.669 | 421.914 | 422.544 | 478.174 | 478.784 | 479.714 | 480.569 | 479.679 | 479.054 | 478.439 | |
| 5/24/2012 | 457.20 | 422.204 | 421.884 | 422.089 | 421.649 | 421.599 | 421.664 | 421.909 | 422.539 | 478.164 | 478.774 | 479.699 | 480.554 | 479.664 | 479.039 | 478.424 | |
| 6/20/2013 | 441.40 | 422.189 | 421.884 | 422.089 | 421.649 | 421.599 | 421.664 | 421.914 | 422.539 | 478.164 | 478.774 | 479.704 | 480.554 | 479.659 | 479.034 | 478.424 | |
| 5/2/2014 | 465.10 | 422.184 | 421.889 | 422.094 | 421.654 | 421.604 | 421.669 | 421.919 | 422.534 | 478.157 | 478.774 | 479.699 | 480.549 | 479.654 | 479.034 | 478.429 | |
| 6/10/2015 | 463.20 | 422.169 | 421.884 | 422.089 | 421.649 | 421.599 | 421.664 | 421.909 | 422.524 | 478.164 | 478.774 | 479.699 | 480.552 | 479.654 | 479.034 | 478.429 | |
| 8/1/2016 | 430.80 | 422.159 | 421.874 | 422.079 | 421.639 | 421.594 | 421.659 | 421.904 | 422.519 | 478.167 | 478.779 | 479.704 | 480.554 | 479.659 | 479.039 | 478.429 | |
| | | | | | | | | | | | | | | | | No survey in 2017 | |
| 6/14/2018 | 451.80 | 422.184 | 421.904 | 422.109 | 421.669 | 421.619 | 421.684 | 421.934 | 422.559 | 478.207 | 478.809 | 479.739 | 480.602 | 479.689 | 479.074 | 478.479 | |

Notes:

- 1) Elevations are in feet relative to NAVD88 datum.
- 2) SA-4, SE-1, and SE-4 were destroyed (see Figure 6).

TABLE 6
SAN JOAQUIN DAM
HORIZONTAL AND VERTICAL MOVEMENT SURVEY DATA
2004 THROUGH 2018

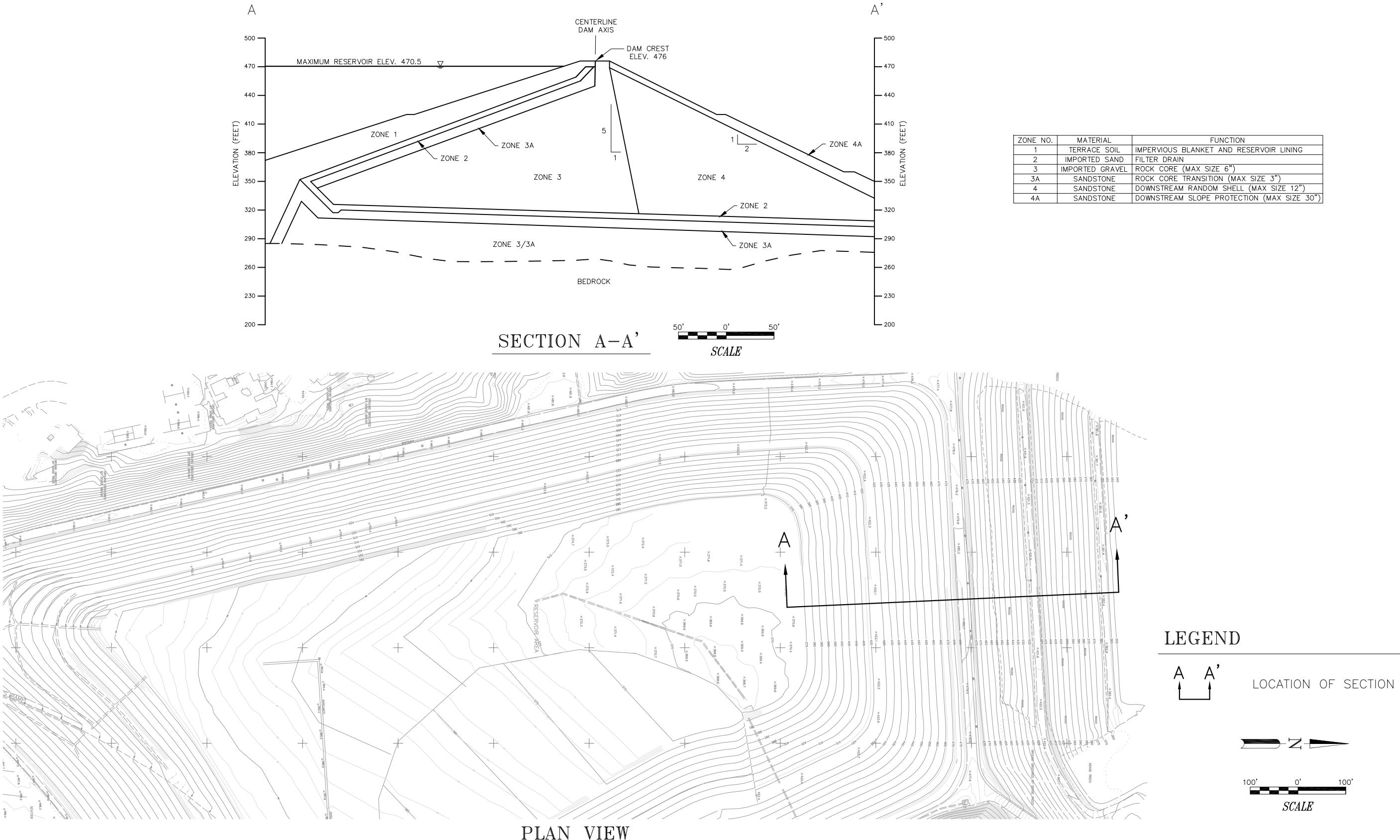
| Date | Reservoir Elevation (feet) | Vertical Movement Since Initial Reading (Feet) Positive = Upward (Uplift); Negative = Downward (Settlement) | | | | | | Comments |
|-------------|-----------------------------------|---|-------------|-------------|-------------|-------------|-------------------|---|
| | | SE-2 | SE-3 | SE-5 | SE-6 | SE-7 | | |
| 12/20/2004 | 370.10 | 422.220 | 422.108 | 422.180 | 422.478 | 422.829 | | |
| 9/27/2005 | 422.80 | 422.181 | 422.069 | 422.130 | 422.452 | 422.807 | | |
| 10/26/2005 | 411.70 | | | | | | | |
| 11/4/2005 | 414.50 | | | | | | | |
| 6/2/2006 | 467.50 | | | | | | | |
| 5/30/2007 | 460.60 | | | | | | | The "SE" Survey Monument Points are located on the upstream face of the dam and cannot be surveyed while the reservoir elevation is above 422 feet. |
| 6/6/2008 | 462.10 | | | | | | | |
| 6/10/2009 | 462.60 | | | | | | | |
| 5/27/2010 | 463.30 | | | | | | | |
| 5/26/2011 | 457.20 | | | | | | | |
| 5/24/2012 | 457.20 | | | | | | | |
| 6/20/2013 | 441.40 | | | | | | | |
| 5/2/2014 | 465.10 | | | | | | | |
| 6/10/2015 | 463.20 | | | | | | | |
| 8/1/2016 | 430.80 | | | | | | | |
| | | | | | | | No survey in 2017 | |
| 6/14/2018 | 451.80 | | | | | | | |

Notes:

- 1) Elevations are in feet relative to NAVD88 datum.
- 2) SA-4, SE-1, and SE-4 were destroyed (see Figure 6).

**ANNUAL SURVEILLANCE REPORT
JANUARY 2018 THROUGH DECEMBER 2018
SAN JOAQUIN DAM AND RESERVOIR, DSOD DAM NO. 1029-000**

FIGURES



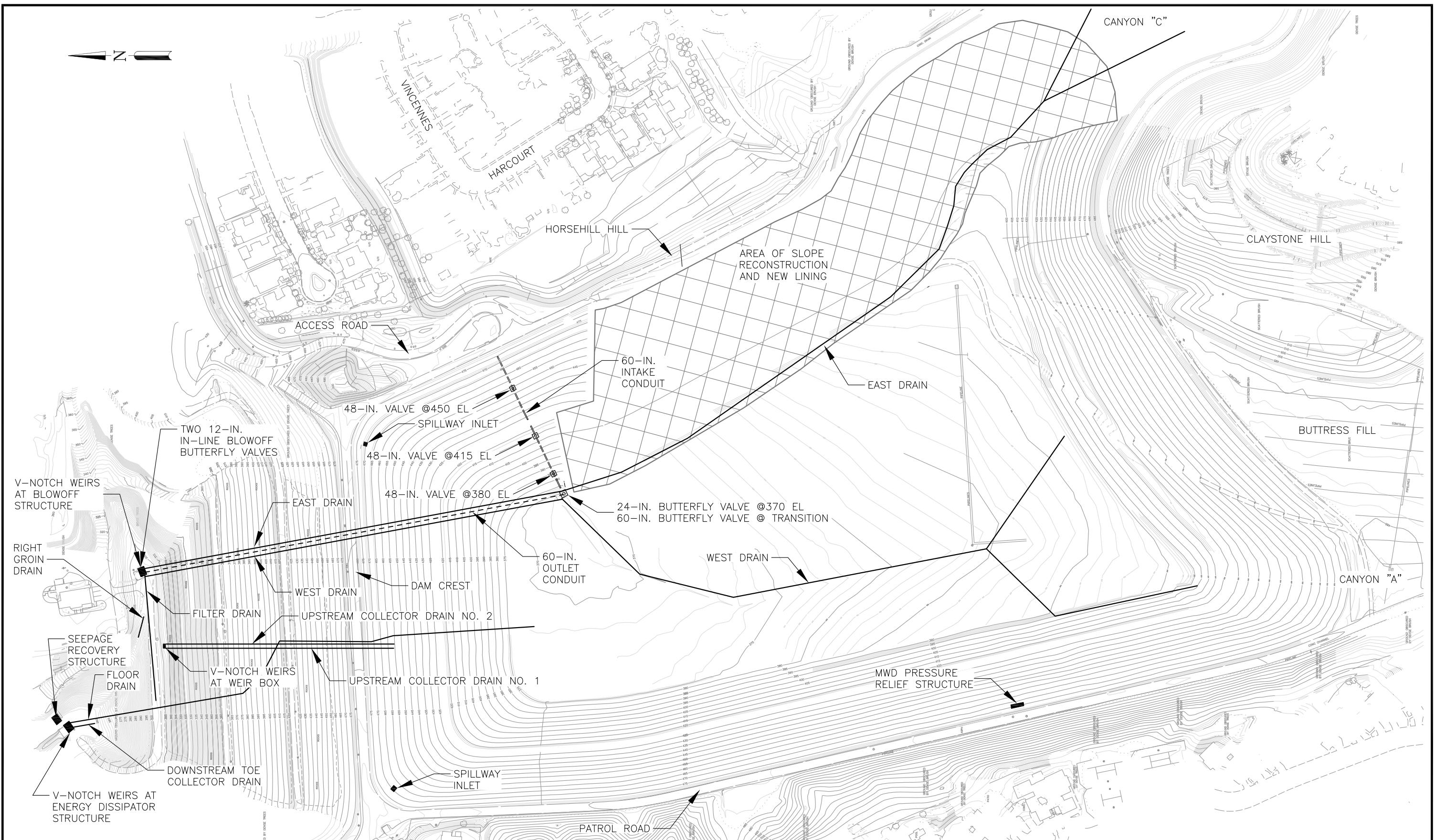
| |
|--------|
| NOTES: |
| |



GENTERRA
CONSULTANTS, INC.
Engineering & Environmental Services
Irvine, California

SAN JOAQUIN
DAM AND RESERVOIR

PLAN VIEW AND SECTION A-A'



NOTES:
1. NOT TO SCALE



**GENTERRA
CONSULTANTS, INC.**
Engineering & Environmental Services
Irvine, California

**SAN JOAQUIN
DAM AND RESERVOIR**

DAM AND RESERVOIR SITE PLAN

PROJECT NO.

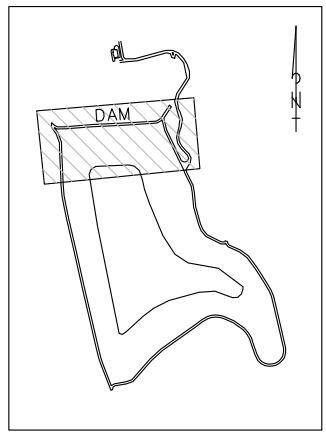
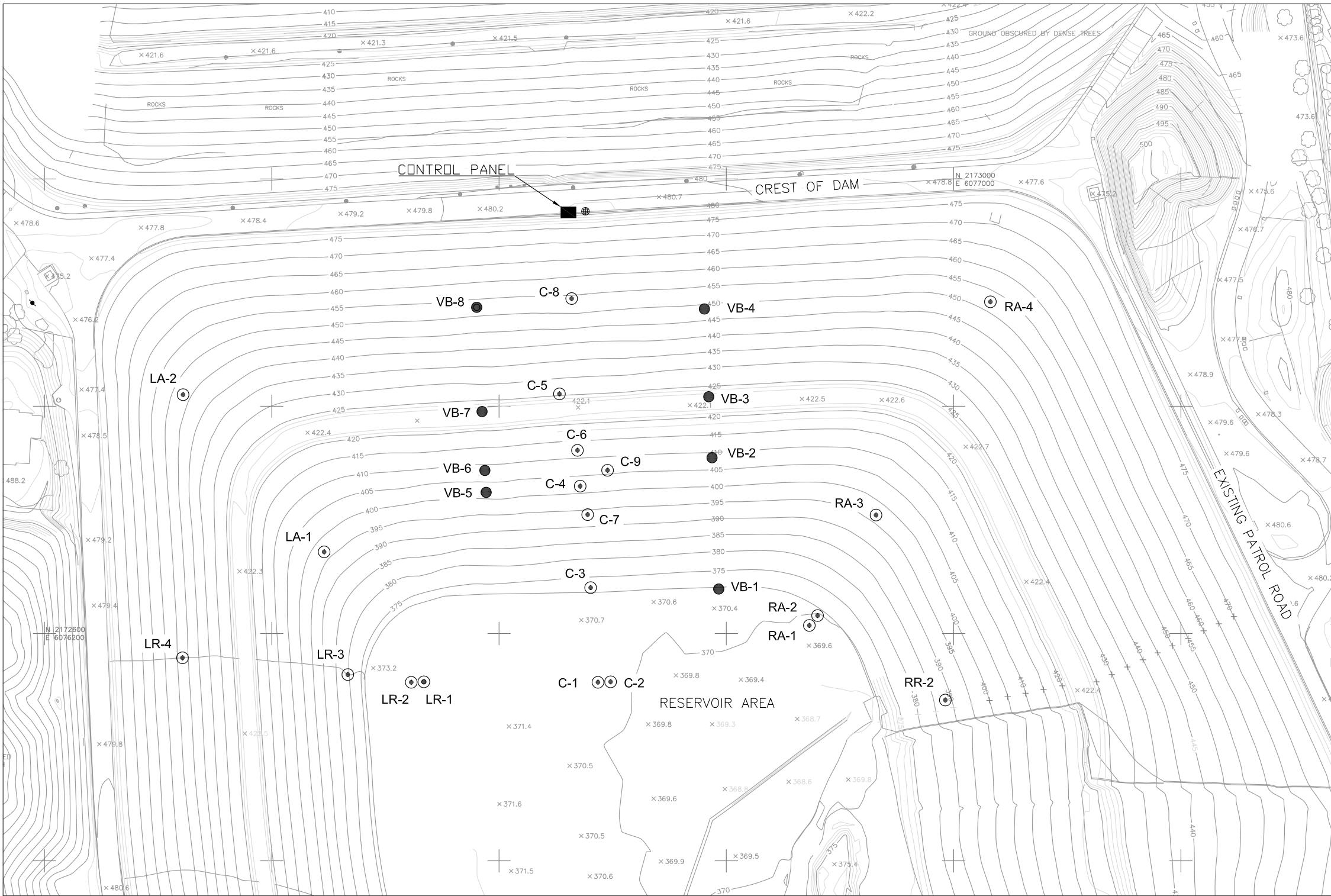
397C-IRW

DATE

JUNE 2019

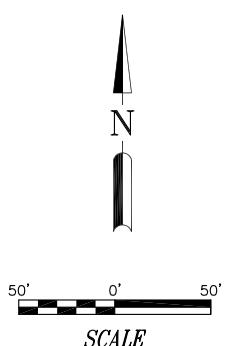
FIGURE

2

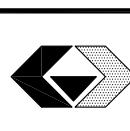


LEGEND

- | | |
|-----|---------------------------|
| 380 | 5-FOOT CONTOUR |
| ● | VIBRATING WIRE PIEZOMETER |
| ○ | PNEUMATIC PIEZOMETER |



NOTES:



GENTERRA
CONSULTANTS, INC.
Engineering & Environmental Services
Irvine, California

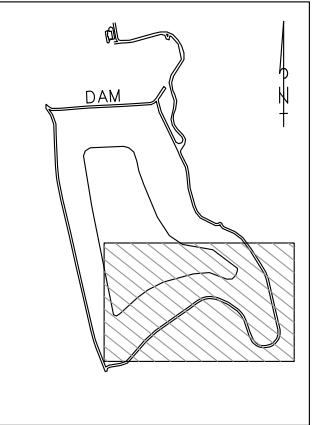
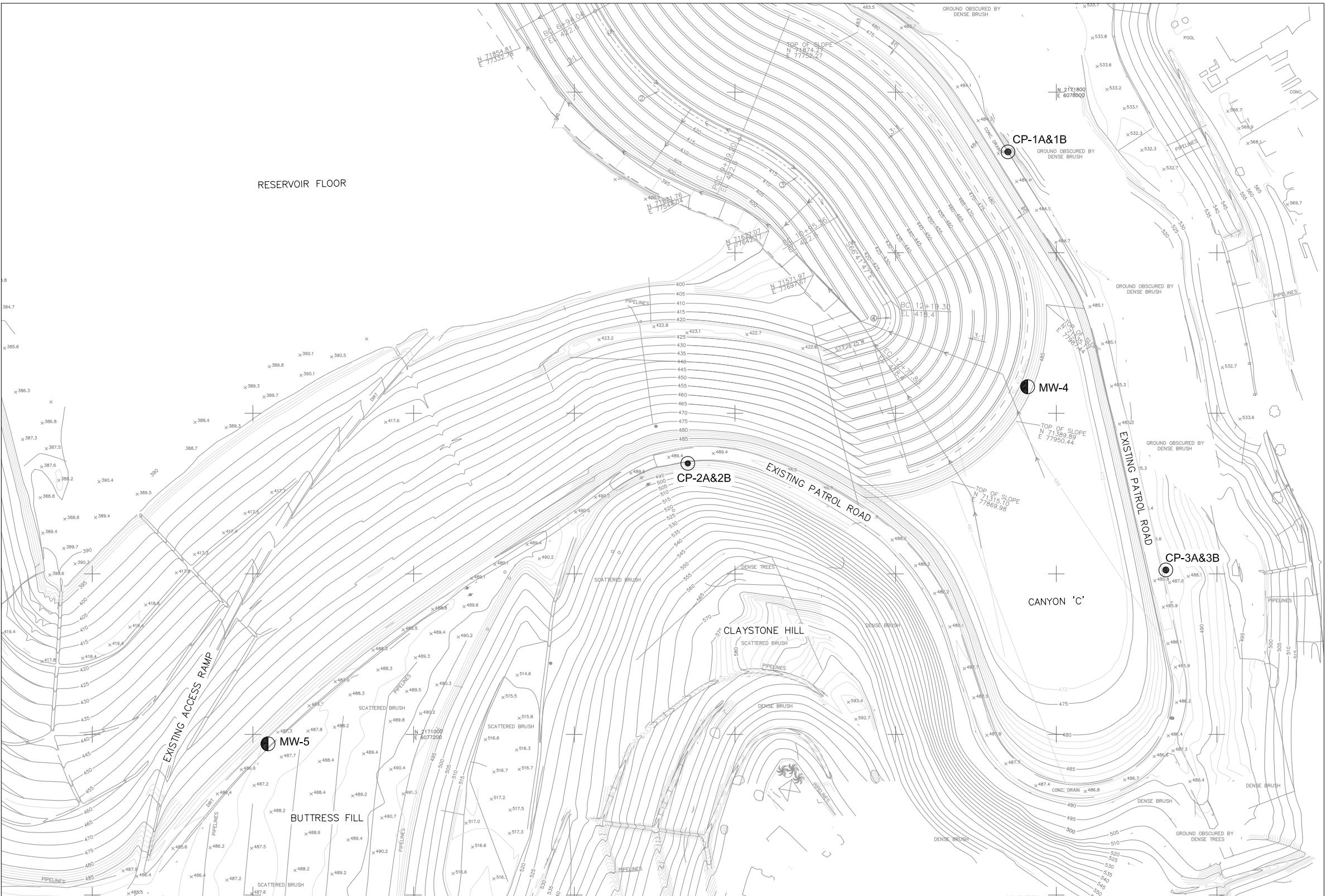
SAN JOAQUIN
DAM AND RESERVOIR

DAM EMBANKMENT AND ABUTMENT
PIEZOMETER LOCATIONS

PROJECT NO.
397C-IRW

DATE
JUNE 2019

FIGURE
3



KEY MAP

LEGEND

CP-1A&1B



OPEN-WELL PIEZOMETER

MW-4

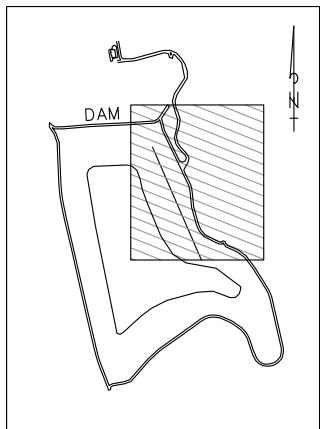


MONITORING WELL



NOT TO SCALE

| NOTES: |   GENTERRA CONSULTANTS, INC. Engineering & Environmental Services Irvine, California | SAN JOAQUIN DAM AND RESERVOIR | LOCATIONS OF OPEN-WELL PIEZOMETERS AND MONITORING WELLS MW-4 AND MW-5 | PROJECT NO. | DATE | FIGURE |
|--------|---|----------------------------------|---|-------------|-----------|--------|
| | | | | 397C-IRW | JUNE 2019 | 4 |



LEGEND

MW-1

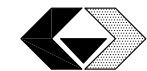
MONITORING WELL



80' 0' 80'

SCALE

NOTES:



**GENTERRA
CONSULTANTS, INC.**
Engineering & Environmental Services
Irvine, California

**SAN JOAQUIN
DAM AND RESERVOIR**

LOCATIONS OF MONITORING WELLS
MW-1, MW-2, MW-3,
MW-6, MW-7, AND MW-8

PROJECT NO.

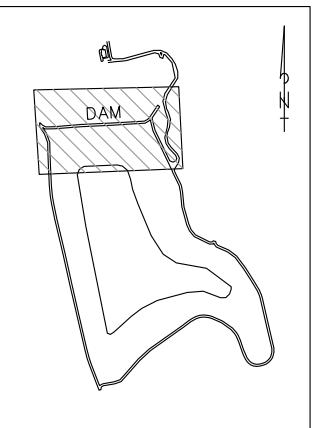
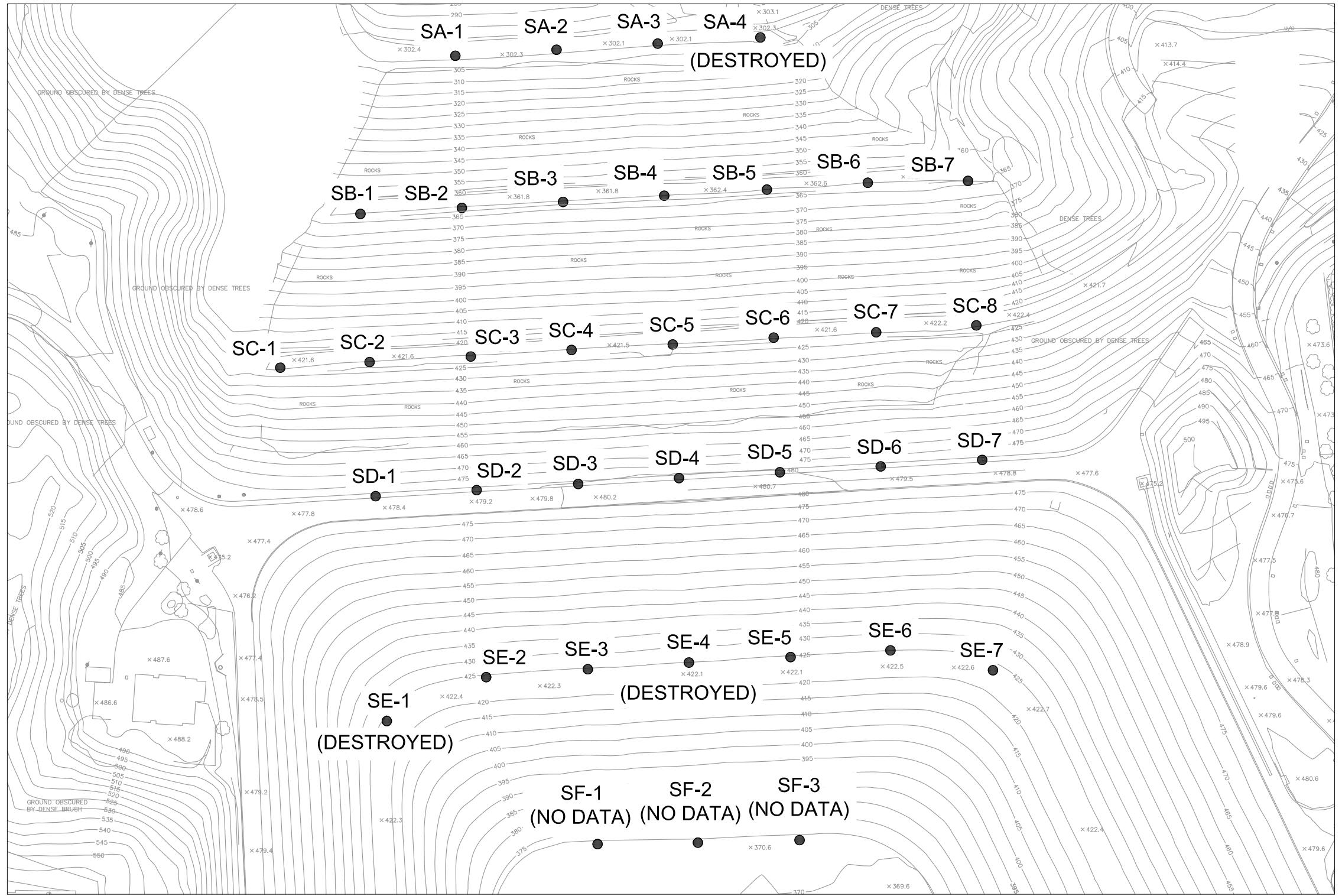
397C-IRW

DATE

JUNE 2019

FIGURE

5



KEY MAP
NTS

LEGEND

SD-3 ● SURVEY MONUMENT



80' 0' 80'

1 INCH = 80 FEET

NOTES:



GENTERRA
CONSULTANTS, INC.
Engineering & Geotechnical Services
Irvine, California

SAN JOAQUIN
DAM AND RESERVOIR

LOCATIONS OF
SURVEY MONUMENTS

PROJECT NO.

DATE

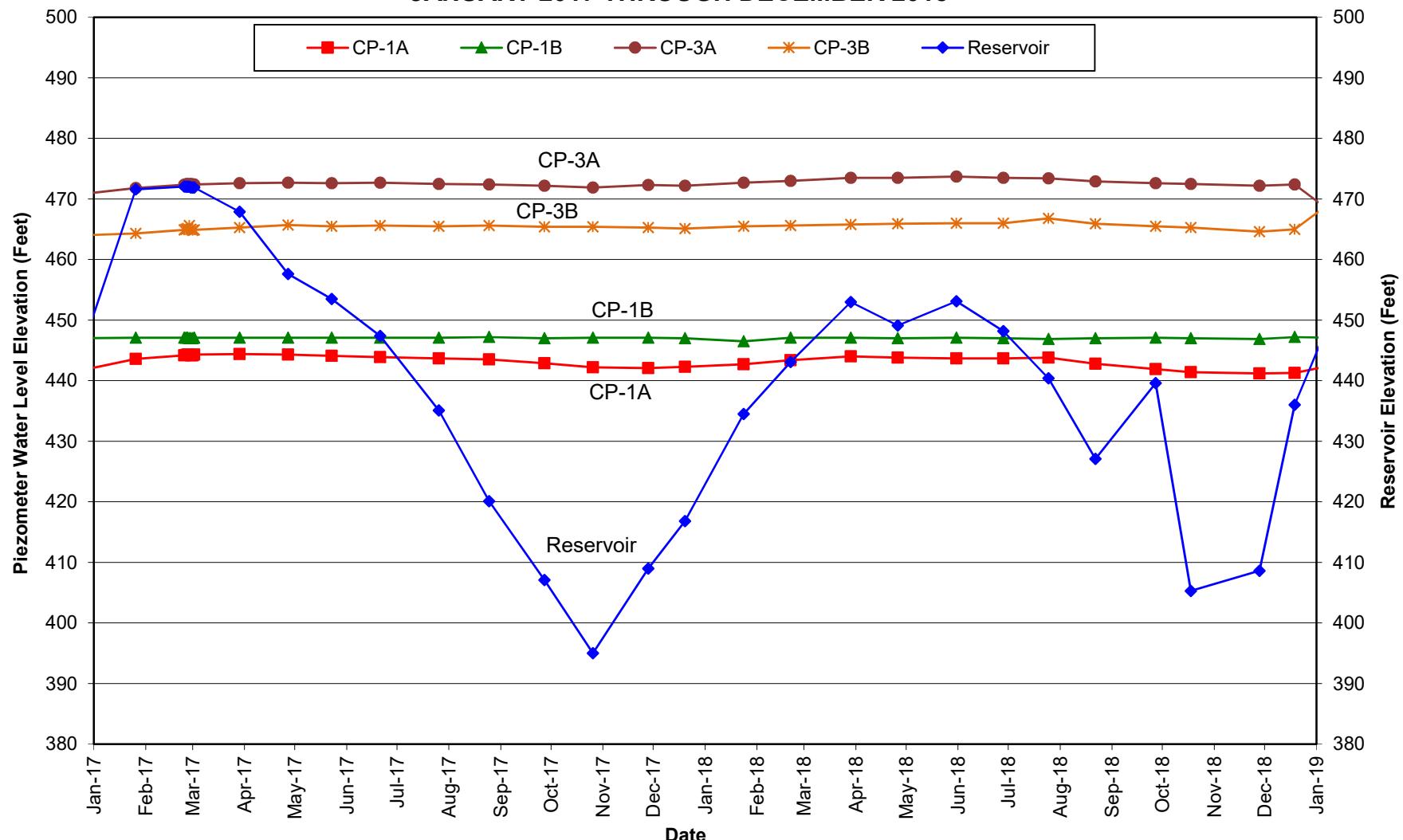
FIGURE

397C-IRW

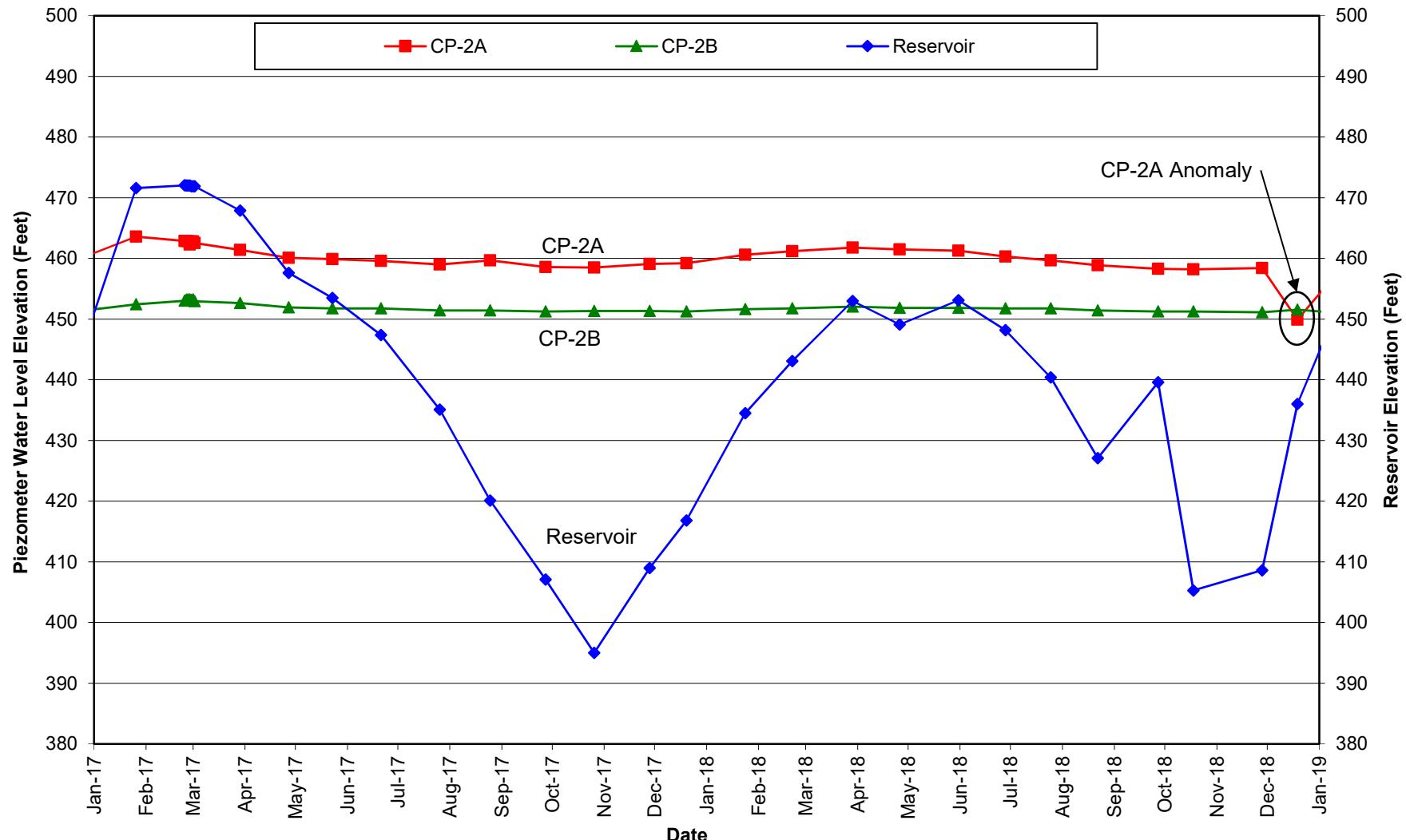
JUNE 2019

6

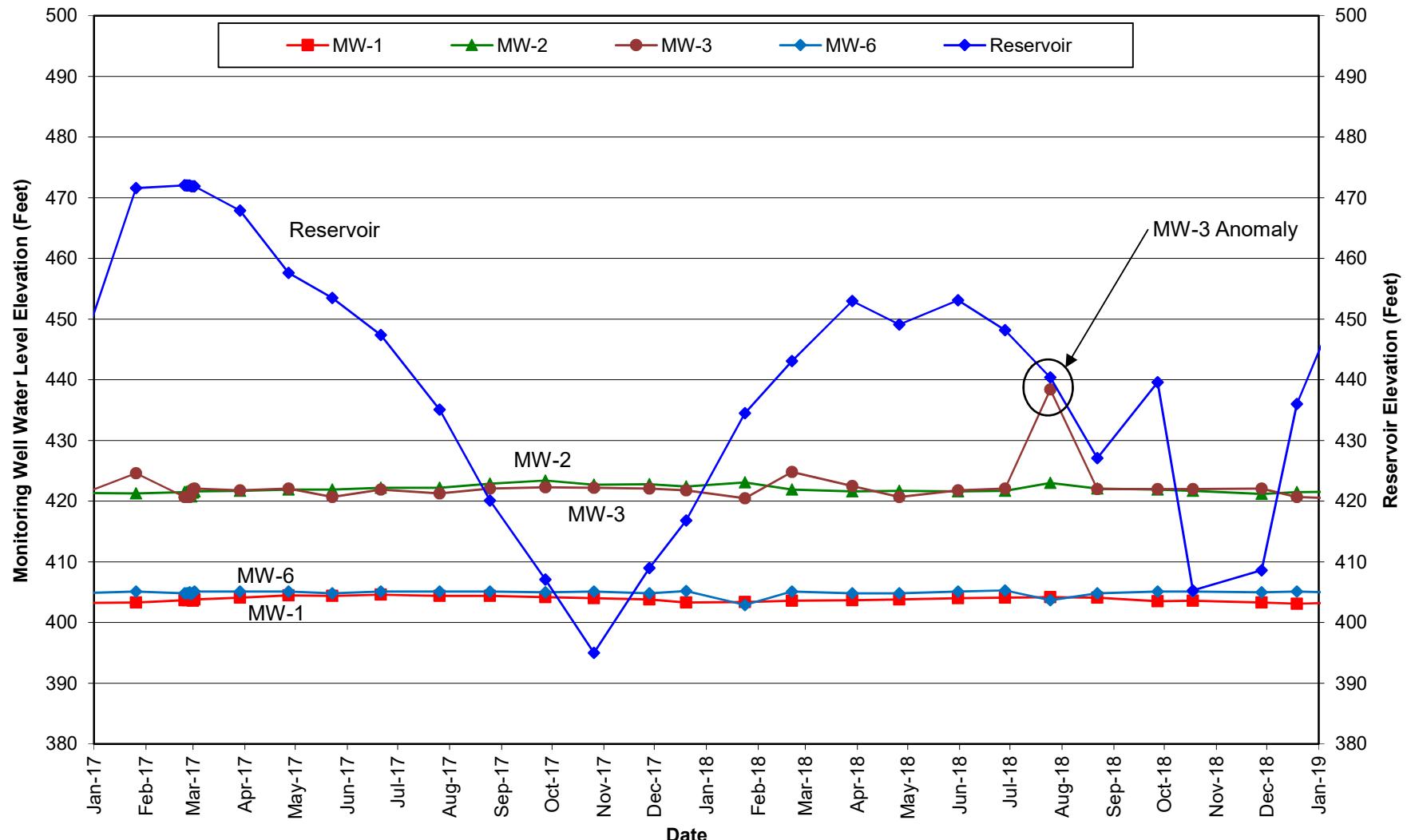
SAN JOAQUIN DAM
2-YR PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
PIEZOMETERS CP-1A, CP-1B, CP-3A, AND CP-3B
JANUARY 2017 THROUGH DECEMBER 2018



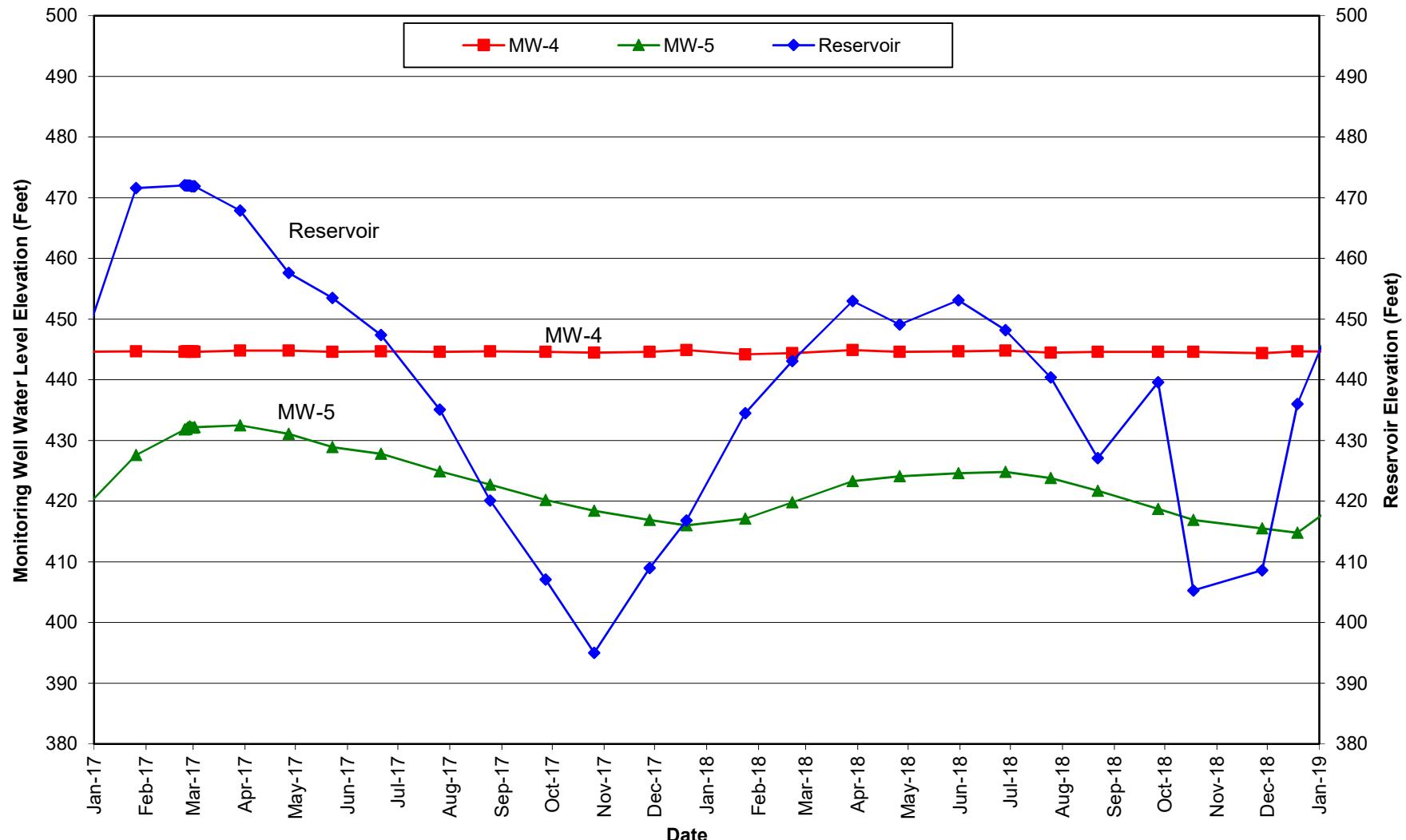
SAN JOAQUIN DAM
2-YR PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
PIEZOMETERS CP-2A AND CP-2B
JANUARY 2017 THROUGH DECEMBER 2018



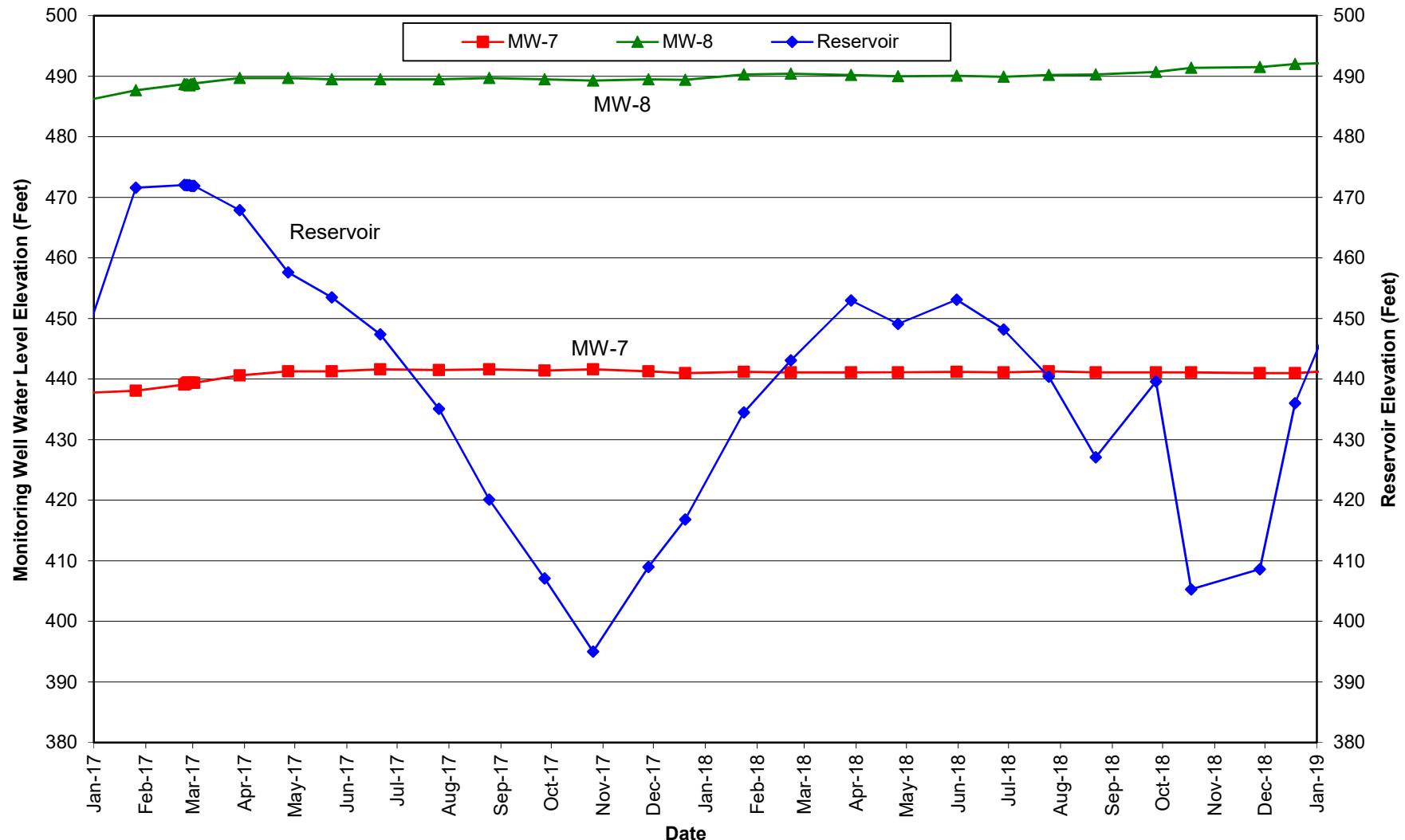
SAN JOAQUIN DAM
2-YR MONITORING WELL AND RESERVOIR WATER SURFACE ELEVATIONS
MONITORING WELLS MW-1, MW-2, MW-3, AND MW-6
JANUARY 2017 THROUGH DECEMBER 2018



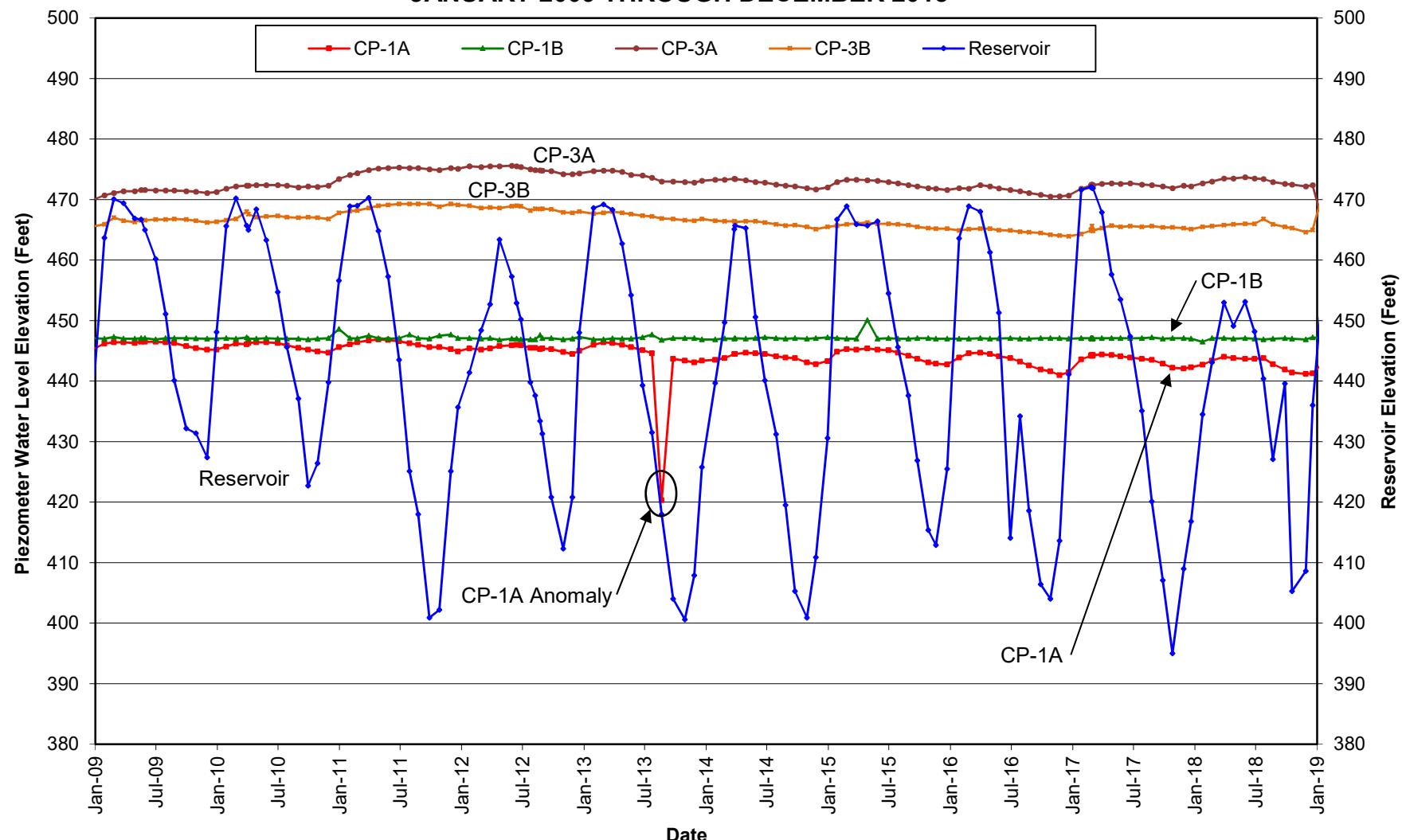
SAN JOAQUIN DAM
2-YR MONITORING WELL AND RESERVOIR WATER SURFACE ELEVATIONS
MONITORING WELLS MW-4 AND MW-5
JANUARY 2017 THROUGH DECEMBER 2018



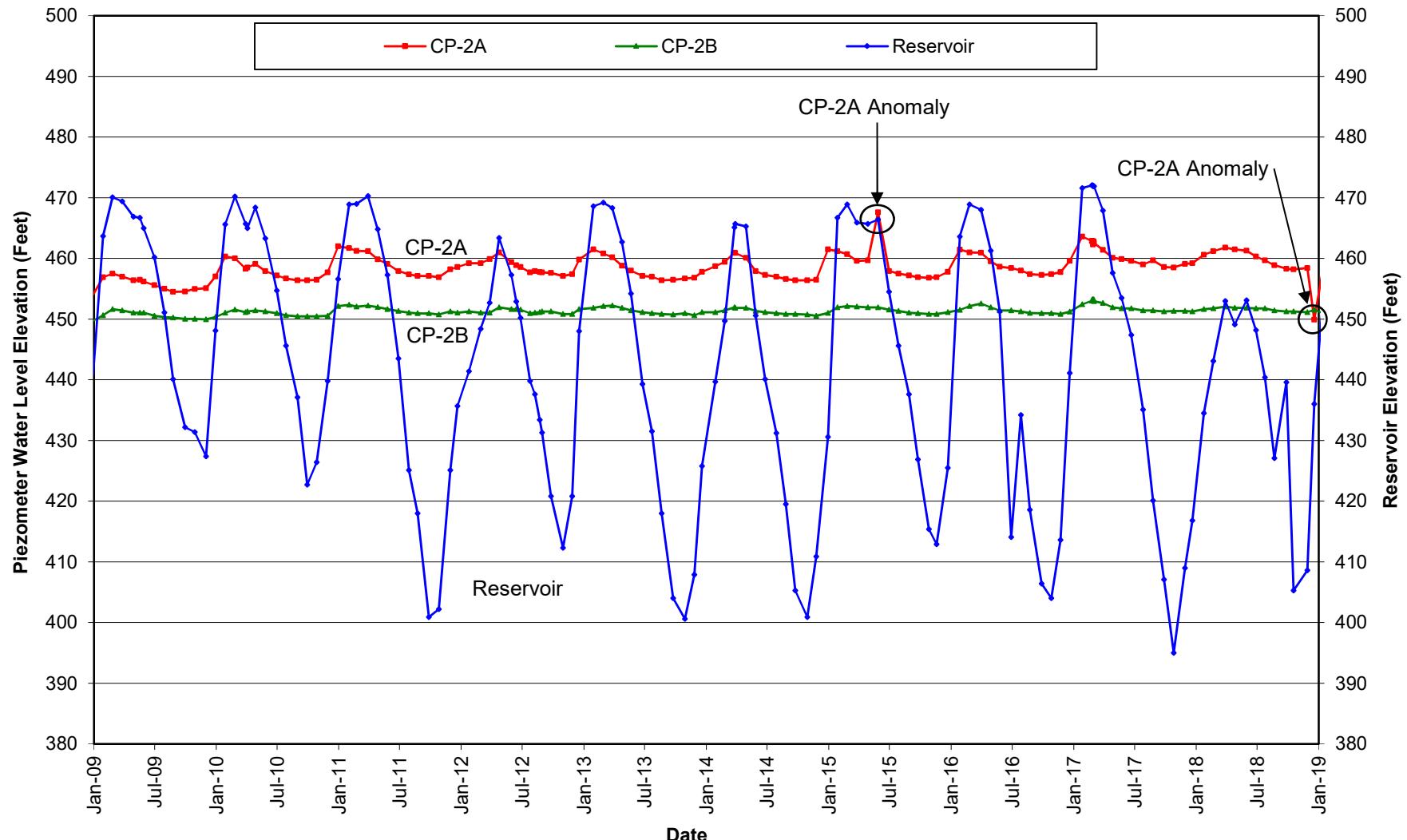
SAN JOAQUIN DAM
2-YR MONITORING WELL AND RESERVOIR WATER SURFACE ELEVATIONS
MONITORING WELLS MW-7 AND MW-8
JANUARY 2017 THROUGH DECEMBER 2018



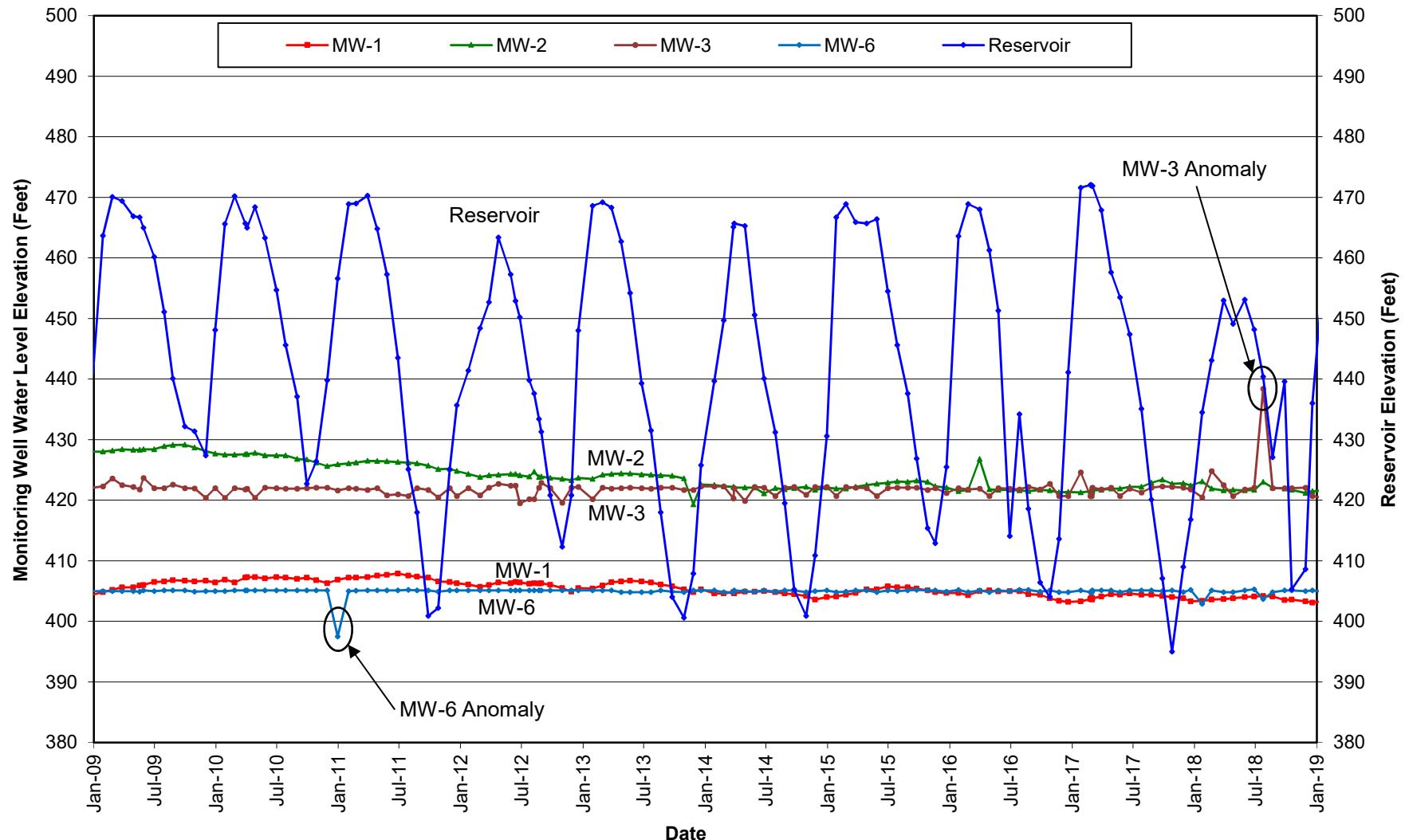
SAN JOAQUIN DAM
10-YR HISTORICAL PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
PIEZOMETERS CP-1A, CP-1B, CP-3A, AND CP-3B
JANUARY 2009 THROUGH DECEMBER 2018



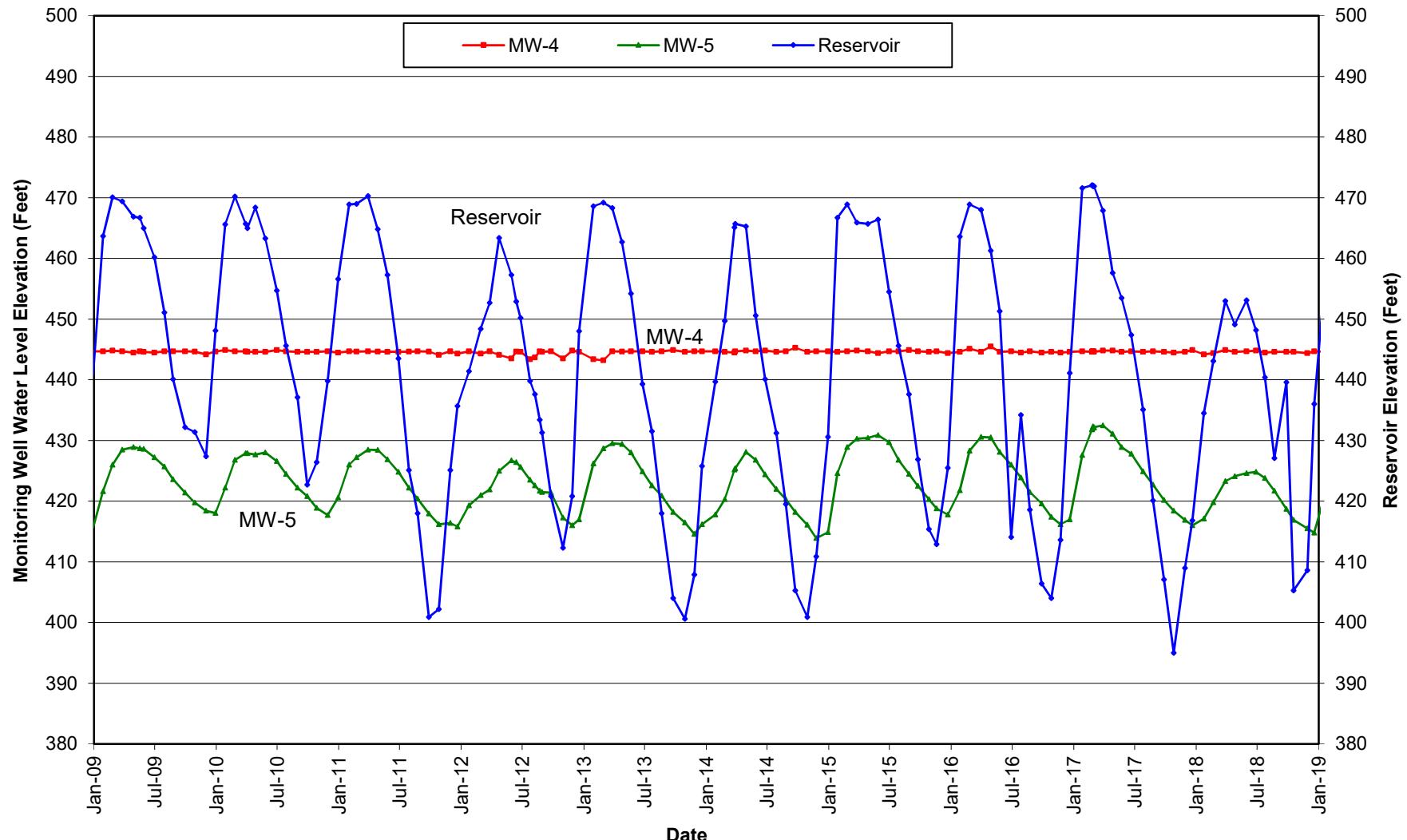
SAN JOAQUIN DAM
10-YR HISTORICAL PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
PIEZOMETERS CP-2A AND CP-2B
JANUARY 2009 THROUGH DECEMBER 2018



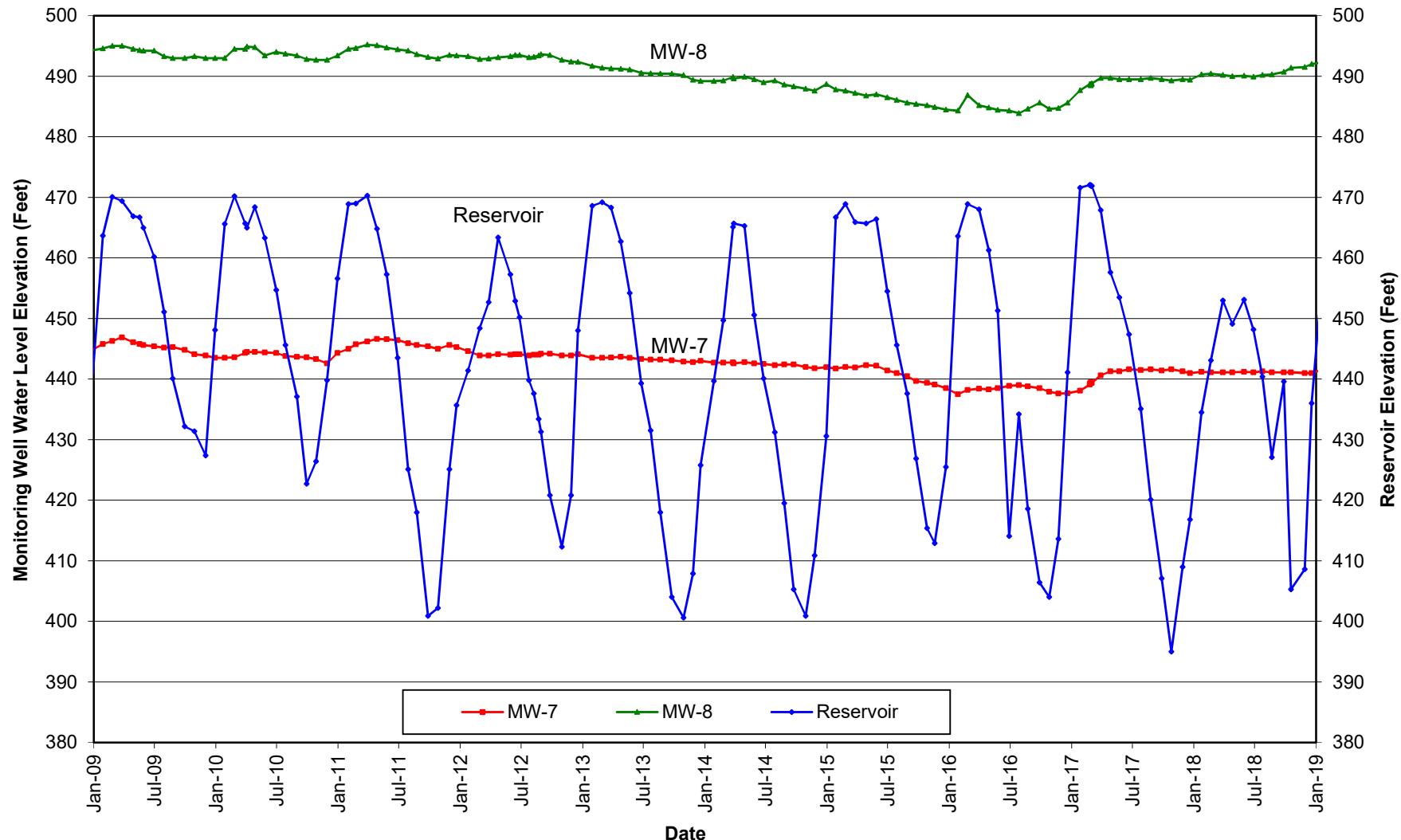
SAN JOAQUIN DAM
10-YR HISTORICAL MONITORING WELL AND RESERVOIR WATER SURFACE ELEVATIONS
MONITORING WELLS MW-1, MW-2, MW-3, AND MW-6
JANUARY 2009 THROUGH DECEMBER 2018



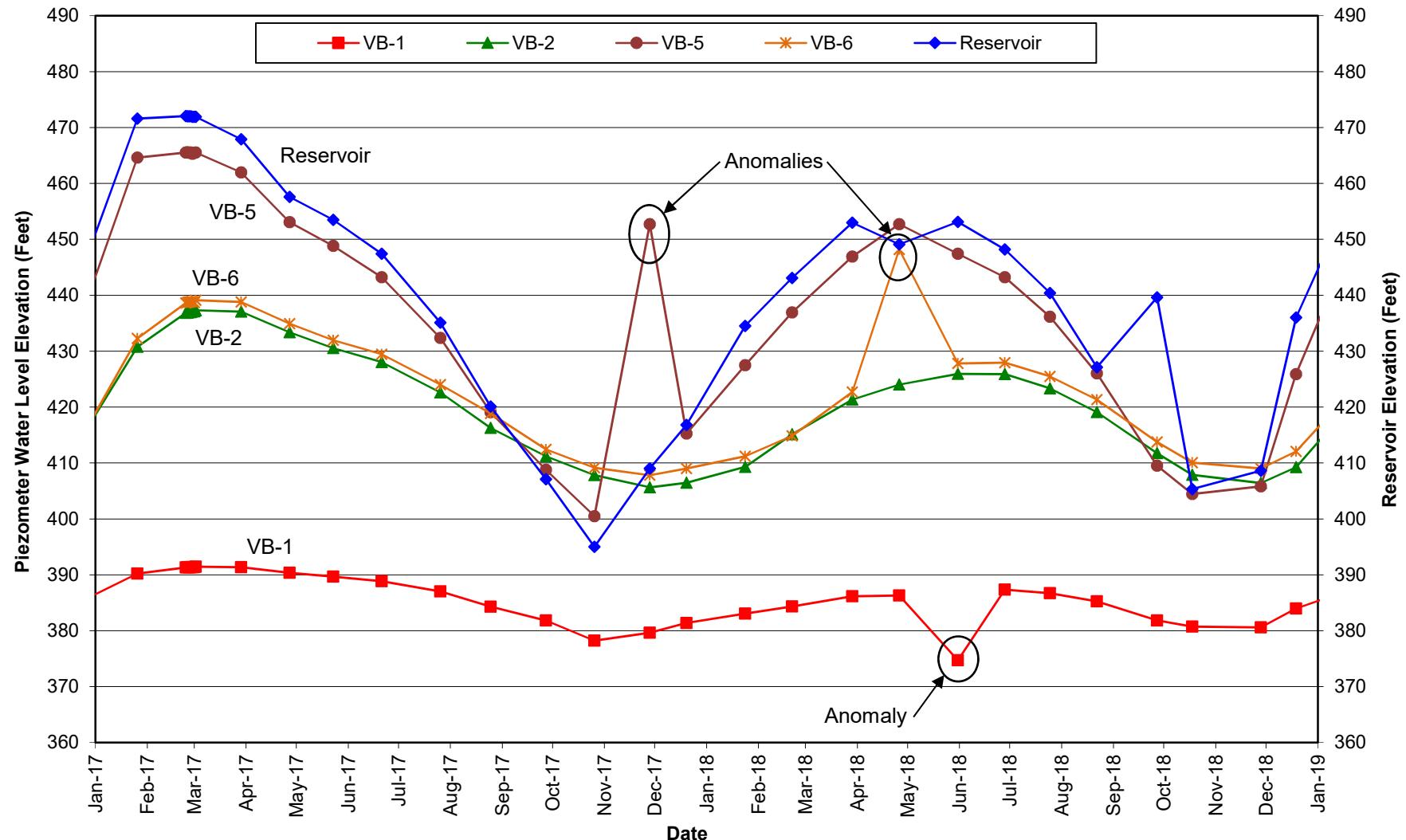
SAN JOAQUIN DAM
10-YR HISTORICAL MONITORING WELL AND RESERVOIR WATER SURFACE ELEVATIONS
MONITORING WELLS MW-4 AND MW-5
JANUARY 2009 THROUGH DECEMBER 2018



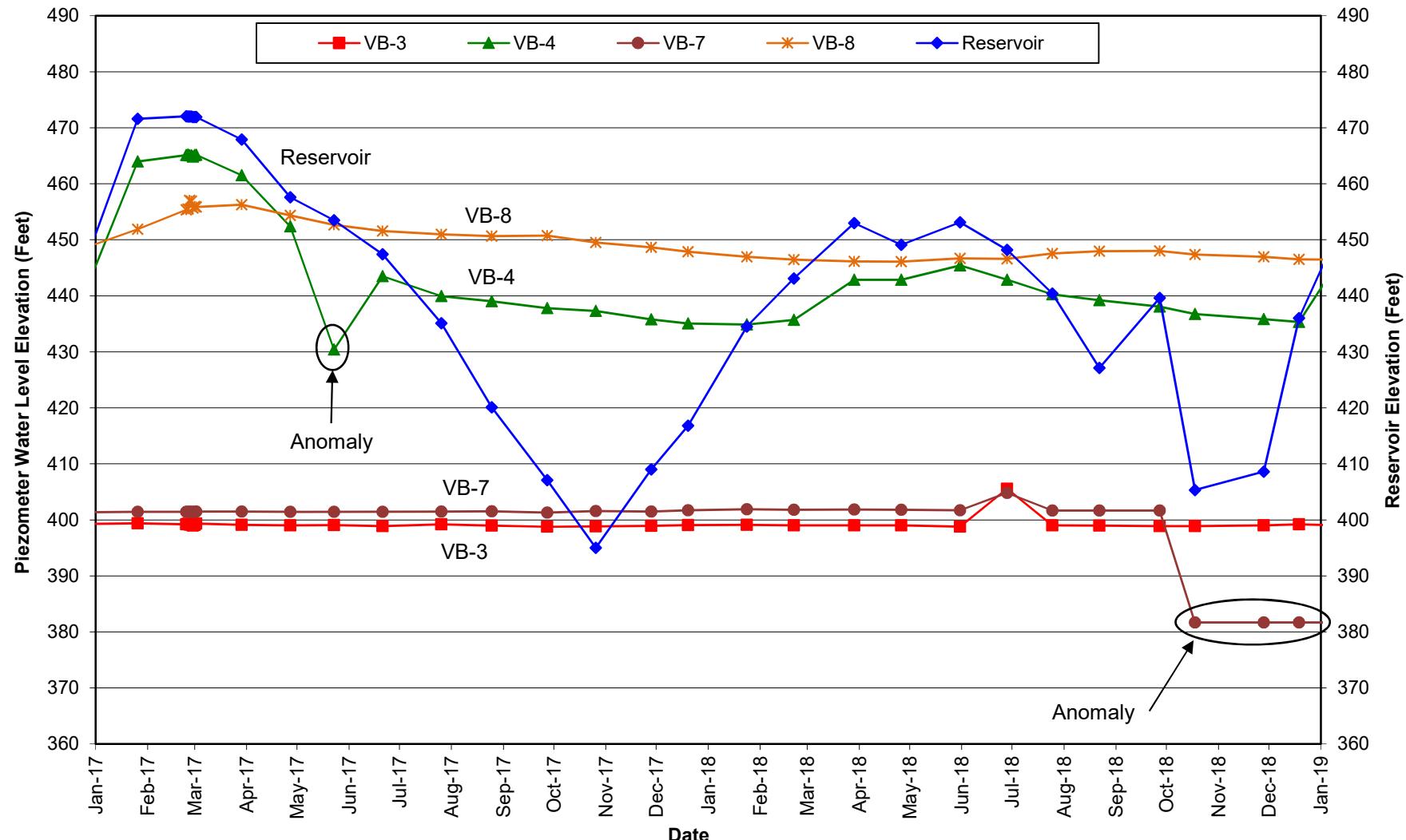
SAN JOAQUIN DAM
10-YR HISTORICAL MONITORING WELL AND RESERVOIR WATER SURFACE ELEVATIONS
MONITORING WELLS MW-7 AND MW-8
JANUARY 2009 THROUGH DECEMBER 2018

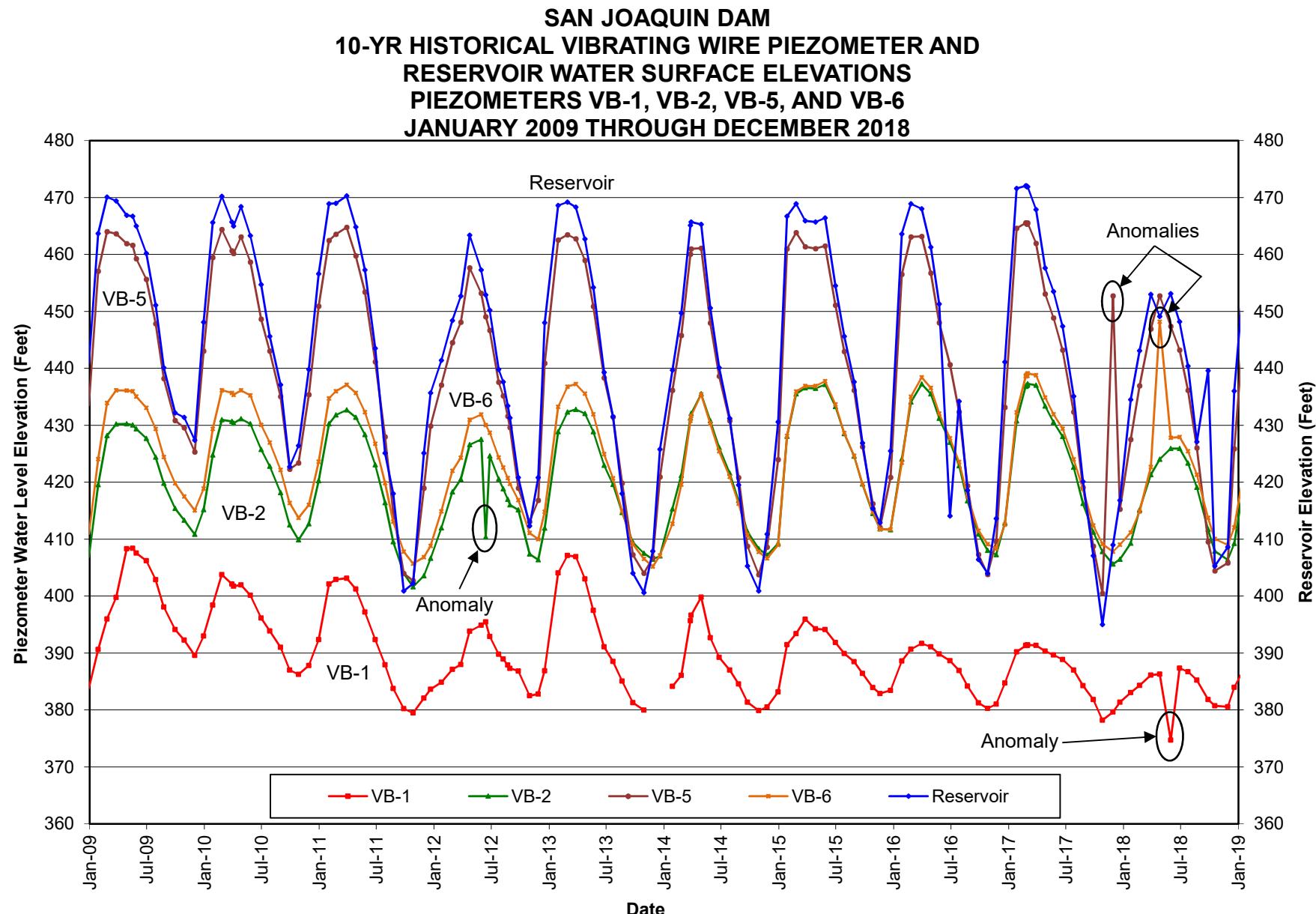


SAN JOAQUIN DAM
2-YR VIBRATING WIRE PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
PIEZOMETERS VB-1, VB-2, VB-5, AND VB-6
JANUARY 2017 THROUGH DECEMBER 2018

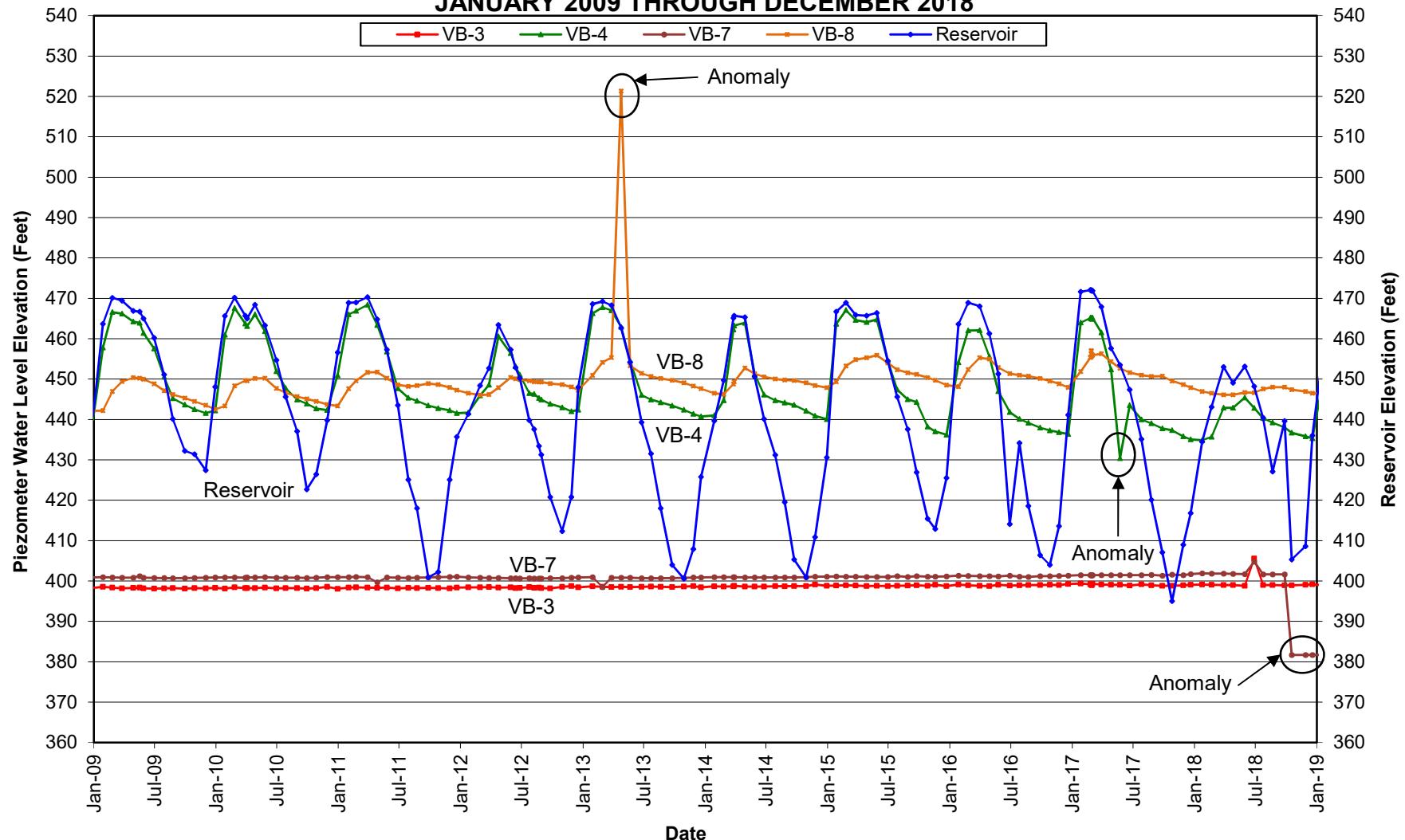


SAN JOAQUIN DAM
2-YR VIBRATING WIRE PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
PIEZOMETERS VB-3, VB-4, VB-7, AND VB-8
JANUARY 2017 THROUGH DECEMBER 2018

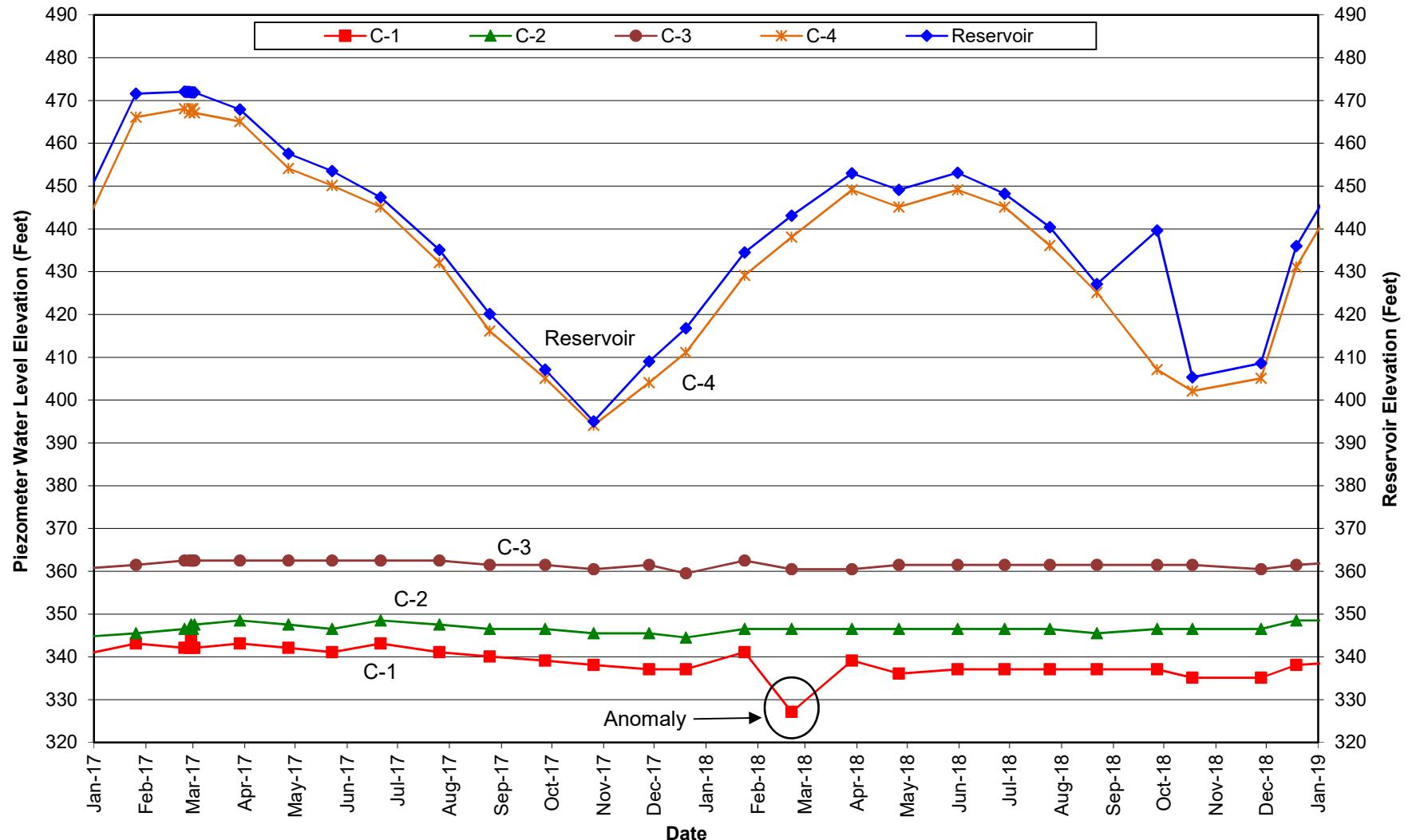




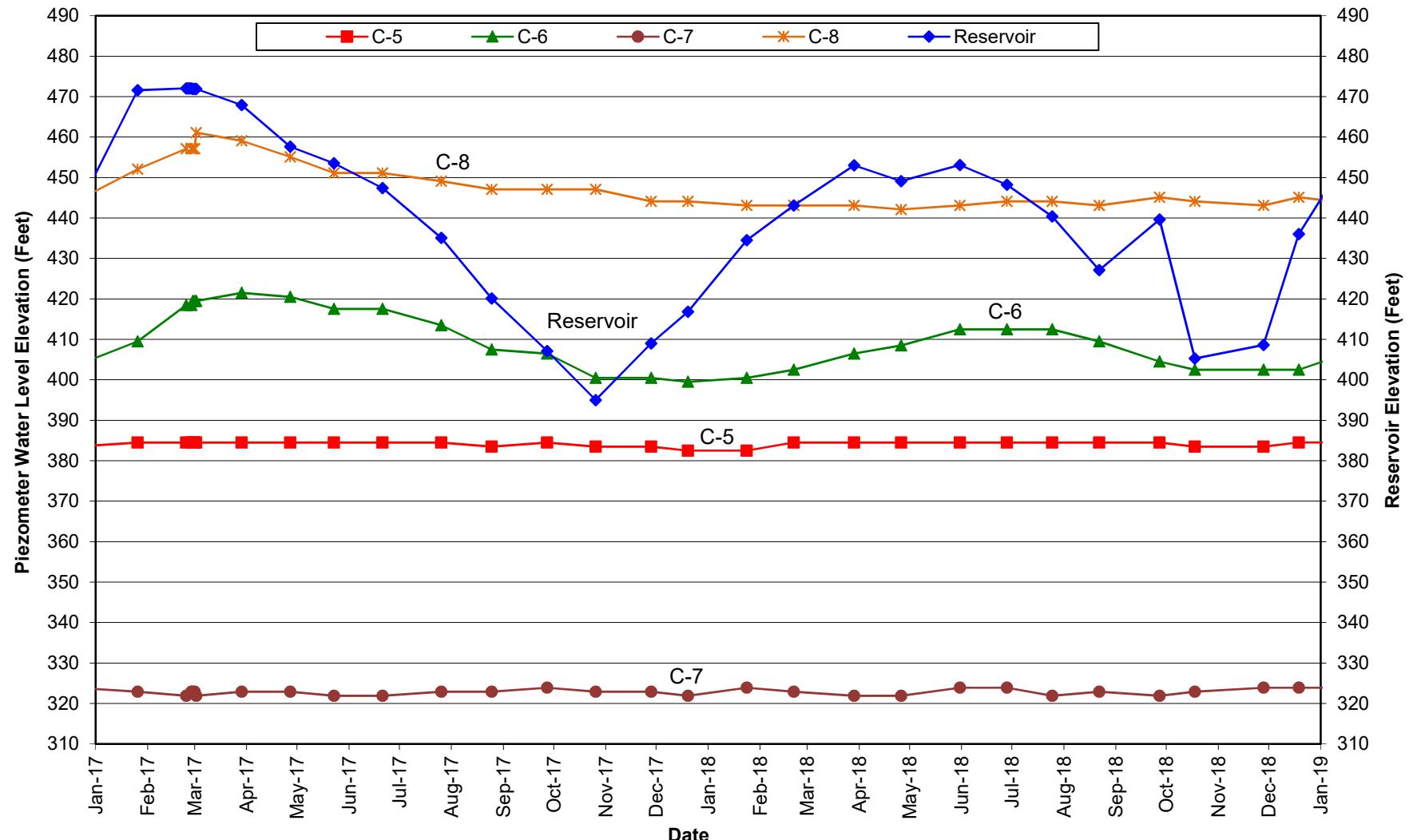
SAN JOAQUIN DAM
10-YR HISTORICAL VIBRATING WIRE PIEZOMETER AND
RESERVOIR WATER SURFACE ELEVATIONS
PIEZOMETERS VB-3, VB-4, VB-7, AND VB-8
JANUARY 2009 THROUGH DECEMBER 2018



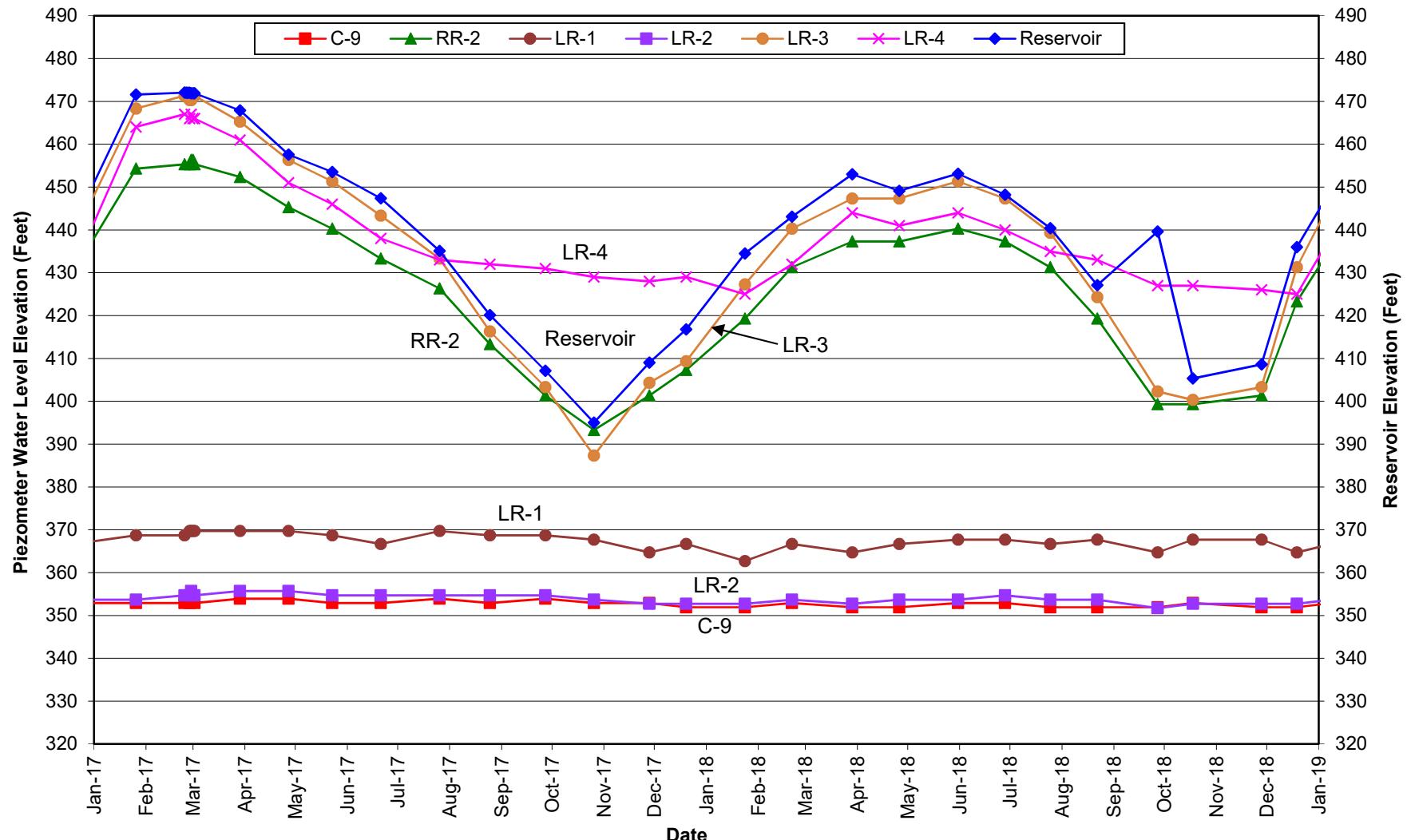
SAN JOAQUIN DAM
2-YR PNEUMATIC PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
PIEZOMETERS C-1, C-2, C-3, AND C-4
JANUARY 2017 THROUGH DECEMBER 2018



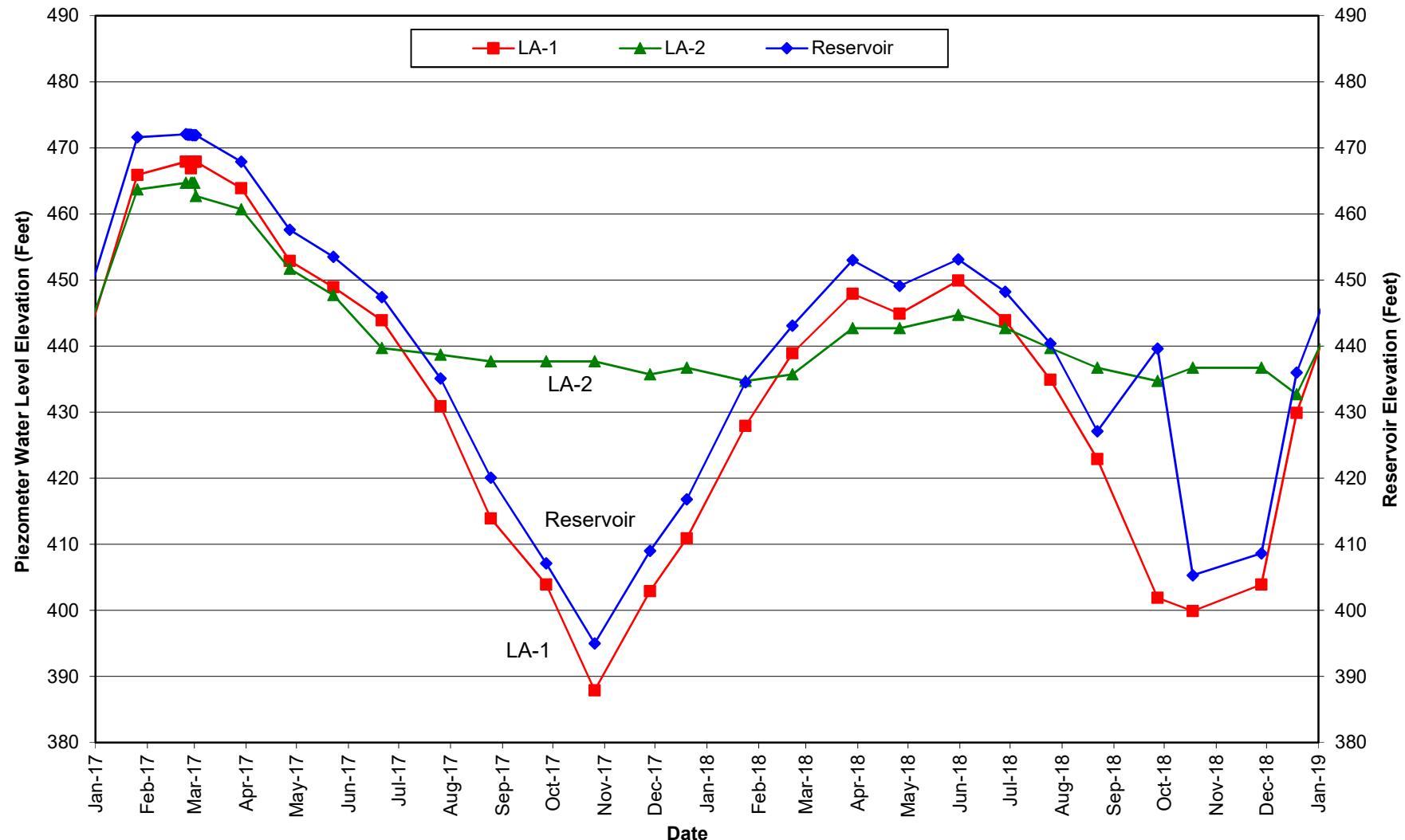
SAN JOAQUIN DAM
2-YR PNEUMATIC PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
PIEZOMETERS C-5, C-6, C-7, AND C-8
JANUARY 2017 THROUGH DECEMBER 2018



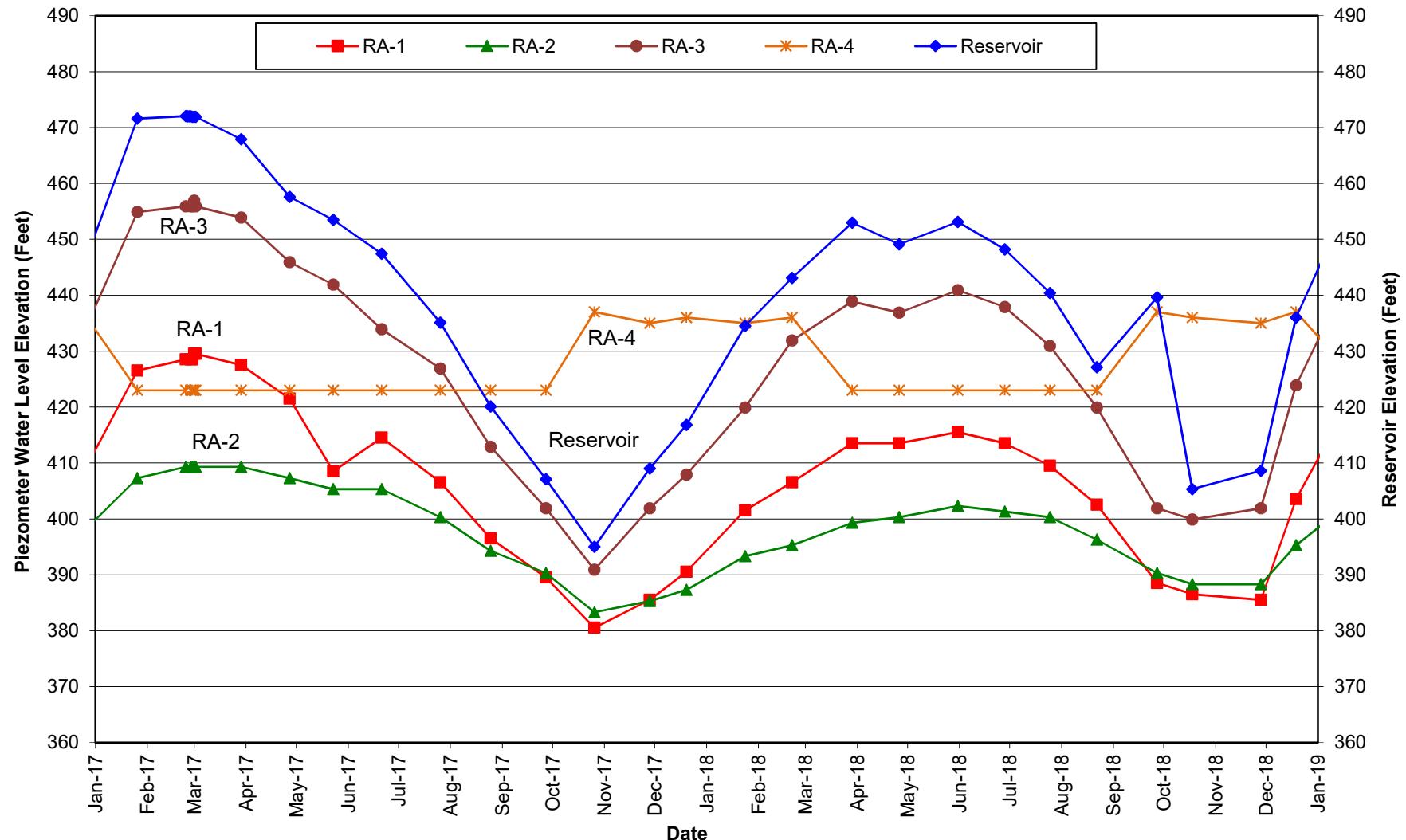
SAN JOAQUIN DAM
2-YR PNEUMATIC PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
PIEZOMETERS C-9, RR-2, LR-1, LR-2, LR-3, AND LR-4
JANUARY 2017 THROUGH DECEMBER 2018

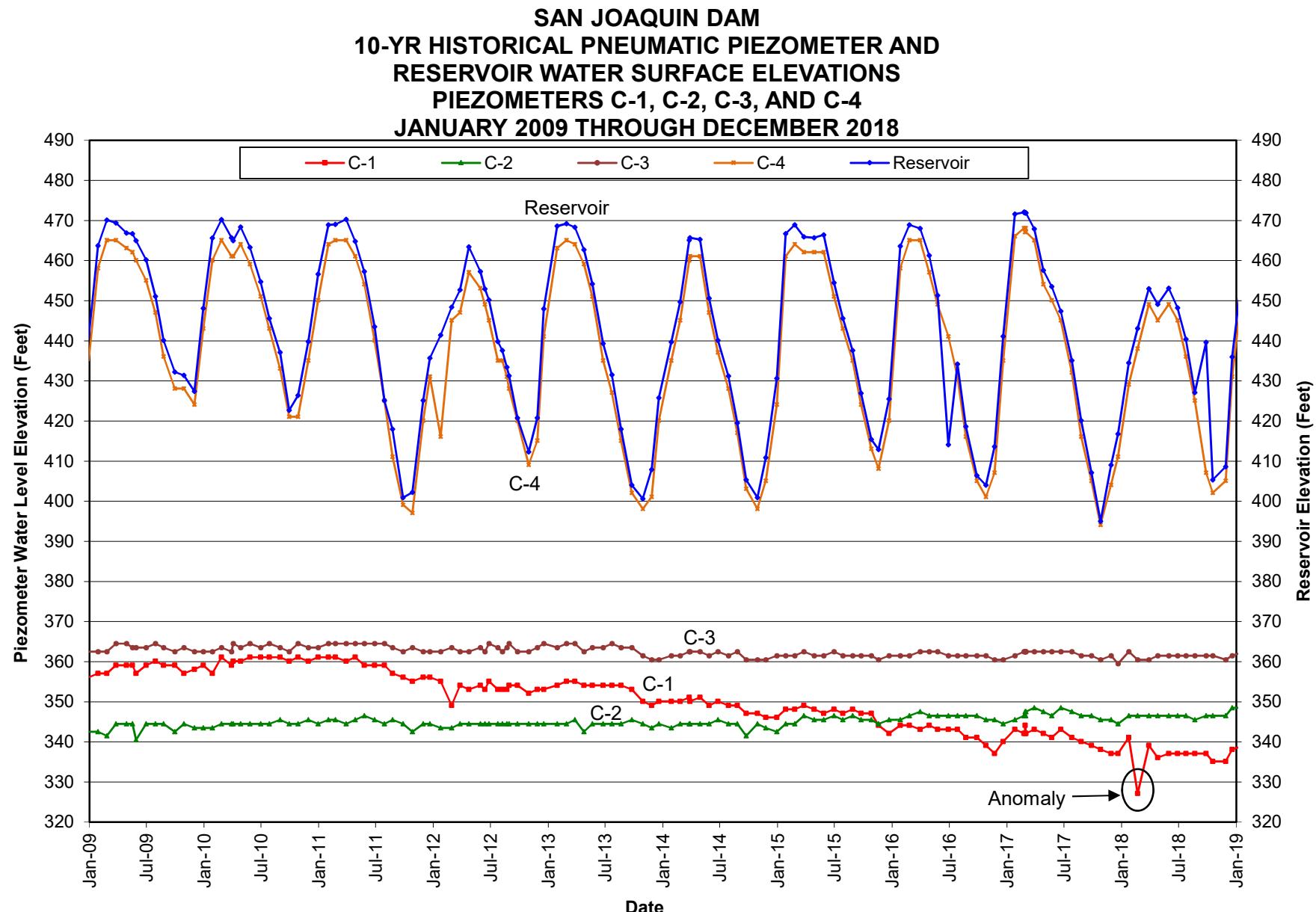


SAN JOAQUIN DAM
2-YR PNEUMATIC PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
PIEZOMETERS LA-1 AND LA-2
JANUARY 2017 THROUGH DECEMBER 2018

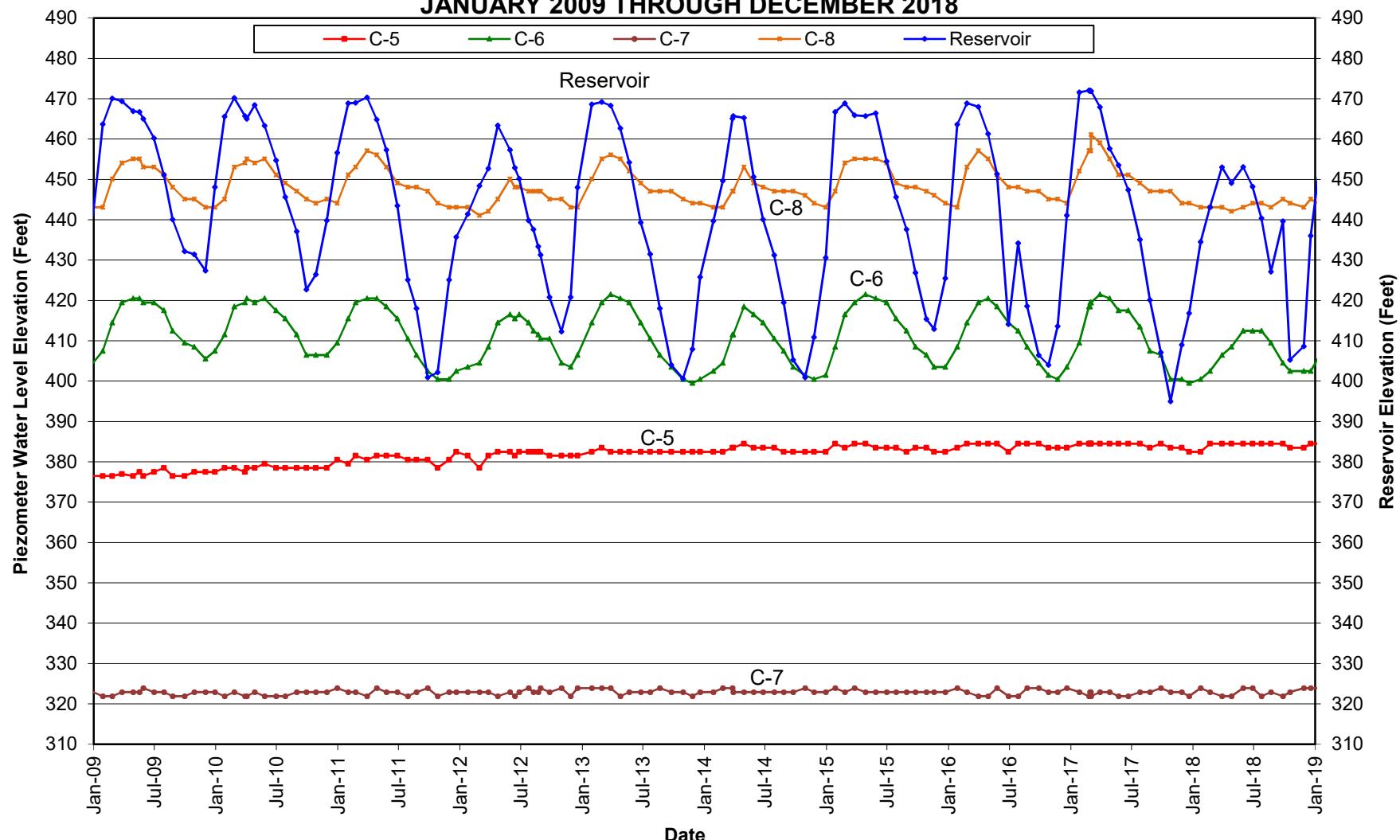


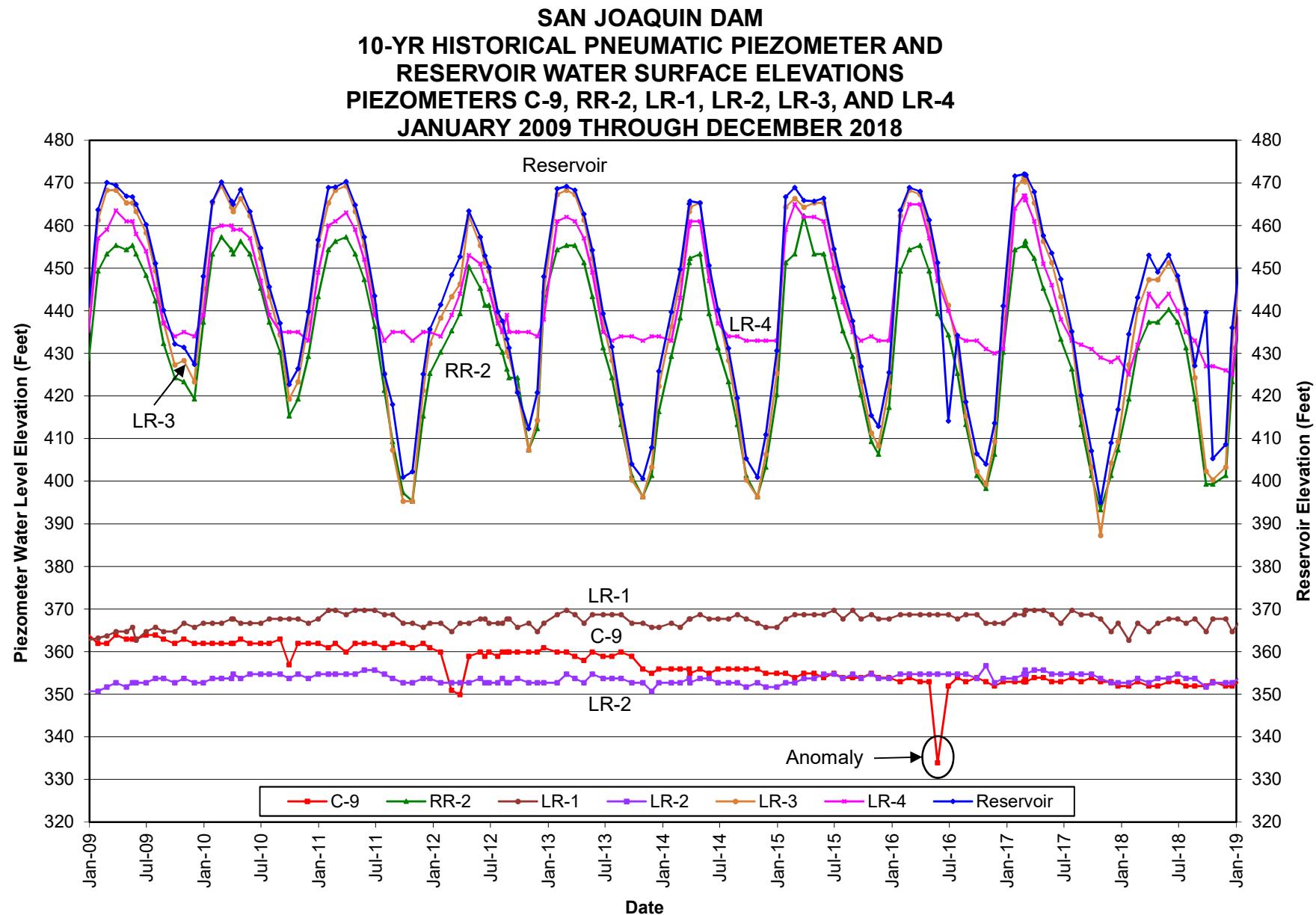
SAN JOAQUIN DAM
2-YR PNEUMATIC PIEZOMETER AND RESERVOIR WATER SURFACE ELEVATIONS
PIEZOMETERS RA-1, RA-2, RA-3, AND RA-4
JANUARY 2017 THROUGH DECEMBER 2018



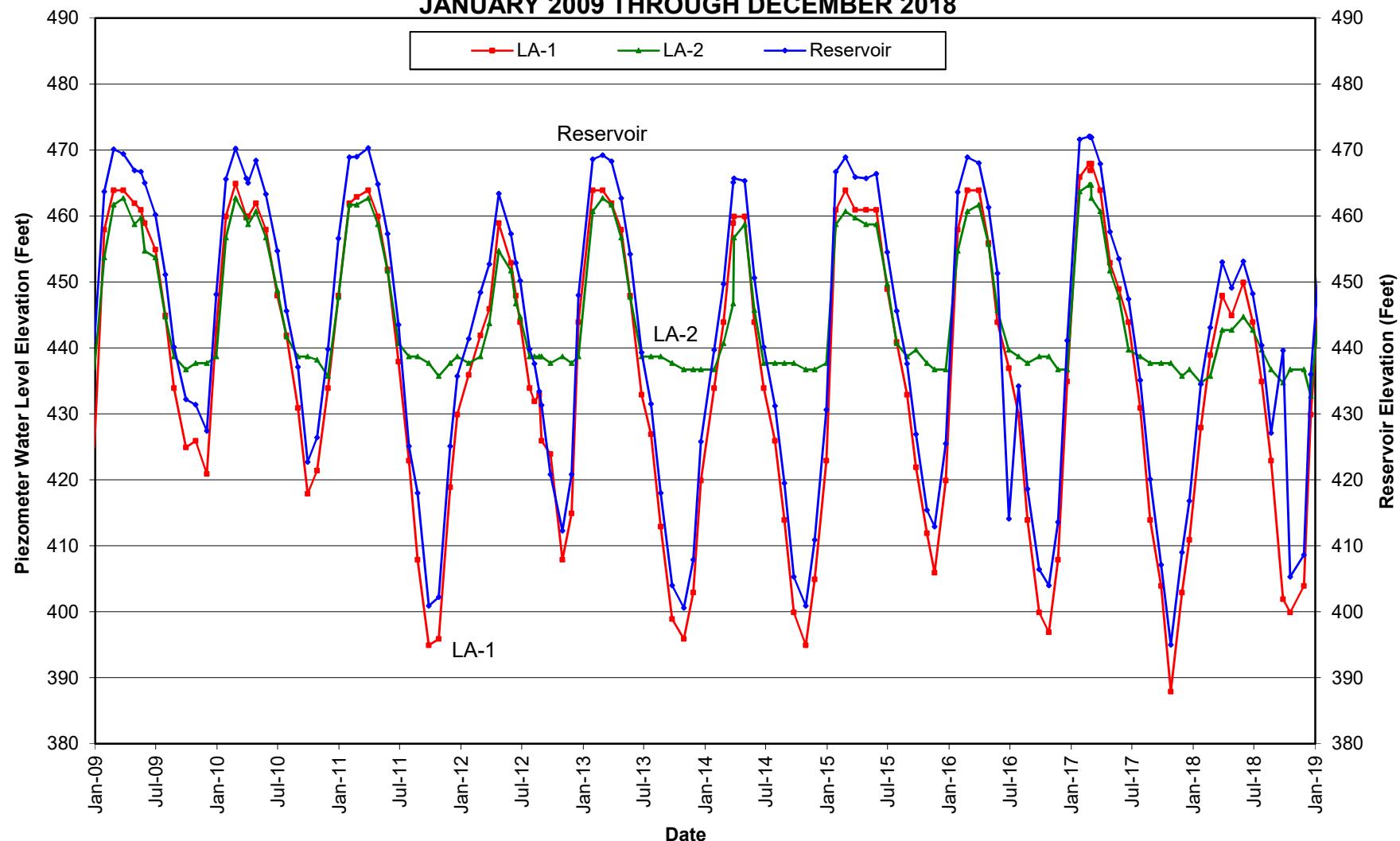


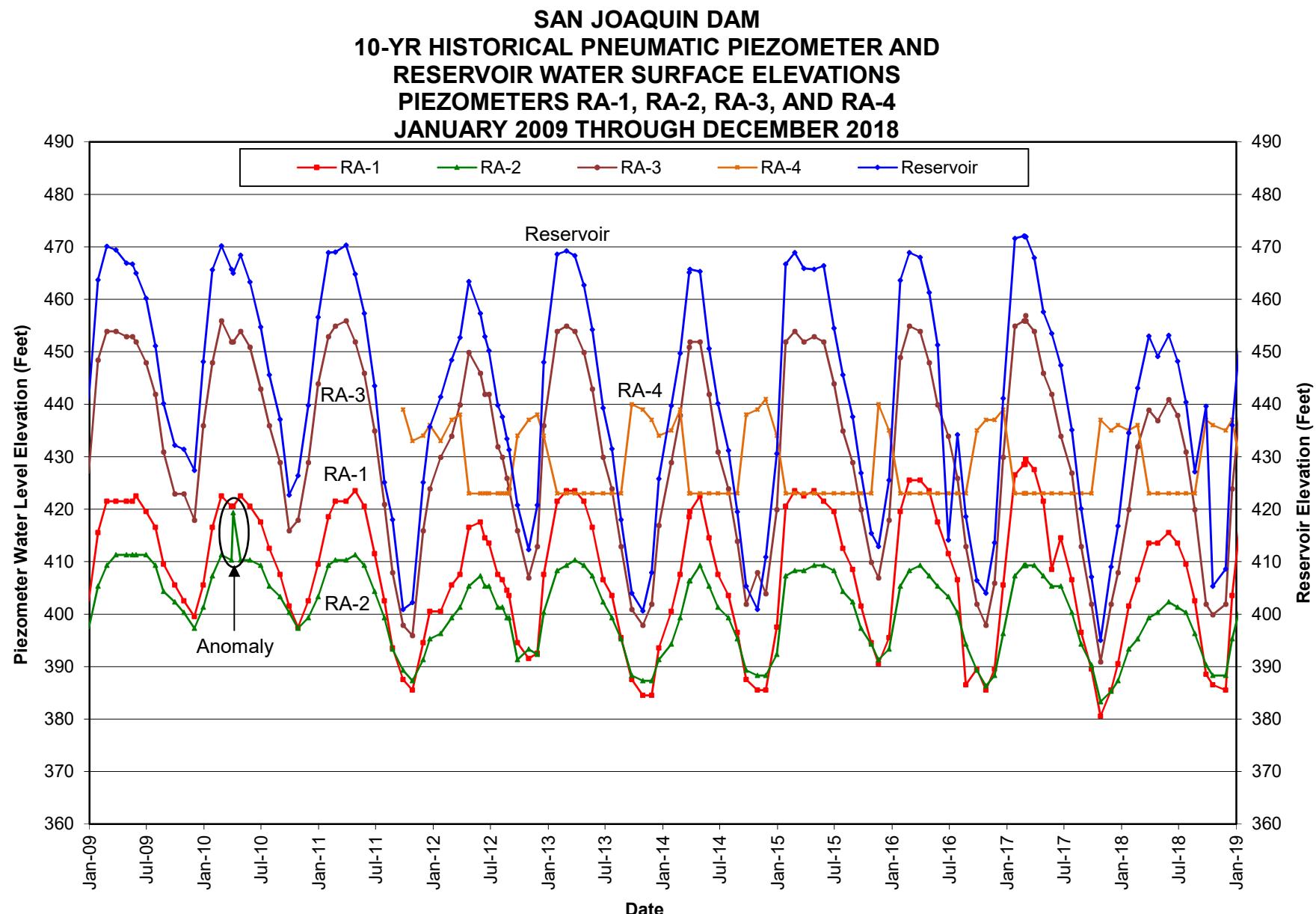
SAN JOAQUIN DAM
10-YR HISTORICAL PNEUMATIC PIEZOMETER AND
RESERVOIR WATER SURFACE ELEVATIONS
PIEZOMETERS C-5, C-6, C-7, AND C-8
JANUARY 2009 THROUGH DECEMBER 2018



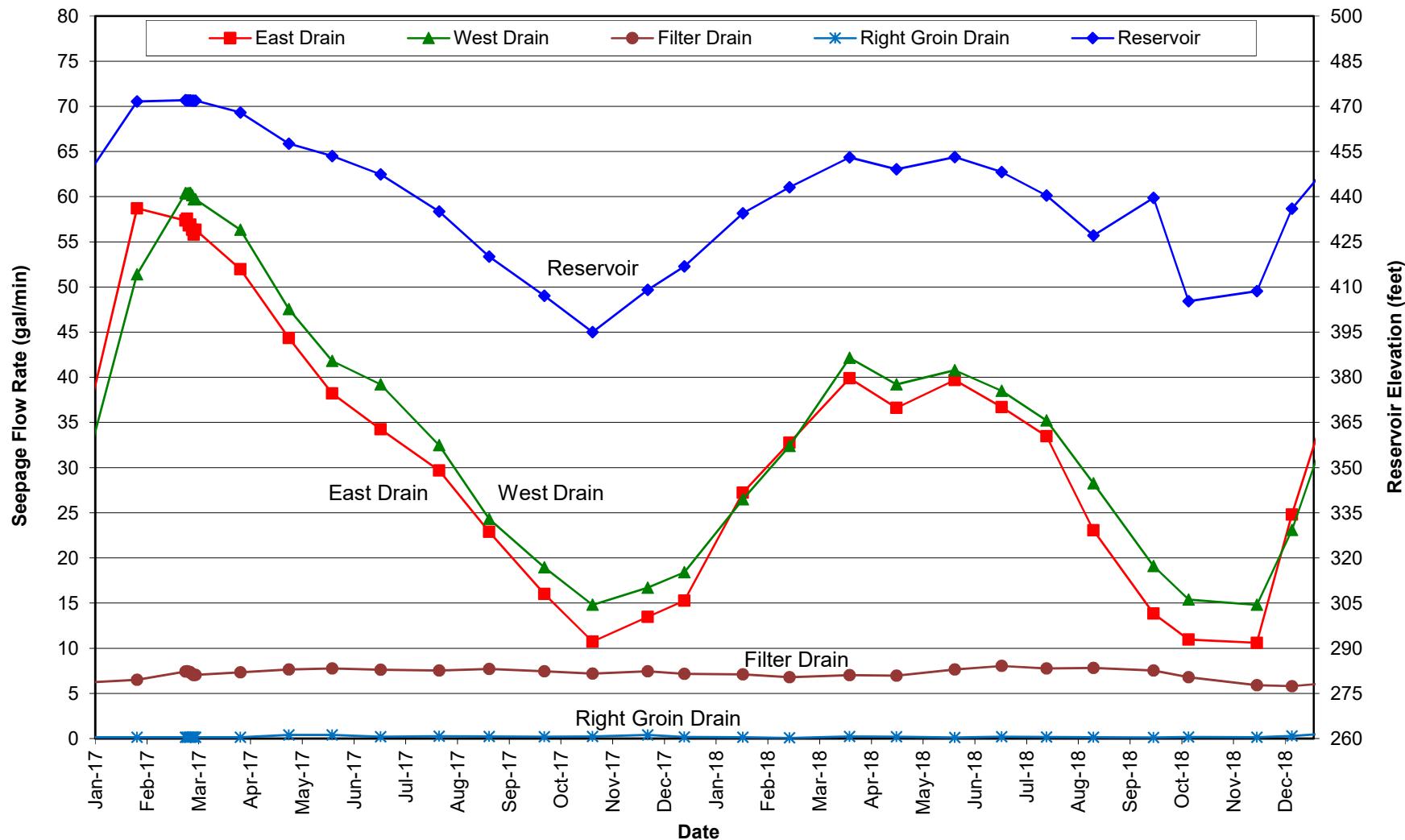


SAN JOAQUIN DAM
10-YR HISTORICAL PNEUMATIC PIEZOMETER AND
RESERVOIR WATER SURFACE ELEVATIONS
PIEZOMETERS LA-1 AND LA-2
JANUARY 2009 THROUGH DECEMBER 2018

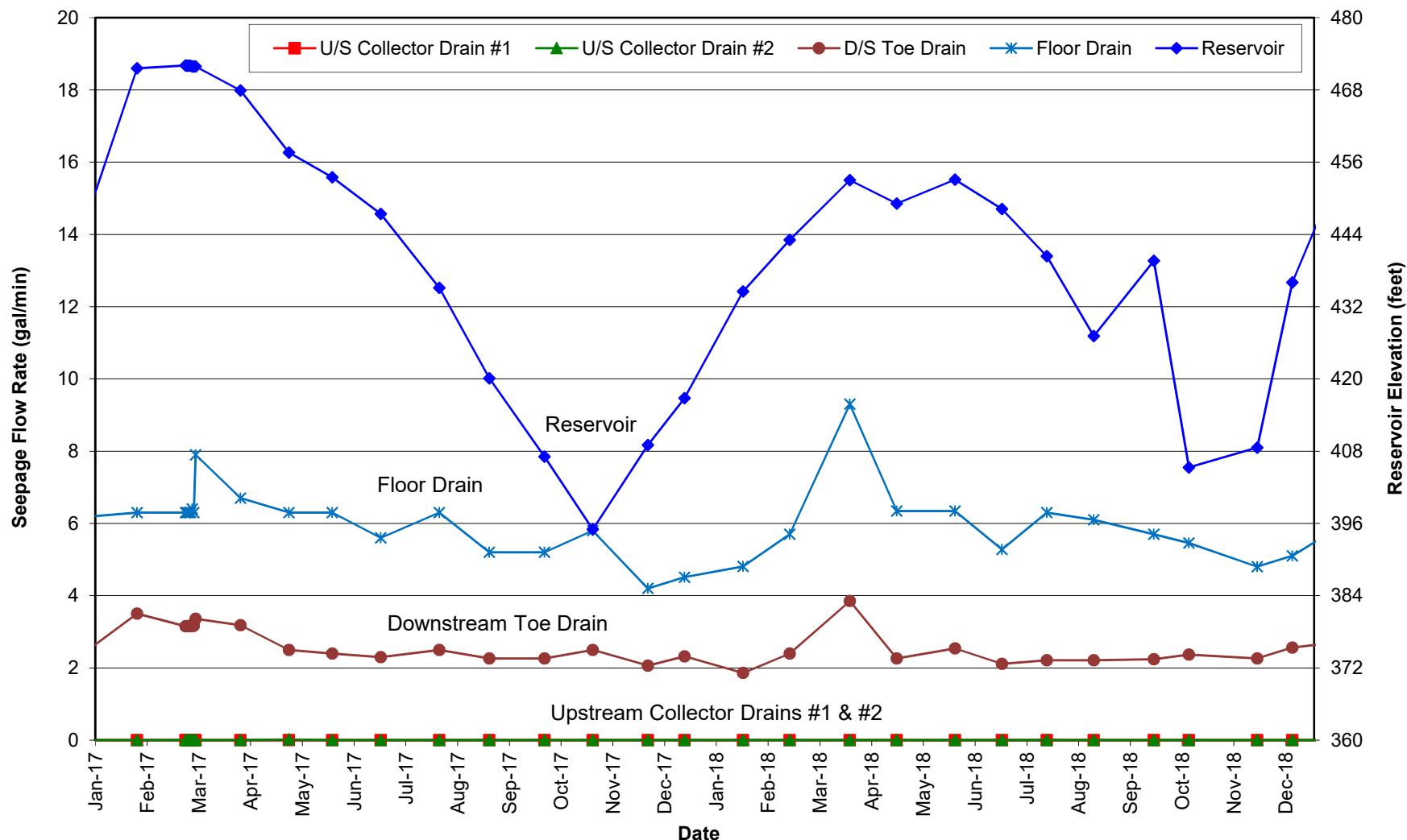




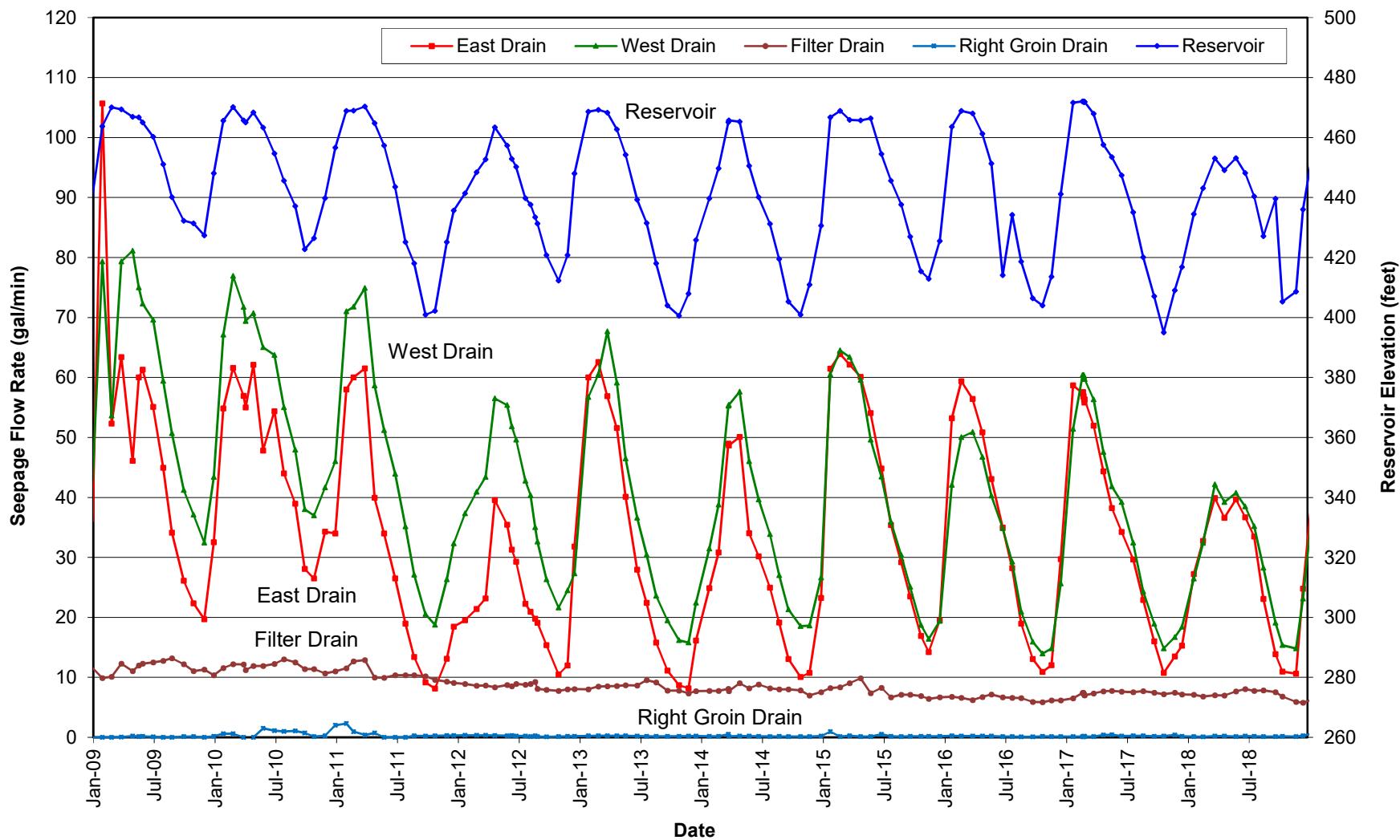
**SAN JOAQUIN DAM
2-YR SEEPAGE FLOW RATES
EAST DRAIN, WEST DRAIN, FILTER DRAIN, AND RIGHT GROIN DRAIN
JANUARY 2017 THROUGH DECEMBER 2018**



**SAN JOAQUIN DAM
2-YR SEEPAGE FLOW RATES
UPSTREAM COLLECTOR DRAINS, DOWNSTREAM TOE DRAIN, AND FLOOR DRAIN
JANUARY 2017 THROUGH DECEMBER 2018**



SAN JOAQUIN DAM
10-YR HISTORICAL SEEPAGE FLOW RATES
EAST DRAIN, WEST DRAIN, FILTER DRAIN, AND RIGHT GROIN DRAIN
JANUARY 2009 THROUGH DECEMBER 2018

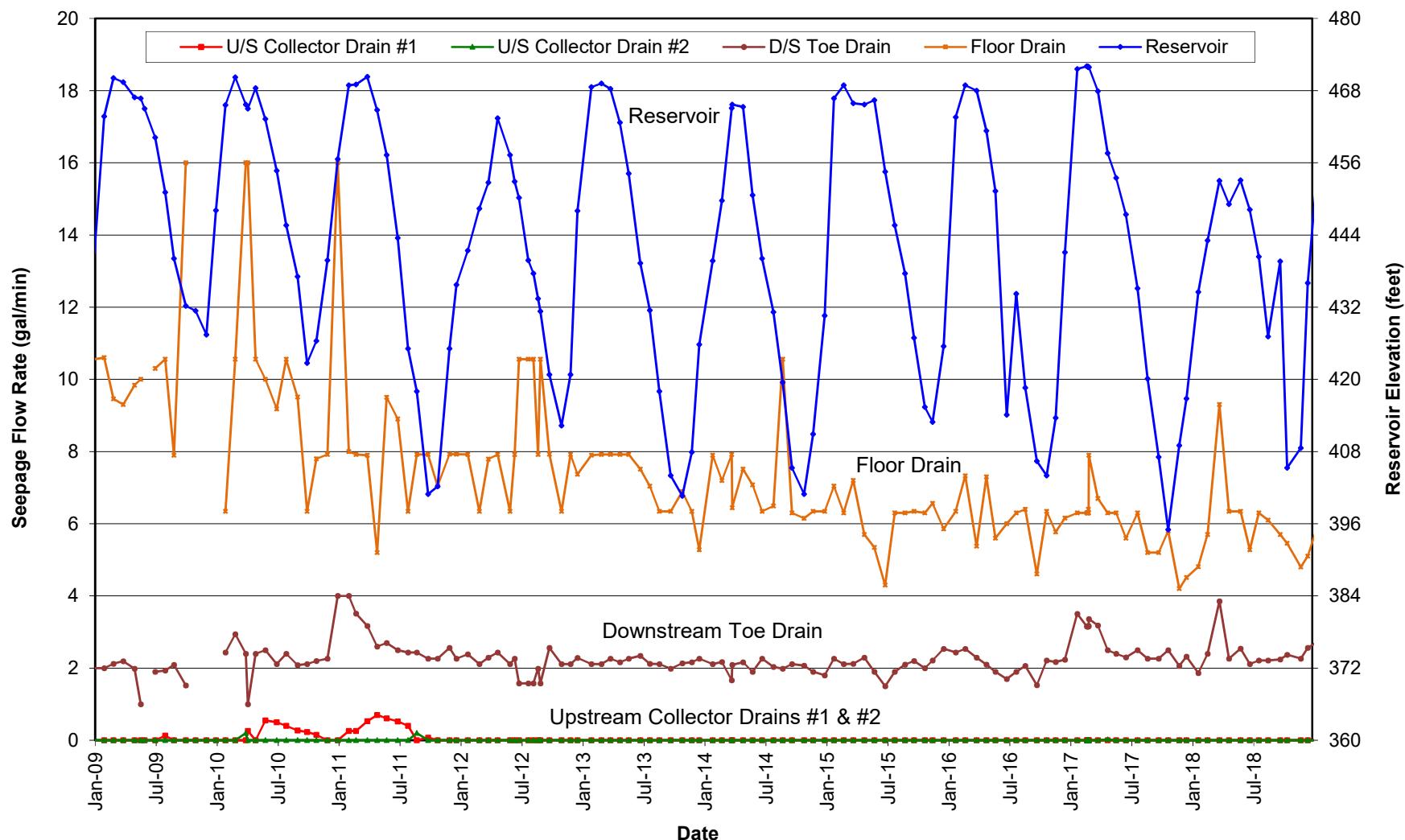


NAVD88 DATUM

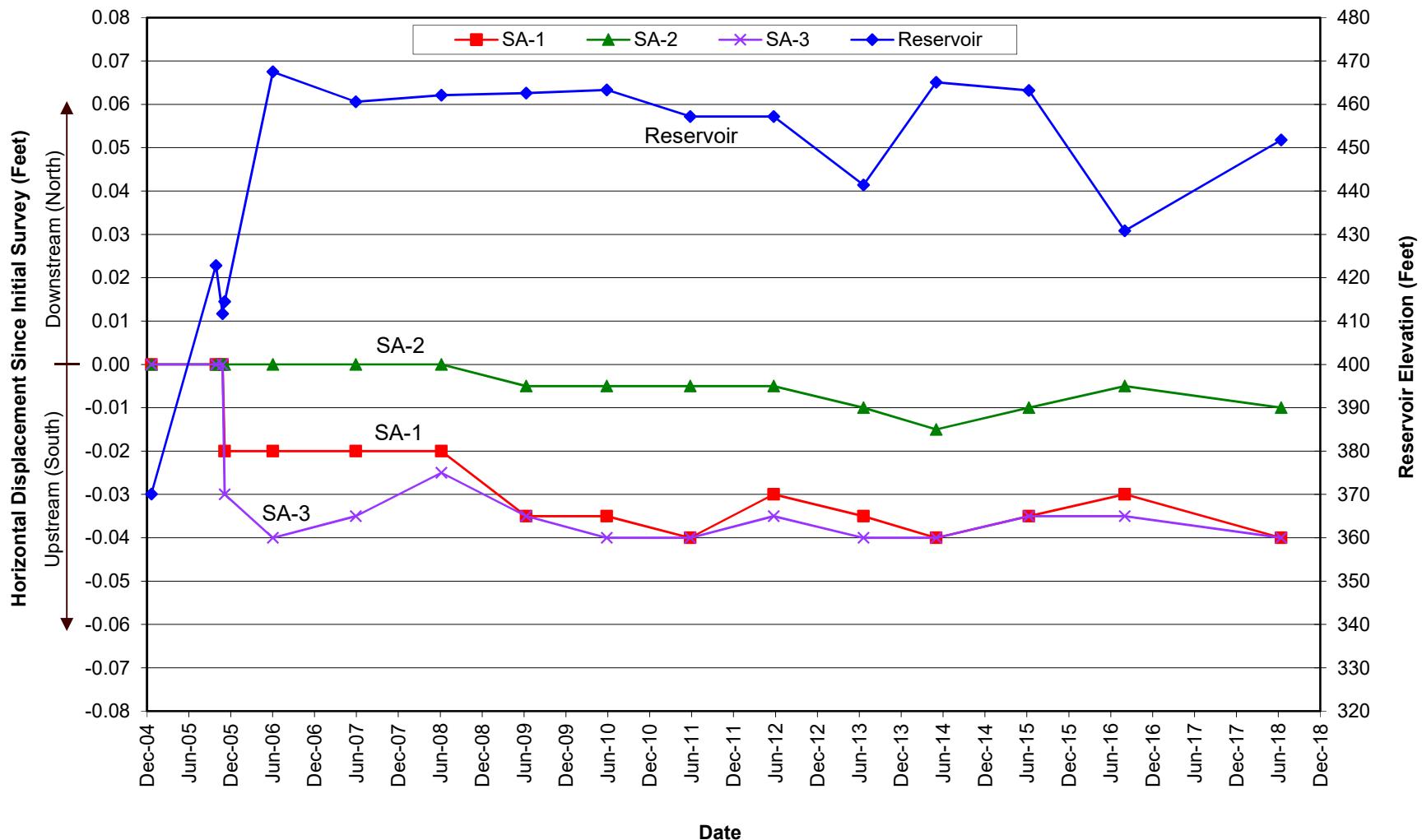
IRVINE RANCH WATER DISTRICT

FIGURE 14A

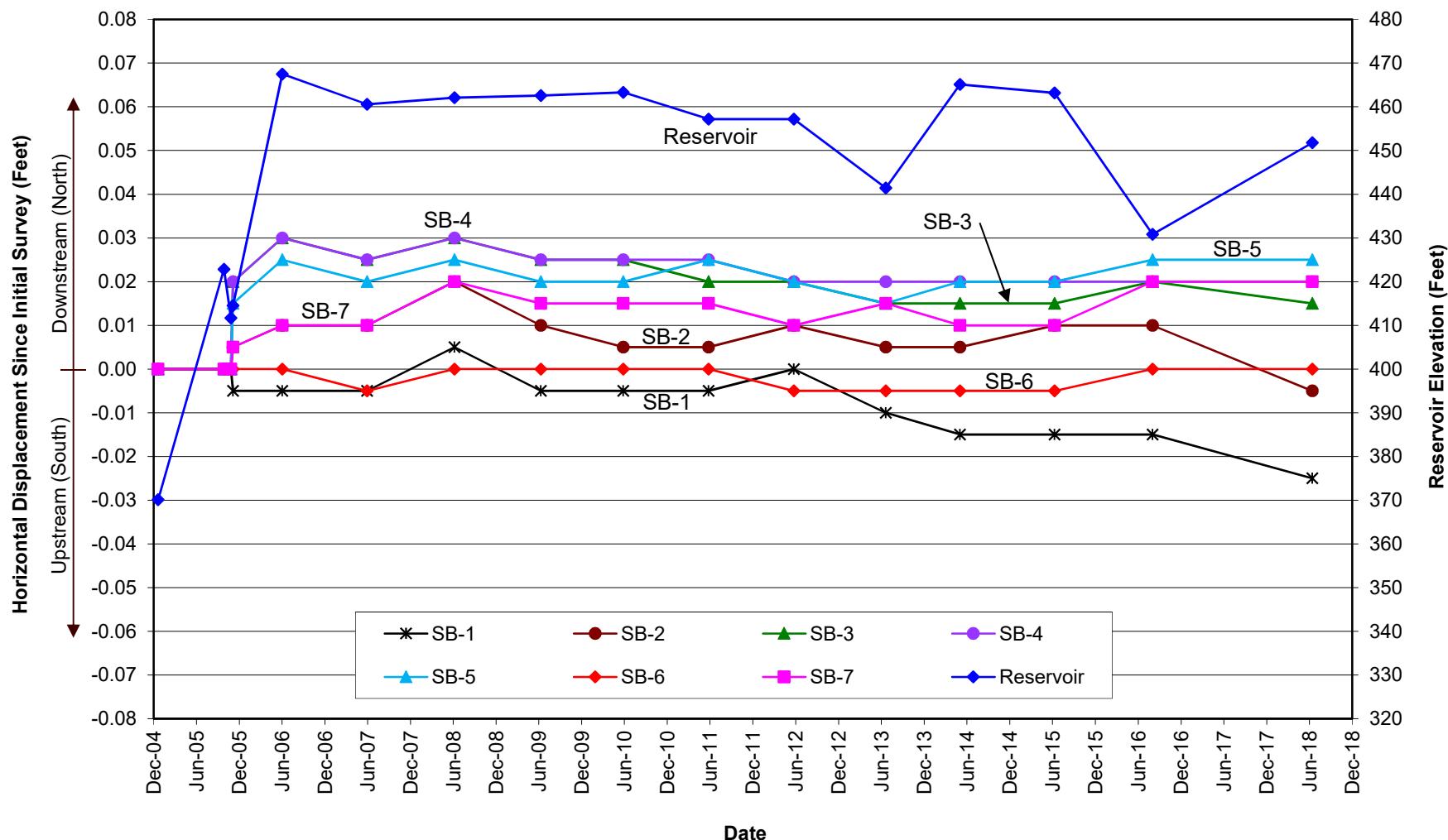
SAN JOAQUIN DAM
10-YR HISTORICAL SEEPAGE FLOW RATES
UPSTREAM COLLECTOR DRAINS, DOWNSTREAM TOE DRAIN, AND FLOOR DRAIN
JANUARY 2009 THROUGH DECEMBER 2018



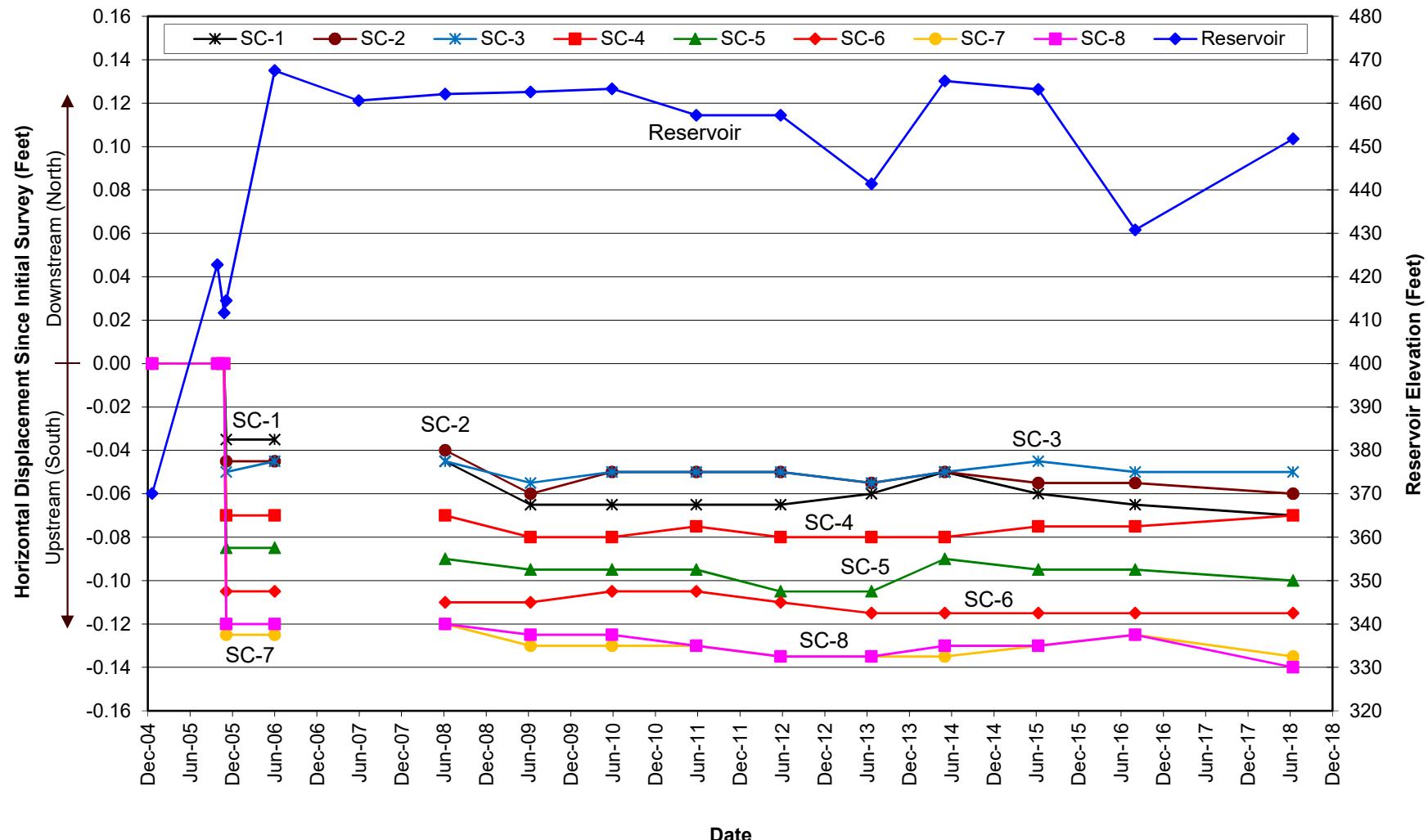
**SAN JOAQUIN DAM
NET HORIZONTAL DISPLACEMENT
SURVEY MONUMENTS SA-1, SA-2, AND SA-3
2004 THROUGH 2018**



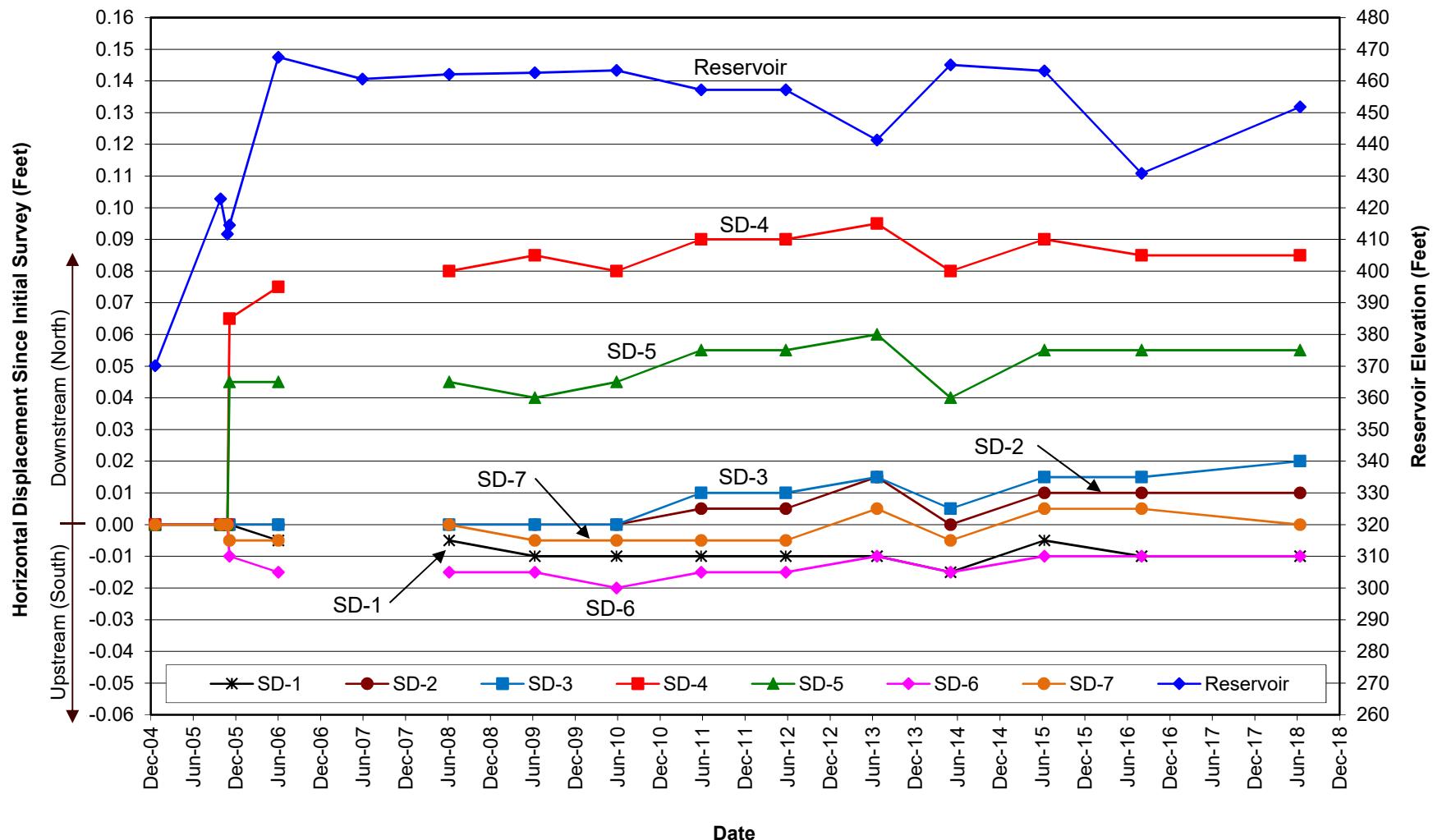
**SAN JOAQUIN DAM
NET HORIZONTAL DISPLACEMENT
SURVEY MONUMENTS SB-1, SB-2, SB-3, SB-4, SB-5, SB-6, AND SB-7
2004 THROUGH 2018**



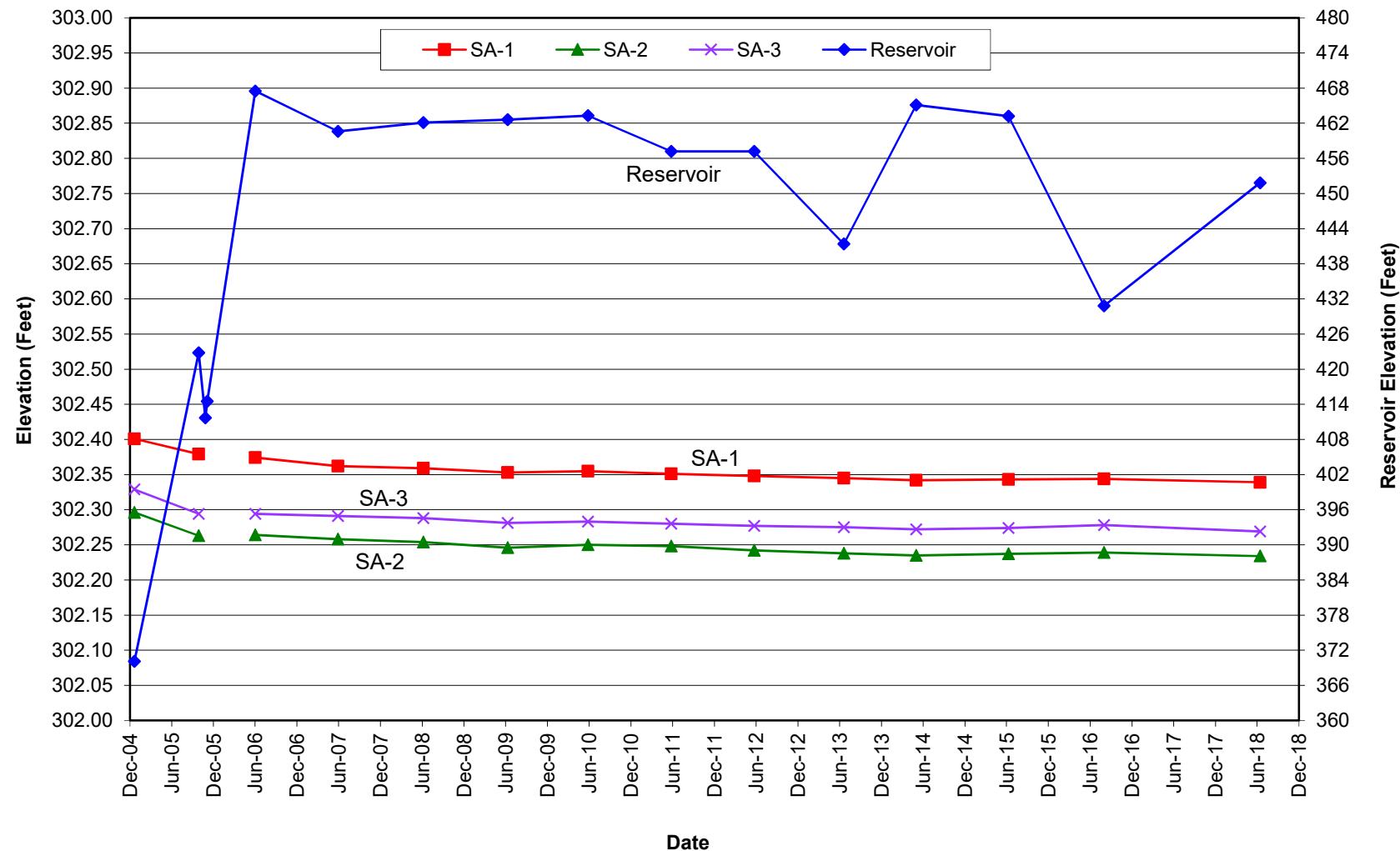
**SAN JOAQUIN DAM
NET HORIZONTAL DISPLACEMENT
SURVEY MONUMENTS SC-1, SC-2, SC-3, SC-4, SC-5, SC-6, SC-7, AND SC-8
2004 THROUGH 2018**



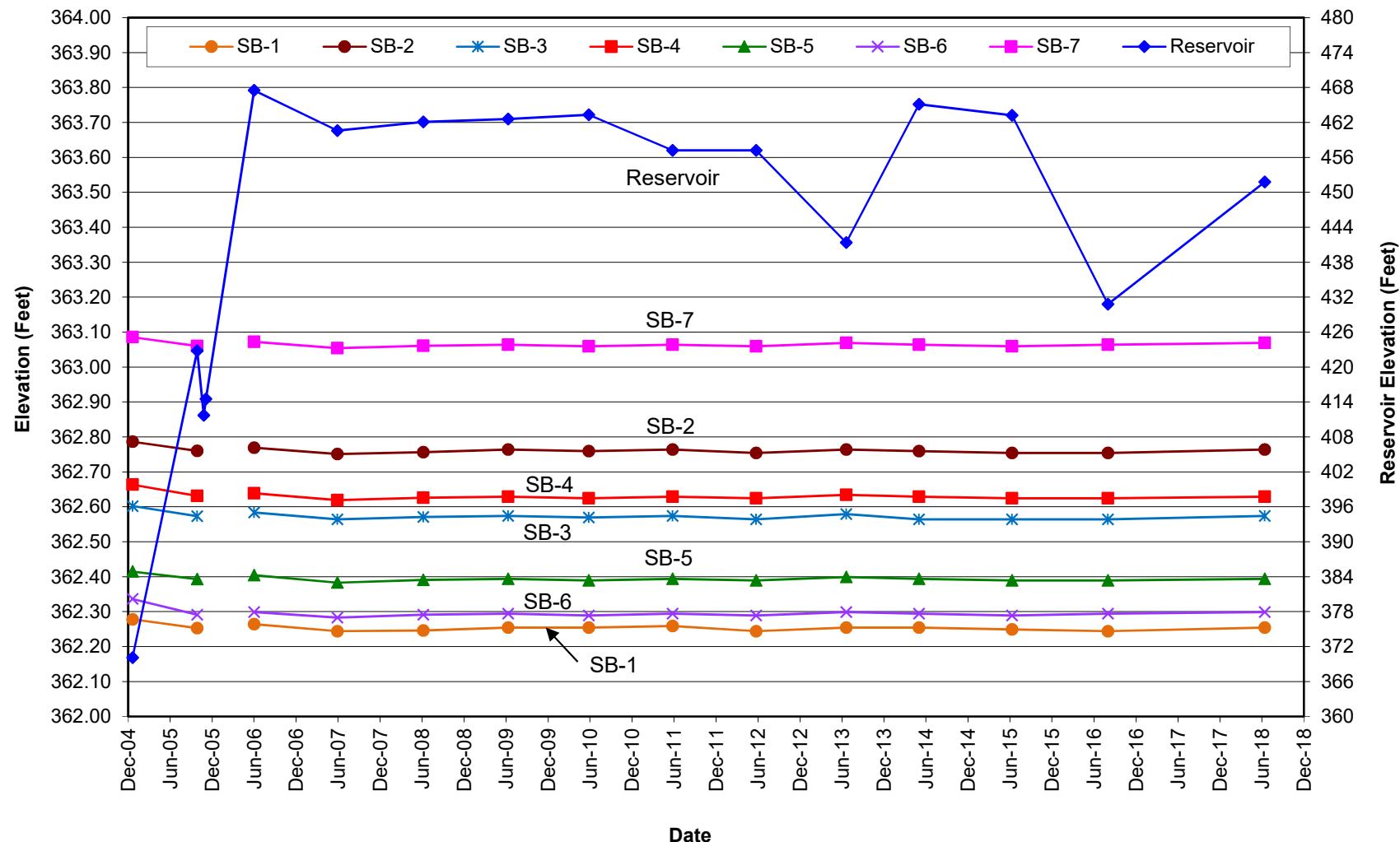
**SAN JOAQUIN DAM
NET HORIZONTAL DISPLACEMENT
SURVEY MONUMENTS SD-1, SD-2, SD-3, SD-4, SD-5, SD-6, AND SD-7
2004 THROUGH 2018**



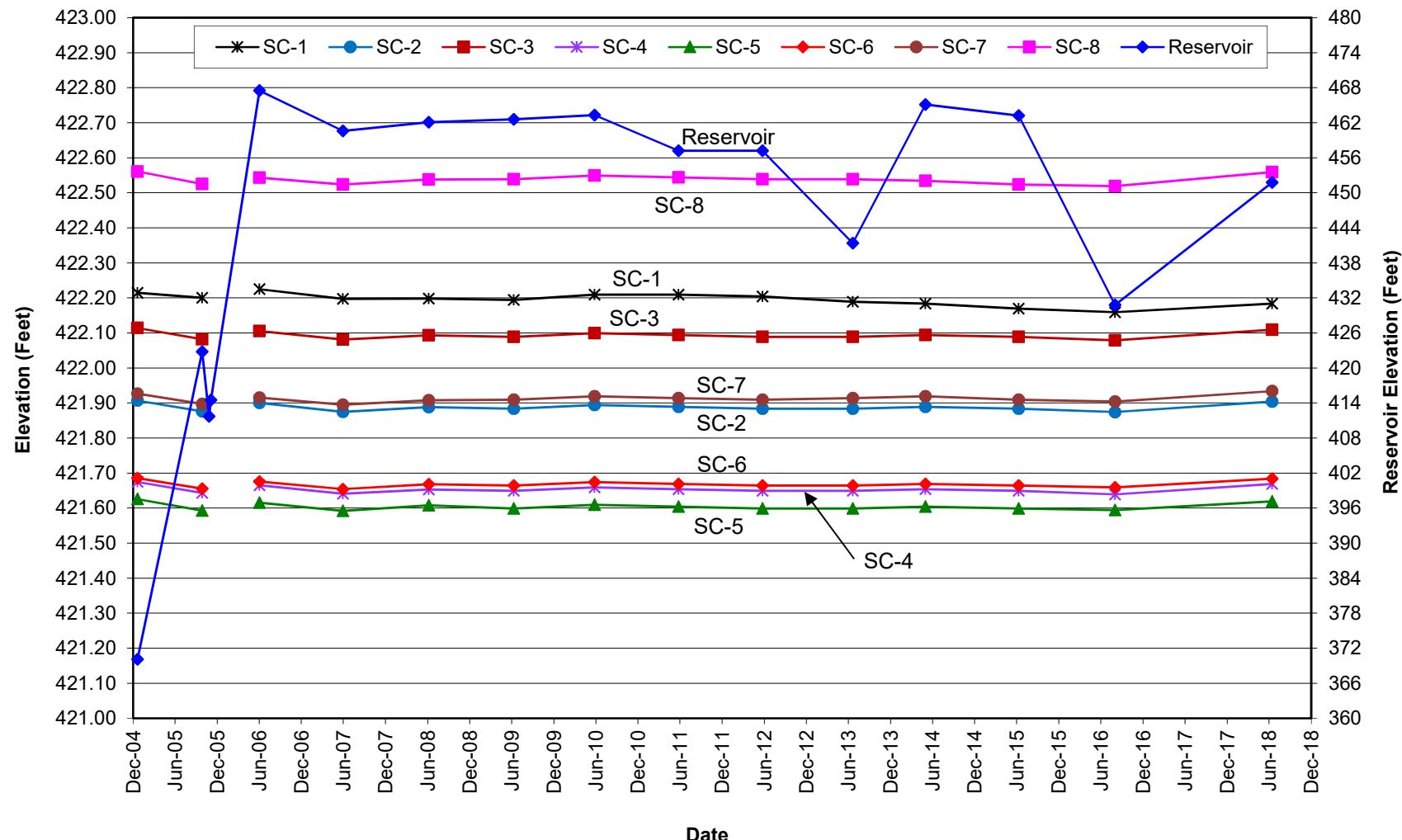
**SAN JOAQUIN DAM
VERTICAL MOVEMENT
SURVEY MONUMENTS SA-1, SA-2, AND SA-3
2004 THROUGH 2018**



**SAN JOAQUIN DAM
VERTICAL MOVEMENT
SURVEY MONUMENTS SB-1, SB-2, SB-3, SB-4, SB-5, SB-6, AND SB-7
2004 THROUGH 2018**



**SAN JOAQUIN DAM
VERTICAL MOVEMENT
SURVEY MONUMENTS SC-1, SC-2, SC-3, SC-4, SC-5, SC-6, SC-7, AND SC-8
2004 THROUGH 2018**



**SAN JOAQUIN DAM
VERTICAL MOVEMENT
SURVEY MONUMENTS SD-1, SD-2, SD-3, SD-4, SD-5, SD-6, AND SD-7
2004 THROUGH 2018**

