

Annual Surveillance Report
January 2018 through December 2018
Santiago Creek Dam
DSOD Dam No. 75-000
Irvine, CA
June 26, 2019



Prepared By:

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Prepared For:

Irvine Ranch Water District
Field Operations Department
P. O. Box 57000
Irvine, CA 92619-7000
and
Serrano Water District
18021 East Lincoln Street
Villa Park, CA 92861-6446



**ANNUAL SURVEILLANCE REPORT
JANUARY 2018 THROUGH DECEMBER 2018
FOR
SANTIAGO CREEK DAM
DSOD DAM NO. 75-000
IRVINE, CALIFORNIA**

Submitted To:

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

and

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18021 East Lincoln Street
Villa Park, CA 92861-6446**

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15375 Barranca Pkwy., Bldg. L
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Project No. 397E-IRW

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

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

Subject: Santiago Creek Dam, DSOD Dam No. 75-000,
Annual Surveillance Report, January 2018 through December 2018

Dear Mr. Cortez:

GENTERRA Consultants, Inc. (GENTERRA) is pleased to submit this Annual Surveillance Report for Santiago Creek Dam 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 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 if you have any questions.

Sincerely,
GENTERRA CONSULTANTS, INC.



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



Joseph J. Kulikowski, P.E., G.E.
President & Senior Principal Engineer
P.E. 17478, G.E. 491



cc: Mr. Jerry Vilander, Serrano Water District
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 Santiago Creek Dam conducted by the Irvine Ranch Water District and the Serrano Water District (Districts), and GENTERRA Consultants, Inc. (GENTERRA) for the 12-month period from January 2018 through December 2018. Irvine Ranch Water District and Serrano Water District jointly own and operate the dam and reservoir. The term “Districts” is used when referring to both responsible parties. This report includes a compilation of field measurements, observations and conclusions related to the general condition, safety and performance of the dam. In addition, this report contains recommendations for continued operation, surveillance, and monitoring of the dam. It 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 was prepared by GENTERRA and includes recent (2-year) and historical (10-year or 7-year) plots showing trends of water levels in the piezometers and in the reservoir (Irvine Lake, which is impounded by Santiago Creek Dam), presented in graphical form. The following tabular data are also presented in this report: piezometer water level data for the period from 2009 through 2018, survey monument elevations for the period from 1989 to 2018, and net horizontal displacements of the survey monument data for the period from 1994 to 2018. Survey monument elevations (since 1989) and net horizontal displacements of the survey monuments (since 1994) are presented graphically to provide a visualization of the long-term performance of the dam and reservoir. No surveying of the dam was performed during calendar year 2017.

One of the original as-built plan sheets dated December 1930 notes that the topographic contours are referenced to the “U.S.G.S. Datum”, which may refer to the Sea Level Datum of 1929, renamed in 1973 to the National Geodetic Vertical Datum of 1929 (NGVD 29). The National Oceanic and Atmospheric Administration (NOAA) National Geodetic Survey (NGS) online program VERTCON calculated a height difference (i.e. datum shift) of 2.536 feet that is to be added to elevations in NGVD 29 to obtain estimated elevations in the North American Vertical Datum of 1988 (NAVD 88) for the Santiago Creek Dam and Reservoir.

In July 2002, a survey was performed to determine the vertical conversion factor from the original construction datum to the NAVD 88. That survey showed that a vertical conversion factor of 1.90 feet is to be added to elevations from the original construction datum to obtain NAVD 88 elevations. Although the original construction datum had been assumed to be NGVD 29, the 1.90-foot vertical conversion factor is to be used in place of the VERTCON datum shift since there is no confirmation that the original construction datum was NGVD 29. Therefore, elevations referenced to the original construction datum are indicated simply as “construction datum” (AECOM, 2016).

The crest of the dam is at an elevation of 810.0 feet (construction datum) or an elevation of 811.9 feet (NAVD 88). The spillway crest is at an elevation of 790.0 feet (construction datum) or an

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elevation of 791.9 feet (NAVD 88). All elevations presented in this report are referenced to NAVD 88 unless use of the construction datum is indicated.

1.2 DAM AND RESERVOIR

Santiago Creek Dam is a rolled earthfill embankment dam that was completed in 1932 on Santiago Creek and Limestone Canyon Creek. The dam is 136 feet high with a dam crest length of 1,425 feet. Figure 1A depicts the general plan view of the dam, spillway, and outlet tower. The upstream face has a slope gradient of 1.5H:1V (Horizontal:Vertical) above an elevation of 799.4 feet, whereas the slope gradient is 2.5H:1V below an elevation of 799.4 feet. The width of the dam crest is 10 feet. The downstream face has a slope gradient of 1.5H:1V above an elevation of 791.9 feet (same elevation as the spillway crest), and the slope gradient is 2H:1V below an elevation of 791.9 feet. As used in this report, the left and right designations are as viewed looking downstream.

The reservoir has a drainage area of about 63 square miles. Per the document titled “*Dams within the Jurisdiction of the State of California*” (DSOD, 2000 & DSOD, 2018) the reservoir has a storage capacity of 25,000 acre-feet.

A reservoir caretaker’s house is located above and away from the right abutment of the dam. A rain gage is located near the caretaker’s house.

1.3 SPILLWAY

The spillway currently consists of an approach, control structure, chute and flip-bucket. According to a report by AECOM (2016), the spillway was extensively modified in late 1969 and/or early 1970 after being damaged by high spillway discharges from the February 1969 flood event. The original spillway chute did not terminate in the flip-bucket, but rather the chute continued with a slope of 50% to Elevation 689.9 feet, at which point the chute turned approximately 68 degrees and entered a relatively horizontal “waste chute”, which discharged to the streambed at Elevation 683.4 feet. The damaged waste channel and lower chute were removed, and the flip-bucket also known as a “ski jump” was installed at the end of the remaining chute. A portion of the left wall of the original spillway channel was left in place immediately downstream of the flip-bucket.

There is an 8-foot deep cutoff at the upstream end of the spillway (Spillway Station 0+00), and shallower cutoffs at Spillway Stations 1+05, 2+00, 2+75, and 3+10. A subdrain system consisting of a tile drain surrounded by stone was placed downstream of the cutoff at Spillway Station 0+00, upstream of the other cutoffs, and was daylighted through the spillway chute at Spillway Station 3+14 (AECOM, 2016).

The DSOD allows the effective spillway crest to be raised by four feet with stoplogs to Elevation 795.9 feet from April through September of each year.

1.4 OUTLET WORKS

The outlet works consists of: (1) an outlet tower with gated intakes at eight different elevations, (2) an outlet conduit, and (3) a downstream control house where the evacuation/release of water from

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the reservoir can be accomplished in the event of an emergency situation involving the safety of the dam. The 135-foot tall outlet tower has eight gated intakes at 10-foot elevation intervals. The lower four gates have been inoperable due to siltation for more than 30 years. The outlet conduit is a 592-foot long, 60-inch diameter welded steel outlet pipe. At the downstream toe of the dam, the outlet pipe splits into two pipes: a 36-inch diameter main pipe and a 30-inch diameter emergency release pipe. Water moving through the outlet conduit is controlled by the main valve located in the control house (also known as valve house or valve building). The main valve is normally kept open to supply water through the Irvine Lake Pipeline (ILP) to the District. The emergency release pipe is controlled by the diverter valve, which is normally kept closed. It can be opened in an emergency to release water into the streambed immediately downstream of the control house (AECOM, 2016).

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SECTION 2: FIELD MEASUREMENTS

There are currently 22 open-well piezometers being monitored at Santiago Creek Dam, labeled as R-1 Upper, R-1 Middle, R-1 Lower, R-2 Upper, R-2 Middle, R-2 Lower, R-3 Upper, R-3 Middle, R-3 Lower, R-4 Upper, R-4 Lower, R-5 Upper, R-5 Lower, R-6 Upper, R-6 Lower, R-7 Upper, R-7 Lower, No. 1, No. 2, No. 3, No. 4 and No. 5. The seven piezometers (R-1 through R-7) with an “Upper” and “Lower”, or “Upper”, “Middle”, and “Lower” designation are nested or multi-stage piezometers, which consist of two or three standpipes that were installed in the same borehole but with their tips at different depths. A piezometer is a small diameter well used mainly to measure water levels. It is typically installed as a casing in a vertical borehole and has a discrete perforated zone near its bottom to enable monitoring of changes in groundwater levels within that zone. More than one piezometer can be installed within a single, larger-diameter borehole. These groups of piezometers are often referred to as multi-stage or nested piezometers. The tip of each piezometer is placed at its own discrete depth interval. The borehole is filled with permeable sandy material across the vertical zones corresponding to the sensing zone of the piezometer, and remaining zones are filled with impermeable materials.

There is one benchmark labeled as BM-0 and five survey monuments labeled as BM-1 through BM-5 being monitored at Santiago Creek Dam. The survey monuments’ elevations and net horizontal displacements are typically measured annually. However, during calendar year 2017, no surveying of the dam was performed. Benchmark BM-0 is located on the right abutment of the dam. Survey Monuments BM-1, BM-2 and BM-3 are located along the crest of the dam. Survey Monument BM-4 is located on the right side of the walkway over the spillway. Survey Monument BM-5 is located on the left side of the walkway over the spillway.

Figure 1A is a site and instrumentation plan showing the layout of the dam and appurtenances, as well as the locations of the piezometers and survey monuments. Figures 1B, 1C and 1D are representative cross-sections of Santiago Creek Dam. Piezometers No. 1 and No. 2 are single-stage piezometers that were installed in 1964. Piezometers No. 3, No. 4, and No. 5 are single-stage piezometers that were installed in 2011. Piezometers R-1 through R-6 are multi-stage piezometers that were installed in 1969. Piezometer R-7 is a multi-stage piezometer that was installed in 1990. Additional information about these piezometers is provided in Section 2.2. Seepage through the dam or its foundation is not measured since there are currently no facilities to monitor seepage through the dam or its foundation.

2.1 RESERVOIR WATER LEVELS

The reservoir water surface elevation is noted on days when the piezometer field measurements are taken. For this 12-month monitoring period, the reservoir water surface ranged from an elevation of 737.2 feet to 753.1 feet. The spillway crest is at an elevation of 791.9 feet but can be raised to 795.9 feet with flashboards. The crest of the dam is at an elevation of 811.9 feet.

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2.2 PIEZOMETERS

The water levels in the piezometers were generally measured on a weekly basis by Serrano Water District personnel during the current 12-month review period.

Figures 2A through 2F are plots of piezometer water levels during the past two years (January 2017 through December 2018). Figures 3A through 3F present historical (last 10-year or 7-year) piezometer water levels through December 2018. Table 1 lists piezometer water level data for the period from January 2009 through December 2018. Note that Figures 2A through 3F also include the reservoir water level.

In May 2012, modifications were made to the upper portion of several piezometers to prevent surface water runoff and sediment from entering the piezometers. The improvements consisted of raising the top of eight selected piezometers: Piezometer Nos. 2, 3, 4, and 5 (located at the toe of the dam), and Piezometers R-4 Upper, R-4 Lower, R-7 Upper and R-7 Lower (located at the downstream bench of the dam). The top elevations of the monitored piezometers were surveyed on August 14, 2012. Table 1 lists the pre- and post-May 2012 top reference elevations (i.e. original and current top elevation), along with the total depth (i.e. total length of piezometer).

There were several abnormal readings (also referred to as anomalies in this report) taken from various piezometers during the five-year period from 2011 to 2015. Piezometers that exhibited anomalies included the following: R-1 Lower (in November 2011 and in February 2013), R-2 Upper (in March 2011), R-4 Lower (in January 2011 and June 2012), No. 1 (in February 2013), No. 2 (in May and December 2012, and in October 2015), and R-7 Upper and R-7 Lower (in June and December 2012, and in October 2015). These anomalies are labeled on Figures 2A through 3F. According to the 2015 Annual Surveillance Report by AECOM (2016), maintenance work was conducted during 2015 on selected piezometers that were thought to be clogged or otherwise not providing reliable readings. Piezometers R-4 Upper and R-5 Lower were jetted to the tip with pressurized water, vacuumed, filled with water, and allowed to drain during early July 2015. Figures 3A and 3B show the specific abnormal readings for these two piezometers that were a result of the maintenance work. From May 2012 to May 2013, Piezometer R-3 Upper had an apparent blockage and then rain water either had entered the standpipe after blockage or rain water had entered the standpipe or the previous blockage was removed due to high pore water pressure around the piezometer tip (see Figure 3C). In May 2012, Piezometer R-3 Middle had no data available, followed by a single data point that was lower than typical readings.

Piezometer R-1 is located on the dam crest near Station 6+00. Figures 2A and 3A present time-series graphs of the water levels measured in Piezometers R-1 Upper, R-1 Middle, and R-1 Lower. Piezometer R-1 Upper was installed in the pervious shell material and was dry throughout the review period, except for a reported water level increase in December 2018. Piezometer R-1 Middle has its tip near the base of the pervious shell material and was dry throughout the review period. Piezometer R-1 Lower was installed in the underlying bedrock foundation. It should be noted that the cross-sections shown on Figures 1B, 1C, and 1D are approximate, and that the contact lines

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shown between the embankment material, the stream gravels (alluvial material), and the bedrock are considered to be approximate estimates. The water level fluctuated during this monitoring period, but the variations did not appear to correlate with reservoir water surface elevation fluctuations.

Piezometer R-2 is located on the dam crest near Station 2+50. Figures 2B and 3B present plots of the water levels measured in Piezometers R-2 Upper, R-2 Middle, and R-2 Lower. Piezometer R-2 Upper was installed in the pervious shell material, and the water level in this piezometer did not respond to reservoir fluctuations since September 2012. Water levels in R-2 Upper tend to respond to reservoir fluctuations following periods when the reservoir pool is at or above an elevation of approximately 775 feet. Piezometer R-2 Middle was installed in the foundation alluvium underlying the dam embankment and was fairly constant throughout the review period. In review of previous years recorded readings, there may be 1 to 1.5 feet of sediment accumulated in the piezometer. It is possible that the perforated zone is blocked and is therefore resulting in no response to reservoir water level changes. GENTERRA recommends a maintenance cleaning of Piezometer R-2 Middle to further evaluate the condition of the piezometer. Piezometer R-2 Lower is in the foundation bedrock, and the water level generally has not responded to reservoir water level changes since May 2013.

Piezometer R-3 is located on the dam crest near the right abutment at approximately Station 9+50. Figures 2C and 3C are plots of water levels in Piezometers R-3 Upper, R-3 Middle, and R-3 Lower. Piezometer R-3 Upper was installed in terrace materials in the right abutment and was dry throughout the current review period. Piezometer R-3 Middle was also installed in terrace materials. The water level in Piezometer R-3 Middle remained constant throughout the review period. Historically, Piezometer R-3 Middle does not respond to changes in the reservoir water level, and it does not appear to be providing reliable readings. Since February 2005, the depth to water readings had gradually dropped to below 75 feet. Since June 2012 the depth to water readings had remained constant, ranging from 59.7 to 60.0 feet. GENTERRA recommends a maintenance cleaning of Piezometer R-3 Middle to further evaluate the condition of the piezometer. Piezometer R-3 Lower is in the foundation bedrock and showed little variation in water level during periods when it was not reported as dry.

Piezometer R-4 is located on the downstream bench of the dam, downstream of Piezometer R-2. Figures 2B and 3B are plots of the water levels measured in Piezometers R-4 Upper and R-4 Lower. Piezometer R-4 Upper was installed in foundation alluvium. A maintenance cleaning of R-4 Upper was performed in July 2015, resulting in the water levels in this piezometer dropping by approximately 10 feet. After the cleaning, the water levels in Piezometer R-4 Upper remained between an elevation of 682 feet and 686 feet. Water levels in Piezometer R-4 Upper showed very little fluctuation throughout the current review period. Piezometer R-4 Lower was installed in the underlying bedrock and was reported during this review period as being dry from March 7, 2018 through the end of December 2018.

Piezometer R-5 is located on the downstream bench of the dam, downstream of Piezometer R-1. Figures 2A and 3A present graphs of the water levels measured in Piezometers R-5 Upper and R-5

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Lower. Piezometer R-5 Upper was installed in foundation alluvium and showed water levels that remained relatively constant throughout the review period. Piezometer R-5 Lower has its tip in bedrock, and water levels generally declined during the review period. A maintenance cleaning was reportedly performed on Piezometer R-5 Lower in July 2015, and the resulting effects can be seen on Figure 3A as an increase in the water level of approximately 8.4 feet in this piezometer. The water levels in this piezometer have gradually lowered since the cleaning was performed. Based on a review of historical data, it is likely that this piezometer was plugged starting in late 2010. Attempts at clearing the blockage had not resulted in the piezometer's water levels returning to historical levels, which are around an elevation of 670 feet. GENTERRA performed bailing and cleaning of Piezometer R-5 Lower on February 8, 2018 to evaluate the condition of the piezometer. GENTERRA was not able to remove the blockage that is present at a depth of 15 feet.

Piezometer R-6 is located on the dam crest near Station 5+00. Figures 2D and 3D display graphs that show water levels measured in Piezometers R-6 Upper and R-6 Lower. Piezometer R-6 Upper is installed in the pervious shell material. The water level in this piezometer displays a weak correlation with reservoir water level. Water levels in Piezometer R-6 Upper remained fairly constant from approximately October 2012 until September 2014 with no discernable response to reservoir fluctuations. Starting in 2014, the piezometer's water levels began to generally decline as the reservoir water level declined. However, Piezometer R-6 Upper has not responded to the increase in the reservoir water surface elevation that began in November 2016. Piezometer R-6 Lower was installed in the bedrock. This piezometer exhibits relatively low water levels and showed a general trend of decline during the last three years. Historically, the water levels in this piezometer have shown no discernable response to reservoir water level fluctuations.

Piezometer R-7 is located on the downstream bench of the dam at approximately Station 3+50. Figures 2E and 3E are plots of the water levels measured in Piezometers R-7 Upper and R-7 Lower. Piezometer R-7 Upper was installed in the pervious shell material and was reported as dry throughout the review period. R-7 Upper has been reported as dry at an elevation of 678.9 feet, which is higher than the tip elevation and therefore could indicate a buildup of sediment in the bottom of the piezometer. GENTERRA performed a cleaning of Piezometer R-7 Upper but was unable to clear the inside of all debris to the depth of the slotted interval at the bottom elevation. The water level in Piezometer R-7 Lower, installed in the underlying bedrock, was consistently around an elevation of 665.7 feet during the current review period. Water levels in this piezometer showed no correlation with water levels in the reservoir.

Piezometer No. 1 is located on the dam crest near Station 4+00. Figures 2E and 3E are graphs of the water levels measured in Piezometer No. 1. This piezometer was installed in the pervious shell material. Water levels in Piezometer No. 1 have gradually declined since approximately May 2013 and may respond somewhat to fluctuations in the reservoir.

Piezometer No. 2 is located at the downstream toe of the dam, downstream of Piezometer No. 1. Figures 2E and 3E are graphs of water levels measured in Piezometer No. 2. This piezometer, installed in the foundation alluvium, showed little variation, and no discernable response to reservoir

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fluctuations. This piezometer was reported as dry by the Districts at a time when the water level reading at an Elevation of 678.1 feet was recorded. The Districts should check the top of casing elevation and should measure the depth to the bottom of the piezometer to determine if the piezometer casing is open throughout its entire length, and to confirm that the reported bottom elevation of the piezometer is correct.

According to the Irvine Ranch Water District, Piezometers No. 3, No. 4, and No. 5 are two-inch-diameter piezometers that were installed along the downstream toe of the dam by GeoPentech. These piezometers were installed in boreholes that had been drilled during an investigation into the alluvial deposits below the dam's foundation as part of GeoPentech's liquefaction evaluation. No adverse conditions or trends were observed in the piezometers' readings during the current reporting period. The first recorded reading of these piezometers took place on November 5, 2011. The data are plotted in Figures 2F and 3F. There were minor variations in the piezometers' water levels during the current reporting period. An accumulation of mud had been encountered by Serrano personnel in the bottom of Piezometer 3 during the previous reporting period. GENTERRA performed a careful maintenance cleaning of Piezometer No. 3 on February 8, 2018. The cleaning succeeded in removing a substantial amount of the mud that had built up at the bottom of the piezometer, the District should consider performing another round of cleaning. Piezometer No. 4 was reported as being dry throughout the 12-month review period.

GENTERRA's review of the piezometer data does not indicate any adverse conditions in the dam embankment or abutments.

2.3 MOVEMENT SURVEYS

There is one benchmark labeled BM-0 and five survey monuments labeled BM-1 through BM-5 being monitored at Santiago Creek Dam. The survey monuments' elevations and net horizontal displacements are typically measured annually. Benchmark BM-0 is located on the right abutment of the dam. Survey Monuments BM-1, BM-2 and BM-3 are located along the crest of the dam. Survey Monument BM-4 is located on the right side of the walkway over the spillway. Survey Monument BM-5 is located on the left side of the walkway over the spillway. Figure 1A shows the locations of the survey monuments and benchmark.

Surveying of the survey monuments' elevations along with determination of the net horizontal displacements of the survey monuments was last performed on June 11, 2018. The dam was not surveyed during calendar year 2017. Graphical plots of the survey monuments' elevations from 1989 through 2018 were developed for this report and are presented as Figures 4A and 4B. Table 2 lists the data for the period from 1989 to 2018.

Surveys to measure the net horizontal displacements of the survey monuments began in 1994. Graphical plots for the period from 1994 through 2018 were developed for this report and are presented as Figures 4C and 4D. Table 3 lists data for the net displacements of the survey monuments for the period from 1994 to 2018.

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The elevation data for the survey monuments located along the dam crest (Survey Monuments BM-1, BM-2 and BM-3) indicated a very small amount of settlement since 1989. The elevation data for the survey monuments located on the walkway over the spillway (Survey Monuments BM-4 and BM-5) continues to show little or no settlement. The change in elevation from 1989 to 2018 for each of the survey monuments is less than 1¼ inch.

The net horizontal displacement data for the survey monuments located along the dam crest (Survey Monuments BM-1, BM-2 and BM-3) show little net movement in the northern or southern directions (upstream or downstream, respectively). The net horizontal displacement data for the survey monuments located on the walkway over the spillway (Survey Monuments BM-4 and BM-5) indicate slight net movement in the southern (upstream) direction. The net horizontal displacement of BM-5 in the upstream direction is 0.0775 foot (0.930 inch) based on the latest survey data collected on June 11, 2018.

The net horizontal displacement data for the survey monuments located along the dam crest (Survey Monuments BM-1, BM-2 and BM-3) indicate slight net movement in the eastern (right) direction. The net horizontal displacement data for the survey monuments located on the walkway over the spillway (Survey Monuments BM-4 and BM-5) indicate slight net movement in the western (left) direction.

Based on GENTERRA's review of the survey data, none of the movements indicate any adverse conditions. The dam was not surveyed during calendar year 2017.

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SECTION 3: FIELD EVALUATIONS

3.1 FIELD EVALUATION OF MARCH 15, 2018

A field evaluation of Santiago Creek Dam on March 15, 2018 was performed by Douglas A. Harriman, P.E., Page Brue and J. Will Kulikowski of GENTERRA; Bill Wesson of the Irvine Ranch Water District; and Vinnie Coppola of the Serrano Water District. The reservoir water surface was at an elevation of 750.1 feet at the time of the field evaluation. Photographs were taken and are in the project files at GENTERRA for comparison with previous and future field evaluations. Right and left designations as listed in this report are viewed looking downstream.

3.1.1 DAM

The upstream face of the dam is surfaced with concrete. The concrete on the upstream face of the dam appeared to be in satisfactory condition but has undergone some weathering. Cracking had occurred in the concrete slabs and joints, and minor uneven settlement of the concrete slabs was observed in a few locations. Also, a few major uneven settlements were observed. The cracks, weathering, spalling, exposed rebars and settlement had been noted in the past, and no new cracks were observed. No signs of instability were observed in the upstream face of the dam above reservoir level during this field evaluation. Continued monitoring of areas with above identified issues is recommended. A minor number of weeds were observed growing through the joints in the concrete slabs during previous field evaluations, had been sprayed with a pesticide according to Mr. Coppola. At the time of this field evaluation, the weeds were all dead and little to no new growth was observed. The District has a program for keeping the weeds under control with satisfactory results.

The crest of the dam is surfaced with gravel and was in satisfactory condition with no signs of settlement. Slight depressions/rutting have formed on the crest because of vehicular use; these depressions are considered to be minor and do not appear to be of structural significance. A few minor longitudinal and transverse cracks were observed along the dam crest in the general vicinity where previously observed cracks had been located. This area should continue to be monitored in the future for any changes.

The downstream face of the dam is covered with vegetation and has one bench. The vegetation on the downstream slope of the dam was generally well trimmed on the downstream face of the dam, below the bench, and in the area of the downstream toe of the dam, a few tall weeds can be seen. The recommended height is approximately 12-inches or less. The tree that is located near the downstream toe of the dam in the vicinity of the right abutment should be removed. There were recent signs of rodent activity noticed in the form of fresh rodent burrows on the downstream face of the dam, on the left abutment of the dam, intermittently along downstream edge of the crest of the dam, and on the downstream toe area of the dam. The District had recently increased the rodent control program, it resulted in a slight decrease in activity from the previous field evaluation.

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There were some areas where the surface of the downstream face of the dam was not uniform due to localized sloughing. Features observed included some depressions that are located above areas with apparent bulges possibly due to an old shallow localized surficial sliding. The District mentioned that the cause of these irregularities was mainly due to heavy rains in 1998, and that no change had occurred since those heavy rains. There were no significant changes observed during this field evaluation when compared to recent field evaluations. These areas should continue to be monitored during routine field evaluations, especially during and following heavy rain periods, as well as during future evaluations. GENTERRA recommends that existing shallow failures and erosion gullies on the downstream face and any other failure/sliding/erosion gullies within 30 feet of the downstream edge of the dam crest (i.e. within the upper steeper portion of the dam embankment) should be repaired as soon as possible to avoid issues during heavy rain periods. As a minimum, these areas should be properly cleaned to remove existing vegetation and roots and filled with compacted gravel materials to prevent further erosion and undermining. GENTERRA can provide detailed remedial repair design recommendations, if requested by the District. GENTERRA representatives took a series of photos for use in comparing the surfaces of the dam for any changes that may be observed during future field evaluations.

3.1.2 SPILLWAY

The concrete on the floor of the spillway crest and channel was in fair condition, but some repairs were recently done by the District to fill existing cracks in the spillway chute. Repair is warranted to fix deteriorating conditions in the walkway over the spillway. There were some cracking and fairly extensive spalling of concrete that has exposed reinforcing steel on the underside of the walkway over the spillway, in the piers that support the bridge, and in local areas on the floor of the spillway. Some recent patching was observed on the spillway crest and spillway floor, but some of the patch has already deteriorated and is no longer intact.

A portion of the lower left spillway wall adjacent to the flip-bucket (Ski-jump) had been damaged and another portion is missing, leaving exposed steel reinforcing rebars, (These damages may have happened during previous spillway channel modification to construct the flip-bucket when the spillway was extensively modified in late 1969 and/or early 1970 after being damaged by high spillway discharges from the February 1969 flood event. The original spillway chute did not terminate with a flip-bucket at the end, but rather the chute continued with a slope of 50% to Elevation 689.9 feet, at which point the spillway chute turned approximately 68 degrees and entered a relatively horizontal “waste chute”, which discharged to the streambed at Elevation 683.4 feet. The damaged “waste chute” and lower part of the main spillway chute were removed during in the late 1969 and/or early 1970, and the flip-bucket also known as a “ski jump” was constructed at the end of the remaining spillway chute. A portion of the left wall of the original spillway channel was left in place immediately downstream of the flip-bucket). This damage was observed during previous field evaluations and no major changes were observed since the last field evaluation. This area is at the steeper transition on the downstream left side of the spillway channel wall. The spillway floor appears to be generally intact in that area, but some boulders are visible adjacent to the damaged area along the slope, above the left side of the spillway wall.

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Erosion has continued to occur under the bottom portion of the flip bucket in the spillway chute and continues to undermine the foundation support below the bottom of the spillway chute. This erosion has exposed the underdrain pipes below the chute and some damage to these pipes can be seen because the soil used to surround the pipes is no longer there. This area should be monitored for assessing the impact of continued erosion. We recommend that some remedial work be performed as soon as possible to prevent further undermining to the flip-bucket and spillway chute. In a special inspection with proper safety measures, the spillway channel downstream of the flip-bucket should be inspected to determine the potential causes of existing distress and to evaluate the condition of the foundation support at the end of spillway chute. We recommend that the District perform necessary remedial repair work in a timely manner to prevent further erosion under the flip-bucket and spillway chute so that the spillway structure will function as expected when needed during heavy storm events.

A small amount of soil and debris has accumulated along the left side of the spillway channel wall, in the left portion of the spillway crest and along the channel walls downstream of the spillway crest. A combination of unstable soils and surface water flows during heavy storm events has caused erosion of the adjacent slope located to the left of the spillway crest area and has resulted in accumulation of colluvial materials near the spillway approach just upstream of the spillway crest. This erosion has resulted in removal of the materials behind the last column at the left end of the spillway bridge. Further erosion may eventually undermine the spillway bridge support. Therefore, some remedial work should be performed to prevent further damage to the spillway and to redirect or slow the surface flow in the slope left of the spillway crest area. Please note that if remedial work to fix these existing issues are not performed in a timely manner, damage to the spillway structure is possible due to heavy erosion that may be caused by eddies that may form near the left support of the walkway bridge. It is necessary to properly channel the flow into the spillway structure without giving the opportunity for eddies to form during spillway flow.

The area of erosion previously observed located approximately 50 feet upstream of the upstream end of the left side of the spillway approach channel was still present.

Erosion was observed along the top portion of the slope above the top of the right-side wall of the spillway. If the existing spillway walls were not designed to resist hydrostatic pressure, it is recommended that V-ditches be installed to divert the surface flow in this area and to reduce the potential of hydrostatic pressure buildup behind the wall. GENTERRA recommends minor grading on the top portion of the slope on the right side of the spillway to stabilize the slope. Recent rodent activity in the form of fresh animal burrows were also observed in the top portion of the slope on the right side of the spillway.

GENTERRA's observations, descriptions, and recommendations regarding spillway issues should be integrated with the information presented by the Districts' consultant who performed the spillway condition assessment for Santiago Creek Dam.

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3.1.3 OUTLET WORKS

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

The concrete tower appeared to be in satisfactory condition, based on limited visual observation of one side of the tower as viewed from the spillway crest. The upper four gates in the tower, located at Elevation 720, Elevation 730, Elevation 740 and Elevation 750, were last exercised on July 17, 2017 but not in the presence of a DSOD representative. The lower four gates in the tower are silted-in and are inoperable. During the field evaluation performed on April 27, 2016, as observed by a DSOD representative, two downstream valves had been cycled 100%.

An evaluation of the outlet tower was performed for the Serrano Water District by another consultant. In June 2016, GENTERRA performed a peer evaluation of the work performed by the consultant and submitted comments to the Serrano Water District in a draft report on June 30, 2016. A copy of the draft report was also sent to the Irvine Ranch Water District.

Releases through the outlet works conduit can also be controlled by two main valves located in the valve building, just downstream of the dam. The valve is normally kept in the open position. In the event of an emergency drawdown, releases are made through a diverter valve, which is normally kept in the closed position.

3.1.4 SEEPAGE

No seepage was observed during this field evaluation.

3.2 FIELD EVALUATION OF MAY 3, 2018

A field evaluation of Santiago Creek Dam on May 3, 2018 was performed by Douglas A. Harriman, P.E., and J. Will Kulikowski of GENTERRA; Steve Habiger of the Irvine Ranch Water District; Vinnie Coppola, Dean Escobedo and Steve Sweeney of the Serrano Water District. Philip Lee of DSOD was also present. The reservoir water surface was at an elevation of 750.4 feet at the time of the field evaluation. Photographs were taken and are in the project files at GENTERRA for comparison with previous and future field evaluations. Right and left designations as listed in this report are viewed looking downstream.

3.2.1 DAM

No significant change has occurred on the upstream slope and crest of the dam since the previous field evaluation on March 15, 2018.

The downstream face of the dam is covered with vegetation and has one bench. The vegetation on the downstream slope of the dam was very well trimmed mostly with patchy areas with weeds and sage growing over 2 feet high, which when well trimmed enables visual observation and identification of any problems. There were recent signs of rodent activity noticed in the form of

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rodent burrows on the downstream face and on the downstream toe area of the dam. The DSOD representative requested the removal of the large trees and additional brush growing in the downstream groin areas and at the downstream toe of the dam.

No significant change has occurred to the areas where the surface of the dam along the downstream face and at the top of the downstream slope were not uniform in slope.

3.2.2 SPILLWAY

No significant change has occurred since the previous field evaluation.

3.2.3 OUTLET WORKS

Since the previous field evaluation on March 15, 2018, the upper four gates in the tower were exercised on May 3, 2018 and in the presence of a DSOD representative.

3.2.4 SEEPAGE

No seepage was observed during this field evaluation.

3.3 FIELD EVALUATION OF SEPTEMBER 14, 2018

A field evaluation of Santiago Creek Dam on September 14, 2018 was performed by Soma Balachandran, Ph.D. G.E. P.E., and J. Will Kulikowski of GENTERRA; Bill Wesson of the District; and Vinnie Coppola of the Serrano Water District. The reservoir water surface was at an elevation of 737.8 feet above mean sea level at the time of the field evaluation. Photographs were taken and are in the project files at GENTERRA for comparison with previous and future field evaluations.

3.3.1 DAM

The upstream face of the dam is surfaced with concrete. The concrete on the upstream face of the dam appeared to be in satisfactory condition but has undergone some weathering. Cracking had occurred in the concrete slabs and joints, and minor uneven settlement of the concrete slabs was observed in a few locations. Also, a few major uneven settlements were observed. The cracks, weathering, spalling, exposed rebars and settlement had been noted in the past, and no new cracks were observed. No signs of instability were observed in the upstream face of the dam above reservoir level during this field evaluation. Continued monitoring of areas with above identified issues is recommended. A minor accumulation of weeds that had been observed growing through the joints in the concrete slabs during previous field evaluations has been sprayed with a pesticide, according to Mr. Coppola. At the time of this field evaluation, the weeds were all dead and little to no new growth was observed. The District has a program for keeping the weeds under control with satisfactory results.

The crest of the dam is surfaced with gravel and was in satisfactory condition with no signs of settlement. Slight depressions/rutting have formed on the crest because of vehicular use; these depressions are considered to be minor and do not appear to be of structural significance. A few minor longitudinal and transverse cracks were observed along the dam crest in the general vicinity

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where previously observed cracks had been located. This area should continue to be monitored in the future for any changes.

The downstream face of the dam is covered with vegetation and has one bench. The vegetation on the downstream slope of the dam was generally well trimmed on the downstream face of the dam, below the bench, and in the area of the downstream toe of the dam, but a few tall weeds were noted. The recommended height is approximately 12-inches or less. The tree that is located near the downstream toe of the dam in the vicinity of the right abutment should be removed. There were recent signs of rodent activity noticed in the form of fresh rodent burrows on the downstream face of the dam, on the left abutment of the dam, intermittently along downstream edge of the crest of the dam, and on the downstream toe area of the dam. The District had recently increased the rodent control program, it resulted in a slight decrease in activity from the previous field evaluation.

There were some areas where the surface of the downstream face of the dam was not uniform due to localized sloughing. Features observed included some depressions that are located above areas with apparent bulges possibly due to an old shallow localized surficial sliding. The District mentioned that the cause of these irregularities was mainly due to heavy rains in 1998, and that no change had occurred since those heavy rains. There were no significant changes observed during this field evaluation when compared to recent field evaluations. These areas should continue to be monitored during routine field evaluations, especially during and following heavy rain periods, as well as during future evaluations. GENTERRA recommends that existing shallow failures and erosion gullies on the downstream face and any other failure/sliding/erosion gullies within 30 feet of the downstream edge of the dam crest (i.e. within the upper steeper portion of the dam embankment) should be repaired as soon as possible to avoid issues during heavy rain periods. As a minimum, these areas should be properly cleaned to remove existing vegetation and roots and filled with compacted gravel materials to prevent further erosion and undermining. GENTERRA can provide detailed remedial repair design recommendations, if requested by the District, as an additional service. GENTERRA representatives took a series of photos for use in comparing the surfaces of the dam for any changes that may be observed during future field evaluations.

3.3.2 SPILLWAY

The concrete on the floor of the spillway crest and channel was in fair condition, but some repairs were recently done by the District to fill existing cracks in the spillway. Repair is warranted to fix deteriorating conditions in the walkway over the spillway. There were some cracking and fairly extensive spalling of concrete that has exposed reinforcing steel on the underside of the walkway over the spillway, in the piers that support the bridge, and in local areas on the floor of the spillway. Some recent patching was observed on the spillway crest and spillway floor, but some of the patch has already deteriorated and is no longer intact, and visible cracking and flaking of patch material can be seen.

A portion of the lower left spillway wall adjacent to the flip-bucket (Ski-jump) had been damaged and another portion is missing, leaving exposed steel reinforcing rebars, see Photo No. 15 (These

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damages may have happened during previous spillway channel modification to construct the flip-bucket when the spillway was extensively modified in late 1969 and/or early 1970 after being damaged by high spillway discharges from the February 1969 flood event. The original spillway chute did not terminate with a flip-bucket at the end, but rather the chute continued with a slope of 50% to Elevation 689.9 feet, at which point the spillway chute turned approximately 68 degrees and entered a relatively horizontal “waste chute”, which discharged to the streambed at Elevation 683.4 feet. The damaged “waste chute” and lower part of the main spillway chute were removed during in the late 1969 and/or early 1970, and the flip-bucket also known as a “ski jump” was constructed at the end of the remaining spillway chute. A portion of the left wall of the original spillway channel was left in place immediately downstream of the flip-bucket). This damage was observed during previous field evaluations and no major changes were observed since the last field evaluation. This area is at the steeper transition on the downstream left side of the spillway channel wall. The spillway floor appears to be generally intact in that area, but some boulders are visible adjacent to the damaged area along the slope, above the left side of the spillway wall.

Erosion has continued to occur under the bottom portion of the flip bucket in the spillway chute and continues to undermine the foundation support below the bottom of the spillway chute. This erosion has exposed the underdrain pipes below the chute and some damage to these pipes can be seen because the soil used to surround the pipes is no longer there. This area should be monitored for assessing the impact of continued erosion. We recommend that some remedial work be performed as soon as possible to prevent further undermining to the flip-bucket and spillway chute. In a special inspection with proper safety measures, the spillway channel downstream of the flip-bucket should be inspected to determine the potential causes of existing distress and to evaluate the condition of the foundation support at the end of spillway chute. We recommend that the District perform necessary remedial repair work in a timely manner to prevent further erosion under the flip-bucket and spillway chute so that the spillway structure will function as expected when needed during heavy storm events.

A small amount of soil and debris has accumulated along the left side of the spillway channel wall, in the left portion of the spillway crest and along the channel walls downstream of the spillway crest. A combination of unstable soils and surface water flows during heavy storm events has caused erosion of the adjacent slope located to the left of the spillway crest area and has resulted in accumulation of colluvial materials near the spillway approach just upstream of the spillway crest. This erosion has resulted in removal of the materials behind the last column at the left end of the spillway bridge. Further erosion may eventually undermine the spillway bridge support. Therefore, some remedial work should be performed to prevent further damage to the spillway and to redirect or slow the surface flow in the slope left of the spillway crest area. Please note that if remedial work to fix these existing issues are not performed in a timely manner, damage to the spillway structure is possible due to heavy erosion that may be caused by eddies that may form near the left support of the walkway bridge. It is necessary to properly channel the flow into the spillway structure without giving the opportunity for eddies to form during spillway flow.

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The area of erosion previously observed located approximately 50 feet upstream of the upstream end of the left side of the spillway approach channel was still present.

Erosion was observed along the top portion of the slope above the top of the right-side wall of the spillway. If the existing spillway walls were not designed to resist hydrostatic pressure, it is recommended that V-ditches be installed to divert the surface flow in this area and to reduce the potential of hydrostatic pressure buildup behind the wall. GENTERRA recommends minor grading on the top portion of the slope on the right side of the spillway to stabilize the slope. Recent rodent activity in the form of fresh animal burrows were also observed in the top portion of the slope on the right side of the spillway.

3.3.3 OUTLET WORKS

Based on our limited visual observation of one side of the tower as viewed from the spillway crest, the concrete outlet tower appeared to be in satisfactory condition but it had been previously determined that it is seismically unstable, and the District is in the process of designing a replacement outlet tower. According to the District, the upper four gates in the tower had been most recently cycled in the presence of the DSOD representative on May 3, 2018, prior to the date of this field evaluation. The lower four gates on the outlet tower are silted-in and are inoperable. During the field evaluation performed on May 3, 2018, as observed by a DSOD representative, the tower gates had been cycled and the downstream valve just upstream of the blow off valve had also been cycled.

3.3.4 SEEPAGE

No seepage was observed during this field evaluation.

3.4 FIELD EVALUATION OF DECEMBER 21, 2018

A field evaluation of Santiago Creek Dam on December 21, 2018 was performed by Soma Balachandran, Ph.D. G.E. P.E. and J. Will Kulikowski of GENTERRA; Bill Wesson of the Irvine Ranch Water District; and Vinnie Coppola of the Serrano Water District.. The reservoir water surface was at an elevation of 737.6 feet at the time of the field evaluation. Photographs were taken and are in the project files at GENTERRA for comparison with previous and future field evaluations.

3.4.1 DAM

No significant change has occurred since the previous field evaluation, and observed issues are noted in this paragraph. Minor amounts of weeds were observed on the upstream slope. Dead weeds piles located on the upstream slope should be removed. Minor depressed area near the right abutment was observed near the right abutment. Rodent activity was observed near the downstream edge of the dam crest. Severe rodent activities and several erosion gullies were noted on the downstream slope. The upper surface of the downstream slope should be compacted to fill voids formed by rodent activities. The toe area of the left abutment near the spillway approach has significant rodent activity.

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3.4.2 SPILLWAY

No significant change has occurred since the previous field evaluation. Issues noted on the previous evaluation still exist. Districts should consider our recommendations to fix existing issues. Trees behind both side walls of the spillway should be removed.

3.4.3 OUTLET WORKS

Intake tower was observed from the spillway approach area, and appears to be in good condition, but it is our understanding that the design to replace the existing intake tower is being performed by another consultant.

3.4.4 SEEPAGE

No seepage was observed during this field evaluation.

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SECTION 4: CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

- 4.1.1** Based on review of available data for the current 12-month review period, the dam appears to be performing satisfactorily.
- 4.1.2** Horizontal and vertical movement appears to be typical and consistent with historical values and trends. No surveying of the dam was performed during calendar year 2017.
- 4.1.3** Two downstream valves were last exercised on May 3, 2018 in the presence of a DSOD representative. The upper four gates in the tower were last exercised on May 3, 2018 in the presence of a DSOD representative.
- 4.1.4** The visible portion of the concrete on the upstream face of the dam appeared to be in satisfactory condition but has undergone some weathering. Cracking had occurred in the concrete slabs and joints, and a few areas of minor uneven settlement of the concrete slabs was observed.
- 4.1.5** Vegetation and roots are growing through the gaps at some of the joints between the concrete slope protection blocks on the upstream face of the dam.
- 4.1.6** The tree that had been observed near the downstream toe of the dam in the vicinity of the right abutment was removed by the District prior to GENTERRA's field evaluation on December 21, 2018.
- 4.1.7** There was some cracking and fairly extensive spalling of concrete that has exposed reinforcing steel on the underside of the walkway over the spillway. There was some minor cracking in the piers that support the bridge, and in local areas on the floor of the spillway; some recent repairs and concrete patches in the floor of the spillway and approach are not in good condition, monitoring of these areas should continue until proper remedial repairs are completed.
- 4.1.8** Erosion of soil material was observed under the bottom portion of the flip bucket, undermining a small portion of the foundation support. There is a potential that the erosion may eventually undermine the flip-bucket and the spillway channel.
- 4.1.9** Immediately downstream of the spillway flip-bucket, a portion of the left wall of the original spillway channel was left in place. In the 2015 Annual Surveillance Report by AECOM (2016), it had been observed during the 2007 inspection that the left channel wall downstream of the flip bucket had been damaged. The damage consists of concrete that had broken off leaving exposed steel reinforcing bars. Review of the as-built plans dated February 20, 1970 shows that the downstream portion of the left

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wall was deliberately cut. The condition of the wall was observed during previous field evaluations and no major changes have been observed.

- 4.1.10** Erosion of the foundation support for the lower portion of the spillway chute was observed but has not worsened.
- 4.1.11** A portion of the lower left spillway wall adjacent to the flip-bucket had been damaged and another portion of the spillway wall is missing (this damages may have occurred during a previous spillway channel modification to construct the flip-bucket when the spillway had been extensively modified in late 1969 and/or early 1970 after being damaged by high spillway discharges from the February 1969 flood event), leaving exposed steel reinforcing rebars. This area is at the steeper transition on the downstream left side of the spillway channel wall. The spillway floor appears to be generally intact in this area. The District should consider findings and recommendations from the detailed spillway condition assessment that was performed by another dam safety consultant.

4.2 RECOMMENDATIONS

The District is aware that during the daily, weekly, and monthly operations at the dam, the District personnel should always be observing the condition of the dam and appurtenances, looking for signs of distress or movement, signs of seepage on the downstream slope or toe area or abutments, or other unusual conditions, and confirming that the critical facilities are functional. Any unusual observations should be reported immediately to a District supervisor and the District's dam safety consultant. Our recommendations are the following:

- 4.2.1** The Districts should continue to implement the rodent control program, with emphasis on the dam crest, downstream face of the dam and the downstream toe of the dam.
- 4.2.2** GENTERRA recommends that the cracks and uneven settlement in the concrete slabs on the upstream face of the dam be monitored for any changes, and consideration be given to making proper repairs of these cracks and areas of uneven settlement. GENTERRA recommends repairing the concrete slab on the upstream slope that settled unevenly and significantly as soon as possible.
- 4.2.3** GENTERRA recommends clearing and removal of all vegetation and roots that are growing through the joints between the concrete protection blocks on the upstream face of the dam. This will reduce further damage to the upstream concrete slope protection. Vegetation should be removed on a regular basis as part of the maintenance program, but proper safety precautions should be implemented while performing these routine maintenance activities. Cutting the vegetation but leaving the roots in place will not help to reduce the potential for future damage.

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- 4.2.4** GENTERRA recommends that the Districts perform a maintenance cleaning of Piezometers R-2 Upper, R-2 Middle and R-3 Middle to further evaluate the condition of these piezometers. GENTERRA also recommends cleanings of Piezometer R-4 Lower, R-4 Upper, Piezometer R-7 Upper, and Piezometer No. 3 to remove accumulated debris and sediment from the bottom portions of these piezometers.
- 4.2.5** GENTERRA recommends that if the cracks on the crest of the dam that were observed during the field evaluation performed on September 16, 2016 return, then the Districts mark the ends of the cracks with paint so that any increase in length in the cracks in the future can be more easily observed. In addition to marking the ends of the cracks, GENTERRA also recommends that the Districts place matching marks on the upstream edge of the dam crest on the concrete along with the date the markings are made. The purpose of putting matching marks on the upstream edge of the dam crest is so that if vehicular traffic or other events cause disturbance of the paint marked in the gravel on the dam crest, there will be a reference on the concrete.
- 4.2.6** The Districts should continue the on-going valve exercise program for the outlet works tower.
- 4.2.7** In a special inspection with proper safety measures, the spillway channel downstream of the flip-bucket should be inspected to determine the potential causes of existing distress and to evaluate the condition of the foundation support at the end of spillway chute. We recommend that the District perform necessary remedial repair work in a timely manner to prevent further erosion under the flip-bucket and spillway chute so that the spillway structure will function as expected when needed during heavy storm events.
- 4.2.8** A combination of unstable soils and surface water flows during heavy storm events has caused erosion of the adjacent slope located to the left of the spillway crest area and has resulted in accumulation of colluvial materials near the spillway approach just upstream of the spillway crest. This erosion has resulted in removal of the materials behind the last column at the left end of the spillway bridge. Further erosion may eventually undermine the spillway bridge support. Therefore, some remedial work should be performed to prevent further damage to the spillway and to redirect or slow the surface flow in the slope left of the spillway crest area. Please note that if remedial work to fix these existing issues are not performed in a timely manner, damage to the spillway structure is possible due to heavy erosion that may be caused by eddies that may form near the left support of the walkway bridge. It is necessary to properly channel the flow into the spillway structure without giving the opportunity for eddies to form during spillway flow. Also, trees behind both side walls of the spillway should be removed.

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- 4.2.9** GENTERRA's observations, descriptions, and recommendations regarding issues with the spillway should be integrated with the information presented by the Districts' consultant who performed the spillway condition assessment for Santiago Creek Dam.
- 4.2.10** GENTERRA recommends that existing shallow failures and erosion gullies on the downstream face of the dam and any other shallow failures within 30 feet of the downstream edge of the dam crest should be repaired as soon as possible to avoid issues during heavy rain periods. As a minimum, these areas should be properly cleaned to remove existing vegetation and roots and filled with compacted gravel materials to prevent further erosion and undermining. GENTERRA can provide detailed remedial repair design recommendations, if requested by the District. Also, the upper surface of the downstream slope should be compacted to fill voids formed by rodent activities, similar to what GENTERRA had previously designed and coordinated at Rattlesnake Canyon Dam.
- 4.2.11** GENTERRA recommends that the concrete deterioration in the spillway bridge and columns be addressed and that the concrete patches and repairs should be performed with proper guidance from a structural engineer.
- 4.2.12** GENTERRA recommends that the District perform an updated hydraulics study to see the impact of spillway flow to the near vertical slope that may take the impact force of spillway flow and perform necessary remedial work to the spillway structure and channel in a timely manner so that the spillway can function as expected when needed.
- 4.2.13** Based on the satisfactory performance of the dam, the following general frequencies of field measurements are recommended for the dam:

Piezometers: The water levels in the piezometers, together with the corresponding reservoir surface elevation at the time of the readings, should be measured at least once per month.

Horizontal and Vertical Surveys: Annually

Complete Visual Field Evaluations: Quarterly

These recommended frequencies are subject to revision following continued review and evaluation of the dam based on the results of water level measurements in all piezometers, surveys, and field evaluations of the dam.

- 4.2.14** 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 near the dam and reservoir.

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SECTION 5: LIMITATIONS

This report represents the results of our review of the surveillance data for Santiago Creek 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 and the Serrano Water District in accordance with generally accepted engineering principles and practices. GENTERRA makes no other warranty, either express or implied.

**ANNUAL SURVEILLANCE REPORT
JANUARY 2018 THROUGH DECEMBER 2018
SANTIAGO CREEK DAM, DSOD DAM NO. 75-000**

SECTION 6: REFERENCES

1. AECOM, 2016, *2015 Annual Surveillance Report for Santiago Creek Dam, No. 75-000, Orange County, California*; by AECOM; dated April 21, 2016.
2. California Department of Water Resources, Division of Safety of Dams (DSOD), 2000, *Dams Within Jurisdiction of the State of California, Bulletin 17-00*; by DSOD; dated July 2000.
3. California Department of Water Resources, Division of Safety of Dams (DSOD), 2018, *Dams Within Jurisdiction of the State of California*; by DSOD; dated September 2018.
4. GENTERRA Consultants, Inc. (GENTERRA), 2018, *Annual Surveillance Report, January 2017 through December 2017, for Santiago Creek Dam, No. 75-000, Irvine, California*; by GENTERRA; dated November 26, 2018.
5. GENTERRA (GENTERRA), 2017, *Annual Surveillance Report, January 2016 through December 2016, for Santiago Creek Dam, No. 75-000, Irvine, California*; by GENTERRA; dated August 25, 2017.
6. GENTERRA, 2013, *Annual Surveillance Report, January 2012 through December 2012, for Santiago Creek Dam, No. 75, Irvine, California*; by GENTERRA; dated April 8, 2013.
7. GENTERRA, 2007, *Annual Surveillance Report, 18-Month Period July 2005 through December 2006 for Santiago Creek Dam, No. 75, Irvine, California*; by GENTERRA; dated February 21, 2007.
8. GENTERRA, 2004, *Annual Surveillance Report, July 2003 through June 2004, for Santiago Creek Dam, No. 75, Irvine, California*; by GENTERRA; dated August 17, 2004.
9. GENTERRA, 2003, *Surveillance Report, January 2002 through June 2003, for Santiago Creek Dam, No. 75, Irvine, California*; by GENTERRA; dated August 28, 2003.

**ANNUAL SURVEILLANCE REPORT
JANUARY 2018 THROUGH DECEMBER 2018
SANTIAGO CREEK DAM, DSOD DAM NO. 75-000**

TABLES

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-1 Upper			R-1 Middle			R-1 Lower			R-2 Upper			R-2 Middle			R-2 Lower		
Top Ref. Elev. (ft)			811.500			811.500			811.500			811.900			811.900			811.900		
Top Ref. Elev. (ft) After 5/21/2012			811.405			811.425			811.380			811.675			811.675			811.675		
Tip Elev. (ft)			733.405			701.425			669.880			711.675			670.175			654.675		
Total Depth (ft)			78.0			110.0			141.5			100.0			141.5			157.0		
Total Depth (ft) After 5/21/2012			78.0			110.0			141.5			100.0			141.5			157.0		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-1 Upper						R-1 Middle			R-1 Lower			R-2 Upper			R-2 Middle			R-2 Lower		
1/8/2009	779.3		77.5	734.0	Dry	109.2	702.3	Dry	120.0	691.5	Wet	100.0	711.9	Dry	140.0	671.9	Dry	144.8	667.1	Wet
1/19/2009	778.5		77.5	734.0	Dry	109.2	702.3	Dry	120.0	691.5	Wet	100.0	711.9	Dry	140.0	671.9	Dry	144.7	667.2	Wet
1/29/2009	778.3	0.38	77.5	734.0	Dry	109.2	702.3	Dry	120.0	691.5	Wet	100.0	711.9	Dry	140.0	671.9	Dry	144.7	667.2	Wet
2/12/2009	779.8		77.5	734.0	Dry	109.2	702.3	Dry	120.0	691.5	Wet	100.0	711.9	Dry	140.0	671.9	Dry	144.7	667.2	Wet
2/19/2009	781.3		77.5	734.0	Dry	109.2	702.3	Dry	119.8	691.7	Wet	100.0	711.9	Dry	140.0	671.9	Dry	144.7	667.2	Wet
2/27/2009	782.2	4.33	77.5	734.0	Dry	109.2	702.3	Dry	119.8	691.7	Wet	100.0	711.9	Dry	140.0	671.9	Dry	144.7	667.2	Wet
3/10/2009	782.7		77.5	734.0	Dry	109.2	702.3	Dry	119.6	691.9	Wet	100.0	711.9	Dry	140.0	671.9	Dry	144.7	667.2	Wet
3/20/2009	782.4		77.5	734.0	Dry	109.2	702.3	Dry	119.8	691.7	Wet	100.0	711.9	Dry	140.0	671.9	Dry	144.7	667.2	Wet
3/25/2009	782.2	0.43	77.5	734.0	Dry	109.2	702.3	Dry	119.9	691.6	Wet	100.0	711.9	Dry	140.0	671.9	Dry	144.7	667.2	Wet
4/4/2009	785.3		77.5	734.0	Dry	109.2	702.3	Dry	119.7	691.8	Wet	100.0	711.9	Dry	140.0	671.9	Dry	144.7	667.2	Wet
4/13/2009	788.5		77.5	734.0	Dry	109.2	702.3	Dry	119.6	691.9	Wet	99.0	712.9	Wet	140.0	671.9	Dry	144.7	667.2	Wet
4/21/2009	790.5		77.5	734.0	Dry	109.2	702.3	Dry	119.3	692.2	Wet	95.9	716.0	Wet	140.0	671.9	Dry	144.7	667.2	Wet
4/26/2009	791.2	0.00	77.5	734.0	Dry	109.2	702.3	Dry	119.3	692.2	Wet	94.8	717.1	Wet	140.0	671.9	Dry	144.7	667.2	Wet
5/4/2009	791.3		77.5	734.0	Dry	109.2	702.3	Dry	118.8	692.7	Wet	92.1	719.8	Wet	140.0	671.9	Dry	144.7	667.2	Wet
5/13/2009	790.6		77.5	734.0	Dry	109.2	702.3	Dry	118.5	693.0	Wet	91.8	720.1	Wet	140.0	671.9	Dry	144.7	667.2	Wet
5/21/2009	789.9		77.5	734.0	Dry	109.2	702.3	Dry	118.3	693.2	Wet	90.8	721.1	Wet	140.0	671.9	Dry	144.7	667.2	Wet
5/30/2009	789.3	0.00	77.5	734.0	Dry	109.2	702.3	Dry	118.2	693.3	Wet	89.0	722.9	Wet	140.0	671.9	Dry	144.7	667.2	Wet
6/8/2009	788.7		77.5	734.0	Dry	109.2	702.3	Dry	118.0	693.5	Wet	88.8	723.1	Wet	140.0	671.9	Dry	144.7	667.2	Wet
6/17/2009	788.2		77.5	734.0	Dry	109.2	702.3	Dry	117.7	693.8	Wet	88.7	723.2	Wet	140.0	671.9	Dry	144.7	667.2	Wet
6/27/2009	787.6	0.00	77.5	734.0	Dry	109.2	702.3	Dry	117.4	694.1	Wet	88.5	723.4	Wet	140.0	671.9	Dry	144.7	667.2	Wet
7/7/2009	786.8		77.5	734.0	Dry	109.2	702.3	Dry	117.4	694.1	Wet	88.6	723.3	Wet	140.0	671.9	Dry	144.5	667.4	Wet
7/15/2009	786.1		77.5	734.0	Dry	109.2	702.3	Dry	117.4	694.1	Wet	88.7	723.2	Wet	140.0	671.9	Dry	143.4	668.5	Wet
7/22/2009	785.5		77.5	734.0	Dry	109.2	702.3	Dry	117.4	694.1	Wet	88.7	723.2	Wet	140.0	671.9	Dry	143.4	668.5	Wet
7/30/2009	784.7	0.00	77.5	734.0	Dry	109.2	702.3	Dry	117.5	694.0	Wet	88.9	723.0	Wet	140.0	671.9	Dry	143.4	668.5	Wet
8/8/2009	783.9		77.5	734.0	Dry	109.2	702.3	Dry	116.9	694.6	Wet	89.3	722.6	Wet	140.0	671.9	Dry	143.5	668.4	Wet
8/15/2009	783.3		77.5	734.0	Dry	109.2	702.3	Dry	116.6	694.9	Wet	89.7	722.2	Wet	140.0	671.9	Dry	143.6	668.3	Wet
8/26/2009	782.3	0.00	77.5	734.0	Dry	109.2	702.3	Dry	116.2	69										

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number		R-1 Upper			R-1 Middle			R-1 Lower			R-2 Upper			R-2 Middle			R-2 Lower			
Top Ref. Elev. (ft)		811.500			811.500			811.500			811.900			811.900			811.900			
Top Ref. Elev. (ft) After 5/21/2012		811.405			811.425			811.380			811.675			811.675			811.675			
Tip Elev. (ft)		733.405			701.425			669.880			711.675			670.175			654.675			
Total Depth (ft)		78.0			110.0			141.5			100.0			141.5			157.0			
Total Depth (ft) After 5/21/2012		78.0			110.0			141.5			100.0			141.5			157.0			
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-1 Upper						R-1 Middle			R-1 Lower			R-2 Upper			R-2 Middle			R-2 Lower		
1/9/2010	773.9		77.5	734.0	Dry	109.2	702.3	Dry	116.5	695.0	Wet	97.1	714.8	Wet	140.0	671.9	Dry	143.1	668.8	Wet
1/17/2010	773.6		77.5	734.0	Dry	109.2	702.3	Dry	116.5	695.0	Wet	97.2	714.7	Wet	140.0	671.9	Dry	143.2	668.7	Wet
1/28/2010	779.9	7.84	77.5	734.0	Dry	109.2	702.3	Dry	116.5	695.0	Wet	97.2	714.7	Wet	140.0	671.9	Dry	143.0	668.9	Wet
2/4/2010	780.2		77.5	734.0	Dry	109.2	702.3	Dry	116.5	695.0	Wet	96.9	715.0	Wet	140.0	671.9	Dry	143.9	668.0	Wet
2/12/2010	783.4		77.5	734.0	Dry	109.2	702.3	Dry	116.5	695.0	Wet	96.6	715.3	Wet	140.0	671.9	Dry	143.8	668.1	Wet
2/19/2010	784.0		77.5	734.0	Dry	109.2	702.3	Dry	116.6	694.9	Wet	96.2	715.7	Wet	140.0	671.9	Dry	143.8	668.1	Wet
2/26/2010	784.5	2.69	77.5	734.0	Dry	109.2	702.3	Dry	116.6	694.9	Wet	95.9	716.0	Wet	140.0	671.9	Dry	143.8	668.1	Wet
3/6/2010	785.6		77.5	734.0	Dry	109.2	702.3	Dry	116.6	694.9	Wet	95.8	716.1	Wet	140.0	671.9	Dry	143.7	668.2	Wet
3/15/2010	786.2		77.5	734.0	Dry	109.2	702.3	Dry	116.5	695.0	Wet	94.8	717.1	Wet	140.0	671.9	Dry	143.7	668.2	Wet
3/16/2010	786.3		77.5	734.0	Dry	109.2	702.3	Dry	116.4	695.1	Wet	94.8	717.1	Wet	140.0	671.9	Dry	143.7	668.2	Wet
3/24/2010	786.2	2.03	77.5	734.0	Dry	109.2	702.3	Dry	116.3	695.2	Wet	93.8	718.1	Wet	140.0	671.9	Dry	143.7	668.2	Wet
4/2/2010	785.8		77.5	734.0	Dry	109.1	702.4	Dry	116.0	695.5	Wet	92.2	719.7	Wet	140.0	671.9	Dry	143.6	668.3	Wet
4/4/2010	785.8		77.5	734.0	Dry	109.1	702.4	Dry	116.0	695.5	Wet	92.1	719.8	Wet	140.0	671.9	Dry	143.6	668.3	Wet
4/12/2010	787.4		77.5	734.0	Dry	109.1	702.4	Dry	116.0	695.5	Wet	91.6	720.3	Wet	140.0	671.9	Dry	143.5	668.4	Wet
4/20/2010	790.1		77.5	734.0	Dry	109.1	702.4	Dry	115.9	695.6	Wet	90.8	721.1	Wet	140.0	671.9	Dry	143.5	668.4	Wet
4/28/2010	792.6	1.19	77.5	734.0	Dry	109.1	702.4	Dry	115.9	695.6	Wet	90.1	721.8	Wet	140.0	671.9	Dry	143.4	668.5	Wet
5/14/2010	792.4		77.5	734.0	Dry	109.1	702.4	Dry	115.7	695.8	Wet	86.0	725.9	Wet	140.0	671.9	Dry	143.1	668.8	Wet
5/21/2010	792.1		77.5	734.0	Dry	109.1	702.4	Dry	115.5	696.0	Wet	84.5	727.4	Wet	140.0	671.9	Dry	143.0	668.9	Wet
5/29/2010	791.7	0.00	77.5	734.0	Dry	109.1	702.4	Dry	115.2	696.3	Wet	82.7	729.2	Wet	140.0	671.9	Dry	142.9	669.0	Wet
6/8/2010	791.0		77.5	734.0	Dry	109.0	702.5	Dry	114.7	696.8	Wet	81.9	730.0	Wet	140.0	671.9	Dry	142.9	669.0	Wet
6/15/2010	790.6		77.5	734.0	Dry	109.0	702.5	Dry	114.4	697.1	Wet	81.6	730.3	Wet	140.0	671.9	Dry	142.8	669.1	Wet
6/22/2010	790.1		77.5	734.0	Dry	109.0	702.5	Dry	114.2	697.3	Wet	81.2	730.7	Wet	140.0	671.9	Dry	142.8	669.1	Wet
6/29/2010	789.7	0.00	77.5	734.0	Dry	109.0	702.5	Dry	113.8	697.7	Wet	80.9	731.0	Wet	140.0	671.9	Dry	142.8	669.1	Wet
7/8/2010	789.2		77.5	734.0	Dry	109.0	702.5	Dry	113.7	697.8	Wet	80.9	731.0	Wet	140.0	671.9	Dry	143.0	668.9	Wet
7/16/2010	788.7		77.5	734.0	Dry	109.0	702.5	Dry	113.5	698.0	Wet	80.9	731.0	Wet	140.0	671.9	Dry	143.0	668.9	Wet
7/23/2010	788.3		77.5	734.0	Dry	109.0	702.5	Dry	113.4	698.1	Wet	80.9	731.0	Wet	140.0	671.9	Dry	143.1	668.8	Wet
7/31/2010	787.7	0.00	77.5	734.0	Dry	109.0	702.5	Dry	113.4	698.1	Wet	80.8								

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number		R-1 Upper			R-1 Middle			R-1 Lower			R-2 Upper			R-2 Middle			R-2 Lower			
Top Ref. Elev. (ft)		811.500			811.500			811.500			811.900			811.900			811.900			
Top Ref. Elev. (ft) After 5/21/2012		811.405			811.425			811.380			811.675			811.675			811.675			
Tip Elev. (ft)		733.405			701.425			669.880			711.675			670.175			654.675			
Total Depth (ft)		78.0			110.0			141.5			100.0			141.5			157.0			
Total Depth (ft) After 5/21/2012		78.0			110.0			141.5			100.0			141.5			157.0			
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-1 Upper						R-1 Middle			R-1 Lower			R-2 Upper			R-2 Middle			R-2 Lower		
1/6/2011	792.2		77.5	734.0	Dry	107.1	704.4		113.2	698.3	Wet	81.8	730.1	Wet	140.0	671.9	Dry	143.1	668.8	Wet
1/7/2011	792.2		77.5	734.0	Dry	107.3	704.2		113.2	698.3	Wet	81.8	730.1	Wet	140.0	671.9	Dry	143.1	668.8	Wet
1/17/2011	792.0		77.5	734.0	Dry	106.7	704.8		112.7	698.8	Wet	79.8	732.1	Wet	139.0	672.9		143.1	668.8	Wet
1/27/2011	791.8	1.11	77.5	734.0	Dry	106.5	705.0		112.5	699.0	Wet	78.9	733.0	Wet	139.1	672.8		143.1	668.8	Wet
2/5/2011	791.8		77.5	734.0	Dry	106.0	705.5		112.3	699.2	Wet	78.9	733.0	Wet	139.0	672.9		143.1	668.8	Wet
2/15/2011	791.8		77.5	734.0	Dry	105.8	705.7		112.1	699.4	Wet	78.9	733.0	Wet	139.0	672.9		143.1	668.8	Wet
2/23/2011	792.2	2.87	77.5	734.0	Dry	105.8	705.7		112.0	699.5	Wet	78.7	733.2	Wet	139.0	672.9		143.1	668.8	Wet
3/8/2011	792.1		77.5	734.0	Dry	105.1	706.4		111.6	699.9	Wet	78.0	733.9	Wet	139.0	672.9		143.1	668.8	Wet
3/19/2011	791.8		77.5	734.0	Dry	104.6	706.9		111.4	700.1	Wet	77.6	734.3	Wet	139.0	672.9		143.1	668.8	Wet
3/30/2011	791.5	3.23	77.5	734.0	Dry	104.3	707.2		111.2	700.3	Wet	71.1	740.8	Wet	139.0	672.9		143.1	668.8	Wet
4/7/2011	792.1		77.5	734.0	Dry	104.0	707.5		110.9	700.6	Wet	77.1	734.8	Wet	139.0	672.9		143.0	668.9	Wet
4/16/2011	792.5		77.5	734.0	Dry	103.8	707.7		110.7	700.8	Wet	77.2	734.7	Wet	139.0	672.9		143.7	668.2	Wet
4/23/2011	792.6		77.5	734.0	Dry	103.6	707.9		110.5	701.0	Wet	77.2	734.7	Wet	139.7	672.2		143.4	668.5	Wet
4/30/2011	792.6	0.00	77.5	734.0	Dry	103.4	708.1		110.4	701.1	Wet	77.2	734.7	Wet	139.9	672.0		142.8	669.1	Wet
5/9/2011	792.4		77.5	734.0	Dry	103.2	708.3		110.4	701.1	Wet	77.2	734.7	Wet	139.9	672.0		142.8	669.1	Wet
5/16/2011	792.4		77.5	734.0	Dry	103.0	708.5		110.3	701.2	Wet	77.2	734.7	Wet	139.9	672.0		142.8	669.1	Wet
5/24/2011	792.4		77.5	734.0	Dry	102.8	708.7		110.1	701.4	Wet	77.3	734.6	Wet	139.9	672.0		142.8	669.1	Wet
5/31/2011	792.4	0.81	77.5	734.0	Dry	102.6	708.9		110.0	701.5	Wet	77.3	734.6	Wet	139.9	672.0		142.8	669.1	Wet
6/8/2011	792.1		77.5	734.0	Dry	102.3	709.2		110.0	700.5	Wet	77.3	734.6	Wet	140.0	671.9		142.8	669.1	Wet
6/16/2011	791.9		77.5	734.0	Dry	102.3	709.2		109.9	701.6	Wet	77.3	734.6	Wet	140.0	671.9		142.8	669.1	Wet
6/23/2011	791.8		77.5	734.0	Dry	102.3	709.2		109.6	701.9	Wet	77.3	734.6	Wet	140.0	671.9		142.8	669.1	Wet
6/30/2011	791.6	0.00	77.5	734.0	Dry	102.2	709.3		109.4	702.1	Wet	77.3	734.6	Wet	140.0	671.9		142.8	669.1	Wet
7/8/2011	791.4		77.5	734.0	Dry	102.2	709.3		109.2	702.3	Wet	77.6	734.3	Wet	140.0	671.9		142.9	669.0	Wet
7/14/2011	791.2		77.5	734.0	Dry	102.2	709.3		109.2	702.3	Wet	77.9	734.0	Wet	140.0	671.9		142.9	669.0	Wet
7/21/2011	790.9		77.5	734.0	Dry	102.2	709.3		109.0	702.5	Wet	78.1	733.8	Wet	140.0	671.9		142.9	669.0	Wet
7/30/2011	790.4	0.00	77.5	734.0	Dry	102.2	709.3		108.8	702.7	Wet	78.5	733.4	Wet	140.0	671.9		142.9	669.0	Wet
8/9/2011	789.9		77.5	734.0	Dry	102.2	709.3		109.0	702.5	Wet	79.1	732.8	Wet	140.0	671.9		142.9	669.0	Wet
8/15/2011	789.7		77.5	734.0	Dry	102.2														

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-1 Upper			R-1 Middle			R-1 Lower			R-2 Upper			R-2 Middle			R-2 Lower		
Top Ref. Elev. (ft)			811.500			811.500			811.500			811.900			811.900			811.900		
Top Ref. Elev. (ft) After 5/21/2012			811.405			811.425			811.380			811.675			811.675			811.675		
Tip Elev. (ft)			733.405			701.425			669.880			711.675			670.175			654.675		
Total Depth (ft)			78.0			110.0			141.5			100.0			141.5			157.0		
Total Depth (ft) After 5/21/2012			78.0			110.0			141.5			100.0			141.5			157.0		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-1 Upper						R-1 Middle			R-1 Lower			R-2 Upper			R-2 Middle			R-2 Lower		
1/7/2012	784.0		77.5	734.0	Dry	104.3	707.2		111.2	700.3		85.4	726.5		140.2	671.7		143.5	668.4	
1/14/2012	783.8		77.5	734.0	Dry	104.4	707.1		111.2	700.3		85.7	726.2		140.1	671.8		143.5	668.4	
1/21/2012	783.6		77.5	734.0	Dry	104.5	707.0		111.3	700.2		85.9	726.0		140.1	671.8		143.6	668.3	
1/28/2012	783.6	1.72	77.5	734.0	Dry	104.6	706.9		111.3	700.2		86.0	725.9		140.1	671.8		143.6	668.3	
2/7/2012	783.4		77.5	734.0	Dry	104.6	706.9		111.3	700.2		86.1	725.8		140.1	671.8		143.7	668.2	
2/15/2012	783.4		77.5	734.0	Dry	104.6	706.9		111.3	700.2		86.1	725.8		140.1	671.8		143.6	668.3	
2/25/2012	783.4	0.62	77.5	734.0	Dry	104.7	706.8		111.3	700.2		86.1	725.8		140.1	671.8		143.6	668.3	
3/5/2012	783.2		77.5	734.0	Dry	105.0	706.5		111.7	699.8		86.4	725.5		140.1	671.8		143.6	668.3	
3/15/2012	782.7		77.5	734.0	Dry	105.2	706.3		111.9	699.6		86.7	725.2		140.1	671.8		143.6	668.3	
3/22/2012	782.6	2.01	77.5	734.0	Dry	105.4	706.1		111.9	699.6		86.9	725.0		140.1	671.8		143.7	668.2	
4/3/2012	782.5		77.5	734.0	Dry	105.5	706.0		111.9	699.6		86.9	725.0		140.1	671.8		143.6	668.3	
4/12/2012	782.1		77.5	734.0	Dry	105.6	705.9		111.9	699.6		87.0	724.9		140.1	671.8		143.6	668.3	
4/21/2012	782.0		77.5	734.0	Dry	105.7	705.8		112.0	699.5		87.0	724.9		140.1	671.8		143.6	668.3	
4/23/2012	781.9	1.32	77.5	734.0	Dry	105.7	705.8		112.0	699.5		87.2	724.7		140.1	671.8		143.6	668.3	
5/1/2012	781.7		77.5	734.0	Dry	105.7	705.8		112.1	699.4		87.0	724.9		140.1	671.8		143.9	668.0	
5/7/2012	781.3		77.5	734.0	Dry	105.6	705.9		112.1	699.4		87.1	724.8		140.1	671.8		143.6	668.3	
5/21/2012	780.9		77.5	734.0	Dry	105.2	706.3		112.1	699.4		87.3	724.6		140.1	671.8		143.6	668.3	
5/25/2012	780.0	0.06	77.5	733.9	New Survey/Dry	105.9	705.5	New Survey	112.1	699.3	New Survey	87.5	724.2	New Survey	140.1	671.6	New Survey	143.7	668.0	New Survey
6/4/2012	779.6		77.5	733.9	Dry	105.9	705.5		112.4	699.0		87.5	724.2		140.1	671.6		143.7	668.0	
6/13/2012	778.7		77.5	733.9	Dry	105.9	705.5		112.4	699.0		88.2	723.5		140.1	671.6		143.7	668.0	
6/20/2012	778.0		77.5	733.9	Dry	106.2	705.2		112.4	699.0		88.2	723.5		140.1	671.6		143.7	668.0	
6/25/2012	777.3	0.00	77.5	733.9	Dry	106.3	705.1		112.5	698.9		88.6	723.1		140.1	671.6		143.7	668.0	
7/4/2012	776.3		77.5	733.9	Dry	106.3	705.1		112.5	698.9		89.3	722.4		140.1	671.6		143.8	667.9	
7/13/2012	775.7		77.5	733.9	Dry	106.5	704.9		112.5	698.9		89.8	721.9		140.1	671.6		144.0	667.7	
7/20/2012	775.2		77.5	733.9	Dry	106.6	704.8		112.7	698.7		90.6	721.1		140.1	671.6		144.0	667.7	
7/30/2012	775.0	0.10	77.5	733.9	Dry	106.9	704.5		112.9	698.5		91.0	720.7		140.1	671.6		144.0	667.7	
8/8/2012	773.0		77.5	733.9	Dry	107.0	704.4		113.0	698.4		92.6	719.1		140.1	671.6		144.1	667.6	
8/9/2012	772.9		77.5	733.9	Dry	107.1	704.3		113.0	698.4		92.7	719.0		140.1	671.6		144.1	667.6	
8/18/2012	772.0		77.5	733.9	Dry	107.3	704.1	</td												

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-1 Upper			R-1 Middle			R-1 Lower			R-2 Upper			R-2 Middle			R-2 Lower		
Top Ref. Elev. (ft)			811.500			811.500			811.500			811.900			811.900			811.900		
Top Ref. Elev. (ft) After 5/21/2012			811.405			811.425			811.380			811.675			811.675			811.675		
Tip Elev. (ft)			733.405			701.425			669.880			711.675			670.175			654.675		
Total Depth (ft)			78.0			110.0			141.5			100.0			141.5			157.0		
Total Depth (ft) After 5/21/2012			78.0			110.0			141.5			100.0			141.5			157.0		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-1 Upper						R-1 Middle			R-1 Lower			R-2 Upper			R-2 Middle			R-2 Lower		
1/16/2013	770.4		77.5	733.9	Dry	109.0	702.4		115.0	696.4		100.0	711.7		140.3	671.4		144.3	667.4	
1/28/2013	769.9	1.82	77.5	733.9	Dry	109.0	702.4		115.0	696.4		100.0	711.7		140.3	671.4		144.4	667.3	
2/15/2013	769.6		77.5	733.9	Dry	109.1	702.3		113.0	698.4		100.0	711.7		140.3	671.4		144.4	667.3	
2/26/2013	769.4	0.68	77.5	733.9	Dry	109.2	702.2		115.4	696.0		100.0	711.7		140.3	671.4		144.4	667.3	
3/13/2013	768.8		77.5	733.9	Dry	109.2	702.2		116.0	695.4		99.1	712.6		140.3	671.4		144.4	667.3	
3/26/2013	768.6	0.66	77.5	733.9	Dry	109.2	702.2		116.0	695.4		99.1	712.6		140.3	671.4		144.4	667.3	
4/10/2013	771.1		77.5	733.9	Dry	109.2	702.2		116.0	695.4		99.1	712.6		140.3	671.4		144.4	667.3	
4/30/2013	772.2	0.00	77.5	733.9	Dry	109.2	702.2		116.0	695.4		99.8	711.9		140.3	671.4		144.4	667.3	
5/9/2013	771.9		77.5	733.9	Dry	109.2	702.2		116.4	695.0		99.1	712.6		140.2	671.5		144.6	667.1	
5/15/2013	771.7		77.5	733.9	Dry	109.2	702.2		116.4	695.0		99.1	712.6		140.2	671.5		144.6	667.1	
5/22/2013	771.4		77.5	733.9	Dry	109.2	702.2		116.4	695.0		99.1	712.6		140.2	671.5		144.6	667.1	
5/30/2013	771.0	0.00	77.5	733.9	Dry	109.2	702.2		116.4	695.0		99.2	712.5		140.2	671.5		144.6	667.1	
6/6/2013	770.8		77.5	733.9	Dry	109.1	702.3		116.5	694.9		99.2	712.5		140.3	671.4		144.6	667.1	
6/13/2013	769.3		77.5	733.9	Dry	109.1	702.3		116.5	694.9		99.2	712.5		140.3	671.4		144.6	667.1	
6/20/2013	769.0		77.5	733.9	Dry	109.1	702.3		116.5	694.9		99.2	712.5		140.3	671.4		144.6	667.1	
6/26/2013	768.6	0.00	77.5	733.9	Dry	109.1	702.3		116.5	694.9		99.2	712.5		140.3	671.4		144.6	667.1	
7/2/2013	767.8		77.5	733.9	Dry	109.1	702.3		116.5	694.9		99.2	712.5		140.3	671.4		144.6	667.1	
7/10/2013	766.9		77.5	733.9	Dry	109.1	702.3		116.6	694.8		99.2	712.5		140.3	671.4		144.6	667.1	
7/16/2013	766.5		77.5	733.9	Dry	109.1	702.3		116.7	694.7		99.2	712.5		140.3	671.4		144.6	667.1	
7/29/2013	765.2	0.00	77.5	733.9	Dry	109.1	702.3		116.7	694.7		99.2	712.5		140.3	671.4		144.6	667.1	
8/5/2013	764.5		77.5	733.9	Dry	109.1	702.3	Dry	116.5	694.9		99.2	712.5		140.3	671.4		144.6	667.1	
8/12/2013	763.8		77.5	733.9	Dry	109.1	702.3	Dry	116.9	694.5		99.2	712.5		140.3	671.4		144.6	667.1	
8/19/2013	763.3		77.5	733.9	Dry	109.1	702.3	Dry	116.9	694.5		99.2	712.5		140.3	671.4		144.6	667.1	
8/26/2013	762.4	0.00	77.5	733.9	Dry	109.1	702.3	Dry	116.9	694.5		99.4	712.3		140.3	671.4		144.6	667.1	
9/2/2013	761.5		77.5	733.9	Dry	109.1	702.3	Dry	116.9	694.5		99.2	712.5		140.3	671.4		144.6	667.1	
9/10/2013	760.7		77.5	733.9	Dry	109.3	702.1	Dry	117.2	694.2		99.5	712.2		140.3	671.4		144.6	667.1	
9/17/2013	759.9		77.5	733.9	Dry	109.3	702.1	Dry	117.2	694.2		99.5	712.2		140.3	671.4		144.6	667.1	
9/23/2013	759.4		77.5	733.9	Dry	109.3	702.1	Dry	117.2	694.2		99.5	712.2		140.3	671.4		144.6	667.1	
9/30/2013	758.7	0.00	77.5	733.9	Dry															

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number		R-1 Upper			R-1 Middle			R-1 Lower			R-2 Upper			R-2 Middle			R-2 Lower			
Top Ref. Elev. (ft)		811.500			811.500			811.500			811.900			811.900			811.900			
Top Ref. Elev. (ft) After 5/21/2012		811.405			811.425			811.380			811.675			811.675			811.675			
Tip Elev. (ft)		733.405			701.425			669.880			711.675			670.175			654.675			
Total Depth (ft)		78.0			110.0			141.5			100.0			141.5			157.0			
Total Depth (ft) After 5/21/2012		78.0			110.0			141.5			100.0			141.5			157.0			
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-1 Upper						R-1 Middle			R-1 Lower			R-2 Upper			R-2 Middle			R-2 Lower		
1/6/2014	754.5		77.5	733.9	Dry	109.2	702.2	Dry	118.2	693.2		100.2	711.5		140.4	671.3		145.0	666.7	
1/13/2014	755.0		77.5	733.9	Dry	109.2	702.2	Dry	118.4	693.0		99.8	711.9		140.4	671.3		145.0	666.7	
1/20/2014	754.6		77.5	733.9	Dry	109.2	702.2	Dry	118.4	693.0		99.6	712.1		140.4	671.3		145.0	666.7	
1/27/2014	754.3	0.00	77.5	733.9	Dry	109.2	702.2	Dry	118.4	693.0		99.3	712.4		140.4	671.3		145.0	666.7	
2/3/2014	754.1		77.5	733.9	Dry	109.2	702.2	Dry	118.6	692.8		100.3	711.4	Dry	140.3	671.4		145.0	666.7	
2/10/2014	754.7		77.5	733.9	Dry	109.2	702.2	Dry	118.6	692.8		100.0	711.7		140.2	671.5		145.0	666.7	
2/17/2014	754.5		77.5	733.9	Dry	109.2	702.2	Dry	118.6	692.8		99.9	711.8		140.2	671.5		145.0	666.7	
2/24/2014	754.2	0.83	77.5	733.9	Dry	109.2	702.2	Dry	118.7	692.7		99.8	711.9		140.4	671.3		145.0	666.7	
3/3/2014	754.5		77.5	733.9	Dry	109.2	702.2	Dry	118.8	692.6		99.8	711.9		140.4	671.3		145.0	666.7	
3/10/2014	755.2		77.5	733.9	Dry	109.2	702.2	Dry	118.7	692.7		99.7	712.0		140.3	671.4		145.0	666.7	
3/19/2014	755.9		77.5	733.9	Dry	109.2	702.2	Dry	118.8	692.6		99.9	711.8		140.3	671.4		145.0	666.7	
3/25/2014	758.8		77.5	733.9	Dry	109.2	702.2	Dry	118.8	692.6		99.9	711.8		140.3	671.4		145.0	666.7	
3/29/2014	760.5		77.5	733.9	Dry	109.2	702.2	Dry	118.8	692.6		99.9	711.8		140.3	671.4		145.0	666.7	
3/31/2014	761.6	1.85	77.5	733.9	Dry	109.2	702.2	Dry	118.8	692.6		99.8	711.9		140.3	671.4		145.0	666.7	
4/1/2014	762.0		77.5	733.9	Dry	109.2	702.2	Dry	118.9	692.5		99.9	711.8		140.3	671.4		145.0	666.7	
4/8/2014	764.7		77.5	733.9	Dry	109.2	702.2	Dry	118.9	692.5		99.9	711.8		140.3	671.4		145.0	666.7	
4/15/2014	766.6		77.5	733.9	Dry	109.2	702.2	Dry	118.9	692.5		99.9	711.8		140.3	671.4		145.0	666.7	
4/22/2014	768.6		77.5	733.9	Dry	109.2	702.2	Dry	119.1	692.3		99.9	711.8		140.3	671.4		145.0	666.7	
4/29/2014	770.4	0.88	77.5	733.9	Dry	109.2	702.2	Dry	119.1	692.3		99.9	711.8		140.3	671.4		145.0	666.7	
5/5/2014	769.7		77.5	733.9	Dry	109.2	702.2	Dry	119.2	692.2		99.9	711.8		140.3	671.4		145.0	666.7	
5/12/2014	769.0		77.5	733.9	Dry	109.2	702.2	Dry	119.2	692.2		99.9	711.8		140.3	671.4		145.0	666.7	
5/19/2014	768.0		77.5	733.9	Dry	109.2	702.2	Dry	119.2	692.2		99.9	711.8		140.3	671.4		145.0	666.7	
5/26/2014	767.1	0.00	77.5	733.9	Dry	109.2	702.2	Dry	119.2	692.2		99.9	711.8		140.3	671.4		145.0	666.7	
6/2/2014	766.2		77.5	733.9	Dry	109.2	702.2	Dry	119.3	692.1		99.9	711.8		140.3	671.4		144.9	666.8	
6/9/2014	765.4		77.5	733.9	Dry	109.2	702.2	Dry	119.3	692.1		99.9	711.8		140.3	671.4		144.9	666.8	
6/16/2014	764.3		77.5	733.9	Dry	109.2	702.2	Dry	119.3	692.1		99.9	711.8		140.3	671.4		144.9	666.8	
6/23/2014	763.1		77.5	733.9	Dry	109.2	702.2	Dry	119.3	692.1		99.9	711.8		140.3	671.4		144.9	666.8	
6/27/2014	762.3	0.00	77.5	733.9	Dry	109.2	702.2	Dry	119.3	692.1		99.9	711.8		140.3	671.4		144.9	666.8	
7/7/2014	760.9		77.5	733.9																

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number		R-1 Upper			R-1 Middle			R-1 Lower			R-2 Upper			R-2 Middle			R-2 Lower			
Top Ref. Elev. (ft)		811.500			811.500			811.500			811.900			811.900			811.900			
Top Ref. Elev. (ft) After 5/21/2012		811.405			811.425			811.380			811.675			811.675			811.675			
Tip Elev. (ft)		733.405			701.425			669.880			711.675			670.175			654.675			
Total Depth (ft)		78.0			110.0			141.5			100.0			141.5			157.0			
Total Depth (ft) After 5/21/2012		78.0			110.0			141.5			100.0			141.5			157.0			
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-1 Upper						R-1 Middle			R-1 Lower			R-2 Upper			R-2 Middle			R-2 Lower		
1/5/2015	751.3		77.5	733.9	Dry	109.2	702.2	Dry	120.2	691.2		100.0	711.7		140.4	671.3		145.2	666.5	
1/12/2015	751.8		77.5	733.9	Dry	109.2	702.2	Dry	120.3	691.1		99.9	711.8		140.2	671.5		145.2	666.5	
1/19/2015	752.3		77.5	733.9	Dry	109.2	702.2	Dry	120.3	691.1		99.9	711.8		140.2	671.5		145.2	666.5	
1/26/2015	752.6	1.48	77.5	733.9	Dry	109.2	702.2	Dry	120.3	691.1		99.9	711.8		140.2	671.5		145.2	666.5	
2/4/2015	753.1		77.5	733.9	Dry	109.2	702.2	Dry	120.2	691.2		100.0	711.7		140.4	671.3		145.2	666.5	
2/9/2015	753.3		77.5	733.9	Dry	109.2	702.2	Dry	120.3	691.1		100.0	711.7		140.4	671.3		145.2	666.5	
2/16/2015	753.8		77.5	733.9	Dry	109.2	702.2	Dry	120.4	691.0		100.0	711.7		140.4	671.3		145.2	666.5	
2/23/2015	753.9	0.44	77.5	733.9	Dry	109.2	702.2	Dry	120.4	691.0		100.0	711.7		140.4	671.3		145.2	666.5	
3/2/2015	754.5		77.5	733.9	Dry	109.2	702.2	Dry	120.4	691.0		100.0	711.7		140.4	671.3		145.2	666.5	
3/9/2015	755.0		77.5	733.9	Dry	109.2	702.2	Dry	120.4	691.0		100.0	711.7		140.4	671.3		145.2	666.5	
3/16/2015	755.3		77.5	733.9	Dry	109.2	702.2	Dry	120.4	691.0		100.0	711.7		140.2	671.5		145.2	666.5	
3/23/2015	755.5		77.5	733.9	Dry	109.2	702.2	Dry	120.4	691.0		100.0	711.7		140.2	671.5		145.2	666.5	
3/30/2015	755.7	0.57	77.5	733.9	Dry	109.2	702.2	Dry	120.5	690.9		100.0	711.7		140.2	671.5		145.2	666.5	
4/6/2015	755.6		77.5	733.9	Dry	109.2	702.2	Dry	120.5	690.9		100.0	711.7		140.2	671.5		145.2	666.5	
4/13/2015	755.8		77.5	733.9	Dry	109.2	702.2	Dry	120.6	690.8		100.0	711.7		140.2	671.5		145.2	666.5	
4/20/2015	755.9		77.5	733.9	Dry	109.2	702.2	Dry	120.6	690.8		100.0	711.7		140.2	671.5		145.2	666.5	
4/27/2015	755.9	0.20	77.5	733.9	Dry	109.2	702.2	Dry	120.6	690.8		100.0	711.7		140.2	671.5		145.2	666.5	
5/4/2015	755.6		77.5	733.9	Dry	109.2	702.2	Dry	120.6	690.8		100.0	711.7		140.2	671.5		145.2	666.5	
5/11/2015	755.3		77.5	733.9	Dry	109.2	702.2	Dry	120.6	690.8		100.0	711.7		140.2	671.5		145.2	666.5	
5/18/2015	755.2		77.5	733.9	Dry	109.2	702.2	Dry	120.6	690.8		100.0	711.7		140.2	671.5		145.2	666.5	
5/26/2015	755.3	0.95	77.5	733.9	Dry	109.2	702.2	Dry	120.6	690.8		100.0	711.7		140.2	671.5		145.2	666.5	
6/1/2015	755.2		77.5	733.9	Dry	109.2	702.2	Dry	120.6	690.8		100.0	711.7		140.2	671.5		145.2	666.5	
6/8/2015	755.1		77.5	733.9	Dry	109.2	702.2	Dry	120.6	690.8		100.0	711.7		140.2	671.5		145.2	666.5	
6/15/2015	755.2		77.5	733.9	Dry	109.2	702.2	Dry	120.7	690.7		100.0	711.7		140.2	671.5		145.2	666.5	
6/22/2015	754.8		77.5	733.9	Dry	109.2	702.2	Dry	120.8	690.6		100.0	711.7		140.2	671.5		145.2	666.5	
6/29/2015	754.2	0.00	77.5	733.9	Dry	109.2	702.2	Dry	120.8	690.6		100.0	711.7		140.2	671.5		145.2	666.5	
7/10/2015	753.3		77.5	733.9	Dry	109.2	702.2	Dry	120.9	690.5		100.0	711.7		140.1	671.6		145.5	666.2	
7/15/2015	753.0		77.5	733.9	Dry	109.2	702.2	Dry	120.9	690.5		100.0	711.7		140.1	671.6		145.2	666.5	
7/21/2015	752.8</td																			

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number		R-1 Upper			R-1 Middle			R-1 Lower			R-2 Upper			R-2 Middle			R-2 Lower			
Top Ref. Elev. (ft)		811.500			811.500			811.500			811.900			811.900			811.900			
Top Ref. Elev. (ft) After 5/21/2012		811.405			811.425			811.380			811.675			811.675			811.675			
Tip Elev. (ft)		733.405			701.425			669.880			711.675			670.175			654.675			
Total Depth (ft)		78.0			110.0			141.5			100.0			141.5			157.0			
Total Depth (ft) After 5/21/2012		78.0			110.0			141.5			100.0			141.5			157.0			
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-1 Upper						R-1 Middle			R-1 Lower			R-2 Upper			R-2 Middle			R-2 Lower		
1/5/2016	741.7		77.5	733.9	Dry	109.2	702.2	Dry	121.5	689.9		100.0	711.7		140.2	671.5		145.3	666.4	
1/12/2016	742.3		77.5	733.9	Dry	109.2	702.2	Dry	121.5	689.9		100.0	711.7		140.2	671.5		145.4	666.3	
1/19/2016	742.0		77.5	733.9	Dry	109.2	702.2	Dry	121.5	689.9		100.0	711.7		140.2	671.5		145.3	666.4	
1/26/2016	741.8	3.51	77.5	733.9	Dry	109.2	702.2	Dry	121.5	689.8		100.0	711.7		140.2	671.5		145.4	666.3	
2/2/2016	741.4		77.5	733.9	Dry	109.2	702.2	Dry	121.7	689.7		100.0	711.7		140.2	671.5		145.4	666.3	
2/9/2016	741.0		77.5	733.9	Dry	109.2	702.2	Dry	121.7	689.7		100.0	711.7		140.2	671.5		145.4	666.3	
2/16/2016	740.5		77.5	733.9	Dry	109.2	702.2	Dry	121.6	689.8		100.0	711.7		140.2	671.5		145.4	666.3	
2/23/2016	740.2	0.35	77.5	733.9	Dry	109.2	702.2	Dry	121.7	689.7		100.0	711.7		140.2	671.5		145.4	666.3	
3/1/2016	739.7		77.5	733.9	Dry	109.2	702.2	Dry	121.7	689.7		100.0	711.7		140.2	671.5		145.4	666.3	
3/9/2016	739.4		77.5	733.9	Dry	109.2	702.2	Dry	121.7	689.7		100.0	711.7		140.2	671.5		145.4	666.3	
3/17/2016	739.3		77.5	733.9	Dry	109.2	702.2	Dry	121.7	689.7		100.0	711.7		140.2	671.5		145.4	666.3	
3/23/2016	739.1		77.5	733.9	Dry	109.2	702.2	Dry	121.8	689.6		100.0	711.7		140.2	671.5		145.5	666.2	
3/30/2016	738.5	1.59	77.5	733.9	Dry	109.2	702.2	Dry	121.8	689.6		100.0	711.7		140.2	671.5		145.5	666.2	
4/6/2016	738.0		77.5	733.9	Dry	109.2	702.2	Dry	121.8	689.6		100.0	711.7		140.2	671.5		145.5	666.2	
4/13/2016	737.6		77.5	733.9	Dry	109.2	702.2	Dry	121.9	689.5		98.0	713.7		140.2	671.5		145.5	666.2	
4/20/2016	736.9		77.5	733.9	Dry	109.2	702.2	Dry	121.9	689.5		98.0	713.7		140.2	671.5		145.5	666.2	
4/27/2016	736.2	0.07	77.5	733.9	Dry	109.2	702.2	Dry	121.9	689.5		98.0	713.7		140.2	671.5		145.5	666.2	
5/4/2016	736.9		77.5	733.9	Dry	109.2	702.2	Dry	121.8	689.6		100.0	711.7		140.2	671.5		145.5	666.2	
5/11/2016	737.5		77.5	733.9	Dry	109.2	702.2	Dry	122.0	689.4		100.0	711.7		140.2	671.5		145.5	666.2	
5/18/2016	737.0		77.5	733.9	Dry	109.2	702.2	Dry	122.0	689.4		100.0	711.7		140.2	671.5		145.5	666.2	
5/25/2016	737.6	1.21	77.5	733.9	Dry	109.2	702.2	Dry	122.0	689.4		100.0	711.7		140.2	671.5		145.5	666.2	
6/1/2016	737.6		77.5	733.9	Dry	109.2	702.2	Dry	122.0	689.4		100.0	711.7		140.2	671.5		145.5	666.2	
6/8/2016	737.9		77.5	733.9	Dry	109.2	702.2	Dry	122.0	689.4		100.0	711.7		140.2	671.5		145.5	666.2	
6/15/2016	738.0		77.5	733.9	Dry	109.2	702.2	Dry	122.0	689.4		100.0	711.7		140.2	671.5		145.5	666.2	
6/23/2016	737.7		77.5	733.9	Dry	109.2	702.2	Dry	122.0	689.4		100.0	711.7		140.2	671.5		145.5	666.2	
6/29/2016	737.5	0.00	77.5	733.9	Dry	109.2	702.2	Dry	122.0	689.4		100.0	711.7		140.2	671.5		145.5	666.2	
7/6/2016	737.4		77.5	733.9	Dry	109.2	702.2	Dry	122.1	689.3		100.0	711.7		140.2	671.5		145.5	666.2	
7/15/2016	737.4		77.5	733.9	Dry	109.2	702.2	Dry	122.1	689.3		100.0	711.7		140.2	671.5		145.5	666.2	
7/20/2016	737.1																			

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number		R-1 Upper			R-1 Middle			R-1 Lower			R-2 Upper			R-2 Middle			R-2 Lower			
Top Ref. Elev. (ft)		811.500			811.500			811.500			811.900			811.900			811.900			
Top Ref. Elev. (ft) After 5/21/2012		811.405			811.425			811.380			811.675			811.675			811.675			
Tip Elev. (ft)		733.405			701.425			669.880			711.675			670.175			654.675			
Total Depth (ft)		78.0			110.0			141.5			100.0			141.5			157.0			
Total Depth (ft) After 5/21/2012		78.0			110.0			141.5			100.0			141.5			157.0			
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-1 Upper						R-1 Middle			R-1 Lower			R-2 Upper			R-2 Middle			R-2 Lower		
1/4/2017	757.5		77.5	733.9	Dry	109.2	702.2	Dry	122.7	688.7		100.0	711.7		139.6	672.1		145.5	666.2	
1/13/2017	758.1		77.5	733.9	Dry	109.2	702.2	Dry	122.7	688.7		100.0	711.7		140.1	671.6		145.5	666.2	
1/18/2017	758.3		77.5	733.9	Dry	109.2	702.2	Dry	122.7	688.7		100.0	711.7		139.6	672.1		145.5	666.2	
1/25/2017	758.0	6.73	77.5	733.9	Dry	109.2	702.2	Dry	122.7	688.7		100.0	711.7		138.4	673.3		145.6	666.1	
2/1/2017	769.1		77.5	733.9	Dry	109.2	702.2	Dry	122.7	688.7		100.0	711.7		138.4	673.3		145.6	666.1	
2/8/2017	769.7		77.5	733.9	Dry	109.2	702.2	Dry	122.7	688.7		100.0	711.7		140.3	671.4		145.4	666.3	
2/15/2017	770.1		77.5	733.9	Dry	109.2	702.2	Dry	122.7	688.7		100.0	711.7		140.3	671.4		145.5	666.2	
2/22/2017	771.8	4.17	77.5	733.9	Dry	109.2	702.2	Dry	122.7	688.7		100.0	711.7		140.3	671.4		145.2	666.5	
3/1/2017	771.9		77.5	733.9	Dry	109.2	702.2	Dry	122.7	688.7		100.0	711.7		140.3	671.4		145.2	666.5	
3/8/2017	771.2		77.5	733.9	Dry	109.2	702.2	Dry	122.7	688.7		100.0	711.7		140.3	671.4		145.2	666.5	
3/15/2017	770.6		77.5	733.9	Dry	109.2	702.2	Dry	122.7	688.7		100.0	711.7		140.2	671.5		145.2	666.5	
3/22/2017	769.6		77.5	733.9	Dry	109.2	702.2	Dry	122.7	688.7		100.0	711.7		140.1	671.6		145.2	666.5	
3/29/2017	768.4	0.13	77.5	733.9	Dry	109.2	702.2	Dry	122.7	688.7		100.0	711.7		140.2	671.5		145.2	666.5	
4/5/2017	769.1		77.5	733.9	Dry	109.2	702.2	Dry	122.7	688.7		100.0	711.7		140.2	671.5		145.2	666.5	
4/12/2017	768.0		77.5	733.9	Dry	109.2	702.2	Dry	122.8	688.6		100.0	711.7		140.2	671.5		145.2	666.5	
4/19/2017	767.9		77.5	733.9	Dry	109.2	702.2	Dry	122.8	688.6		100.0	711.7		140.2	671.5		145.0	666.7	
4/26/2017	767.7	0.07	77.5	733.9	Dry	109.2	702.2	Dry	122.8	688.6		100.0	711.7		140.2	671.5		145.1	666.6	
5/1/2017	767.4		77.5	733.9	Dry	109.2	702.2	Dry	122.8	688.6		100.0	711.7		140.2	671.5		145.1	666.6	
5/10/2017	766.5		77.5	733.9	Dry	109.2	702.2	Dry	122.8	688.6		100.0	711.7		140.2	671.5		145.1	666.6	
5/17/2017	765.9		77.5	733.9	Dry	109.2	702.2	Dry	122.8	688.6		100.0	711.7		140.2	671.5		145.1	666.6	
5/24/2017	765.7		77.5	733.9	Dry	109.2	702.2	Dry	122.8	688.6		100.0	711.7		140.2	671.5		145.1	666.6	
5/30/2017	765.5	0.36	77.5	733.9	Dry	109.2	702.2	Dry	122.8	688.6		100.0	711.7		140.2	671.5		145.1	666.6	
6/7/2017	765.3		77.5	733.9	Dry	109.2	702.2	Dry	122.8	688.6		100.0	711.7		140.2	671.5		145.1	666.6	
6/14/2017	765.1		77.5	733.9	Dry	109.2	702.2	Dry	122.8	688.6		100.0	711.7		140.2	671.5		145.1	666.6	
6/21/2017	764.8		77.5	733.9	Dry	109.2	702.2	Dry	122.8	688.6		100.0	711.7		140.2	671.5		145.1	666.6	
6/28/2017	764.7	0.05	77.5	733.9	Dry	109.2	702.2	Dry	122.8	688.6		100.0	711.7		140.2	671.5		145.1	666.6	
7/5/2017	764.2		77.5	733.9	Dry	109.2	702.2	Dry	122.8	688.6		100.0	711.7		140.2	671.5		145.1	666.6	
7/12/2017	763.8		77.5	733.9	Dry	109.2	702.2	Dry	122.8	688.6		100.0	711.7		140.2	671.5		145.1	666.6	
7/19/2017	763.2		77.5	733.9	Dry	109.2</														

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number		R-1 Upper			R-1 Middle			R-1 Lower			R-2 Upper			R-2 Middle			R-2 Lower			
Top Ref. Elev. (ft)		811.500			811.500			811.500			811.900			811.900			811.900			
Top Ref. Elev. (ft) After 5/21/2012		811.405			811.425			811.380			811.675			811.675			811.675			
Tip Elev. (ft)		733.405			701.425			669.880			711.675			670.175			654.675			
Total Depth (ft)		78.0			110.0			141.5			100.0			141.5			157.0			
Total Depth (ft) After 5/21/2012		78.0			110.0			141.5			100.0			141.5			157.0			
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-1 Upper						R-1 Middle			R-1 Lower			R-2 Upper			R-2 Middle			R-2 Lower		
1/3/2018	753.1		77.5	733.9	Dry	109.2	702.2	Dry	122.7	688.7		100.1	711.6		140.2	671.5		145.2	666.5	
1/10/2018	753.1		77.5	733.9	Dry	109.2	702.2	Dry	122.7	688.7		100.0	711.7		140.2	671.5		145.2	666.5	
1/17/2018	753.0		77.5	733.9	Dry	109.2	702.2	Dry	122.7	688.7		100.0	711.7		140.2	671.5		145.2	666.5	
1/24/2018	752.8		77.5	733.9	Dry	109.2	702.2	Dry	122.7	688.7		100.0	711.7		140.2	671.5		145.2	666.5	
1/30/2018	752.6	1.8	77.5	733.9	Dry	109.2	702.2	Dry	122.7	688.7		100.0	711.7		140.2	671.5		145.2	666.5	
2/7/2018	752.3		77.5	733.9	Dry	109.2	702.2	Dry	122.7	688.7		100.0	711.7		140.2	671.5		145.2	666.5	
2/14/2018	751.8		77.5	733.9	Dry	109.2	702.2	Dry	122.8	688.6		100.0	711.7		140.2	671.5		145.2	666.5	
2/21/2018	750.2		77.5	733.9	Dry	109.2	702.2	Dry	122.8	688.6		100.0	711.7		140.2	671.5		145.2	666.5	
2/27/2018	750.3	0.6	77.5	733.9	Dry	109.2	702.2	Dry	122.8	688.6		100.0	711.7		140.2	671.5		145.2	666.5	
3/7/2018	750.2		77.5	733.9	Dry	109.3	702.1	Dry	122.8	688.6		100.0	711.7		140.2	671.5		145.2	666.5	
3/15/2018	750.1		77.5	733.9	Dry	109.3	702.1	Dry	122.8	688.6		100.1	711.6		140.3	671.4		145.3	666.4	
3/21/2018	750.8		77.5	733.9	Dry	109.3	702.1	Dry	122.8	688.6		100.1	711.6		140.3	671.4		145.3	666.4	
3/28/2018	750.9	0.6	77.5	733.9	Dry	109.3	702.1	Dry	122.8	688.6		100.1	711.6		140.3	671.4		145.3	666.4	
4/4/2018	751.7		77.5	733.9	Dry	109.3	702.1	Dry	122.8	688.6		100.1	711.6		140.3	671.4		145.3	666.4	
4/11/2018	751.7		77.5	733.9	Dry	109.3	702.1	Dry	122.9	688.5		100.2	711.5		140.3	671.4		145.3	666.4	
4/18/2018	750.8		77.5	733.9	Dry	109.3	702.1	Dry	122.9	688.5		100.3	711.4		140.3	671.4		145.3	666.4	
4/25/2018	749.5	0.1	77.5	733.9	Dry	109.3	702.1	Dry	122.9	688.5		100.3	711.4		140.3	671.4		145.3	666.4	
5/1/2018	750.5		77.5	733.9	Dry	109.3	702.1	Dry	122.9	688.5		100.3	711.4		140.3	671.4		145.3	666.4	
5/8/2018	749.4		77.5	733.9	Dry	109.3	702.1	Dry	122.9	688.5		100.3	711.4		140.3	671.4		145.3	666.4	
5/15/2018	748.3		77.5	733.9	Dry	109.3	702.1	Dry	122.9	688.5		100.2	711.5		140.1	671.6		145.3	666.4	
5/22/2018	747.0		77.5	733.9	Dry	109.3	702.1	Dry	122.9	688.5		100.2	711.5		140.1	671.6		145.3	666.4	
5/29/2018	745.6	0.3	77.5	733.9	Dry	109.3	702.1	Dry	122.9	688.5		100.3	711.4		140.2	671.5		145.4	666.3	
6/6/2018	744.7		77.5	733.9	Dry	109.3	702.1	Dry	122.9	688.5		100.3	711.4		140.2	671.5		145.4	666.3	
6/13/2018	743.7		77.5	733.9	Dry	109.3	702.1	Dry	123.0	688.4		100.3	711.4		140.3	671.4		145.4	666.3	
6/20/2018	742.5		77.5	733.9	Dry	109.3	702.1	Dry	123.0	688.4		100.3	711.4		140.2	671.5		145.4	666.3	
6/27/2018	741.2	0.0	77.5	733.9	Dry	109.3	702.1		123.0	688.4		100.3	711.4		140.2	671.5		145.4	666.3	
7/5/2018	739.8		77.5	733.9	Dry	109.3	702.1		123.1	688.3		100.3	711.4		140.2	671.5		145.5	666.2	
7/11/2018	738.7		77.5	733.9	Dry	109.3	702.1		123.1	688.3		100.3	711.4		140.2	671.5		145.5	666.2	
7/18/2018	738.5		77.5</td																	

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-3 Upper			R-3 Middle			R-3 Lower			R-4 Upper			R-4 Lower		
Top Ref. Elev. (ft)			812.200			812.200			812.200			752.100			752.100		
Top Ref. Elev. (ft) After 5/21/2012			812.000			812.025			811.995			754.455			754.455		
Tip Elev. (ft)			737.500			690.025			675.995			667.100			655.600		
Total Depth (ft)			74.5			122.0			136.0			85.0			96.5		
Total Depth (ft) After 5/21/2012			74.5			122.0			136.0			87.4			98.9		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-3 Upper						R-3 Middle			R-3 Lower			R-4 Upper			R-4 Lower		
1/8/2009	779.3		74.5	737.7	Dry	70.0	742.2	Wet	135.7	676.5	Dry	52.2	699.9	Wet	88.8	663.3	Wet
1/19/2009	778.5		74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	52.2	699.9	Wet	88.8	663.3	Wet
1/29/2009	778.3	0.38	74.5	737.7	Dry	69.8	742.4	Wet	135.7	676.5	Dry	52.2	699.9	Wet	88.8	663.3	Wet
2/12/2009	779.8		74.5	737.7	Dry	69.8	742.4	Wet	135.7	676.5	Dry	52.2	699.9	Wet	88.8	663.3	Wet
2/19/2009	781.3		74.5	737.7	Dry	69.8	742.4	Wet	135.7	676.5	Dry	52.2	699.9	Wet	88.8	663.3	Wet
2/27/2009	782.2	4.33	74.5	737.7	Dry	69.8	742.4	Wet	135.7	676.5	Dry	52.2	699.9	Wet	88.8	663.3	Wet
3/10/2009	782.7		74.5	737.7	Dry	69.8	742.4	Wet	135.7	676.5	Dry	52.2	699.9	Wet	88.8	663.3	Wet
3/20/2009	782.4		74.5	737.7	Dry	69.8	742.4	Wet	135.7	676.5	Dry	52.1	700.0	Wet	88.8	663.3	Wet
3/25/2009	782.2	0.43	74.5	737.7	Dry	69.8	742.4	Wet	135.7	676.5	Dry	51.9	700.2	Wet	88.7	663.4	Wet
4/4/2009	785.3		74.5	737.7	Dry	69.8	742.4	Wet	135.7	676.5	Dry	51.9	700.2	Wet	88.4	663.7	Wet
4/13/2009	788.5		74.5	737.7	Dry	69.8	742.4	Wet	135.7	676.5	Dry	51.9	700.2	Wet	88.3	663.8	Wet
4/21/2009	790.5		74.5	737.7	Dry	69.8	742.4	Wet	135.7	676.5	Dry	51.9	700.2	Wet	88.2	663.9	Wet
4/26/2009	791.2	0.00	74.5	737.7	Dry	69.8	742.4	Wet	135.7	676.5	Dry	51.9	700.2	Wet	88.2	663.9	Wet
5/4/2009	791.3		74.5	737.7	Dry	69.8	742.4	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.6	664.5	Wet
5/13/2009	790.6		74.5	737.7	Dry	69.8	742.4	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.5	664.6	Wet
5/21/2009	789.9		74.5	737.7	Dry	69.8	742.4	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.3	664.8	Wet
5/30/2009	789.3	0.00	74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.2	664.9	Wet
6/8/2009	788.7		74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.2	664.9	Wet
6/17/2009	788.2		74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.1	665.0	Wet
6/27/2009	787.6	0.00	74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.1	665.0	Wet
7/7/2009	786.8		74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.1	665.0	Wet
7/15/2009	786.1		74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.1	665.0	Wet
7/22/2009	785.5		74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.1	665.0	Wet
7/30/2009	784.7	0.00	74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.1	665.0	Wet
8/8/2009	783.9		74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.1	665.0	Wet
8/15/2009	783.3		74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.1	665.0	Wet
8/26/2009	782.3	0.00	74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.1	665.0	Wet
9/5/2009	781.5		74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.1	665.0	Wet
9/12/2009	780.8		74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.1	665.0	Wet
9/19/2009	780.2		74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.1	665.0	Wet
9/28/2009	779.5	0.00	74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.1	665.0	Wet
10/8/2009	778.5		74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.2	664.9	Wet
10/19/2009	777.8		74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.2	6	

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-3 Upper			R-3 Middle			R-3 Lower			R-4 Upper			R-4 Lower		
Top Ref. Elev. (ft)			812.200			812.200			812.200			752.100			752.100		
Top Ref. Elev. (ft) After 5/21/2012			812.000			812.025			811.995			754.455			754.455		
Tip Elev. (ft)			737.500			690.025			675.995			667.100			655.600		
Total Depth (ft)			74.5			122.0			136.0			85.0			96.5		
Total Depth (ft) After 5/21/2012			74.5			122.0			136.0			87.4			98.9		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-3 Upper						R-3 Middle			R-3 Lower			R-4 Upper			R-4 Lower		
1/9/2010	773.9		74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	52.1	700.0	Wet	87.9	664.2	Wet
1/17/2010	773.6		74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	52.1	700.0	Wet	87.9	664.2	Wet
1/28/2010	779.9	7.84	74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	52.1	700.0	Wet	87.9	664.2	Wet
2/4/2010	780.2		74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	52.0	700.1	Wet	87.8	664.3	Wet
2/12/2010	783.4		74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	51.9	700.2	Wet	87.8	664.3	Wet
2/19/2010	784.0		74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	51.8	700.3	Wet	87.8	664.3	Wet
2/26/2010	784.5	2.69	74.5	737.7	Dry	69.9	742.3	Wet	135.7	676.5	Dry	51.6	700.5	Wet	87.6	664.5	Wet
3/6/2010	785.6		74.5	737.7	Dry	69.7	742.5	Wet	135.7	676.5	Dry	51.6	700.5	Wet	87.6	664.5	Wet
3/15/2010	786.2		74.5	737.7	Dry	69.5	742.7	Wet	135.5	676.7	Dry	51.5	700.6	Wet	87.6	664.5	Wet
3/16/2010	786.3		74.5	737.7	Dry	69.5	742.7	Wet	135.5	676.7	Dry	51.5	700.6	Wet	87.6	664.5	Wet
3/24/2010	786.2	2.03	74.5	737.7	Dry	69.5	742.7	Wet	135.7	676.5	Dry	51.4	700.7	Wet	87.6	664.5	Wet
4/2/2010	785.8		74.5	737.7	Dry	69.0	743.2	Wet	135.8	676.4	Dry	51.5	700.6	Wet	87.6	664.5	Wet
4/4/2010	785.8		74.5	737.7	Dry	69.0	743.2	Wet	135.8	676.4	Dry	51.5	700.6	Wet	87.6	664.5	Wet
4/12/2010	787.4		74.5	737.7	Dry	69.0	743.2	Wet	135.9	676.3	Dry	51.5	700.6	Wet	87.5	664.6	Wet
4/20/2010	790.1		74.5	737.7	Dry	69.0	743.2	Wet	136.0	676.2	Dry	51.5	700.6	Wet	87.4	664.7	Wet
4/28/2010	792.6	1.19	74.5	737.7	Dry	69.0	743.2	Wet	136.0	676.2	Dry	51.5	700.6	Wet	87.3	664.8	Wet
5/14/2010	792.4		74.50	737.7	Dry	69.0	743.2	Wet	136.0	676.2	Dry	51.5	700.6	Wet	87.3	664.8	Wet
5/21/2010	792.1		74.50	737.7	Dry	69.1	743.1	Wet	136.1	676.1	Dry	51.5	700.6	Wet	87.1	665.0	Wet
5/29/2010	791.7	0.00	74.50	737.7	Dry	69.1	743.1	Wet	136.1	676.1	Dry	51.5	700.6	Wet	87.0	665.1	Wet
6/8/2010	791.0		74.50	737.7	Dry	69.1	743.1	Wet	136.1	676.1	Dry	51.6	700.5	Wet	86.9	665.2	Wet
6/15/2010	790.6		74.50	737.7	Dry	69.1	743.1	Wet	136.1	676.1	Dry	51.6	700.5	Wet	86.8	665.3	Wet
6/22/2010	790.1		74.50	737.7	Dry	69.1	743.1	Wet	136.1	676.1	Dry	51.6	700.5	Wet	86.7	665.4	Wet
6/29/2010	789.7	0.00	74.50	737.7	Dry	69.1	743.1	Wet	136.1	676.1	Dry	51.6	700.5	Wet	86.7	665.4	Wet
7/8/2010	789.2		74.50	737.7	Dry	69.1	743.1	Wet	136.1	676.1	Dry	51.6	700.5	Wet	86.8	665.3	Wet
7/16/2010	788.7		74.50	737.7	Dry	69.1	743.1	Wet	136.1	676.1	Dry	51.6	700.5	Wet	86.7	665.4	Wet
7/23/2010	788.3		74.50	737.7	Dry	69.1	743.1	Wet	136.1	676.1	Dry	51.6	700.5	Wet	86.8	665.3	Wet
7/31/2010	787.7	0.00	74.50	737.7	Dry	69.1	743.1	Wet	136.1	676.1	Dry	51.6	700.5	Wet	86.8	665.3	Wet
8/7/2010	787.3		74.50	737.7	Dry	69.1	743.1	Wet	136.1	676.1	Dry	51.6	700.5	Wet	86.8	665.3	Wet
8/15/2010	786.7		74.50	737.7	Dry	69.1	743.1	Wet	136.1	676.1	Dry	51.6	700.5	Wet	86.9	665.2	Wet
8/23/2010	786.1		74.50	737.7	Dry	69.1	743.1	Wet	136.1	676.1	Dry	51.6	700.5	Wet	86.9	665.2	Wet
8/29/2010	785.6	0.00	74.50	737.7	Dry	69.1	743.1	Wet	136.1	676.1	Dry	51.6	700.5	Wet	86.9	665.2	Wet
9/8/2010	784.9		74.50	737.7	Dry	69.1	743.1	Wet	136.1	676.1	Dry	51.6	700.5	Wet	86.9	665.2	Wet
9/17/2010	784.2		74.50	737.7	Dry	69.1	743.1	Wet	136.1	676.1	Dry	51.6	700.5	Wet	86.9	665.2	Wet
9/27/20																	

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-3 Upper			R-3 Middle			R-3 Lower			R-4 Upper			R-4 Lower		
Top Ref. Elev. (ft)			812.200			812.200			812.200			752.100			752.100		
Top Ref. Elev. (ft) After 5/21/2012			812.000			812.025			811.995			754.455			754.455		
Tip Elev. (ft)			737.500			690.025			675.995			667.100			655.600		
Total Depth (ft)			74.5			122.0			136.0			85.0			96.5		
Total Depth (ft) After 5/21/2012			74.5			122.0			136.0			87.4			98.9		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-3 Upper						R-3 Middle			R-3 Lower			R-4 Upper			R-4 Lower		
1/6/2011	792.2		74.60	737.6		62.3	749.9	Wet	136.1	676.1	Dry						
1/7/2011	792.2		74.60	737.6		62.3	749.9	Wet	136.1	676.1	Dry	51.6	700.5	Wet	98.0	654.1	Wet
1/17/2011	792.0		74.60	737.6		62.3	749.9	Wet	136.1	676.1	Dry	51.8	700.3	Wet	97.0	655.1	Wet
1/27/2011	791.8	1.11	74.60	737.6		62.3	749.9	Wet	136.1	676.1	Dry	51.8	700.3	Wet	86.2	665.9	Wet
2/5/2011	791.8		74.60	737.6		62.1	750.1	Wet	136.1	676.1	Dry	51.8	700.3	Wet	86.2	665.9	Wet
2/15/2011	791.8		74.60	737.6		62.1	750.1	Wet	136.2	676.0	Dry	51.8	700.3	Wet	86.2	665.9	Wet
2/23/2011	792.2	2.87	74.60	737.6		62.0	750.2	Wet	136.2	676.0	Dry	51.8	700.3	Wet	86.2	665.9	Wet
3/8/2011	792.1		74.60	737.6		62.0	750.2	Wet	136.2	676.0	Dry	51.8	700.3	Wet	86.2	665.9	Wet
3/19/2011	791.8		74.60	737.6		62.0	750.2	Wet	136.2	676.0	Dry	51.8	700.3	Wet	86.2	665.9	Wet
3/30/2011	791.5	3.23	74.80	737.4		61.4	750.8	Wet	136.2	676.0	Dry	51.8	700.3	Wet	86.2	665.9	Wet
4/7/2011	792.1		74.80	737.4		61.3	750.9	Wet	136.2	676.0	Dry	51.8	700.3	Wet	86.2	665.9	Wet
4/16/2011	792.5		74.80	737.4		60.7	751.5	Wet	136.2	676.0	Dry	51.8	700.3	Wet	86.2	665.9	Wet
4/23/2011	792.6		74.70	737.5		60.4	751.8	Wet	136.2	676.0	Dry	51.8	700.3	Wet	86.2	665.9	Wet
4/30/2011	792.6	0.00	74.60	737.6		60.0	752.2	Wet	136.1	676.1	Dry	51.8	700.3	Wet	86.3	665.8	Wet
5/9/2011	792.4		74.60	737.6		60.0	752.2	Wet	136.1	676.1	Dry	51.7	700.4	Wet	86.3	665.8	Wet
5/16/2011	792.4		74.60	737.6		60.0	752.2	Wet	136.2	676.0	Dry	51.7	700.4	Wet	86.3	665.8	Wet
5/24/2011	792.4		74.60	737.6		59.9	752.3	Wet	136.2	676.0	Dry	51.7	700.4	Wet	86.3	665.8	Wet
5/31/2011	792.4	0.81	74.60	737.6		59.9	752.3	Wet	136.3	675.9	Dry	51.7	700.4	Wet	86.4	665.7	Wet
6/8/2011	792.1		74.60	737.6		59.9	752.3	Wet	136.3	675.9	Dry	51.7	700.4	Wet	86.4	665.7	Wet
6/16/2011	791.9		74.60	737.6		59.9	752.3	Wet	136.3	675.9	Dry	51.7	700.4	Wet	86.7	665.4	Wet
6/23/2011	791.8		74.60	737.6		59.9	752.3	Wet	136.3	675.9	Dry	51.7	700.4	Wet	86.4	665.7	Wet
6/30/2011	791.6	0.00	74.60	737.6		60.0	752.2	Wet	136.3	675.9	Dry	51.7	700.4	Wet	86.4	665.7	Wet
7/8/2011	791.4		74.60	737.6	Dry	59.9	752.3	Wet	136.3	675.9	Dry	51.7	700.4	Wet	86.4	665.7	Wet
7/14/2011	791.2		74.60	737.6	Dry	59.9	752.3	Wet	136.3	675.9	Dry	51.7	700.4	Wet	86.4	665.7	Wet
7/21/2011	790.9		74.60	737.6	Dry	59.9	752.3	Wet	136.3	675.9	Dry	51.7	700.4	Wet	86.4	665.7	Wet
7/30/2011	790.4	0.00	74.60	737.6	Dry	59.9	752.3	Wet	136.3	675.9	Dry	51.7	700.4	Wet	86.4	665.7	Wet
8/9/2011	789.9		74.60	737.6	Dry	59.9	752.3	Wet	136.4	675.8	Dry	51.7	700.4	Wet	86.5	665.6	Wet
8/15/2011	789.7		74.60	737.6	Dry	59.9	752.3	Wet	136.4	675.8	Dry	51.7	700.4	Wet	86.5	665.6	Wet
8/24/2011	789.0		74.60	737.6	Dry	59.9	752.3	Wet	136.5	675.7	Dry	51.7	700.4	Wet	86.6	665.5	Wet
9/1/2011	788.7	0.00	74.60	737.6	Dry	59.9	752.3	Wet	135.9	676.3	Dry	51.7	700.4	Wet	86.7	665.4	Wet
9/9/2011	787.9		74.60	737.6	Dry	59.9	752.3	Wet	136.0	676.2	Dry	51.8	700.3	Wet	86.7	665.4	Wet
9/16/2011	787.3		74.60	737.6	Dry	59.9	752.3	Wet	136.1	676.1	Dry	51.8	700.3	Wet	86.7	665.4	Wet
9/23/2011	787.0		74.60	737.6	Dry	59.9	752.3	Wet	136.1	676.1	Dry	51.8	700.3	Wet	86.8	665.3	Wet
9/29/2011	786.8	0.08	7														

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-3 Upper			R-3 Middle			R-3 Lower			R-4 Upper			R-4 Lower		
Top Ref. Elev. (ft)			812.200			812.200			812.200			752.100			752.100		
Top Ref. Elev. (ft) After 5/21/2012			812.000			812.025			811.995			754.455			754.455		
Tip Elev. (ft)			737.500			690.025			675.995			667.100			655.600		
Total Depth (ft)			74.5			122.0			136.0			85.0			96.5		
Total Depth (ft) After 5/21/2012			74.5			122.0			136.0			87.4			98.9		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-3 Upper						R-3 Middle			R-3 Lower			R-4 Upper			R-4 Lower		
1/7/2012	784.0		74.60	737.6	Dry	59.7	752.5		136.3	675.9		51.9	700.2		87.1	665.0	
1/14/2012	783.8		74.60	737.6	Dry	59.6	752.6		136.3	675.9		51.9	700.2		87.1	665.0	
1/21/2012	783.6		74.60	737.6	Dry	59.7	752.5		136.3	675.9		51.9	700.2		87.1	665.0	
1/28/2012	783.6	1.72	74.60	737.6	Dry	59.7	752.5		136.3	675.9		51.9	700.2		87.1	665.0	
2/7/2012	783.4		74.60	737.6	Dry	59.7	752.5		136.1	676.1		52.0	700.1		87.1	665.0	
2/15/2012	783.4		74.60	737.6	Dry	59.6	752.6		136.1	676.1		52.0	700.1		87.1	665.0	
2/25/2012	783.4	0.62	74.60	737.6	Dry	59.7	752.5		136.1	676.1		52.0	700.1		87.1	665.0	
3/5/2012	783.2		74.60	737.6	Dry	59.6	752.6		136.1	676.1		52.0	700.1		87.1	665.0	
3/15/2012	782.7		74.60	737.6	Dry	59.7	752.5		136.1	676.1		52.0	700.1		87.1	665.0	
3/22/2012	782.6	2.01	74.60	737.6	Dry	59.7	752.5		136.2	676.0		52.0	700.1		87.1	665.0	
4/3/2012	782.5		74.60	737.6	Dry	59.7	752.5		136.1	676.1		52.0	700.1		87.2	664.9	
4/12/2012	782.1		74.60	737.6	Dry	59.7	752.5		136.1	676.1		52.0	700.1		87.2	664.9	
4/21/2012	782.0		74.60	737.6	Dry	59.7	752.5		136.1	676.1		52.0	700.1		87.3	664.8	
4/23/2012	781.9	1.32	74.60	737.6	Dry	59.7	752.5		136.1	676.1		52.0	700.1		87.3	664.8	
5/1/2012	781.7		74.60	737.6	Dry			?	136.1	676.1		52.0	700.1		87.3	664.8	
5/7/2012	781.3		74.60	737.6	Dry			?	136.1	676.1		52.0	700.1		87.3	664.8	
5/21/2012	780.9		74.60	737.6	Dry			?	136.1	676.1		52.0	700.1		87.3	664.8	
5/25/2012	780.0	0.06	4.30	807.7	New Survey/Clogged	69.6	742.4	New Survey	136.0	676.0	New Survey	54.8	699.7	New Survey	88.3	666.2	New Survey
6/4/2012	779.6		4.30	807.7	Clogged	59.7	752.3		135.8	676.2		53.5	701.0		87.3	667.2	
6/13/2012	778.7		4.30	807.7	Clogged	59.7	752.3		135.9	676.1		53.7	700.8		87.3	667.2	
6/20/2012	778.0		4.30	807.7	Clogged	59.7	752.3		135.8	676.2		54.0	700.5		89.4	665.1	
6/25/2012	777.3	0.00	4.30	807.7	Clogged	59.7	752.3		135.6	676.4		54.8	699.7		90.3	664.2	
7/4/2012	776.3		4.30	807.7	Clogged	59.7	752.3		136.0	676.0		54.9	699.6		90.3	664.2	
7/13/2012	775.7		4.30	807.7	Clogged	59.7	752.3		135.9	676.1		54.9	699.6		90.4	664.1	
7/20/2012	775.2		4.30	807.7	Clogged	59.7	752.3		136.0	676.0		54.9	699.6		90.5	664.0	
7/30/2012	775.0	0.10	4.30	807.7	Clogged	59.7	752.3		136.1	675.9		55.0	699.5		90.5	664.0	
8/8/2012	773.0		4.20	807.8	Clogged	59.7	752.3		136.1	675.9		55.0	699.5		90.5	664.0	
8/9/2012	772.9		4.20	807.8	Clogged	59.7	752.3		136.1	675.9		55.0	699.5		90.6	663.9	
8/18/2012	772.0		4.20	807.8	Clogged	59.7	752.3		136.1	675.9		55.0	699.5		90.7	663.8	
8/27/2012	771.1		4.20	807.8	Clogged	59.7	752.3		136.1	675.9		55.0	699.5		90.7	663.8	
8/29/2012	770.9	0.00	4.20	807.8	Clogged	59.7	752.3		136.1	675.9		55.0	699.5		90.7	663.8	
9/8/2012	769.8		4.20	807.8	Clogged	59.7	752.3		136.1	675.9		55.0	699.5		90.7	663.8	
9/15/2012	768.9		4.20	807.8	Clogged	59.7	752.3		136.1	675.9		55.0	699.5		90.6	663.9	
9/29/2012	767.8	0.00	4.20	807.8	Clogged	59.7	752.3		136.1	675.9		55.0	699.5		90.6	663.9	
10/11/2012	766.8		4.20	807.8	Clogged	59.7	752.3		136.1	675.9		55.0	699.5		90.8	663.7	
10/23/2012	765.9	1.10	4.20	807.8	Clogged	59.7	752.3		136.								

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-3 Upper			R-3 Middle			R-3 Lower			R-4 Upper			R-4 Lower		
Top Ref. Elev. (ft)			812.200			812.200			812.200			752.100			752.100		
Top Ref. Elev. (ft) After 5/21/2012			812.000			812.025			811.995			754.455			754.455		
Tip Elev. (ft)			737.500			690.025			675.995			667.100			655.600		
Total Depth (ft)			74.5			122.0			136.0			85.0			96.5		
Total Depth (ft) After 5/21/2012			74.5			122.0			136.0			87.4			98.9		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-3 Upper						R-3 Middle			R-3 Lower			R-4 Upper			R-4 Lower		
1/16/2013	770.4		4.2	807.8		59.7	752.3		137.0	675.0		55.1	699.4		91.2	663.3	
1/28/2013	769.9	1.82	4.2	807.8		59.7	752.3		137.0	675.0		55.1	699.4		91.3	663.2	
2/15/2013	769.6		4.2	807.8		59.7	752.3		136.1	675.9		55.1	699.4		91.4	663.1	
2/26/2013	769.4	0.68	4.2	807.8		59.7	752.3		136.1	675.9		55.1	699.4		91.4	663.1	
3/13/2013	768.8		4.2	807.8		59.7	752.3		136.0	676.0		55.2	699.3		91.4	663.1	
3/26/2013	768.6	0.66	4.2	807.8		59.7	752.3		136.0	676.0		55.2	699.3		91.4	663.1	
4/10/2013	771.1		4.2	807.8		59.7	752.3		136.0	676.0		55.3	699.2		91.4	663.1	
4/30/2013	772.2	0.00	4.2	807.8		59.7	752.3		136.0	676.0		55.3	699.2		91.4	663.1	
5/9/2013	771.9		4.6	807.4		59.7	752.3		136.0	676.0		55.3	699.2		91.4	663.1	
5/15/2013	771.7		73.8	738.2		59.7	752.3		136.0	676.0		55.3	699.2		91.4	663.1	
5/22/2013	771.4		73.8	738.2		59.7	752.3		136.0	676.0		55.3	699.2		91.4	663.1	
5/30/2013	771.0	0.00	73.8	738.2		59.7	752.3		136.0	676.0		55.3	699.2		91.3	663.2	
6/6/2013	770.8		73.9	738.1		59.8	752.2		135.7	676.3		55.3	699.2		91.3	663.2	
6/13/2013	769.3		73.9	738.1		59.8	752.2		135.7	676.3		55.3	699.2		91.3	663.2	
6/20/2013	769.0		73.9	738.1		59.8	752.2		135.7	676.3		55.3	699.2		91.4	663.1	
6/26/2013	768.6	0.00	73.9	738.1		59.8	752.2		135.7	676.3		55.3	699.2		91.3	663.2	
7/2/2013	767.8		73.9	738.1		59.8	752.2		135.7	676.3		55.3	699.2		91.3	663.2	
7/10/2013	766.9		73.9	738.1		59.8	752.2		135.7	676.3		55.3	699.2		91.3	663.2	
7/16/2013	766.5		73.9	738.1		59.8	752.2		135.7	676.3		55.3	699.2		91.4	663.1	
7/29/2013	765.2	0.00	73.9	738.1	Dry	59.8	752.2		135.7	676.3		55.3	699.2		91.4	663.1	
8/5/2013	764.5		73.9	738.1	Dry	59.8	752.2		135.7	676.3		55.3	699.2		91.3	663.2	
8/12/2013	763.8		73.9	738.1	Dry	59.8	752.2		135.7	676.3		55.3	699.2		91.3	663.2	
8/19/2013	763.3		73.9	738.1	Dry	59.8	752.2		135.7	676.3		55.3	699.2		91.5	663.0	
8/26/2013	762.4	0.00	73.9	738.1	Dry	59.8	752.2		135.7	676.3		55.3	699.2		91.5	663.0	
9/2/2013	761.5		73.9	738.1	Dry	59.8	752.2		135.7	676.3		55.3	699.2		91.3	663.2	
9/10/2013	760.7		73.9	738.1	Dry	59.8	752.2		136.2	675.8	Dry	55.3	699.2		91.5	663.0	
9/17/2013	759.9		73.9	738.1	Dry	59.8	752.2		136.2	675.8	Dry	55.3	699.2		91.5	663.0	
9/23/2013	759.4		73.9	738.1	Dry	59.8	752.2		136.2	675.8	Dry	55.3	699.2		91.5	663.0	
9/30/2013	758.7	0.00	73.9	738.1	Dry	59.8	752.2		136.2	675.8	Dry	55.3	699.2		91.5	663.0	
10/7/2013	758.3		73.9	738.1	Dry	59.7	752.3		135.9	676.1	Dry	55.3	699.2		91.5	663.0	
10/14/2013	757.6		73.9	738.1	Dry	59.7	752.3		135.9	676.1	Dry	55.3	699.2		91.5	663.0	
10/21/2013	756.6		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.3	699.2		91.5	663.0	
10/28/2013	756.0	0.00	73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.4	699.1		91.6	662.9	
11/4/2013	755.7		73.9	738.1	Dry	59.7	752.3		135.9	676.1	Dry	55.4	699.1				

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-3 Upper			R-3 Middle			R-3 Lower			R-4 Upper			R-4 Lower		
Top Ref. Elev. (ft)			812.200			812.200			812.200			752.100			752.100		
Top Ref. Elev. (ft) After 5/21/2012			812.000			812.025			811.995			754.455			754.455		
Tip Elev. (ft)			737.500			690.025			675.995			667.100			655.600		
Total Depth (ft)			74.5			122.0			136.0			85.0			96.5		
Total Depth (ft) After 5/21/2012			74.5			122.0			136.0			87.4			98.9		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-3 Upper						R-3 Middle			R-3 Lower			R-4 Upper			R-4 Lower		
1/6/2014	754.5		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.5	699.0		91.8	662.7	
1/13/2014	755.0		73.9	738.1	Dry	59.7	752.3		135.8	676.2		55.5	699.0		91.8	662.7	
1/20/2014	754.6		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.5	699.0		91.8	662.7	
1/27/2014	754.3	0.00	73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.5	699.0		91.8	662.7	
2/3/2014	754.1		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.5	699.0		91.8	662.7	
2/10/2014	754.7		73.9	738.1	Dry	59.7	752.3		136.1	675.9	Dry	55.5	699.0		91.8	662.7	
2/17/2014	754.5		73.9	738.1	Dry	59.7	752.3		135.9	676.1		55.5	699.0		91.8	662.7	
2/24/2014	754.2	0.83	73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.5	699.0		91.8	662.7	
3/3/2014	754.5		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.5	699.0		91.8	662.7	
3/10/2014	755.2		73.9	738.1	Dry	59.7	752.3		136.1	675.9	Dry	55.5	699.0		91.8	662.7	
3/19/2014	755.9		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.5	699.0		91.9	662.6	
3/25/2014	758.8		73.9	738.1	Dry	59.7	752.3		136.1	675.9	Dry	55.5	699.0		91.9	662.6	
3/29/2014	760.5		73.9	738.1	Dry	59.7	752.3		136.1	675.9	Dry	55.5	699.0		91.9	662.6	
3/31/2014	761.6	1.85	73.9	738.1	Dry	59.7	752.3		136.1	675.9	Dry	55.6	698.9		91.8	662.7	
4/1/2014	762.0		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.5	699.0		91.8	662.7	
4/8/2014	764.7		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.5	699.0		91.8	662.7	
4/15/2014	766.6		73.9	738.1	Dry	59.7	752.3		135.9	676.1		55.5	699.0		91.8	662.7	
4/22/2014	768.6		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.5	699.0		91.8	662.7	
4/29/2014	770.4	0.88	73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.5	699.0		91.8	662.7	
5/5/2014	769.7		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.5	699.0		91.8	662.7	
5/12/2014	769.0		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.5	699.0		91.8	662.7	
5/19/2014	768.0		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.5	699.0		91.8	662.7	
5/26/2014	767.1	0.00	73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.5	699.0		91.8	662.7	
6/2/2014	766.2		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.5	699.0		91.8	662.7	
6/9/2014	765.4		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.5	699.0		91.8	662.7	
6/16/2014	764.3		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.5	699.0		91.8	662.7	
6/23/2014	763.1		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.5	699.0		91.8	662.7	
6/27/2014	762.3	0.00	73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.5	699.0		91.8	662.7	
7/7/2014	760.9		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.6	698.9		91.8	662.7	
7/14/2014	760.0		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.6	698.9		91.8	662.7	
7/21/2014	759.1		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.6	698.9		91.8	662.7	
7/28/2014	757.9	0.06	73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.6	698.9		91.8	662.7	
8/4/2014	756.8		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.6	698.9		91.8	662.7	
8/11/2014	755.6		73.9	738.1	Dry	59.7	752.3		135.7	676.3							

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-3 Upper			R-3 Middle			R-3 Lower			R-4 Upper			R-4 Lower		
Top Ref. Elev. (ft)			812.200			812.200			812.200			752.100			752.100		
Top Ref. Elev. (ft) After 5/21/2012			812.000			812.025			811.995			754.455			754.455		
Tip Elev. (ft)			737.500			690.025			675.995			667.100			655.600		
Total Depth (ft)			74.5			122.0			136.0			85.0			96.5		
Total Depth (ft) After 5/21/2012			74.5			122.0			136.0			87.4			98.9		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-3 Upper						R-3 Middle			R-3 Lower			R-4 Upper			R-4 Lower		
1/5/2015	751.3		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.7	698.8		92.0	662.5	
1/12/2015	751.8		73.9	738.1	Dry	59.7	752.3		136.2	675.8	Dry	55.7	698.8		92.0	662.5	
1/19/2015	752.3		73.9	738.1	Dry	59.7	752.3		136.2	675.8	Dry	55.7	698.8		92.0	662.5	
1/26/2015	752.6	1.48	73.9	738.1	Dry	59.7	752.3		135.8	676.2		55.7	698.8		92.0	662.5	
2/4/2015	753.1		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.7	698.8		92.0	662.5	
2/9/2015	753.3		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.8	698.7		92.0	662.5	
2/16/2015	753.8		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.8	698.7		92.0	662.5	
2/23/2015	753.9	0.44	73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.8	698.7		92.0	662.5	
3/2/2015	754.5		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.8	698.7		92.0	662.5	
3/9/2015	755.0		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.8	698.7		92.0	662.5	
3/16/2015	755.3		73.9	738.1	Dry	59.7	752.3		136.1	675.9		55.8	698.7		92.0	662.5	
3/23/2015	755.5		73.9	738.1	Dry	59.7	752.3		136.1	675.9		55.8	698.7		92.0	662.5	
3/30/2015	755.7	0.57	73.9	738.1	Dry	59.7	752.3		136.1	675.9		55.8	698.7		92.0	662.5	
4/6/2015	755.6		73.9	738.1	Dry	59.7	752.3		136.1	675.9	Dry	55.8	698.7		92.0	662.5	
4/13/2015	755.8		73.9	738.1	Dry	59.8	752.2		136.1	675.9	Dry	55.8	698.7		92.0	662.5	
4/20/2015	755.9		73.9	738.1	Dry	59.8	752.2		136.1	675.9	Dry	55.8	698.7		92.0	662.5	
4/27/2015	755.9	0.20	73.9	738.1	Dry	59.8	752.2		136.1	675.9	Dry	55.8	698.7		92.0	662.5	
5/4/2015	755.6		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.8	698.7		92.0	662.5	
5/11/2015	755.3		73.9	738.1	Dry	59.7	752.3		135.7	676.3		55.8	698.7		92.0	662.5	
5/18/2015	755.2		73.9	738.1	Dry	59.8	752.2		136.1	675.9	Dry	55.8	698.7		92.0	662.5	
5/26/2015	755.3	0.95	73.9	738.1	Dry	59.8	752.2		136.1	675.9	Dry	55.8	698.7		92.0	662.5	
6/1/2015	755.2		73.9	738.1	Dry	59.7	752.3		136.0	676.0	Dry	55.8	698.7		92.0	662.5	
6/8/2015	755.1		73.9	738.1	Dry	59.7	752.3		136.0	676.0	Dry	55.8	698.7		92.0	662.5	
6/15/2015	755.2		73.9	738.1	Dry	59.7	752.3		136.0	676.0	Dry	55.8	698.7		92.0	662.5	
6/22/2015	754.8		73.9	738.1	Dry	59.7	752.3		136.0	676.0	Dry	55.8	698.7		92.0	662.5	
6/29/2015	754.2	0.00	73.9	738.1	Dry	59.7	752.3		136.0	676.0	Dry	55.8	698.7		92.0	662.5	
7/10/2015	753.3		73.9	738.1	Dry	59.7	752.3		136.0	676.0	Dry	65.8	688.7		92.0	662.5	
7/15/2015	753.0		73.9	738.1	Dry	59.7	752.3		136.0	676.0	Dry	67.8	686.7		92.0	662.5	
7/21/2015	752.8		73.9	738.1	Dry	59.7	752.3		136.0	676.0	Dry	69.4	685.1		92.0	662.5	
7/28/2015	752.4	0.00	73.9	738.1	Dry	59.7	752.3		136.0	676.0	Dry	69.3	685.2		92.0	662.5	
8/4/2015	752.0		73.9	738.1	Dry	59.7	752.3		136.0	676.0	Dry	69.3	685.2		92.0	662.5	
8/11/2015	751.6		73.9	738.1	Dry	59.7	752.3		136.0	676.0	Dry	69.3	685.2		92.0	662.5	
8/18/2015	751.1		73.9	738.1	Dry	59.7	752.3		136.0	676.0	Dry	69.3	685.2		92.0	662.5	
8/25/2015	750.6	0.00	73.9	738.1	Dry	59.7	752.3		136.0	676.0	Dry	69.3	685.2		92.0	662.5	
9/1/2015	749.9		73.9	738.1	Dry	59.7	752.3		136.0	676.0	Dry	69.3	685.2		92.0	662.5	
9/8/2015	7																

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-3 Upper			R-3 Middle			R-3 Lower			R-4 Upper			R-4 Lower		
Top Ref. Elev. (ft)			812.200			812.200			812.200			752.100			752.100		
Top Ref. Elev. (ft) After 5/21/2012			812.000			812.025			811.995			754.455			754.455		
Tip Elev. (ft)			737.500			690.025			675.995			667.100			655.600		
Total Depth (ft)			74.5			122.0			136.0			85.0			96.5		
Total Depth (ft) After 5/21/2012			74.5			122.0			136.0			87.4			98.9		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
			R-3 Upper			R-3 Middle			R-3 Lower			R-4 Upper			R-4 Lower		
1/5/2016	741.7		73.9	738.1	Dry	59.7	752.3		135.8	676.2		69.3	685.2		92.2	662.3	
1/12/2016	742.3		73.9	738.1	Dry	59.7	752.3		135.8	676.2		69.3	685.2		92.2	662.3	
1/19/2016	742.0		73.9	738.1	Dry	59.7	752.3		135.8	676.2		69.3	685.2		92.2	662.3	
1/26/2016	741.8	3.51	73.9	738.1	Dry	59.7	752.3		136.0	676.0	Dry	69.3	685.2		92.2	662.3	
2/2/2016	741.4		73.9	738.1	Dry	59.7	752.3		136.0	676.0	Dry	69.3	685.2		92.2	662.3	
2/9/2016	741.0		73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.3	685.2		92.2	662.3	
2/16/2016	740.5		73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.3	685.2		92.2	662.3	
2/23/2016	740.2	0.35	73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.3	685.2		92.3	662.2	
3/1/2016	739.7		73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.3	685.2		92.3	662.2	
3/9/2016	739.4		73.9	738.1	Dry	59.8	752.2		135.9	676.1		69.3	685.2		92.1	662.4	
3/17/2016	739.3		73.9	738.1	Dry	59.8	752.2		135.9	676.1		69.3	685.2		92.1	662.4	
3/23/2016	739.1		73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.3	685.2		92.1	662.4	
3/30/2016	738.5	1.59	73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.3	685.2		92.1	662.4	
4/6/2016	738.0		73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.3	685.2		92.2	662.3	
4/13/2016	737.6		73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.4	685.1		92.2	662.3	
4/20/2016	736.9		73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.4	685.1		92.2	662.3	
4/27/2016	736.2	0.07	73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.4	685.1		92.2	662.3	
5/4/2016	736.9		73.9	738.1	Dry	59.8	752.2		137.0	675.0	Dry	69.3	685.2		92.1	662.4	
5/11/2016	737.5		73.9	738.1	Dry	59.8	752.2		138.0	674.0	Dry	69.3	685.2		92.1	662.4	
5/18/2016	737.0		73.9	738.1	Dry	59.8	752.2		139.0	673.0	Dry	69.5	685.0	Dry	92.3	662.2	Dry
5/25/2016	737.6	1.21	73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.5	685.0	Dry	92.3	662.2	Dry
6/1/2016	737.6		73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.5	685.0	Dry	92.3	662.2	Dry
6/8/2016	737.9		73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.5	685.0	Dry	92.3	662.2	Dry
6/15/2016	738.0		73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.2	685.3		92.3	662.2	Dry
6/23/2016	737.7		73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.2	685.3		92.3	662.2	Dry
6/29/2016	737.5	0.00	73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.2	685.3		92.3	662.2	Dry
7/6/2016	737.4		73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.2	685.3		92.3	662.2	Dry
7/15/2016	737.4		73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.2	685.3		92.3	662.2	Dry
7/20/2016	737.1		73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.2	685.3		92.3	662.2	Dry
7/27/2016	736.7	0.00	73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.2	685.3		92.3	662.2	Dry
8/3/2016	736.9		73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.3	685.2		92.3	662.2	Dry
8/10/2016	737.1		73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.3	685.2		92.3	662.2	Dry
8/17/2016	736.6		73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.3	685.2		92.3	662.2	Dry
8/24/2016	736.7		73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.3	685.2		92.3	662.2	Dry
8/30/2016	736.7	0.00	73.9	738.1	Dry	59.8	752.2		136.								

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-3 Upper			R-3 Middle			R-3 Lower			R-4 Upper			R-4 Lower		
Top Ref. Elev. (ft)			812.200			812.200			812.200			752.100			752.100		
Top Ref. Elev. (ft) After 5/21/2012			812.000			812.025			811.995			754.455			754.455		
Tip Elev. (ft)			737.500			690.025			675.995			667.100			655.600		
Total Depth (ft)			74.5			122.0			136.0			85.0			96.5		
Total Depth (ft) After 5/21/2012			74.5			122.0			136.0			87.4			98.9		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-3 Upper						R-3 Middle			R-3 Lower			R-4 Upper			R-4 Lower		
1/4/2017	757.5		73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.3	685.2		92.3	662.2	Dry
1/13/2017	758.1		73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.3	685.2		92.3	662.2	Dry
1/18/2017	758.3		73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.3	685.2		92.3	662.2	Dry
1/25/2017	758.0	6.73	73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.4	685.1		91.8	662.7	
2/1/2017	769.1		73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.4	685.1		91.8	662.7	
2/8/2017	769.7		73.9	738.1	Dry	59.8	752.2		136.1	675.9		69.4	685.1		91.8	662.7	
2/15/2017	770.1		73.9	738.1	Dry	59.8	752.2		136.1	675.9		69.4	685.1		91.8	662.7	
2/22/2017	771.8	4.17	73.9	738.1	Dry	59.8	752.2		136.1	675.9		69.4	685.1		91.8	662.7	
3/1/2017	771.9		73.9	738.1	Dry	59.8	752.2		136.1	675.9		69.4	685.1		91.8	662.7	
3/8/2017	771.2		73.9	738.1	Dry	59.8	752.2		136.1	675.9		69.4	685.1		91.8	662.7	
3/15/2017	770.6		73.9	738.1	Dry	59.8	752.2		136.1	675.9		69.4	685.1		91.8	662.7	
3/22/2017	769.6		73.9	738.1	Dry	59.8	752.2		136.1	675.9		69.4	685.1		91.8	662.7	
3/29/2017	768.4	0.13	73.9	738.1	Dry	59.8	752.2		136.1	675.9	Dry	69.4	685.1		91.8	662.7	
4/5/2017	769.1		73.9	738.1	Dry	59.8	752.2		136.1	675.9	Dry	69.4	685.1		91.8	662.7	
4/12/2017	768.0		73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.4	685.1		91.8	662.7	
4/19/2017	767.9		73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.5	685.0		92.3	662.2	Dry
4/26/2017	767.7	0.07	73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.4	685.1		92.3	662.2	Dry
5/1/2017	767.4		73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.4	685.1		92.3	662.2	Dry
5/10/2017	766.5		73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.6	684.9	Dry	92.3	662.2	Dry
5/17/2017	765.9		73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.6	684.9	Dry	92.3	662.2	Dry
5/24/2017	765.7		73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.6	684.9	Dry	92.3	662.2	Dry
5/30/2017	765.5	0.36	73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.6	684.9	Dry	92.3	662.2	Dry
6/7/2017	765.3		73.9	738.1	Dry	59.8	752.2		135.8	676.2		69.6	684.9	Dry	92.3	662.2	Dry
6/14/2017	765.1		73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.6	684.9	Dry	92.3	662.2	Dry
6/21/2017	764.8		73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.6	684.9	Dry	92.3	662.2	Dry
6/28/2017	764.7	0.05	73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.6	684.9	Dry	92.3	662.2	Dry
7/5/2017	764.2		73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.6	684.9	Dry	92.3	662.2	Dry
7/12/2017	763.8		73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.6	684.9	Dry	91.8	662.7	
7/19/2017	763.2		73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.6	684.9	Dry	91.9	662.6	
7/26/2017	762.7	0.00	73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.6	684.9	Dry	91.9	662.6	
8/2/2017	761.9		73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.6	684.9	Dry	91.9	662.6	
8/9/2017	761.6		73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.4	685.1		91.9	662.6	
8/16/2017	761.2		73.9	738.1	Dry	59.8	752.2		136.0	676.0	Dry	69.4	685.1		91.8	662.7	
8/23/2017	760.6		73														

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-3 Upper			R-3 Middle			R-3 Lower			R-4 Upper			R-4 Lower		
Top Ref. Elev. (ft)			812.200			812.200			812.200			752.100			752.100		
Top Ref. Elev. (ft) After 5/21/2012			812.000			812.025			811.995			754.455			754.455		
Tip Elev. (ft)			737.500			690.025			675.995			667.100			655.600		
Total Depth (ft)			74.5			122.0			136.0			85.0			96.5		
Total Depth (ft) After 5/21/2012			74.5			122.0			136.0			87.4			98.9		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-3 Upper						R-3 Middle			R-3 Lower			R-4 Upper			R-4 Lower		
1/3/2018	753.1		73.9	738.1	Dry	59.9	752.1		135.8	676.2		69.0	685.5		92.1	662.4	
1/10/2018	753.1		73.9	738.1	Dry	59.9	752.1		136.0	676.0		69.0	685.5		91.9	662.6	
1/17/2018	753.0		73.9	738.1	Dry	59.9	752.1		136.0	676.0		69.0	685.5		91.9	662.6	
1/24/2018	752.8		73.9	738.1	Dry	59.9	752.1		136.0	676.0		69.0	685.5		91.9	662.6	
1/30/2018	752.6	1.8	73.9	738.1	Dry	59.9	752.1		136.0	676.0		69.0	685.5		92.0	662.5	
2/7/2018	752.3		73.9	738.1	Dry	59.9	752.1		136.0	676.0		69.0	685.5		91.9	662.6	
2/14/2018	751.8		73.9	738.1	Dry	59.9	752.1		136.0	676.0		68.9	685.6		91.9	662.6	
2/21/2018	750.2		73.9	738.1	Dry	59.9	752.1		136.0	676.0		69.3	685.2		92.1	662.4	
2/27/2018	750.3	0.6	73.9	738.1	Dry	59.9	752.1		136.0	676.0		69.1	685.4		92.1	662.4	
3/7/2018	750.2		73.9	738.1	Dry	59.9	752.1		136.0	676.0	Dry	69.1	685.4		92.1	662.4	Dry
3/15/2018	750.1		73.9	738.1	Dry	59.9	752.1		135.8	676.2		69.1	685.4		92.1	662.4	Dry
3/21/2018	750.8		73.9	738.1	Dry	59.9	752.1		136.0	676.0		69.1	685.4		92.1	662.4	Dry
3/28/2018	750.9	0.6	73.9	738.1	Dry	59.9	752.1		136.0	676.0		69.1	685.4		92.1	662.4	Dry
4/4/2018	751.7		73.9	738.1	Dry	59.9	752.1		136.0	676.0		69.1	685.4		92.1	662.4	Dry
4/11/2018	751.7		73.9	738.1	Dry	59.9	752.1		136.0	676.0		69.3	685.2		92.1	662.4	Dry
4/18/2018	750.8		73.9	738.1	Dry	59.9	752.1		136.0	676.0		69.3	685.2		92.1	662.4	Dry
4/25/2018	749.5	0.1	73.9	738.1	Dry	59.9	752.1		136.0	676.0	Dry	69.3	685.2	Dry	92.1	662.4	Dry
5/1/2018	750.5		73.9	738.1	Dry	59.9	752.1		136.0	676.0	Dry	69.3	685.2	Dry	92.1	662.4	Dry
5/8/2018	749.4		73.9	738.1	Dry	59.9	752.1		136.0	676.0	Dry	69.3	685.2	Dry	92.1	662.4	Dry
5/15/2018	748.3		73.9	738.1	Dry	60.0	752.0		136.0	676.0	Dry	69.3	685.2	Dry	92.1	662.4	Dry
5/22/2018	747.0		73.9	738.1	Dry	60.0	752.0		136.0	676.0	Dry	69.3	685.2	Dry	92.1	662.4	Dry
5/29/2018	745.6	0.3	73.9	738.1	Dry	60.0	752.0		136.0	676.0	Dry	69.3	685.2	Dry	92.1	662.4	Dry
6/6/2018	744.7		73.9	738.1	Dry	60.0	752.0		136.0	676.0	Dry	69.3	685.2	Dry	92.1	662.4	Dry
6/13/2018	743.7		73.9	738.1	Dry	60.0	752.0		136.0	676.0	Dry	69.3	685.2	Dry	92.1	662.4	Dry
6/20/2018	742.5		73.9	738.1	Dry	60.0	752.0		136.0	676.0	Dry	69.3	685.2	Dry	92.1	662.4	Dry
6/27/2018	741.2	0.0	73.9	738.1	Dry	60.0	752.0		136.0	676.0	Dry	69.3	685.2	Dry	92.1	662.4	Dry
7/5/2018	739.8		73.9	738.1	Dry	60.0	752.0		136.0	676.0	Dry	69.3	685.2	Dry	92.1	662.4	Dry
7/11/2018	738.7		73.9	738.1	Dry	60.0	752.0		135.8	676.2	Dry	69.3	685.2	Dry	92.1	662.4	Dry
7/18/2018	738.5		73.9	738.1	Dry	60.0	752.0		136.0	676.0	Dry	69.3	685.2	Dry	92.1	662.4	Dry
7/25/2018	738.4	0.0	73.9	738.1	Dry	60.0	752.0		136.0	676.0	Dry	69.3	685.2	Dry	92.1	662.4	Dry
8/1/2018	738.1		73.9	738.1	Dry	60.0	752.0		136.0	676.0	Dry	69.3	685.2	Dry	92.1	662.4	Dry
8/8/2018	737.8		73.9	738.1	Dry	60.0	752.0		136.0	676.0	Dry	69.3	685.2	Dry	92.1	662.4	Dry
8/15/2018	737.7		73.9	738.1	Dry	60.0	752.0		136.0	676.0	Dry	69.3	685.2</td				

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-5 Upper			R-5 Lower			R-6 Upper			R-6 Lower			R-7 Upper			R-7 Lower		
Top Ref. Elev. (ft)			752.400			752.400			812.200			812.200			750.700			750.800		
Top Ref. Elev. (ft) After 5/21/2012			751.920			751.930			811.520			811.510			754.355			754.370		
Tip Elev. (ft)			676.920			654.430			700.020			674.510			677.200			664.700		
Total Depth (ft)			75.0			97.5			111.5			137.0			73.5			86.1		
Total Depth (ft) After 5/21/2012			75.0			97.5			111.5			137.0			77.2			89.7		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
			R-5 Upper			R-5 Lower			R-6 Upper			R-6 Lower			R-7 Upper			R-7 Lower		
1/8/2009	779.3		73.6	678.8	Wet	81.0	671.4	Wet	98.0	714.2	Wet	133.1	679.1	Wet	72.2	678.5	Dry	85.7	665.1	Dry
1/19/2009	778.5		73.8	678.6	Wet	81.7	670.7	Wet	96.9	715.3	Wet	133.1	679.1	Wet	72.2	678.5	Dry	85.7	665.1	Dry
1/29/2009	778.3	0.38	74.0	678.4	Wet	82.0	670.4	Wet	96.0	716.2	Wet	133.1	679.1	Wet	72.2	678.5	Dry	85.7	665.1	Dry
2/12/2009	779.8		73.5	678.9	Wet	79.6	672.8	Wet	96.0	716.2	Wet	132.6	679.6	Wet	72.2	678.5	Dry	85.7	665.1	Dry
2/19/2009	781.3		73.4	679.0	Wet	79.6	672.8	Wet	96.0	716.2	Wet	132.9	679.3	Wet	72.2	678.5	Dry	85.7	665.1	Dry
2/27/2009	782.2	4.33	73.3	679.1	Wet	79.6	672.8	Wet	96.0	716.2	Wet	133.2	679.0	Wet	72.2	678.5	Dry	85.7	665.1	Dry
3/10/2009	782.7		73.4	679.0	Wet	80.0	672.4	Wet	96.0	716.2	Wet	133.3	678.9	Wet	72.2	678.5	Dry	85.7	665.1	Dry
3/20/2009	782.4		73.4	679.0	Wet	80.3	672.1	Wet	96.0	716.2	Wet	133.3	678.9	Wet	72.2	678.5	Dry	85.7	665.1	Dry
3/25/2009	782.2	0.43	73.5	678.9	Wet	80.6	671.8	Wet	95.9	716.3	Wet	133.4	678.8	Wet	72.2	678.5	Dry	85.7	665.1	Dry
4/4/2009	785.3		73.6	678.8	Wet	80.7	671.7	Wet	95.8	716.4	Wet	133.4	678.8	Wet	72.2	678.5	Dry	85.7	665.1	Dry
4/13/2009	788.5		73.8	678.6	Wet	80.9	671.5	Wet	95.6	716.6	Wet	133.4	678.8	Wet	72.2	678.5	Dry	85.7	665.1	Dry
4/21/2009	790.5		73.9	678.5	Wet	80.9	671.5	Wet	95.5	716.7	Wet	133.4	678.8	Wet	72.2	678.5	Dry	85.7	665.1	Dry
4/26/2009	791.2	0.00	73.9	678.5	Wet	80.9	671.5	Wet	95.5	716.7	Wet	133.4	678.8	Wet	72.2	678.5	Dry	85.7	665.1	Dry
5/4/2009	791.3		74.0	678.4	Wet	80.9	671.5	Wet	95.0	717.2	Wet	133.4	678.8	Wet	72.2	678.5	Dry	85.7	665.1	Dry
5/13/2009	790.6		74.0	678.4	Wet	81.0	671.4	Wet	94.6	717.6	Wet	133.4	678.8	Wet	72.2	678.5	Dry	85.7	665.1	Dry
5/21/2009	789.9		74.1	678.3	Wet	81.0	671.4	Wet	94.6	717.6	Wet	133.2	679.0	Wet	72.2	678.5	Dry	85.7	665.1	Dry
5/30/2009	789.3	0.00	74.1	678.3	Wet	81.1	671.3	Wet	94.4	717.8	Wet	133.0	679.2	Wet	72.2	678.5	Dry	85.7	665.1	Dry
6/8/2009	788.7		74.1	678.3	Wet	81.1	671.3	Wet	94.1	718.1	Wet	132.9	679.3	Wet	72.2	678.5	Dry	85.7	665.1	Dry
6/17/2009	788.2		73.9	678.5	Wet	81.1	671.3	Wet	95.9	716.3	Wet	132.8	679.4	Wet	72.2	678.5	Dry	85.7	665.1	Dry
6/27/2009	787.6	0.00	73.9	678.5	Wet	81.1	671.3	Wet	95.8	716.4	Wet	132.8	679.4	Wet	72.2	678.5	Dry	85.7	665.1	Dry
7/7/2009	786.8		73.9	678.5	Wet	81.2	671.2	Wet	93.8	718.4	Wet	133.0	679.2	Wet	72.2	678.5	Dry	85.7	665.1	Dry
7/15/2009	786.1		73.9	678.5	Wet	81.3	671.1	Wet	93.8	718.4	Wet	133.1	679.1	Wet	72.2	678.5	Dry	85.7	665.1	Dry
7/22/2009	785.5		73.9	678.5	Wet	81.4	671.0	Wet	93.7	718.5	Wet	133.1	679.1	Wet	72.2	678.5	Dry	85.7	665.1	Dry
7/30/2009	784.7	0.00	73.9	678.5	Wet	81.4	671.0	Wet	93.7	718.5	Wet	133.3	678.9	Wet	72.2	678.5	Dry	85.7	665.1	Dry
8/8/2009	783.9		73.9	678.5	Wet	81.4	671.0	Wet	93.8	718.4	Wet	133.5	678.7	Wet	72.2	678.5	Dry	85.7	665.1	Dry
8/15/2009	783.3		73.9	678.5	Wet	81.4	671.0	Wet	93.9	718.3	Wet	133.6	678.6	Wet	72.2	678.5	Dry	85.7	665.1	Dry
8/26/2009	782.3	0.00	73.9	678.5	Wet	81.4	671.0	Wet	93.9	718.3	Wet	133.9	678.3	Wet	72.2	6				

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-5 Upper			R-5 Lower			R-6 Upper			R-6 Lower			R-7 Upper			R-7 Lower		
Top Ref. Elev. (ft)			752.400			752.400			812.200			812.200			750.700			750.800		
Top Ref. Elev. (ft) After 5/21/2012			751.920			751.930			811.520			811.510			754.355			754.370		
Tip Elev. (ft)			676.920			654.430			700.020			674.510			677.200			664.700		
Total Depth (ft)			75.0			97.5			111.5			137.0			73.5			86.1		
Total Depth (ft) After 5/21/2012			75.0			97.5			111.5			137.0			77.2			89.7		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
			R-5 Upper			R-5 Lower			R-6 Upper			R-6 Lower			R-7 Upper			R-7 Lower		
1/9/2010	773.9		73.9	678.5	Wet	81.6	670.8	Wet	95.9	716.3	Wet	133.3	678.9	Wet	72.2	678.5	Dry	85.7	665.1	Dry
1/17/2010	773.6		73.8	678.6	Wet	81.6	670.8	Wet	95.9	716.3	Wet	133.3	678.9	Wet	72.2	678.5	Dry	85.7	665.1	Dry
1/28/2010	779.9	7.84	74.1	678.3	Wet	81.9	670.5	Wet	95.9	716.3	Wet	133.4	678.8	Wet	72.2	678.5	Dry	85.7	665.1	Dry
2/4/2010	780.2		74.1	678.3	Wet	82.0	670.4	Wet	95.9	716.3	Wet	132.4	679.8	Wet	72.2	678.5	Dry	85.7	665.1	Dry
2/12/2010	783.4		74.1	678.3	Wet	82.0	670.4	Wet	95.9	716.3	Wet	132.4	679.8	Wet	72.2	678.5	Dry	85.7	665.1	Dry
2/19/2010	784.0		74.1	678.3	Wet	82.0	670.4	Wet	95.9	716.3	Wet	132.4	679.8	Wet	72.2	678.5	Dry	85.7	665.1	Dry
2/26/2010	784.5	2.69	74.1	678.3	Wet	82.0	670.4	Wet	95.9	716.3	Wet	132.4	679.8	Wet	72.2	678.5	Dry	85.7	665.1	Dry
3/6/2010	785.6		74.1	678.3	Wet	81.8	670.6	Wet	95.7	716.5	Wet	132.9	679.3	Wet	72.1	678.6	Dry	85.7	665.1	Dry
3/15/2010	786.2		74.1	678.3	Wet	81.6	670.8	Wet	95.4	716.8	Wet	132.9	679.3	Wet	72.1	678.6	Dry	85.7	665.1	Dry
3/16/2010	786.3		74.1	678.3	Wet	81.6	670.8	Wet	95.4	716.8	Wet	132.9	679.3	Wet	72.1	678.6	Dry	85.7	665.1	Dry
3/24/2010	786.2	2.03	73.9	678.5	Wet	81.0	671.4	Wet	95.0	717.2	Wet	133.0	679.2	Wet	72.1	678.6	Dry	85.7	665.1	Dry
4/2/2010	785.8		73.5	678.9	Wet	81.2	671.2	Wet	94.7	717.5	Wet	133.2	679.0	Wet	72.1	678.6	Dry	85.7	665.1	Dry
4/4/2010	785.8		73.5	678.9	Wet	81.2	671.2	Wet	94.6	717.6	Wet	133.2	679.0	Wet	72.1	678.6	Dry	85.7	665.1	Dry
4/12/2010	787.4		73.4	679.0	Wet	81.3	671.1	Wet	94.4	717.8	Wet	133.2	679.0	Wet	72.1	678.6	Dry	85.7	665.1	Dry
4/20/2010	790.1		73.4	679.0	Wet	81.4	671.0	Wet	93.8	718.4	Wet	133.2	679.0	Wet	72.1	678.6	Dry	85.7	665.1	Dry
4/28/2010	792.6	1.19	73.5	678.9	Wet	81.4	671.0	Wet	93.4	718.8	Wet	133.2	679.0	Wet	72.1	678.6	Dry	85.7	665.1	Dry
5/14/2010	792.4		73.5	678.9	Wet	81.5	670.9	Wet	92.4	719.8	Wet	133.0	679.2	Wet	72.1	678.6	Dry	85.7	665.1	Dry
5/21/2010	792.1		73.6	678.8	Wet	81.5	670.9	Wet	91.2	721.0	Wet	132.8	679.4	Wet	72.1	678.6	Dry	85.7	665.1	Dry
5/29/2010	791.7	0.00	73.6	678.8	Wet	81.6	670.8	Wet	91.1	721.1	Wet	132.2	680.0	Wet	72.1	678.6	Dry	85.7	665.1	Dry
6/8/2010	791.0		73.6	678.8	Wet	81.5	670.9	Wet	90.8	721.4	Wet	131.8	680.4	Wet	72.1	678.6	Dry	85.7	665.1	Dry
6/15/2010	790.6		73.0	679.4	Wet	81.5	670.9	Wet	90.5	721.7	Wet	131.7	680.5	Wet	72.1	678.6	Dry	85.7	665.1	Dry
6/22/2010	790.1		73.6	678.8	Wet	81.6	670.8	Wet	90.2	722.0	Wet	131.7	680.5	Wet	72.1	678.6	Dry	85.7	665.1	Dry
6/29/2010	789.7	0.00	73.6	678.8	Wet	81.6	670.8	Wet	89.6	722.6	Wet	131.7	680.5	Wet	72.1	678.6	Dry	85.7	665.1	Dry
7/8/2010	789.2		73.4	679.0	Wet	81.5	670.9	Wet	89.5	722.7	Wet	131.6	680.6	Wet	72.1	678.6	Dry	85.7	665.1	Dry
7/16/2010	788.7		73.8	678.6	Wet	81.6	670.8	Wet	89.5	722.7	Wet	131.6	680.6	Wet	72.1	678.6	Dry	85.7	665.1	Dry
7/23/2010	788.3		73.9	678.5	Wet	81.6	670.8	Wet	89.4	722.8	Wet	131.5	680.7	Wet	72.1	678.6	Dry	85.7	665.1	Dry
7/31/2010	787.7	0.00	74.0	678.4	Wet	81.6	670.8	Wet	89.4	722.8	Wet	131.5	680.7	Wet	72.1	678.6</td				

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-5 Upper			R-5 Lower			R-6 Upper			R-6 Lower			R-7 Upper			R-7 Lower		
Top Ref. Elev. (ft)			752.400			752.400			812.200			812.200			750.700			750.800		
Top Ref. Elev. (ft) After 5/21/2012			751.920			751.930			811.520			811.510			754.355			754.370		
Tip Elev. (ft)			676.920			654.430			700.020			674.510			677.200			664.700		
Total Depth (ft)			75.0			97.5			111.5			137.0			73.5			86.1		
Total Depth (ft) After 5/21/2012			75.0			97.5			111.5			137.0			77.2			89.7		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
			R-5 Upper			R-5 Lower			R-6 Upper			R-6 Lower			R-7 Upper			R-7 Lower		
1/6/2011	792.2		73.6	678.8	Wet	81.6	670.8	Wet	90.4	721.8	Wet	131.5	680.7	Wet						
1/7/2011	792.2		73.6	678.8	Wet	81.6	670.8	Wet	90.4	721.8	Wet	131.6	680.6	Wet						
1/17/2011	792.0		74.0	678.4	Wet	31.1	721.3	Wet	88.1	724.1	Wet	129.6	682.6	Wet	72.1	678.6	Dry	85.7	665.1	Dry
1/27/2011	791.8	1.11	73.9	678.5	Wet	32.0	720.4	Wet	87.1	725.1	Wet	131.4	680.8	Wet	72.1	678.6	Dry	85.7	665.1	Dry
2/5/2011	791.8		73.9	678.5	Wet	33.5	718.9	Wet	86.9	725.3	Wet	131.0	681.2	Wet	72.1	678.6	Dry	85.7	665.1	Dry
2/15/2011	791.8		73.9	678.5	Wet	34.4	718.0	Wet	86.6	725.6	Wet	130.8	681.4	Wet	72.1	678.6	Dry	85.7	665.1	Dry
2/23/2011	792.2	2.87	73.9	678.5	Wet	34.8	717.6	Wet	86.4	725.8	Wet	130.6	681.6	Wet	72.1	678.6	Dry	85.7	665.1	Dry
3/8/2011	792.1		73.6	678.8	Wet	34.7	717.7	Wet	86.0	726.2	Wet	130.9	681.3	Wet	72.1	678.6	Dry	85.7	665.1	Dry
3/19/2011	791.8		72.8	679.6	Wet	34.7	717.7	Wet	85.8	726.4	Wet	131.2	681.0	Wet	72.1	678.6	Dry	85.7	665.1	Dry
3/30/2011	791.5	3.23	72.3	680.1	Wet	34.7	717.7	Wet	85.5	726.7	Wet	131.4	680.8	Wet	72.1	678.6	Dry	85.7	665.1	Dry
4/7/2011	792.1		72.2	680.2	Wet	34.7	717.7	Wet	85.4	726.8	Wet	131.0	681.2	Wet	72.1	678.6	Dry	85.7	665.1	Dry
4/16/2011	792.5		72.2	680.2	Wet	34.7	717.7	Wet	85.3	726.9	Wet	130.9	681.3	Wet	72.1	678.6	Dry	85.7	665.1	Dry
4/23/2011	792.6		72.0	680.4	Wet	34.8	717.6	Wet	85.2	727.0	Wet	130.6	681.6	Wet	72.1	678.6	Dry	85.7	665.1	Dry
4/30/2011	792.6	0.00	72.0	680.4	Wet	34.7	717.7	Wet	85.1	727.1	Wet	130.2	682.0	Wet	72.1	678.6	Dry	85.7	665.1	Dry
5/9/2011	792.4		72.3	680.1	Wet	35.1	717.3	Wet	84.8	727.4	Wet	130.6	681.6	Wet	72.1	678.6	Dry	85.7	665.1	Dry
5/16/2011	792.4		72.5	679.9	Wet	37.1	715.3	Wet	84.9	727.3	Wet	130.9	681.3	Wet	72.1	678.6	Dry	85.7	665.1	Dry
5/24/2011	792.4		73.0	679.4	Wet	36.1	716.3	Wet	84.9	727.3	Wet	131.0	681.2	Wet	72.1	678.6	Dry	85.7	665.1	Dry
5/31/2011	792.4	0.81	73.6	678.8	Wet	37.0	715.4	Wet	85.0	727.2	Wet	131.0	681.2	Wet	72.1	678.6	Dry	85.7	665.1	Dry
6/8/2011	792.1		73.9	678.5	Wet	37.0	715.4	Wet	85.0	727.2	Wet	131.0	681.2	Wet	72.1	678.6	Dry	85.7	665.1	Dry
6/16/2011	791.9		73.9	678.5	Wet	37.1	715.3	Wet	85.0	727.2	Wet	131.0	681.2	Wet	72.1	678.6	Dry	85.7	665.1	Dry
6/23/2011	791.8		72.1	680.3	Wet	37.1	715.3	Wet	85.0	727.2	Wet	130.4	681.8	Wet	72.1	678.6	Dry	85.7	665.1	Dry
6/30/2011	791.6	0.00	72.5	679.9	Wet	37.8	714.6	Wet	85.0	727.2	Wet	130.5	681.7	Wet	72.1	678.6	Dry	85.7	665.1	Dry
7/8/2011	791.4		73.3	679.1	Wet	37.8	714.6	Wet	85.0	727.2	Wet	130.5	681.7	Wet	72.1	678.6	Dry	85.5	665.3	Dry
7/14/2011	791.2					36.0	716.4	Wet	85.0	727.2	Wet	130.5	681.7	Wet	72.1	678.6	Dry	85.7	665.1	Dry
7/21/2011	790.9	73.5	678.9	Wet	34.9	717.5	Wet	85.0	727.2	Wet	130.5	681.7	Wet	72.1	678.6	Dry	85.8	665.0	Dry	
7/30/2011	790.4	0.00	73.7	678.7	Wet	35.0	717.4	Wet	85.0	727.2	Wet	130.5	681.7	Wet	72.1	678.6	Dry	85.6	665.2	Dry
8/9/2011	789.9		73.7	678.7	Wet	35.0	717.4	Wet	86.1	726.1	Wet	130.4	681.8	Wet	72.1	678.6	Dry	85.7	665.1	Dry

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-5 Upper			R-5 Lower			R-6 Upper			R-6 Lower			R-7 Upper			R-7 Lower		
Top Ref. Elev. (ft)			752.400			752.400			812.200			812.200			750.700			750.800		
Top Ref. Elev. (ft) After 5/21/2012			751.920			751.930			811.520			811.510			754.355			754.370		
Tip Elev. (ft)			676.920			654.430			700.020			674.510			677.200			664.700		
Total Depth (ft)			75.0			97.5			111.5			137.0			73.5			86.1		
Total Depth (ft) After 5/21/2012			75.0			97.5			111.5			137.0			77.2			89.7		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-5 Upper						R-5 Lower			R-6 Upper			R-6 Lower			R-7 Upper			R-7 Lower		
1/7/2012	784.0		72.8	679.6		37.1	715.3		89.3	722.9		131.2	681.0		72.1	678.6	Dry	85.8	665.0	
1/14/2012	783.8		72.5	679.9		37.4	715.0		89.4	722.8		131.2	681.0		72.1	678.6	Dry	85.8	665.0	
1/21/2012	783.6		71.9	680.5		37.1	715.3		89.9	722.3		131.2	681.0		72.1	678.6	Dry	85.8	665.0	
1/28/2012	783.6	1.72	71.7	680.7		36.7	715.7		89.8	722.4		131.2	681.0		72.1	678.6	Dry	85.8	665.0	
2/7/2012	783.4		71.6	680.8		36.5	715.9		89.0	723.2		131.2	681.0		72.1	678.6	Dry	85.8	665.0	
2/15/2012	783.4		71.4	681.0		36.4	716.0		90.0	722.2		131.2	681.0		72.1	678.6	Dry	85.8	665.0	
2/25/2012	783.4	0.62	71.4	681.0		36.2	716.2		90.1	722.1		131.2	681.0		72.1	678.6	Dry	85.8	665.0	
3/5/2012	783.2		71.4	681.0		36.2	716.2		90.2	722.0		131.2	681.0		72.1	678.6	Dry	85.8	665.0	
3/15/2012	782.7		71.4	681.0		36.1	716.3		90.4	721.8		131.2	681.0		72.1	678.6	Dry	85.8	665.0	
3/22/2012	782.6	2.01	71.4	681.0		36.2	716.2		90.8	721.4		131.2	681.0		72.1	678.6	Dry	85.8	665.0	
4/3/2012	782.5		70.6	681.8		36.4	716.0		90.9	721.3		131.2	681.0		72.1	678.6	Dry	85.8	665.0	
4/12/2012	782.1		70.6	681.8		36.4	716.0		90.9	721.3		131.2	681.0		72.1	678.6	Dry	85.8	665.0	
4/21/2012	782.0		70.8	681.6		36.6	715.8		91.1	721.1		131.2	681.0		72.1	678.6	Dry	85.8	665.0	
4/23/2012	781.9	1.32	70.8	681.6		36.6	715.8		91.1	721.1		131.2	681.0		72.1	678.6	Dry	85.8	665.0	
5/1/2012	781.7		70.6	681.8		36.6	715.8		90.9	721.3		131.2	681.0		72.1	678.6	Dry	85.8	665.0	
5/7/2012	781.3		70.6	681.8		36.6	715.8		91.0	721.2		131.2	681.0		72.1	678.6	Dry	85.8	665.0	
5/21/2012	780.9		70.7	681.7		36.7	715.7		91.1	721.1		131.2	681.0		72.1	678.6	Dry	85.8	665.0	
5/25/2012	780.0	0.06	71.6	680.3	New Survey	37.3	714.6	New Survey	91.3	720.2	New Survey	131.2	680.3	New Survey	75.3	679.1	New Survey	87.2	667.2	New Survey
6/4/2012	779.6		73.4	678.5		36.7	715.2		91.0	720.5		131.2	680.3		72.1	682.3		85.8	668.6	
6/13/2012	778.7		73.4	678.5		37.3	714.6		91.1	720.4		131.2	680.3		72.1	682.3		85.8	668.6	
6/20/2012	778.0		73.4	678.5		37.7	714.2		91.9	719.6		131.3	680.2		75.3	679.1		89.2	665.2	
6/25/2012	777.3	0.00	73.4	678.5		37.6	714.3		92.1	719.4		131.3	680.2		75.3	679.1		89.1	665.3	
7/4/2012	776.3		73.6	678.3		37.8	714.1		92.4	719.1		131.3	680.2		75.2	679.2		88.8	665.6	
7/13/2012	775.7		73.7	678.2		37.8	714.1		92.6	718.9		131.2	680.3		75.2	679.2		88.7	665.7	
7/20/2012	775.2		73.7	678.2		38.0	713.9		92.9	718.6		131.4	680.1		75.2	679.2		88.7	665.7	
7/30/2012	775.0	0.10	73.8	678.1		38.1	713.8		93.1	718.4		131.5	680.0		75.2	679.2		88.8	665.6	
8/8/2012	773.0		73.8	678.1		38.1	713.8		93.1	718.4		131.7	679.8		75.2	679.2		88.9	665.5	
8/9/2012	772.9		73.8	678.1		38.1	713.8		93.1	718.4		131.7	679.8		75.2	679.2		88.9	665.5	
8/18/2012	772.0		73.8	678.1		38.3	713.6		93.1	718.4		131.7	679.8		75.2	679.2		88.9	665.5	
8/27/2012	7																			

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-5 Upper			R-5 Lower			R-6 Upper			R-6 Lower			R-7 Upper			R-7 Lower					
Top Ref. Elev. (ft)			752.400			752.400			812.200			812.200			750.700			750.800					
Top Ref. Elev. (ft) After 5/21/2012			751.920			751.930			811.520			811.510			754.355			754.370					
Tip Elev. (ft)			676.920			654.430			700.020			674.510			677.200			664.700					
Total Depth (ft)			75.0			97.5			111.5			137.0			73.5			86.1					
Total Depth (ft) After 5/21/2012			75.0			97.5			111.5			137.0			77.2			89.7					
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment			
R-5 Upper						R-5 Lower						R-6 Upper						R-6 Lower					
1/16/2013	770.4		73.8	678.1		40.3	711.6		95.8	715.7		132.5	679.0		75.1	679.3		88.9	665.5				
1/28/2013	769.9	1.82	73.8	678.1		40.4	711.5		95.8	715.7		132.5	679.0		75.1	679.3		88.9	665.5				
2/15/2013	769.6		73.8	678.1		40.6	711.3		95.6	715.9		132.5	679.0		75.1	679.3		88.9	665.5				
2/26/2013	769.4	0.68	73.8	678.1		40.7	711.2		95.6	715.9		135.1	676.4		75.4	679.0		88.9	665.5				
3/13/2013	768.8		73.8	678.1		40.9	711.0		95.8	715.7		132.4	679.1		75.1	679.3		89.0	665.4				
3/26/2013	768.6	0.66	73.8	678.1		41.3	710.6		95.8	715.7		132.4	679.1		75.1	679.3		88.7	665.7				
4/10/2013	771.1		73.8	678.1		41.6	710.3		95.8	715.7		132.4	679.1		75.1	679.3		88.7	665.7				
4/30/2013	772.2	0.00	73.8	678.1		41.6	710.3		95.8	715.7		132.4	679.1		75.1	679.3		88.7	665.7				
5/9/2013	771.9		73.9	678.0		42.0	709.9		95.9	715.6		132.0	679.5		75.6	678.8		89.0	665.4				
5/15/2013	771.7		73.9	678.0		42.0	709.9		95.9	715.6		132.0	679.5		75.6	678.8		89.0	665.4				
5/22/2013	771.4		73.9	678.0		42.0	709.9		95.9	715.6		132.0	679.5		75.6	678.8		89.0	665.4				
5/30/2013	771.0	0.00	73.5	678.4		42.0	709.9		95.9	715.6		132.0	679.5		75.9	678.5		88.2	666.2				
6/6/2013	770.8		73.8	678.1		42.2	709.7		96.0	715.5		129.9	681.6		75.5	678.9		88.8	665.6				
6/13/2013	769.3		73.8	678.1		42.2	709.7		96.0	715.5		129.9	681.6		75.5	678.9		88.7	665.7				
6/20/2013	769.0		73.8	678.1		42.4	709.5		96.0	715.5		132.4	679.1		75.5	678.9		88.7	665.7				
6/26/2013	768.6	0.00	73.8	678.1		42.1	709.8		96.0	715.5		132.4	679.1		75.5	678.9		88.2	666.2				
7/2/2013	767.8		73.8	678.1		42.7	709.2		96.0	715.5		129.9	681.6		75.5	678.9		88.8	665.6				
7/10/2013	766.9		73.8	678.1		42.7	709.2		96.0	715.5		129.9	681.6		75.6	678.8		88.8	665.6				
7/16/2013	766.5		73.8	678.1		42.7	709.2		95.9	715.6		129.8	681.7		75.8	678.6		88.7	665.7				
7/29/2013	765.2	0.00	73.8	678.1		42.7	709.2		95.9	715.6		129.8	681.7		75.8	678.6		88.7	665.7				
8/5/2013	764.5		73.8	678.1		42.7	709.2		96.0	715.5		129.9	681.6		75.5	678.9	Dry	88.8	665.6				
8/12/2013	763.8		73.8	678.1		42.7	709.2		95.8	715.7		129.9	681.6		75.5	678.9	Dry	88.8	665.6				
8/19/2013	763.3		73.8	678.1		42.9	709.0		95.8	715.7		131.8	679.7		75.5	678.9	Dry	88.8	665.6				
8/26/2013	762.4	0.00	73.8	678.1		42.9	709.0		95.8	715.7		130.4	681.1		75.5	678.9	Dry	88.8	665.6				
9/2/2013	761.5		73.8	678.1		42.7	709.2		96.0	715.5		129.9	681.6		75.5	678.9	Dry	88.8	665.6				
9/10/2013	760.7		73.8	678.1		43.2	708.7		96.0	715.5		129.9	681.6		75.5	678.9	Dry	88.8	665.6				
9/17/2013	759.9		73.8	678.1		42.8	709.1		96.0	715.5		129.9	681.6		75.5	678.9	Dry	88.8	665.6				
9/23/2013	759.4		73.8	678.1		39.3	712.6		96.0	715.5		129.9	681.6		75.5	678.9	Dry	88.8	665.6				
9/30/2013	758.7	0.00	73.8	678.1		39.3	712.6		96.0	715.5		129.9	681.6		75.5	678.9	Dry	88.8	665.6				
10/7/2013	758.3																						

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-5 Upper			R-5 Lower			R-6 Upper			R-6 Lower			R-7 Upper			R-7 Lower					
Top Ref. Elev. (ft)			752.400			752.400			812.200			812.200			750.700			750.800					
Top Ref. Elev. (ft) After 5/21/2012			751.920			751.930			811.520			811.510			754.355			754.370					
Tip Elev. (ft)			676.920			654.430			700.020			674.510			677.200			664.700					
Total Depth (ft)			75.0			97.5			111.5			137.0			73.5			86.1					
Total Depth (ft) After 5/21/2012			75.0			97.5			111.5			137.0			77.2			89.7					
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment			
R-5 Upper						R-5 Lower						R-6 Upper						R-6 Lower					
1/6/2014	754.5		74.1	677.8	Dry	40.5	711.4		96.0	715.5		133.3	678.2		75.5	678.9	Dry	89.6	664.8	Dry			
1/13/2014	755.0		73.8	678.1		40.5	711.4		96.1	715.4		133.3	678.2		75.5	678.9	Dry	88.7	665.7				
1/20/2014	754.6		73.7	678.2		40.6	711.3		96.1	715.4		132.9	678.6		75.5	678.9	Dry	88.7	665.7				
1/27/2014	754.3	0.00	73.7	678.2		40.7	711.2		96.1	715.4		132.9	678.6		75.5	678.9	Dry	88.7	665.7				
2/3/2014	754.1		73.9	678.0		40.5	711.4		96.0	715.5		132.7	678.8		75.5	678.9	Dry	88.7	665.7				
2/10/2014	754.7		73.9	678.0		40.8	711.1		96.0	715.5		132.6	678.9		75.5	678.9	Dry	88.7	665.7				
2/17/2014	754.5		73.8	678.1		40.8	711.1		96.0	715.5		132.6	678.9		75.5	678.9	Dry	88.7	665.7				
2/24/2014	754.2	0.83	73.8	678.1		40.8	711.1		96.0	715.5		132.6	678.9		75.5	678.9	Dry	88.7	665.7				
3/3/2014	754.5		73.8	678.1		40.8	711.1		96.0	715.5		132.6	678.9		75.5	678.9	Dry	88.7	665.7				
3/10/2014	755.2		73.8	678.1		40.8	711.1		96.0	715.5		132.6	678.9		75.5	678.9	Dry	88.7	665.7				
3/19/2014	755.9		73.8	678.1		41.2	710.7		96.0	715.5		132.6	678.9		75.5	678.9	Dry	88.7	665.7				
3/25/2014	758.8		73.8	678.1		41.2	710.7		96.0	715.5		132.6	678.9		75.5	678.9	Dry	88.7	665.7				
3/29/2014	760.5		73.8	678.1		41.2	710.7		96.0	715.5		132.6	678.9		75.5	678.9	Dry	88.7	665.7				
3/31/2014	761.6	1.85	73.8	678.1		41.2	710.7		96.0	715.5		132.6	678.9		75.5	678.9	Dry	88.7	665.7				
4/1/2014	762.0		73.8	678.1		41.4	710.5		96.0	715.5		132.3	679.2		75.5	678.9	Dry	88.7	665.7				
4/8/2014	764.7		73.8	678.1		41.4	710.5		96.0	715.5		132.3	679.2		75.5	678.9	Dry	88.7	665.7				
4/15/2014	766.6		73.8	678.1		41.4	710.5		96.0	715.5		132.3	679.2		75.5	678.9	Dry	88.7	665.7				
4/22/2014	768.6		73.8	678.1		41.4	710.5		96.0	715.5		132.3	679.2		75.5	678.9	Dry	88.7	665.7				
4/29/2014	770.4	0.88	73.8	678.1		41.4	710.5		96.0	715.5		132.3	679.2		75.5	678.9	Dry	88.7	665.7				
5/5/2014	769.7		73.8	678.1		41.6	710.3		96.0	715.5		132.6	678.9		75.5	678.9	Dry	88.7	665.7				
5/12/2014	769.0		73.8	678.1		41.6	710.3		96.0	715.5		132.6	678.9		75.5	678.9	Dry	88.7	665.7				
5/19/2014	768.0		73.8	678.1		41.6	710.3		96.0	715.5		132.6	678.9		75.5	678.9	Dry	88.7	665.7				
5/26/2014	767.1	0.00	73.9	678.0		41.6	710.3		96.0	715.5		132.6	678.9		75.5	678.9	Dry	88.7	665.7				
6/2/2014	766.2		73.9	678.0		41.9	710.0		96.0	715.5		132.6	678.9		75.5	678.9	Dry	88.7	665.7				
6/9/2014	765.4		73.9	678.0		41.9	710.0		96.0	715.5		132.6	678.9		75.5	678.9	Dry	88.7	665.7				
6/16/2014	764.3		74.0	677.9		42.0	709.9		96.1	715.4		132.6	678.9		75.5	678.9	Dry	88.7	665.7				
6/23/2014	763.1		74.0	677.9		42.0	709.9		96.1	715.4		132.6	678.9		75.5	678.9	Dry	88.7	665.7				
6/27/2014	762.3	0.00	74.0	677.9		42.0	709.9		96.1	715.4		132.6	678.9		75.5	678.9	Dry	88.7	665.7				
7/7/2014	760.9		73.9	678.0		42.2	709.7		96.3	715.2		132.6	678.9		75.5	678.9	Dry	88.7	665.7				
7																							

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-5 Upper			R-5 Lower			R-6 Upper			R-6 Lower			R-7 Upper			R-7 Lower					
Top Ref. Elev. (ft)			752.400			752.400			812.200			812.200			750.700			750.800					
Top Ref. Elev. (ft) After 5/21/2012			751.920			751.930			811.520			811.510			754.355			754.370					
Tip Elev. (ft)			676.920			654.430			700.020			674.510			677.200			664.700					
Total Depth (ft)			75.0			97.5			111.5			137.0			73.5			86.1					
Total Depth (ft) After 5/21/2012			75.0			97.5			111.5			137.0			77.2			89.7					
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment			
R-5 Upper						R-5 Lower						R-6 Upper						R-6 Lower					
1/5/2015	751.3		73.9	678.0		43.9	708.0		100.8	710.7		133.3	678.2		75.5	678.9	Dry	88.7	665.7				
1/12/2015	751.8		74.0	677.9		43.9	708.0		99.9	711.6		133.1	678.4		75.5	678.9	Dry	88.7	665.7				
1/19/2015	752.3		74.0	677.9		43.9	708.0		99.9	711.6		133.1	678.4		75.5	678.9	Dry	88.7	665.7				
1/26/2015	752.6	1.48	73.9	678.0		44.1	707.8		99.9	711.6		133.1	678.4		75.5	678.9	Dry	88.7	665.7				
2/4/2015	753.1		73.9	678.0		43.9	708.0		100.8	710.7		133.3	678.2		75.5	678.9	Dry	88.7	665.7				
2/9/2015	753.3		73.9	678.0		44.2	707.7		100.8	710.7		133.3	678.2		75.5	678.9	Dry	88.7	665.7				
2/16/2015	753.8		73.9	678.0		44.3	707.6		100.8	710.7		133.4	678.1		75.5	678.9	Dry	88.7	665.7				
2/23/2015	753.9	0.44	73.9	678.0		44.3	707.6		100.8	710.7		133.4	678.1		75.5	678.9	Dry	88.7	665.7				
3/2/2015	754.5		73.9	678.0		44.4	707.5		100.9	710.6		133.4	678.1		75.5	678.9	Dry	88.7	665.7				
3/9/2015	755.0		73.9	678.0		44.4	707.5		100.9	710.6		133.4	678.1		75.5	678.9	Dry	88.7	665.7				
3/16/2015	755.3		73.9	678.0		44.6	707.3		101.4	710.1		133.4	678.1		75.5	678.9	Dry	88.7	665.7				
3/23/2015	755.5		73.9	678.0		44.6	707.3		101.4	710.1		133.4	678.1		75.5	678.9	Dry	88.7	665.7				
3/30/2015	755.7	0.57	73.9	678.0		44.6	707.3		101.8	709.7		133.7	677.8		75.5	678.9	Dry	88.7	665.7				
4/6/2015	755.6		73.9	678.0		44.6	707.3		101.8	709.7		133.7	677.8		75.5	678.9	Dry	88.7	665.7				
4/13/2015	755.8		73.9	678.0		44.8	707.1		102.3	709.2		133.7	677.8		75.5	678.9	Dry	88.7	665.7				
4/20/2015	755.9		73.9	678.0		44.9	707.0		102.0	709.5		133.7	677.8		75.5	678.9	Dry	88.7	665.7				
4/27/2015	755.9	0.20	73.9	678.0		44.9	707.0		102.0	709.5		133.7	677.8		75.5	678.9	Dry	88.7	665.7				
5/4/2015	755.6		73.9	678.0		44.9	707.0		102.7	708.8		133.7	677.8		75.5	678.9	Dry	88.7	665.7				
5/11/2015	755.3		73.9	678.0		44.9	707.0		102.7	708.8		133.7	677.8		75.5	678.9	Dry	88.7	665.7				
5/18/2015	755.2		73.9	678.0		45.1	706.8		103.2	708.3		133.7	677.8		75.5	678.9	Dry	88.7	665.7				
5/26/2015	755.3	0.95	73.9	678.0		45.1	706.8		103.2	708.3		133.7	677.8		75.5	678.9	Dry	88.7	665.7				
6/1/2015	755.2		73.9	678.0		45.3	706.6		103.7	707.8		134.1	677.4		75.5	678.9	Dry	88.9	665.5	Dry			
6/8/2015	755.1		73.9	678.0		45.3	706.6		103.7	707.8		134.1	677.4		75.5	678.9	Dry	88.9	665.5	Dry			
6/15/2015	755.2		73.9	678.0		45.4	706.5		104.4	707.1		134.1	677.4		75.5	678.9	Dry	88.9	665.5	Dry			
6/22/2015	754.8		73.9	678.0		45.4	706.5		104.4	707.1		134.1	677.4		75.5	678.9	Dry	88.9	665.5	Dry			
6/29/2015	754.2	0.00	73.9	678.0		45.4	706.5		104.4	707.1		134.1	677.4		75.5	678.9	Dry	88.9	665.5	Dry			
7/10/2015	753.3		73.9	678.0		37.0	714.9		105.2	706.3		134.0	677.5		75.5	678.9	Dry	88.6	665.8				
7/15/2015	753.0		73.9	678.0		37.1	714.8		105.4	706.1		134.0	677.5		75.5	678.9	Dry	88.6	665.8				
7/21/2015	752.8		73.9	678.0		37.2	714.7		105.3	706.2		134.2	677.3		75.5	678.9	Dry</						

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-5 Upper			R-5 Lower			R-6 Upper			R-6 Lower			R-7 Upper			R-7 Lower					
Top Ref. Elev. (ft)			752.400			752.400			812.200			812.200			750.700			750.800					
Top Ref. Elev. (ft) After 5/21/2012			751.920			751.930			811.520			811.510			754.355			754.370					
Tip Elev. (ft)			676.920			654.430			700.020			674.510			677.200			664.700					
Total Depth (ft)			75.0			97.5			111.5			137.0			73.5			86.1					
Total Depth (ft) After 5/21/2012			75.0			97.5			111.5			137.0			77.2			89.7					
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment			
R-5 Upper						R-5 Lower						R-6 Upper						R-6 Lower					
1/5/2016	741.7		73.9	678.0		38.7	713.2		111.5	700.0		135.4	676.1		77.5	676.9	Dry	88.6	665.8				
1/12/2016	742.3		73.9	678.0		38.7	713.2		111.5	700.0		135.4	676.1		77.5	676.9	Dry	88.6	665.8				
1/19/2016	742.0		73.9	678.0		38.8	713.1		111.5	700.0		135.4	676.1		77.5	676.9	Dry	88.6	665.8				
1/26/2016	741.8	3.51	73.9	678.0		39.0	712.9		111.6	699.9		135.4	676.1		77.5	676.9	Dry	88.6	665.8				
2/2/2016	741.4		73.9	678.0		39.0	712.9		111.6	699.9		135.4	676.1		77.5	676.9	Dry	88.6	665.8				
2/9/2016	741.0		73.9	678.0		39.1	712.8		111.2	700.3		135.4	676.1		77.5	676.9	Dry	88.6	665.8				
2/16/2016	740.5		73.9	678.0		39.2	712.7		111.3	700.2		135.4	676.1		77.5	676.9	Dry	88.6	665.8				
2/23/2016	740.2	0.35	74.0	677.9		39.3	712.6		111.3	700.2		135.4	676.1		77.5	676.9	Dry	88.6	665.8				
3/1/2016	739.7		74.0	677.9		39.3	712.6		111.3	700.2		135.4	676.1		77.5	676.9	Dry	88.6	665.8				
3/9/2016	739.4		74.0	677.9		39.4	712.5		110.9	700.6		135.4	676.1		77.5	676.9	Dry	88.6	665.8				
3/17/2016	739.3		74.0	677.9		39.4	712.5		111.0	700.5		135.4	676.1		77.5	676.9	Dry	88.6	665.8				
3/23/2016	739.1		74.0	677.9		39.5	712.4		111.0	700.5		135.4	676.1		77.5	676.9	Dry	88.8	665.6				
3/30/2016	738.5	1.59	74.0	677.9		39.6	712.3		111.0	700.5		135.4	676.1		77.5	676.9	Dry	89.0	665.4				
4/6/2016	738.0		74.0	677.9		39.6	712.3		111.3	700.2		135.4	676.1		77.5	676.9	Dry	89.0	665.4				
4/13/2016	737.6		74.0	677.9		39.8	712.1		111.5	700.0		135.4	676.1		77.5	676.9	Dry	89.0	665.4				
4/20/2016	736.9		74.0	677.9		39.7	712.2		111.4	700.1		135.4	676.1		77.5	676.9	Dry	89.0	665.4				
4/27/2016	736.2	0.07	74.0	677.9		39.7	712.2		111.4	700.1		135.4	676.1		77.5	676.9	Dry	89.0	665.4				
5/4/2016	736.9		74.0	677.9		39.6	712.3		111.3	700.2		135.4	676.1		77.5	676.9	Dry	89.0	665.4	Dry			
5/11/2016	737.5		74.0	677.9		39.8	712.1		111.6	699.9		135.4	676.1		77.5	676.9	Dry	89.0	665.4	Dry			
5/18/2016	737.0		74.0	677.9		40.0	711.9		112.2	699.3		135.4	676.1		77.5	676.9	Dry	89.0	665.4	Dry			
5/25/2016	737.6	1.21	73.9	678.0		40.2	711.7		112.6	698.9	Dry	135.4	676.1		77.5	676.9	Dry	89.0	665.4	Dry			
6/1/2016	737.6		73.9	678.0		40.2	711.7		112.6	698.9	Dry	135.4	676.1		75.5	678.9	Dry	89.0	665.4	Dry			
6/8/2016	737.9		73.9	678.0		40.2	711.7		112.6	698.9	Dry	135.4	676.1		75.5	678.9	Dry	89.0	665.4	Dry			
6/15/2016	738.0		73.9	678.0		40.2	711.7		112.6	698.9	Dry	135.4	676.1		75.5	678.9	Dry	88.6	665.8				
6/23/2016	737.7		73.9	678.0		40.2	711.7		112.6	698.9	Dry	135.5	676.0		75.5	678.9	Dry	88.4	666.0				
6/29/2016	737.5	0.00	73.9	678.0		40.2	711.7		112.6	698.9	Dry	135.5	676.0		75.5	678.9	Dry	88.5	665.9				
7/6/2016	737.4		73.9	678.0		40.4	711.5		112.6	698.9	Dry	135.5	676.0		75.5	678.9	Dry	88.5	665.9				
7/15/2016	737.4		73.9	678.0		40.6	711.3		112.6	698.9	Dry	135.5	676.0		75.5	678.9	Dry	88.5	665.9				
7/20/2016	737.1		73.9	678.0		40.8	711.1		112.6	698.9	Dry	135.6	675.9										

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-5 Upper			R-5 Lower			R-6 Upper			R-6 Lower			R-7 Upper			R-7 Lower		
Top Ref. Elev. (ft)			752.400			752.400			812.200			812.200			750.700			750.800		
Top Ref. Elev. (ft) After 5/21/2012			751.920			751.930			811.520			811.510			754.355			754.370		
Tip Elev. (ft)			676.920			654.430			700.020			674.510			677.200			664.700		
Total Depth (ft)			75.0			97.5			111.5			137.0			73.5			86.1		
Total Depth (ft) After 5/21/2012			75.0			97.5			111.5			137.0			77.2			89.7		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-5 Upper						R-5 Lower			R-6 Upper			R-6 Lower			R-7 Upper			R-7 Lower		
1/4/2017	757.5		73.9	678.0		45.7	706.2		112.6	698.9	Dry	135.7	675.8		75.5	678.9	Dry	88.6	665.8	
1/13/2017	758.1		73.9	678.0		46.3	705.6		112.6	698.9	Dry	135.7	675.8		75.5	678.9	Dry	88.6	665.8	
1/18/2017	758.3		73.9	678.0		46.5	705.4		112.6	698.9	Dry	135.7	675.8		75.5	678.9	Dry	88.6	665.8	
1/25/2017	758.0	6.73	73.7	678.2		46.7	705.2		112.6	698.9	Dry	135.7	675.8		75.5	678.9	Dry	88.6	665.8	
2/1/2017	769.1		73.7	678.2		46.7	705.2		112.6	698.9	Dry	135.7	675.8		75.5	678.9	Dry	88.6	665.8	
2/8/2017	769.7		73.9	678.0		47.0	704.9		112.6	698.9	Dry	135.8	675.7		75.5	678.9	Dry	88.6	665.8	
2/15/2017	770.1		73.9	678.0		46.8	705.1		112.6	698.9	Dry	135.7	675.8		75.5	678.9	Dry	88.6	665.8	
2/22/2017	771.8	4.17	73.9	678.0		46.7	705.2		112.6	698.9	Dry	135.7	675.8		75.5	678.9	Dry	88.6	665.8	
3/1/2017	771.9		73.9	678.0		46.7	705.2		112.6	698.9	Dry	135.7	675.8		75.5	678.9	Dry	88.6	665.8	
3/8/2017	771.2		73.9	678.0		46.7	705.2		112.6	698.9	Dry	135.8	675.7		75.5	678.9	Dry	88.6	665.8	
3/15/2017	770.6		74.1	677.8		47.6	704.3		112.3	699.2		135.9	675.6		75.5	678.9	Dry	88.6	665.8	
3/22/2017	769.6		74.0	677.9		48.5	703.4		112.6	698.9	Dry	135.9	675.6		75.5	678.9	Dry	88.6	665.8	
3/29/2017	768.4	0.13	73.9	678.0		48.7	703.2		112.6	698.9	Dry	135.9	675.6		75.5	678.9	Dry	88.6	665.8	
4/5/2017	769.1		73.9	678.0		48.7	703.2		112.6	698.9	Dry	135.9	675.6		75.5	678.9	Dry	88.6	665.8	
4/12/2017	768.0		73.9	678.0		48.8	703.1		111.9	699.6		135.9	675.6		75.5	678.9	Dry	88.6	665.8	
4/19/2017	767.9		73.9	678.0		49.3	702.6		111.8	699.7		135.9	675.6		75.5	678.9	Dry	88.6	665.8	
4/26/2017	767.7	0.07	73.9	678.0		49.3	702.6		111.9	699.6		135.9	675.6		75.5	678.9	Dry	88.6	665.8	
5/1/2017	767.4		73.9	678.0		49.3	702.6		111.9	699.6		135.9	675.6		75.5	678.9	Dry	88.6	665.8	
5/10/2017	766.5		73.9	678.0		49.6	702.3		111.6	699.9		135.6	675.9		75.5	678.9	Dry	88.6	665.8	
5/17/2017	765.9		73.9	678.0		50.0	701.9		111.5	700.0		135.6	675.9		75.5	678.9	Dry	88.9	665.5	Dry
5/24/2017	765.7		73.9	678.0		50.0	701.9		111.5	700.0		135.6	675.9		75.5	678.9	Dry	88.9	665.5	Dry
5/30/2017	765.5	0.36	73.9	678.0		49.9	702.0		111.5	700.0		135.6	675.9		75.5	678.9	Dry	88.9	665.5	Dry
6/7/2017	765.3		73.9	678.0		50.2	701.7		111.5	700.0		135.6	675.9		75.5	678.9	Dry	88.9	665.5	Dry
6/14/2017	765.1		73.9	678.0		50.4	701.5		111.4	700.1		135.6	675.9		75.5	678.9	Dry	88.9	665.5	Dry
6/21/2017	764.8		73.9	678.0		50.7	701.2		111.4	700.1		135.7	675.8		75.5	678.9	Dry	88.9	665.5	Dry
6/28/2017	764.7	0.05	73.9	678.0		50.7	701.2		111.1	700.4		135.7	675.8		75.5	678.9	Dry	88.9	665.5	Dry
7/5/2017	764.2		73.9	678.0		51.5	700.4		111.1	700.4		135.7	675.8		75.5	678.9	Dry	89.0	665.4	Dry
7/12/2017	763.8		73.9	678.0		51.7	700.2		111.3	700.2		135.7	675.8		75.5	678.9	Dry	89.0	665.4	Dry
7/19/2017	763.2		73.9	678.0		51.8	700.1		111.3	700.2		135.7								

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			R-5 Upper			R-5 Lower			R-6 Upper			R-6 Lower			R-7 Upper			R-7 Lower		
Top Ref. Elev. (ft)			752.400			752.400			812.200			812.200			750.700			750.800		
Top Ref. Elev. (ft) After 5/21/2012			751.920			751.930			811.520			811.510			754.355			754.370		
Tip Elev. (ft)			676.920			654.430			700.020			674.510			677.200			664.700		
Total Depth (ft)			75.0			97.5			111.5			137.0			73.5			86.1		
Total Depth (ft) After 5/21/2012			75.0			97.5			111.5			137.0			77.2			89.7		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
R-5 Upper						R-5 Lower			R-6 Upper			R-6 Lower			R-7 Upper			R-7 Lower		
1/3/2018	753.1		74.0	677.9		55.0	696.9		111.0	700.5		135.8	675.7		75.5	678.9	Dry	88.8	665.6	Dry
1/10/2018	753.1		73.9	678.0		53.9	698.0		111.0	700.5		135.8	675.7		75.5	678.9	Dry	88.8	665.6	Dry
1/17/2018	753.0		74.0	677.9		51.1	700.8		111.0	700.5		135.8	675.7		75.5	678.9	Dry	88.8	665.6	Dry
1/24/2018	752.8		74.0	677.9		50.5	701.4		111.0	700.5		135.8	675.7		75.5	678.9	Dry	88.8	665.6	Dry
1/30/2018	752.6	1.8	74.0	677.9		49.5	702.4		111.0	700.5		135.8	675.7		75.5	678.9	Dry	88.8	665.6	Dry
2/7/2018	752.3		74.0	677.9		49.5	702.4		111.0	700.5		135.8	675.7		75.5	678.9	Dry	88.8	665.6	Dry
2/14/2018	751.8		73.9	678.0		50.2	701.7		111.0	700.5		135.8	675.7		75.4	679.0		88.4	666.0	
2/21/2018	750.2		73.9	678.0		50.2	701.7		111.0	700.5		135.8	675.7		75.4	679.0		88.4	666.0	
2/27/2018	750.3	0.6	73.9	678.0		50.4	701.5		111.0	700.5		135.8	675.7		75.4	679.0		88.4	666.0	
3/7/2018	750.2		73.9	678.0		50.4	701.5		111.0	700.5		135.8	675.7		75.4	679.0		88.4	666.0	
3/15/2018	750.1		73.9	678.0		50.6	701.3		111.0	700.5		135.8	675.7		77.5	676.9	Dry	88.4	666.0	
3/21/2018	750.8		73.9	678.0		50.8	701.1		111.0	700.5		135.8	675.7		77.5	676.9	Dry	88.4	666.0	
3/28/2018	750.9	0.6	73.9	678.0		50.9	701.0		101.1	710.4		135.8	675.7		77.5	676.9	Dry	88.4	666.0	
4/4/2018	751.7		73.9	678.0		50.9	701.0		111.2	700.3		135.8	675.7		77.5	676.9	Dry	88.4	666.0	
4/11/2018	751.7		73.9	678.0		51.1	700.8		111.4	700.1		135.8	675.7		77.5	676.9	Dry	88.5	665.9	
4/18/2018	750.8		73.9	678.0		51.3	700.6		111.3	700.2		135.8	675.7		77.5	676.9	Dry	88.5	665.9	
4/25/2018	749.5	0.1	73.9	678.0		51.4	700.5		111.4	700.1		135.8	675.7		77.5	676.9	Dry	88.5	665.9	
5/1/2018	750.5		73.9	678.0		51.4	700.5		111.4	700.1		135.8	675.7		77.5	676.9	Dry	88.5	665.9	
5/8/2018	749.4		73.9	678.0		51.5	700.4		111.4	700.1		135.8	675.7		77.5	676.9	Dry	88.5	665.9	
5/15/2018	748.3		73.9	678.0		51.6	700.3		111.3	700.2		135.8	675.7		77.5	676.9	Dry	88.5	665.9	
5/22/2018	747.0		73.9	678.0		51.7	700.2		111.3	700.2		135.8	675.7		77.5	676.9	Dry	88.5	665.9	
5/29/2018	745.6	0.3	73.9	678.0		51.8	700.1		111.2	700.3		135.8	675.7		77.5	676.9	Dry	88.5	665.9	
6/6/2018	744.7		74.0	677.9		51.8	700.1		111.2	700.3		135.8	675.7		77.5	676.9	Dry	88.5	665.9	
6/13/2018	743.7		74.2	677.7		51.9	700.0		111.2	700.3		135.8	675.7		77.5	676.9	Dry	88.7	665.7	Dry
6/20/2018	742.5		74.2	677.7		51.9	700.0		111.2	700.3		135.8	675.7		77.5	676.9	Dry	88.7	665.7	Dry
6/27/2018	741.2	0.0	74.2	677.7		52.1	699.8		111.2	700.3		135.8	675.7		77.5	676.9	Dry	88.7	665.7	Dry
7/5/2018	739.8		74.2	677.7		52.1	699.8		111.2	700.3		135.8	675.7		77.5	676.9	Dry	88.7	665.7	Dry
7/11/2018	738.7		74.2	677.7		52.2	699.7		111.2	700.3		135.8	675.7		77.5	676.9	Dry	88.7	665.7	Dry
7/18/2018	738.5		74.2	677.7		52.3	699.6		111.3	700.2		135.9	675.6		77.5	676.9	Dry</			

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			No. 1			No. 2			No. 3			No. 4			No. 5		
Top Ref. Elev. (ft)			811.500			697.500			696.000			698.000			703.500		
Top Ref. Elev. (ft) After 5/21/2012			811.510			699.835			699.090			700.345			706.935		
Tip Elev. (ft)			695.310			677.700			654.000			654.000			655.500		
Total Depth (ft)			116.2			19.8			42.0			44.0			48.0		
Total Depth (ft) After 5/21/2012			116.2			22.1			45.1			46.3			51.4		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
			No. 1			No. 2			No. 3			No. 4			No. 5		
1/8/2009	779.3		103.4	708.1	Wet	19.4	678.1	Dry									
1/19/2009	778.5		103.0	708.5	Wet	19.4	678.1	Dry									
1/29/2009	778.3	0.38	102.5	709.0	Wet	19.4	678.1	Dry									
2/12/2009	779.8		101.7	709.8	Wet	19.4	678.1	Dry									
2/19/2009	781.3		101.5	710.0	Wet	19.4	678.1	Dry									
2/27/2009	782.2	4.33	101.4	710.1	Wet	19.4	678.1	Dry									
3/10/2009	782.7		101.4	710.1	Wet	19.4	678.1	Dry									
3/20/2009	782.4		101.5	710.0	Wet	19.4	678.1	Dry									
3/25/2009	782.2	0.43	101.4	710.1	Wet	19.4	678.1	Dry									
4/4/2009	785.3		101.4	710.1	Wet	19.4	678.1	Dry									
4/13/2009	788.5		100.0	711.5	Wet	19.4	678.1	Dry									
4/21/2009	790.5		98.3	713.2	Wet	19.4	678.1	Dry									
4/26/2009	791.2	0.00	97.8	713.7	Wet	19.4	678.1	Dry									
5/4/2009	791.3		95.8	715.7	Wet	19.4	678.1	Dry									
5/13/2009	790.6		94.4	717.1	Wet	19.4	678.1	Dry									
5/21/2009	789.9		93.9	717.6	Wet	19.4	678.1	Dry									
5/30/2009	789.3	0.00	93.1	718.4	Wet	19.4	678.1	Dry									
6/8/2009	788.7		93.1	718.4	Wet	19.4	678.1	Dry									
6/17/2009	788.2		93.2	718.3	Wet	19.4	678.1	Dry									
6/27/2009	787.6	0.00	95.2	716.3	Wet	19.4	678.1	Dry									
7/7/2009	786.8		94.9	716.6	Wet	19.4	678.1	Dry									
7/15/2009	786.1		94.6	716.9	Wet	19.4	678.1	Dry									
7/22/2009	785.5		94.4	717.1	Wet	19.4	678.1	Dry									
7/30/2009	784.7	0.00	94.1	717.4	Wet	19.4	678.1	Dry									
8/8/2009	783.9		94.4	717.1	Wet	19.4	678.1	Dry									
8/15/2009	783.3		94.5	717.0	Wet	19.4	678.1	Dry									
8/26/2009	782.3	0.00	94.8	716.7	Wet	19.4	678.1	Dry									
9/5/2009	781.5		95.0	716.5	Wet	19.4	678.1	Dry									
9/12/2009	780.8		95.1	716.4	Wet	19.4	678.1	Dry									
9/19/2009	780.2		95.3	716.2	Wet	19.4	678.1	Dry									
9/28/2009	779.5	0.00	95.5	716.0	Wet	19.4	678.1	Dry									
10/8/2009	778.5		95.7	715.8	Wet	19.4	678.1	Dry									
10/19/2009	777.8		96.0	715.5	Wet	19.4	678.1	Dry									
10/30/2009	776.8	0.24	96.4	715.1	Wet	19.4	678.1	Dry									
11/9/2009	776.1		96.5	715.0	Wet	19.4	678.1	Dry									
11/20/2009	775.4		96.9	714.6	Wet	19.4	678.1	Dry									
11/28/2009	774.9	0.00	97.2	714.3	Wet	19.4	678.1	Dry									
12/9/2009	774.6		97.6	713.9	Wet	19.4	678.1	Dry									
12/18/2009	774.6		97.8	713.7	Wet	19.4	678.1	Dry									
12/29/2009	774.3	3.56	98.2	713.3	Wet	19.4	678.1	Dry									

Notes:

Elevations are in feet relative to NAVD88 datum; Elev. = elevation; ft = feet; Ref. = reference; W.S. = water surface

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			No. 1			No. 2			No. 3			No. 4			No. 5		
Top Ref. Elev. (ft)			811.500			697.500			696.000			698.000			703.500		
Top Ref. Elev. (ft) After 5/21/2012			811.510			699.835			699.090			700.345			706.935		
Tip Elev. (ft)			695.310			677.700			654.000			654.000			655.500		
Total Depth (ft)			116.2			19.8			42.0			44.0			48.0		
Total Depth (ft) After 5/21/2012			116.2			22.1			45.1			46.3			51.4		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
			No. 1			No. 2			No. 3			No. 4			No. 5		
1/9/2010	773.9		98.2	713.3	Wet	19.4	678.1	Dry									
1/17/2010	773.6		98.4	713.1	Wet	19.4	678.1	Dry									
1/28/2010	779.9	7.84	98.4	713.1	Wet	19.4	678.1	Dry									
2/4/2010	780.2		98.0	713.5	Wet	19.4	678.1	Dry									
2/12/2010	783.4		97.9	713.6	Wet	19.4	678.1	Dry									
2/19/2010	784.0		97.7	713.8	Wet	19.4	678.1	Dry									
2/26/2010	784.5	2.69	97.6	713.9	Wet	19.4	678.1	Dry									
3/6/2010	785.6		97.4	714.1	Wet	19.3	678.2	Dry									
3/15/2010	786.2		96.9	714.6	Wet	19.3	678.2	Dry									
3/16/2010	786.3		96.8	714.7	Wet	19.3	678.2	Dry									
3/24/2010	786.2	2.03	96.0	715.5	Wet	19.3	678.2	Dry									
4/2/2010	785.8		95.0	716.5	Wet	19.3	678.2	Dry									
4/4/2010	785.8		95.0	716.5	Wet	19.3	678.2	Dry									
4/12/2010	787.4		95.0	716.5	Wet	19.3	678.2	Dry									
4/20/2010	790.1		95.0	716.5	Wet	19.3	678.2	Dry									
4/28/2010	792.6	1.19	95.0	716.5	Wet	19.3	678.2	Dry									
5/14/2010	792.4		93.3	718.2	Wet	19.3	678.2	Dry									
5/21/2010	792.1		91.9	719.6	Wet	19.3	678.2	Dry									
5/29/2010	791.7	0.00	89.4	722.1	Wet	19.3	678.2	Dry									
6/8/2010	791.0		88.9	722.6	Wet	19.3	678.2	Dry									
6/15/2010	790.6		88.7	722.8	Wet	19.3	678.2	Dry									
6/22/2010	790.1		88.5	723.0	Wet	19.3	678.2	Dry									
6/29/2010	789.7	0.00	88.4	723.1	Wet	19.3	678.2	Dry									
7/8/2010	789.2		88.4	723.1	Wet	19.3	678.2	Dry									
7/16/2010	788.7		88.5	723.0	Wet	19.3	678.2	Dry									
7/23/2010	788.3		88.6	722.9	Wet	19.3	678.2	Dry									
7/31/2010	787.7	0.00	88.7	722.8	Wet	19.3	678.2	Dry									
8/7/2010	787.3		89.1	722.4	Wet	19.3	678.2	Dry									
8/15/2010	786.7		89.3	722.2	Wet	19.3	678.2	Dry									
8/23/2010	786.1		89.5	722.0	Wet	19.3	678.2	Dry									
8/29/2010	785.6	0.00	89.7	721.8	Wet	19.3	678.2	Dry									
9/8/2010	784.9		90.0	721.5	Wet	19.3	678.2	Dry									
9/17/2010	784.2		90.3	721.2	Wet	19.3	678.2	Dry									
9/27/2010	783.5	0.00	90.6	720.9	Wet	19.3	678.2	Dry									
10/8/2010	782.8		90.8	720.7	Wet	19.3	678.2	Dry									
10/18/2010	782.2		91.2	720.3	Wet	19.3	678.2	Dry									
10/28/2010	782.0	1.76	91.5	720.0	Wet	19.3	678.2	Dry									
11/4/2010	781.7		91.7	719.8	Wet	19.3	678.2	Dry									
11/15/2010	781.1		91.8	719.7	Wet	19.3	678.2	Dry									
11/26/2010	780.8	1.33	92.0	719.5	Wet	19.3	678.2	Dry									
12/8/2010	780.5		92.1	719.4	Wet	19.3	678.2	Dry									
12/16/2010	780.4		92.3	719.2	Wet	19.3	678.2	Dry									
12/30/2010	792.6	11.72	89.8	721.7	Wet												

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			No. 1			No. 2			No. 3			No. 4			No. 5		
Top Ref. Elev. (ft)			811.500			697.500			696.000			698.000			703.500		
Top Ref. Elev. (ft) After 5/21/2012			811.510			699.835			699.090			700.345			706.935		
Tip Elev. (ft)			695.310			677.700			654.000			654.000			655.500		
Total Depth (ft)			116.2			19.8			42.0			44.0			48.0		
Total Depth (ft) After 5/21/2012			116.2			22.1			45.1			46.3			51.4		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
			No. 1			No. 2			No. 3			No. 4			No. 5		
1/6/2011	792.2		89.8	721.7	Wet												
1/7/2011	792.2		89.8	721.7	Wet	20.1	677.4	Dry									
1/17/2011	792.0		87.2	724.3	Wet	20.0	677.5	Dry									
1/27/2011	791.8	1.11	87.5	724.0	Wet	20.0	677.5	Dry									
2/5/2011	791.8		87.0	724.5	Wet	20.0	677.5	Dry									
2/15/2011	791.8		86.8	724.7	Wet	20.0	677.5	Dry									
2/23/2011	792.2	2.87	86.3	725.2	Wet	20.0	677.5	Dry									
3/8/2011	792.1		85.8	725.7	Wet	20.0	677.5	Dry									
3/19/2011	791.8		85.5	726.0	Wet	20.0	677.5	Dry									
3/30/2011	791.5	3.23	85.1	726.4	Wet	20.0	677.5	Dry									
4/7/2011	792.1		85.0	726.5	Wet	19.9	677.6										
4/16/2011	792.5		84.9	726.6	Wet	19.7	677.8										
4/23/2011	792.6		84.8	726.7	Wet	19.6	677.9										
4/30/2011	792.6	0.00	84.7	726.8	Wet	19.6	677.9										
5/9/2011	792.4		84.8	726.7	Wet	19.6	677.9										
5/16/2011	792.4		84.8	726.7	Wet	19.6	677.9										
5/24/2011	792.4		84.9	726.6	Wet	19.6	677.9										
5/31/2011	792.4	0.81	85.0	726.5	Wet	19.6	677.9										
6/8/2011	792.1		85.0	726.5	Wet	19.6	677.9										
6/16/2011	791.9		85.2	726.3	Wet	19.6	677.9										
6/23/2011	791.8		85.4	726.1	Wet	19.6	677.9										
6/30/2011	791.6	0.00	85.5	726.0	Wet	19.6	677.9										
7/8/2011	791.4		85.4	726.1	Wet	19.6	677.9										
7/14/2011	791.2		85.4	726.1	Wet	19.6	677.9										
7/21/2011	790.9		85.6	725.9	Wet	19.6	677.9										
7/30/2011	790.4	0.00	85.7	725.8	Wet	19.6	677.9										
8/9/2011	789.9		86.3	725.2	Wet	19.6	677.9										
8/15/2011	789.7		86.8	724.7	Wet	19.6	677.9										
8/24/2011	789.0		87.1	724.4	Wet	19.6	677.9										
9/1/2011	788.7	0.00	87.3	724.2	Wet	19.6	677.9										
9/9/2011	787.9		87.5	724.0	Wet	19.6	677.9										
9/16/2011	787.3		87.8	723.7	Wet	19.6	677.9										
9/23/2011	787.0		88.2	723.3	Wet	19.6	677.9										
9/29/2011	786.8	0.08	88.6	722.9	Wet	19.6	677.9										
10/8/2011	786.6		88.7	722.8	Wet	19.6	677.9										
10/15/2011	786.4		88.8	722.7	Wet	19.6	677.9										
10/26/2011	786.0	1.29	90.0	721.5	Wet	18.1	679.4										
11/5/2011	785.5		90.2	721.3		18.2	679.3		34.0	662.0		37.0	661.0		36.2	667.3	
11/14/2011	785.4		90.4	721.1		18.4	679.1		34.0	662.0		37.0	661.0		36.2	667.3	
11/22/2011	785.1		90.6	720.9		18.3	679.2		35.0	661.0		37.0	661.0		37.8	665.7	
11/30/2011	785.1	1.79	90.7	720.8		18.2	679.3		36.3	659.7		37.0	661.0		39.0	664.5	
12/9/2011	784.8		90.8	720.7		18.3	679.2		36.3	659.7		37.0	661.0		39.0	664.5	
12/17/2011	784.6		90.9	720.6		18.3	679.2		36.3	659.7		37.0	661.0		39.0	664.5	
12/22/2011	784.5		91.1	720.4		18.4	679.1		36.3	659.7							

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			No. 1			No. 2			No. 3			No. 4			No. 5		
Top Ref. Elev. (ft)			811.500			697.500			696.000			698.000			703.500		
Top Ref. Elev. (ft) After 5/21/2012			811.510			699.835			699.090			700.345			706.935		
Tip Elev. (ft)			695.310			677.700			654.000			654.000			655.500		
Total Depth (ft)			116.2			19.8			42.0			44.0			48.0		
Total Depth (ft) After 5/21/2012			116.2			22.1			45.1			46.3			51.4		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
			No. 1			No. 2			No. 3			No. 4			No. 5		
1/7/2012	784.0		91.3	720.2		18.6	678.9		36.3	659.7		37.0	661.0		39.0	664.5	
1/14/2012	783.8		91.4	720.1		18.5	679.0		36.3	659.7		37.0	661.0		39.0	664.5	
1/21/2012	783.6		91.6	719.9		18.6	678.9		36.3	659.7		37.0	661.0		39.0	664.5	
1/28/2012	783.6	1.72	91.8	719.7		18.8	678.7		36.3	659.7		37.0	661.0		39.0	664.5	
2/7/2012	783.4		89.0	722.5		18.4	679.1		36.4	659.6		37.0	661.0		39.0	664.5	
2/15/2012	783.4		90.0	721.5		18.0	679.5		36.4	659.6		37.0	661.0		39.0	664.5	
2/25/2012	783.4	0.62	90.1	721.4		17.8	679.7		36.4	659.6		37.0	661.0		39.0	664.5	
3/5/2012	783.2		90.2	721.3		18.0	679.5		36.4	659.6		37.0	661.0		39.0	664.5	
3/15/2012	782.7		90.4	721.1		18.6	678.9		36.5	659.5		37.0	661.0		39.0	664.5	
3/22/2012	782.6	2.01	90.6	720.9		19.1	678.4		36.5	659.5		37.0	661.0		39.0	664.5	
4/3/2012	782.5		92.6	718.9		19.1	678.4		36.5	659.5		37.0	661.0		39.0	664.5	
4/12/2012	782.1		92.8	718.7		19.1	678.4		36.5	659.5		37.0	661.0		39.0	664.5	
4/21/2012	782.0		93.1	718.4		19.2	678.3		36.5	659.5		37.0	661.0		39.0	664.5	
4/23/2012	781.9	1.32	93.1	718.4		19.2	678.3		36.5	659.5		37.0	661.0		39.0	664.5	
5/1/2012	781.7		93.1	718.4		19.2	678.3		36.5	659.5		37.0	661.0		39.0	664.5	
5/7/2012	781.3		93.0	718.5		19.2	678.3		36.5	659.5		37.0	661.0		39.0	664.5	
5/21/2012	780.9		93.0	718.5		21.6	675.9		36.5	659.5		37.0	661.0		39.0	664.5	
5/25/2012	780.0	0.06	93.0	718.5	New Survey	21.6	678.2	New Survey	39.8	659.3	New Survey	40.2	660.1	New Survey	42.3	664.6	New Survey
6/4/2012	779.6		93.0	718.5		21.6	678.2		36.5	662.6		37.0	663.3		39.0	667.9	
6/13/2012	778.7		93.5	718.0		21.3	678.5		39.8	659.3		40.2	660.1		42.3	664.6	
6/20/2012	778.0		93.7	717.8		21.4	678.4		39.8	659.3		40.2	660.1		42.3	664.6	
6/25/2012	777.3	0.00	93.9	717.6		21.4	678.4		39.8	659.3		40.2	660.1		42.6	664.3	
7/4/2012	776.3		94.1	717.4		21.4	678.4		39.9	659.2		40.3	660.0		42.5	664.4	
7/13/2012	775.7		94.4	717.1		21.3	678.5		39.9	659.2		40.2	660.1		42.4	664.5	
7/20/2012	775.2		95.0	716.5		20.4	679.4		39.9	659.2		40.3	660.0		42.4	664.5	
7/30/2012	775.0	0.10	95.2	716.3		20.4	679.4		40.0	659.1		40.3	660.0		42.4	664.5	
8/8/2012	773.0		95.4	716.1		20.3	679.5		40.0	659.1		40.3	660.0		42.5	664.4	
8/9/2012	772.9		95.4	716.1		20.3	679.5		40.0	659.1		40.3	660.0		42.5	664.4	
8/18/2012	772.0		96.1	715.4		20.3	679.5		40.0	659.1		40.3	660.0		42.4	664.5	
8/27/2012	771.1		96.5	715.0		20.4	679.4		40.0	659.1		40.2	660.1		42.3	664.6	
8/29/2012	770.9	0.00	96.5	715.0		20.4	679.4		40.0	659.1		40.2	660.1		42.3	664.6	
9/8/2012	769.8		96.5	715.0		20.4	679.4		40.0	659.1		40.2	660.1		42.3	664.6	
9/15/2012	768.9		96.5	715.0		20.4	679.4		40.0	659.1		40.2	660.1		42.3	664.6	
9/29/2012	767.8	0.00	96.5	715.0		20.4	679.4		40.0	659.1		40.1	660.2		42.3	664.6	
10/11/2012	766.8		98.0	713.5		20.4	679.4		40.1	659.0		40.1	660.2		42.3	664.6	
10/23/2012	765.9	1.10	99.2	712.3		20.4	679.4		40.1	659.0		40.1	660.2		42.3	664.6	
11/12/2012	764.6</																

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			No. 1			No. 2			No. 3			No. 4			No. 5		
Top Ref. Elev. (ft)			811.500			697.500			696.000			698.000			703.500		
Top Ref. Elev. (ft) After 5/21/2012			811.510			699.835			699.090			700.345			706.935		
Tip Elev. (ft)			695.310			677.700			654.000			654.000			655.500		
Total Depth (ft)			116.2			19.8			42.0			44.0			48.0		
Total Depth (ft) After 5/21/2012			116.2			22.1			45.1			46.3			51.4		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
			No. 1			No. 2			No. 3			No. 4			No. 5		
1/16/2013	770.4		99.0	712.5		20.4	679.4		40.1	659.0		40.1	660.2		42.3	664.6	
1/28/2013	769.9	1.82	101.0	710.5		20.4	679.4		40.4	658.7		40.2	660.1		42.3	664.6	
2/15/2013	769.6		104.0	707.5		20.4	679.4		40.1	659.0		40.2	660.1		42.3	664.6	
2/26/2013	769.4	0.68	107.0	704.5		21.0	678.8		40.4	658.7		40.2	660.1		42.3	664.6	
3/13/2013	768.8		100.0	711.5		20.5	679.3		40.4	658.7		40.0	660.3		42.3	664.6	
3/26/2013	768.6	0.66	100.0	711.5		20.5	679.3		40.4	658.7		40.1	660.2		42.3	664.6	
4/10/2013	771.1		100.0	711.5		20.5	679.3		40.4	658.7		40.1	660.2		42.3	664.6	
4/30/2013	772.2	0.00	100.0	711.5		20.4	679.4		40.4	658.7		40.1	660.2		42.3	664.6	
5/9/2013	771.9		101.3	710.2		21.1	678.7		40.4	658.7		40.1	660.2		42.6	664.3	
5/15/2013	771.7		101.3	710.2		21.1	678.7		40.4	658.7		40.1	660.2		42.6	664.3	
5/22/2013	771.4		101.3	710.2		21.1	678.7		40.4	658.7		40.1	660.2		42.6	664.3	
5/30/2013	771.0	0.00	101.1	710.4		21.1	678.7		40.4	658.7		40.1	660.2		42.6	664.3	
6/6/2013	770.8		101.3	710.2		21.1	678.7		40.4	658.7		40.1	660.2		42.6	664.3	
6/13/2013	769.3		101.3	710.2		21.1	678.7		40.4	658.7		40.1	660.2		42.6	664.3	
6/20/2013	769.0		101.3	710.2		21.1	678.7		40.4	658.7		40.1	660.2		42.6	664.3	
6/26/2013	768.6	0.00	101.3	710.2		21.1	678.7		40.4	658.7		40.1	660.2		42.6	664.3	
7/2/2013	767.8		101.3	710.2		21.1	678.7		40.4	658.7		40.1	660.2		42.6	664.3	
7/10/2013	766.9		101.3	710.2		21.1	678.7		40.4	658.7		40.1	660.2		42.6	664.3	
7/16/2013	766.5		101.4	710.1		21.1	678.7		40.4	658.7		40.1	660.2		42.6	664.3	
7/29/2013	765.2	0.00	101.5	710.0		21.1	678.7		40.4	658.7		40.1	660.2		42.6	664.3	
8/5/2013	764.5		101.7	709.8		21.1	678.7		40.4	658.7		40.1	660.2	Dry	42.6	664.3	Dry
8/12/2013	763.8		101.7	709.8		21.1	678.7		40.4	658.7		40.1	660.2	Dry	42.6	664.3	Dry
8/19/2013	763.3		101.7	709.8		21.1	678.7		40.4	658.7		40.1	660.2	Dry	42.6	664.3	Dry
8/26/2013	762.4	0.00	101.7	709.8		21.1	678.7		40.4	658.7		40.1	660.2	Dry	42.6	664.3	Dry
9/2/2013	761.5		101.7	709.8		21.1	678.7		40.4	658.7		40.1	660.2	Dry	42.6	664.3	Dry
9/10/2013	760.7		102.3	709.2		21.1	678.7		40.4	658.7		40.1	660.2	Dry	42.6	664.3	Dry
9/17/2013	759.9		102.3	709.2		21.1	678.7		40.4	658.7		40.1	660.2	Dry	42.6	664.3	Dry
9/23/2013	759.4		102.3	709.2		21.1	678.7		40.4	658.7		40.1	660.2	Dry	42.6	664.3	Dry
9/30/2013	758.7	0.00	102.6	708.9		21.1	678.7		40.4	658.7		40.1	660.2	Dry	42.6	664.3	Dry
10/7/2013	758.3		102.6	708.9		21.1	678.7		40.4	658.7		40.1	660.2	Dry	42.6	664.3	Dry
10/14/2013	757.6		102.9	708.6		21.1	678.7		40.4	658.7		40.1	660.2	Dry	42.6	664.3	Dry
10/21/2013	756.6		102.9	708.6		21.4	678.4		40.4	658.7		40.1	660.2	Dry	42.6	664.3	Dry
10/28/2013	756.0	0.00	103.0	708.5		21.4	678.4		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
11/4/2013	755.7		103.1	708.4		21.1	678.7		40.6	658.5		40.1	660.2	Dry	42.6	664.3	Dry
11/11/2013	756.1		103.1	708.4		21.1	678.7		40.6	658.5		40.1	660.2	Dry	42.6	664.3	Dry
11/18/2013	755.7		103.4	708.1		20.5	679.3										

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			No. 1			No. 2			No. 3			No. 4			No. 5		
Top Ref. Elev. (ft)			811.500			697.500			696.000			698.000			703.500		
Top Ref. Elev. (ft) After 5/21/2012			811.510			699.835			699.090			700.345			706.935		
Tip Elev. (ft)			695.310			677.700			654.000			654.000			655.500		
Total Depth (ft)			116.2			19.8			42.0			44.0			48.0		
Total Depth (ft) After 5/21/2012			116.2			22.1			45.1			46.3			51.4		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
			No. 1			No. 2			No. 3			No. 4			No. 5		
1/6/2014	754.5		104.0	707.5		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
1/13/2014	755.0		104.2	707.3		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
1/20/2014	754.6		104.2	707.3		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
1/27/2014	754.3	0.00	104.2	707.3		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
2/3/2014	754.1		104.2	707.3		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
2/10/2014	754.7		104.3	707.2		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
2/17/2014	754.5		104.3	707.2		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
2/24/2014	754.2	0.83	104.3	707.2		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
3/3/2014	754.5		104.3	707.2		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
3/10/2014	755.2		104.5	707.0		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
3/19/2014	755.9		104.5	707.0		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
3/25/2014	758.8		104.5	707.0		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
3/29/2014	760.5		104.8	706.7		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
3/31/2014	761.6	1.85	104.8	706.7		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
4/1/2014	762.0		104.6	706.9		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
4/8/2014	764.7		104.6	706.9		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
4/15/2014	766.6		104.6	706.9		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
4/22/2014	768.6		104.6	706.9		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
4/29/2014	770.4	0.88	104.6	706.9		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
5/5/2014	769.7		104.6	706.9		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
5/12/2014	769.0		104.5	707.0		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
5/19/2014	768.0		104.5	707.0		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
5/26/2014	767.1	0.00	104.5	707.0		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
6/2/2014	766.2		104.3	707.2		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
6/9/2014	765.4		104.3	707.2		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
6/16/2014	764.3		104.3	707.2		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
6/23/2014	763.1		104.3	707.2		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
6/27/2014	762.3	0.00	104.3	707.2		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
7/7/2014	760.9		104.3	707.2		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
7/14/2014	760.0		104.3	707.2		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
7/21/2014	759.1		104.4	707.1		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
7/28/2014	757.9	0.06	104.4	707.1		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
8/4/2014	756.8		104.5	707.0		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
8/11/2014	755.6		104.5	707.0		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
8/18/2014	754.7		104.6	706.9		21.5	678.3		40.7	658.4		40.1	660.2	Dry	42.6	664	

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			No. 1			No. 2			No. 3			No. 4			No. 5		
Top Ref. Elev. (ft)			811.500			697.500			696.000			698.000			703.500		
Top Ref. Elev. (ft) After 5/21/2012			811.510			699.835			699.090			700.345			706.935		
Tip Elev. (ft)			695.310			677.700			654.000			654.000			655.500		
Total Depth (ft)			116.2			19.8			42.0			44.0			48.0		
Total Depth (ft) After 5/21/2012			116.2			22.1			45.1			46.3			51.4		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
			No. 1			No. 2			No. 3			No. 4			No. 5		
1/5/2015	751.3		106.3	705.2		21.5	678.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
1/12/2015	751.8		106.3	705.2		21.5	678.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
1/19/2015	752.3		106.3	705.2		21.5	678.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
1/26/2015	752.6	1.48	106.3	705.2		21.5	678.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
2/4/2015	753.1		106.3	705.2		21.5	678.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
2/9/2015	753.3		106.3	705.2		21.5	678.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
2/16/2015	753.8		106.4	705.1		21.5	678.3		41.3	657.8	Dry	40.1	660.2	Dry	42.6	664.3	Dry
2/23/2015	753.9	0.44	106.4	705.1		21.5	678.3		41.3	657.8	Dry	40.1	660.2	Dry	42.6	664.3	Dry
3/2/2015	754.5		106.4	705.1		21.5	678.3		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
3/9/2015	755.0		106.4	705.1		21.5	678.3		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
3/16/2015	755.3		106.5	705.0		21.5	678.3		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
3/23/2015	755.5		106.5	705.0		21.5	678.3		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
3/30/2015	755.7	0.57	106.5	705.0		21.5	678.3		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
4/6/2015	755.6		106.5	705.0		21.5	678.3		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
4/13/2015	755.8		106.5	705.0		21.5	678.3		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
4/20/2015	755.9		106.5	705.0		21.5	678.3		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
4/27/2015	755.9	0.20	106.5	705.0		21.5	678.3		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
5/4/2015	755.6		106.5	705.0		21.5	678.3		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
5/11/2015	755.3		106.5	705.0		21.5	678.3		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
5/18/2015	755.2		106.5	705.0		21.5	678.3		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
5/26/2015	755.3	0.95	106.5	705.0		21.5	678.3		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
6/1/2015	755.2		106.6	704.9		21.5	678.3		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
6/8/2015	755.1		106.6	704.9		21.5	678.3		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
6/15/2015	755.2		106.7	704.8		21.5	678.3		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
6/22/2015	754.8		106.7	704.8		21.5	678.3		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
6/29/2015	754.2	0.00	106.7	704.8		21.5	678.3		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
7/10/2015	753.3		106.8	704.7		21.5	678.3		39.9	659.2	Wet	40.1	660.2	Dry	42.6	664.3	Dry
7/15/2015	753.0		106.8	704.7		21.5	678.3		39.9	659.2	Wet	40.1	660.2	Dry	42.6	664.3	Dry
7/21/2015	752.8		106.8	704.7		21.5	678.3		39.9	659.2	Wet	40.1	660.2	Dry	42.6	664.3	Dry
7/28/2015	752.4	0.00	106.9	704.6		21.5	678.3		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
8/4/2015	752.0		106.9	704.6		21.5	678.3		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
8/11/2015	751.6		106.7	704.8		21.5	678.3		41.2	657.9	Wet	40.1	660.2	Dry	42.6	664.3	Dry
8/18/2015	751.1		106.7	704.8		21.5	678.3		41.2	657.9	Wet	40.1	660.2	Dry	42.6	664.3	Dry
8/25/2015	750.6	0.00	106.7	704.8		21.5	678.3		41.1	658.0	Wet	40.1	660.2	Dry	42.6	664.3	Dry
9/1/2015	749.9		107.0	704.5	</td												

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			No. 1			No. 2			No. 3			No. 4			No. 5		
Top Ref. Elev. (ft)			811.500			697.500			696.000			698.000			703.500		
Top Ref. Elev. (ft) After 5/21/2012			811.510			699.835			699.090			700.345			706.935		
Tip Elev. (ft)			695.310			677.700			654.000			654.000			655.500		
Total Depth (ft)			116.2			19.8			42.0			44.0			48.0		
Total Depth (ft) After 5/21/2012			116.2			22.1			45.1			46.3			51.4		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
			No. 1			No. 2			No. 3			No. 4			No. 5		
1/5/2016	741.7		108.0	703.5		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
1/12/2016	742.3		108.0	703.5		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
1/19/2016	742.0		108.0	703.5		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
1/26/2016	741.8	3.51	108.1	703.4		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
2/2/2016	741.4		108.1	703.4		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
2/9/2016	741.0		108.1	703.4		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
2/16/2016	740.5		108.1	703.4		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
2/23/2016	740.2	0.35	108.1	703.4		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
3/1/2016	739.7		108.1	703.4		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
3/9/2016	739.4		108.2	703.3		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
3/17/2016	739.3		108.2	703.3		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
3/23/2016	739.1		108.3	703.2		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
3/30/2016	738.5	1.59	108.3	703.2		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
4/6/2016	738.0		108.3	703.2		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
4/13/2016	737.6		108.4	703.1		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
4/20/2016	736.9		108.4	703.1		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
4/27/2016	736.2	0.07	108.4	703.1		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
5/4/2016	736.9		108.5	703.0		21.6	678.2		41.3	657.8	Wet	40.1	660.2	Dry	42.6	664.3	Dry
5/11/2016	737.5		108.5	703.0		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
5/18/2016	737.0		108.5	703.0		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
5/25/2016	737.6	1.21	108.5	703.0		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
6/1/2016	737.6		108.5	703.0		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
6/8/2016	737.9		108.5	703.0		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
6/15/2016	738.0		108.5	703.0		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
6/23/2016	737.7		108.6	702.9		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
6/29/2016	737.5	0.00	108.6	702.9		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
7/6/2016	737.4		108.6	702.9		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
7/15/2016	737.4		108.7	702.8		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
7/20/2016	737.1		108.7	702.8		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
7/27/2016	736.7	0.00	108.7	702.8		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
8/3/2016	736.9		108.7	702.8		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
8/10/2016	737.1		108.8	702.7		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
8/17/2016	736.6		108.9	702.6		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
8/24/2016	736.7		108.9	702.6		21.6	678.2		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
8/30/2016	736.7	0.00	108.9	702.6		21.6	678.2		41.3	657.8	Mud						

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			No. 1			No. 2			No. 3			No. 4			No. 5		
Top Ref. Elev. (ft)			811.500			697.500			696.000			698.000			703.500		
Top Ref. Elev. (ft) After 5/21/2012			811.510			699.835			699.090			700.345			706.935		
Tip Elev. (ft)			695.310			677.700			654.000			654.000			655.500		
Total Depth (ft)			116.2			19.8			42.0			44.0			48.0		
Total Depth (ft) After 5/21/2012			116.2			22.1			45.1			46.3			51.4		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
			No. 1			No. 2			No. 3			No. 4			No. 5		
1/4/2017	757.5		109.2	702.3		21.5	678.3		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
1/13/2017	758.1		109.2	702.3		21.5	678.3		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
1/18/2017	758.3		109.2	702.3		21.5	678.3		41.3	657.8	Mud	40.1	660.2	Dry	42.6	664.3	Dry
1/25/2017	758.0	6.73	109.2	702.3		21.5	678.3		39.5	659.6		40.1	660.2	Dry	42.6	664.3	Dry
2/1/2017	769.1		109.2	702.3		21.5	678.3		39.5	659.6		40.1	660.2	Dry	42.6	664.3	Dry
2/8/2017	769.7		108.9	702.6		21.5	678.3		40.2	658.9		40.1	660.2	Dry	42.6	664.3	Dry
2/15/2017	770.1		109.0	702.5		21.5	678.3		40.0	659.1		40.1	660.2	Dry	42.6	664.3	Dry
2/22/2017	771.8	4.17	108.8	702.7		21.5	678.3		40.1	659.0		40.1	660.2	Dry	42.6	664.3	Dry
3/1/2017	771.9		108.8	702.7		21.5	678.3		40.1	659.0		40.1	660.2	Dry	42.6	664.3	Dry
3/8/2017	771.2		108.6	702.9		21.5	678.3		40.1	659.0		40.1	660.2	Dry	42.0	664.9	
3/15/2017	770.6		108.4	703.1		21.5	678.3		40.3	658.8		40.1	660.2	Dry	42.3	664.6	
3/22/2017	769.6		108.3	703.2		21.5	678.3		40.4	658.7		40.1	660.2	Dry	42.3	664.6	
3/29/2017	768.4	0.13	107.9	703.6		21.5	678.3		40.6	658.5		40.1	660.2	Dry	42.6	664.3	Dry
4/5/2017	769.1		107.9	703.6		20.5	679.3		40.6	658.5		40.1	660.2	Dry	42.6	664.3	Dry
4/12/2017	768.0		107.9	703.6		20.5	679.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
4/19/2017	767.9		107.8	703.7		20.5	679.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
4/26/2017	767.7	0.07	107.9	703.6		20.5	679.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
5/1/2017	767.4		107.9	703.6		20.5	679.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
5/10/2017	766.5		107.6	703.9		20.5	679.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
5/17/2017	765.9		107.5	704.0		20.5	679.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
5/24/2017	765.7		107.5	704.0		20.5	679.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
5/30/2017	765.5	0.36	107.5	704.0		20.5	679.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
6/7/2017	765.3		107.5	704.0		20.5	679.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
6/14/2017	765.1		107.3	704.2		20.5	679.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
6/21/2017	764.8		107.2	704.3		20.5	679.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
6/28/2017	764.7	0.05	107.1	704.4		21.0	678.8		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
7/5/2017	764.2		107.1	704.4		20.5	679.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
7/12/2017	763.8		107.1	704.4		20.5	679.3		40.6	658.5	Mud	40.1	660.2	Dry	42.6	664.3	Dry
7/19/2017	763.2		107.1	704.4		20.5	679.3		40.6	658.5	Mud	40.1	660.2	Dry	42.6	664.3	Dry
7/26/2017	762.7	0.00	107.1	704.4		20.5	679.3		40.6	658.5	Mud	40.1	660.2	Dry	42.6	664.3	Dry
8/2/2017	761.9		107.1	704.4		20.5	679.3		40.6	658.5	Mud	40.1	660.2	Dry	42.6	664.3	Dry
8/9/2017	761.6		107.1	704.4		20.5	679.3		40.6	658.5	Mud	40.1	660.2	Dry	42.6	664.3	Dry
8/16/2017	761.2		107.1	704.4		20.5	679.3		40.6	658.5	Mud	40.1	660.2	Dry	42.6	664.3	Dry
8/23/2017	760.6		107.1	704.4		20.5	679.3		40.6	658.5	Mud	40.1	660.2	Dry	42.6	664.3	Dry
8/30/2017	759.8	0.05	107.1	704.4		20.5	679.3		40.6	658.5	Mud	40.1	660.2	Dry	42.6	664.3	Dry

TABLE 1
SANTIAGO CREEK DAM
PIEZOMETER READINGS
JANUARY 2009 THROUGH DECEMBER 2018

Piezometer Number			No. 1			No. 2			No. 3			No. 4			No. 5		
Top Ref. Elev. (ft)			811.500			697.500			696.000			698.000			703.500		
Top Ref. Elev. (ft) After 5/21/2012			811.510			699.835			699.090			700.345			706.935		
Tip Elev. (ft)			695.310			677.700			654.000			654.000			655.500		
Total Depth (ft)			116.2			19.8			42.0			44.0			48.0		
Total Depth (ft) After 5/21/2012			116.2			22.1			45.1			46.3			51.4		
Date	Reservoir W.S. Elev. (ft)	Monthly Rainfall (inch)	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment	Depth to Water (ft)	W.S. Elev. (ft)	Comment
			No. 1			No. 2			No. 3			No. 4			No. 5		
1/3/2018	753.1		107.9	703.6		20.6	679.2		40.6	658.5	Mud	40.1	660.2	Dry	42.6	664.3	Dry
1/10/2018	753.1		107.9	703.6		20.6	679.2		40.6	658.5	Mud	40.1	660.2	Dry	42.6	664.3	Dry
1/17/2018	753.0		107.9	703.6		20.6	679.2		40.6	658.5	Mud	40.1	660.2	Dry	42.6	664.3	Dry
1/24/2018	752.8		107.9	703.6		20.6	679.2		40.6	658.5	Mud	40.1	660.2	Dry	42.6	664.3	Dry
1/30/2018	752.6	1.8	107.9	703.6		20.6	679.2		40.6	658.5	Mud	40.1	660.2	Dry	42.6	664.3	Dry
2/7/2018	752.3		107.9	703.6		20.6	679.2		40.6	658.5	Mud	40.1	660.2	Dry	42.6	664.3	Dry
2/14/2018	751.8		107.9	703.6		20.5	679.3		40.7	658.4		40.1	660.2	Dry	42.6	664.3	Dry
2/21/2018	750.2		108.0	703.5		20.5	679.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
2/27/2018	750.3	0.6	108.1	703.4		20.5	679.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
3/7/2018	750.2		108.1	703.4		20.5	679.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
3/15/2018	750.1		108.2	703.3		20.5	679.3		40.8	658.3		40.1	660.2	Dry	42.6	664.3	Dry
3/21/2018	750.8		108.2	703.3		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	42.6	664.3	Dry
3/28/2018	750.9	0.6	108.2	703.3		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	42.6	664.3	Dry
4/4/2018	751.7		108.2	703.3		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	42.6	664.3	Dry
4/11/2018	751.7		108.3	703.2		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	42.6	664.3	Dry
4/18/2018	750.8		108.3	703.2		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	42.6	664.3	Dry
4/25/2018	749.5	0.1	108.3	703.2		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	42.6	664.3	Dry
5/1/2018	750.5		108.4	703.1		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	42.6	664.3	Dry
5/8/2018	749.4		108.5	703.0		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	42.6	664.3	Dry
5/15/2018	748.3		108.5	703.0		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	42.6	664.3	Dry
5/22/2018	747.0		108.5	703.0		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	42.6	664.3	Dry
5/29/2018	745.6	0.3	108.4	703.1		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	42.6	664.3	Dry
6/6/2018	744.7		108.4	703.1		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	42.6	664.3	Dry
6/13/2018	743.7		108.5	703.0		20.5	679.3		40.9	658.2		40.1	660.2	Dry	42.6	664.3	Dry
6/20/2018	742.5		108.5	703.0		20.5	679.3		40.9	658.2		40.1	660.2	Dry	42.6	664.3	Dry
6/27/2018	741.2	0.0	108.5	703.0		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	42.6	664.3	Dry
7/5/2018	739.8		108.6	702.9		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	43.6	663.3	Dry
7/11/2018	738.7		108.8	702.7		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	43.6	663.3	Dry
7/18/2018	738.5		108.8	702.7		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	43.6	663.3	Dry
7/25/2018	738.4	0.0	108.9	702.6		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	43.6	663.3	Dry
8/1/2018	738.1		108.8	702.7		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	43.6	663.3	Dry
8/8/2018	737.8		108.9	702.6		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	43.6	663.3	Dry
8/15/2018	737.7		108.9	702.6		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	43.6	663.3	Dry
8/22/2018	737.9		108.9	702.6		20.5	679.3		41.0	658.1	Dry	40.1	660.2	Dry	43.6	663.3	Dry
8/29/2018	737.9	0.0	108.9	702.6		20.5	679.3		41.0								

TABLE 2
SANTIAGO CREEK DAM
ELEVATIONS OF BENCHMARK BM-0 AND
SURVEY MONUMENTS BM-1, BM-2, BM-3, BM-4 AND BM-5
1989 THROUGH 2018

Date	BM-0 (ft)	BM-1 (ft)	BM-2 (ft)	BM-3 (ft)	BM-4 (ft)	BM-5 (ft)	Notes
12/21/1989	830.540	811.923	811.768	811.620	815.450	815.610	
10/11/1990	830.538	811.923	811.748	811.613	815.455	815.620	
7/26/1991	830.535	811.918	811.743	811.613	815.458	815.625	
12/20/1991	830.540	811.918	811.745	811.615	815.450	815.620	
8/4/1992	830.535	811.913	811.750	811.613	815.440	815.610	
1/14/1993	830.545	811.913	811.747	811.623	815.445	815.620	
9/15/1993	830.535	811.888	811.728	811.600	815.420	815.600	
1/7/1994	830.540	811.890	811.730	811.600	815.418	815.600	
7/28/1994	830.538	811.893	811.730	811.600	815.415	815.595	
2/6/1995	830.543	811.898	811.730	811.600	815.408	815.590	
6/26/1996	830.538	811.893	811.733	811.600	815.405	815.595	
1/24/1997	830.543	811.905	811.750	811.615	815.403	815.595	
1/16/1998	830.540	811.900	811.748	811.610	815.405	815.600	
1/20/1999	830.540	811.890	811.738	811.608	815.395	815.600	
3/14/2000	830.540	811.897	811.740	811.610	815.395	815.600	
							No survey was done in 2001
1/31/2002	830.540	811.900	811.745	811.610	815.395	815.605	
8/27/2003	830.540	811.890	811.730	811.590	815.400	815.605	
8/2/2004	830.538	811.900	811.745	811.605	815.403	815.610	
2/7/2005	830.545	811.900	811.748	811.613	815.408	815.620	
3/1/2006	830.538	811.898	811.745	811.613	815.400	815.615	
1/9/2007	830.540	811.903	811.750	811.613	815.395	815.610	
5/27/2007	830.540	811.905	811.750	811.615	815.395	815.610	
6/5/2008	830.540	811.900	811.745	811.610	815.390	815.610	
6/15/2009	830.540	811.905	811.750	811.620	815.400	815.630	
5/20/2010	830.540	811.885	811.730	811.600	815.390	815.610	
5/12/2011	830.540	811.895	811.740	811.610	815.400	815.625	
5/21/2012	830.540	811.900	811.743	811.615	815.400	815.630	
6/12/2013	830.540	811.898	811.740	811.603	815.390	815.620	
4/22/2014	830.545	811.898	811.743	811.600	815.385	815.615	
6/5/2015	830.538	811.900	811.740	811.600	815.380	815.610	
7/26/2016	830.540	811.905	811.745	811.605	815.390	815.620	
							No survey was done in 2017
6/11/2018	830.543	811.915	811.758	811.620	815.400	815.630	

Notes:

(1) ft = feet.

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

TABLE 3
SANTIAGO CREEK DAM
NET HORIZONTAL DISPLACEMENTS OF SURVEY MONUMENTS
BM-1, BM-2, BM-3, BM-4, AND BM-5
IN THE NORTH-SOUTH AND EAST-WEST DIRECTIONS
1994 THROUGH 2016

Date	BM-0		BM-1						BM-2						Notes
	Northing	Easting	Northing	N(+)/S(-) Feet	N(+)/S(-) Inches	Easting	E(+)/W(-) Feet	E(+)/W(-) Inches	Northing	N(+)/S(-) Feet	N(+)/S(-) Inches	Easting	E(+)/W(-) Feet	E(+)/W(-) Inches	
1/7/1994	4875.1482	4987.4599	5251.5595	0.0000	0.0000	4711.7814	0.0000	0.0000	5544.9316	0.0000	0.0000	4597.1356	0.0000	0.0000	
7/28/1994	4875.1390	4987.4510	5251.5558	-0.0037	-0.0444	4711.7914	0.0100	0.1200	5544.9194	-0.0122	-0.1464	4597.1528	0.0172	0.2064	
2/6/1995	4875.1388	4987.4534	5251.5540	-0.0055	-0.0660	4711.7765	-0.0049	-0.0588	5544.9218	-0.0098	-0.1176	4597.1224	-0.0132	-0.1584	
6/26/1996	4875.1390	4987.4510	5251.5581	-0.0014	-0.0168	4711.7802	-0.0012	-0.0144	5544.9177	-0.0139	-0.1668	4597.1336	-0.0020	-0.0240	
1/24/1997	4875.1393	4987.4480	5251.5817	0.0222	0.2664	4711.7476	-0.0338	-0.4056	5544.9240	-0.0076	-0.0912	4597.1085	-0.0271	-0.3252	
1/24/1997	4875.1393	4987.4480	5251.5817	0.0222	0.2664	4711.7476	-0.0338	-0.4056	5544.9294	-0.0022	-0.0264	4597.1085	-0.0271	-0.3252	
1/16/1998	4875.1339	4987.4523	5251.5756	0.0161	0.1932	4711.7490	-0.0324	-0.3888	5544.9179	-0.0137	-0.1644	4597.1171	-0.0185	-0.2220	
1/20/1999	4875.1345	4987.4664	5251.5644	0.0049	0.0588	4711.7618	-0.0196	-0.2352	5544.9046	-0.0270	-0.3240	4597.1310	-0.0046	-0.0552	
3/14/2000	4875.1354	4987.4672	5251.5552	-0.0043	-0.0516	4711.7949	0.0135	0.1620	5544.9129	-0.0187	-0.2244	4597.1372	0.0016	0.0192	
															No survey in 2001
1/31/2002	4875.1402	4987.4591	5251.5637	0.0042	0.0504	4711.7851	0.0037	0.0444	5544.9277	-0.0039	-0.0468	4597.1303	-0.0053	-0.0636	
8/27/2003	4875.1394	4987.4669	5251.5584	-0.0011	-0.0132	4711.8109	0.0295	0.3540	5544.9063	-0.0253	-0.3036	4597.1502	0.0146	0.1752	
8/2/2004	4875.1505	4987.4668	5251.5631	0.0036	0.0432	4711.8084	0.0270	0.3240	5544.9111	-0.0205	-0.2460	4597.1466	0.0110	0.1320	
2/7/2005	4875.1387	4987.4644	5251.5589	-0.0006	-0.0072	4711.8047	0.0233	0.2796	5544.9131	-0.0185	-0.2220	4597.1493	0.0137	0.1644	
3/1/2006	4875.1408	4987.4438	5251.5682	0.0087	0.1044	4711.7969	0.0155	0.1860	5544.9260	-0.0056	-0.0672	4597.1397	0.0041	0.0492	
1/9/2007	4875.1424	4987.4575	5251.5562	-0.0033	-0.0396	4711.8050	0.0236	0.2832	5544.9198	-0.0118	-0.1416	4597.1566	0.0210	0.2520	
5/24/2007	4875.1563	4987.4595	5251.5487	-0.0108	-0.1296	4711.8051	0.0237	0.2844	5544.9138	-0.0178	-0.2136	4597.1569	0.0213	0.2556	
6/5/2008	4875.1551	4987.4612	5251.5571	-0.0024	-0.0288	4711.8124	0.0310	0.3720	5544.9157	-0.0159	-0.1908	4597.1596	0.0240	0.2880	
6/15/2009	4875.1524	4987.4579	5251.5663	0.0068	0.0816	4711.8019	0.0205	0.2460	5544.9262	-0.0054	-0.0648	4597.1518	0.0162	0.1944	
5/20/2010	4875.1519	4987.4627	5251.5630	0.0035	0.0420	4711.8057	0.0243	0.2916	5544.9190	-0.0126	-0.1512	4597.1572	0.0216	0.2592	
5/12/2011	4875.1504	4987.4583	5251.5628	0.0033	0.0396	4711.8002	0.0188	0.2256	5544.9210	-0.0106	-0.1272	4597.1516	0.0160	0.1920	
5/21/2012	4875.1476	4987.4561	5251.5614	0.0019	0.0228	4711.7990	0.0176	0.2112	5544.9194	-0.0122	-0.1464	4597.1528	0.0172	0.2064	
6/12/2013	4875.1484	4987.4575	5251.5621	0.0026	0.0312	4711.7982	0.0168	0.2016	5544.9214	-0.0102	-0.1224	4597.1554	0.0198	0.2376	
4/22/2014	4875.1527	7987.4554	5251.5636	0.0041	0.0492	4711.8022	0.0208	0.2496	5544.9230	-0.0086	-0.1032	4597.1542	0.0186	0.2232	
6/5/2015	4875.1513	4987.4590	5251.5720	0.0125	0.1500	4711.8095	0.0281	0.3372	5544.9284	-0.0032	-0.0384	4597.1666	0.0310	0.3720	
7/26/2016	4875.1543	4987.4587	5251.5631	0.0036	0.0432	4711.8084	0.0270	0.3240	5544.9185	-0.0131	-0.1572	4597.1616	0.0260	0.3120	
															No survey in 2017
6/11/2018	4875.1642	4987.4505	5251.5627	0.0032	0.0384	4711.8173	0.0359	0.4308	5544.9252	-0.0064	-0.0768	4597.1689	0.0333	0.3996	

Notes:

(1) Displacement values are provided in both feet and inches.

(2) Positive values represent displacement downstream (North) or to the right (East).

TABLE 3
SANTIAGO CREEK DAM
NET HORIZONTAL DISPLACEMENTS OF SURVEY MONUMENTS
BM-1, BM-2, BM-3, BM-4, AND BM-5
IN THE NORTH-SOUTH AND EAST-WEST DIRECTIONS
1994 THROUGH 2016

Date	BM-3						BM-4						Notes
	Northing	N(+)/S(-) Feet	N(+)/S(-) Inches	Easting	E(+)/W(-) Feet	E(+)/W(-) Inches	Northing	N(+)/S(-) Feet	N(+)/S(-) Inches	Easting	E(+)/W(-) Feet	E(+)/W(-) Inches	
1/7/1994	5892.2253	0.0000	0.0000	4555.7198	0.0000	0.0000	6204.5658	0.0000	0.0000	4455.1964	0.0000	0.0000	
7/28/1994	5892.2209	-0.0044	-0.0528	4555.7112	-0.0086	-0.1032	6204.5514	-0.0144	-0.1728	4455.1889	-0.0075	-0.0900	
2/6/1995	5892.2256	0.0003	0.0036	4555.6981	-0.0217	-0.2604	6204.5291	-0.0367	-0.4404	4455.1638	-0.0326	-0.3912	
6/26/1996	5892.2141	-0.0112	-0.1344	4555.7200	0.0002	0.0024	6204.5174	-0.0484	-0.5808	4455.1621	-0.0343	-0.4116	
1/24/1997	5892.2387	0.0134	0.1608	4555.7132	-0.0066	-0.0792	6204.5356	-0.0302	-0.3624	4455.1538	-0.0426	-0.5112	
1/24/1997	5892.2387	0.0134	0.1608	4555.7132	-0.0066	-0.0792	6204.5356	-0.0302	-0.3624	4455.1538	-0.0426	-0.5112	
1/16/1998	5892.2410	0.0157	0.1884	4555.7066	-0.0132	-0.1584	6204.5212	-0.0446	-0.5352	4455.1463	-0.0501	-0.6012	
1/20/1999	5892.2111	-0.0142	-0.1704	4555.7161	-0.0037	-0.0444	6204.5203	-0.0455	-0.5460	4455.1467	-0.0497	-0.5964	
3/14/2000	5892.2303	0.0050	0.0600	4555.7389	0.0191	0.2292	6204.5075	-0.0583	-0.6996	4455.1524	-0.0440	-0.5280	
													No survey in 2001
1/31/2002	5892.2329	0.0076	0.0912	4555.7106	-0.0092	-0.1104	6204.5311	-0.0347	-0.4164	4455.1488	-0.0476	-0.5712	
8/27/2003	5892.2102	-0.0151	-0.1812	4555.7435	0.0237	0.2844	6204.5134	-0.0524	-0.6288	4455.1849	-0.0115	-0.1380	
8/2/2004	5892.2122	-0.0131	-0.1572	4555.7318	0.0120	0.1440	6204.5130	-0.0528	-0.6336	4455.1816	-0.0148	-0.1776	
2/7/2005	5892.2154	-0.0099	-0.1188	4555.7248	0.0050	0.0600	6204.5365	-0.0293	-0.3516	4455.1534	-0.0430	-0.5160	
3/1/2006	5892.2254	0.0001	0.0012	4555.7090	-0.0108	-0.1296	6204.5365	-0.0293	-0.3516	4455.1534	-0.0430	-0.5160	
1/9/2007	5892.2124	-0.0129	-0.1548	4555.7209	0.0011	0.0132	6204.5121	-0.0537	-0.6444	4455.1504	-0.0460	-0.5520	
5/24/2007	5892.2143	-0.0110	-0.1320	4555.7361	0.0163	0.1956	6204.5247	-0.0411	-0.4932	4455.1517	-0.0447	-0.5364	
6/5/2008	5892.2125	-0.0128	-0.1536	4555.7356	0.0158	0.1896	6204.5228	-0.0430	-0.5160	4455.1596	-0.0368	-0.4416	
6/15/2009	5892.2202	-0.0051	-0.0612	4555.7277	0.0079	0.0948	6204.5290	-0.0368	-0.4416	4455.1709	-0.0255	-0.3060	
5/20/2010	5892.2201	-0.0052	-0.0624	4555.7386	0.0188	0.2256	6204.5391	-0.0267	-0.3204	4455.1593	-0.0371	-0.4452	
5/12/2011	5892.2240	-0.0013	-0.0156	4555.7421	0.0223	0.2676	6204.5347	-0.0311	-0.3732	4455.1542	-0.0422	-0.5064	
5/21/2012	5892.2197	-0.0056	-0.0672	4555.7334	0.0136	0.1632	6204.5292	-0.0366	-0.4392	4455.1567	-0.0397	-0.4764	
6/12/2013	5892.2255	0.0002	0.0024	4555.7359	0.0161	0.1932	6204.5183	-0.0475	-0.5700	4455.1617	-0.0347	-0.4164	
4/22/2014	5892.2344	0.0091	0.1092	4555.7315	0.0117	0.1404	6204.5274	-0.0384	-0.4608	4455.1575	-0.0389	-0.4668	
6/5/2015	5892.2373	0.0120	0.1440	4555.7462	0.0264	0.3168	6204.5346	-0.0312	-0.3744	4455.1613	-0.0351	-0.4212	
7/26/2016	5892.2263	0.0010	0.0120	4555.7355	0.0157	0.1884	6204.5103	-0.0555	-0.6660	4455.1512	-0.0452	-0.5424	
													No survey in 2017
6/11/2018	5892.2294	0.0041	0.0492	4555.7394	0.0196	0.2352	6204.5110	-0.0548	-0.6576	4455.1650	-0.0314	-0.3768	

Notes:

(1) Displacement values are provided in both feet and inches.

(2) Positive values represent displacement downstream (North) or to the right (East).

TABLE 3
SANTIAGO CREEK DAM
NET HORIZONTAL DISPLACEMENTS OF SURVEY MONUMENTS
BM-1, BM-2, BM-3, BM-4, AND BM-5
IN THE NORTH-SOUTH AND EAST-WEST DIRECTIONS
1994 THROUGH 2016

Date	BM-5						Notes
	Northing	N(+)/S(-) Feet	N(+)/S(-) Inches	Easting	E(+)/W(-) Feet	E(+)/W(-) Inches	
1/7/1994	6327.7984	0.0000	0.0000	4332.9289	0.0000	0.0000	
7/28/1994	6327.7932	-0.0052	-0.0624	4332.9073	-0.0216	-0.2592	
2/6/1995	6327.7972	-0.0012	-0.0144	4332.9375	0.0086	0.1032	
6/26/1996	6327.8029	0.0045	0.0540	4332.9266	-0.0023	-0.0276	
1/24/1997	6327.8061	0.0077	0.0924	4332.9330	0.0041	0.0492	
1/24/1997	6327.8061	0.0077	0.0924	4332.9330	0.0041	0.0492	
1/16/1998	6327.7838	-0.0146	-0.1752	4332.9443	0.0154	0.1848	
1/20/1999	6327.7642	-0.0342	-0.4104	4332.8896	-0.0393	-0.4716	
3/14/2000	6327.7638	-0.0346	-0.4152	4332.8979	-0.0310	-0.3720	
							No survey in 2001
1/31/2002	6327.7805	-0.0179	-0.2148	4332.9378	0.0089	0.1068	
8/27/2003	6327.7616	-0.0368	-0.4416	4332.9312	0.0023	0.0276	
8/2/2004	6327.7582	-0.0402	-0.4824	4332.9289	0.0000	0.0000	
2/7/2005	6327.7694	-0.0290	-0.3480	4332.9112	-0.0177	-0.2124	
3/1/2006	6327.7579	-0.0405	-0.4860	4332.8928	-0.0361	-0.4332	
1/9/2007	6327.7420	-0.0564	-0.6768	4332.9169	-0.0120	-0.1440	
5/24/2007	6327.7413	-0.0571	-0.6852	4332.8931	-0.0358	-0.4296	
6/5/2008	6327.7445	-0.0539	-0.6468	4332.8995	-0.0294	-0.3528	
6/15/2009	6327.7592	-0.0392	-0.4704	4332.9244	-0.0045	-0.0540	
5/20/2010	6327.7667	-0.0317	-0.3804	4332.9125	-0.0164	-0.1968	
5/12/2011	6327.7631	-0.0353	-0.4236	4332.9143	-0.0146	-0.1752	
5/21/2012	6327.7599	-0.0385	-0.4620	4332.9079	-0.0210	-0.2520	
6/12/2013	6327.7438	-0.0546	-0.6552	4332.9160	-0.0129	-0.1548	
4/22/2014	6327.7409	-0.0575	-0.6900	4332.9013	-0.0276	-0.3312	
6/5/2015	6327.7515	-0.0469	-0.5628	4332.9202	-0.0087	-0.1044	
7/26/2016	6327.7394	-0.0590	-0.7080	4332.9182	-0.0107	-0.1284	
							No survey in 2017
6/11/2018	6327.7209	-0.0775	-0.9300	4332.9194	-0.0095	-0.1140	

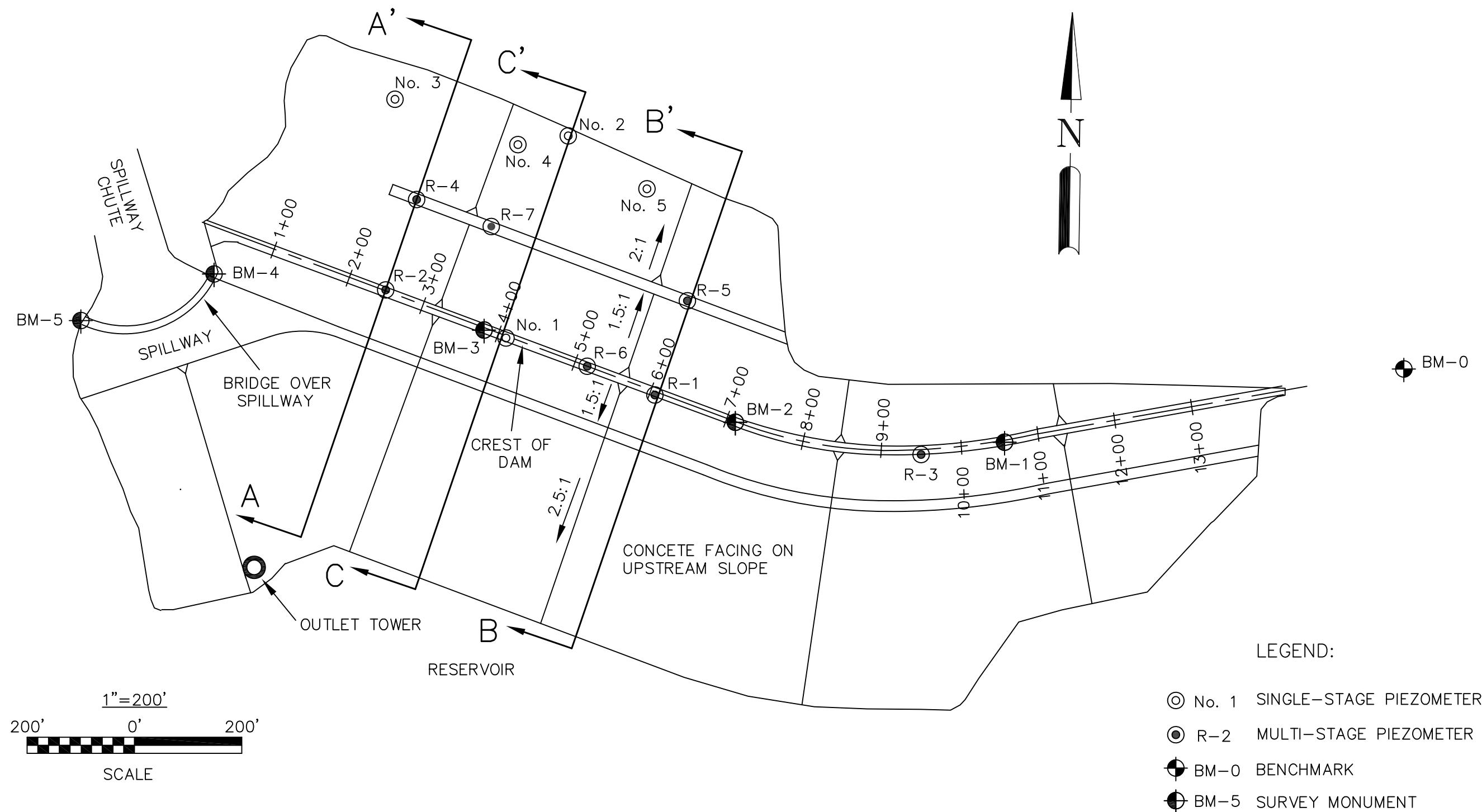
Notes:

(1) Displacement values are provided in both feet and inches.

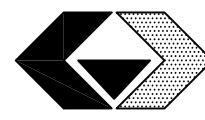
(2) Positive values represent displacement downstream (North) or to the right (East).

**ANNUAL SURVEILLANCE REPORT
JANUARY 2018 THROUGH DECEMBER 2018
SANTIAGO CREEK DAM, DSOD DAM NO. 75-000**

FIGURES



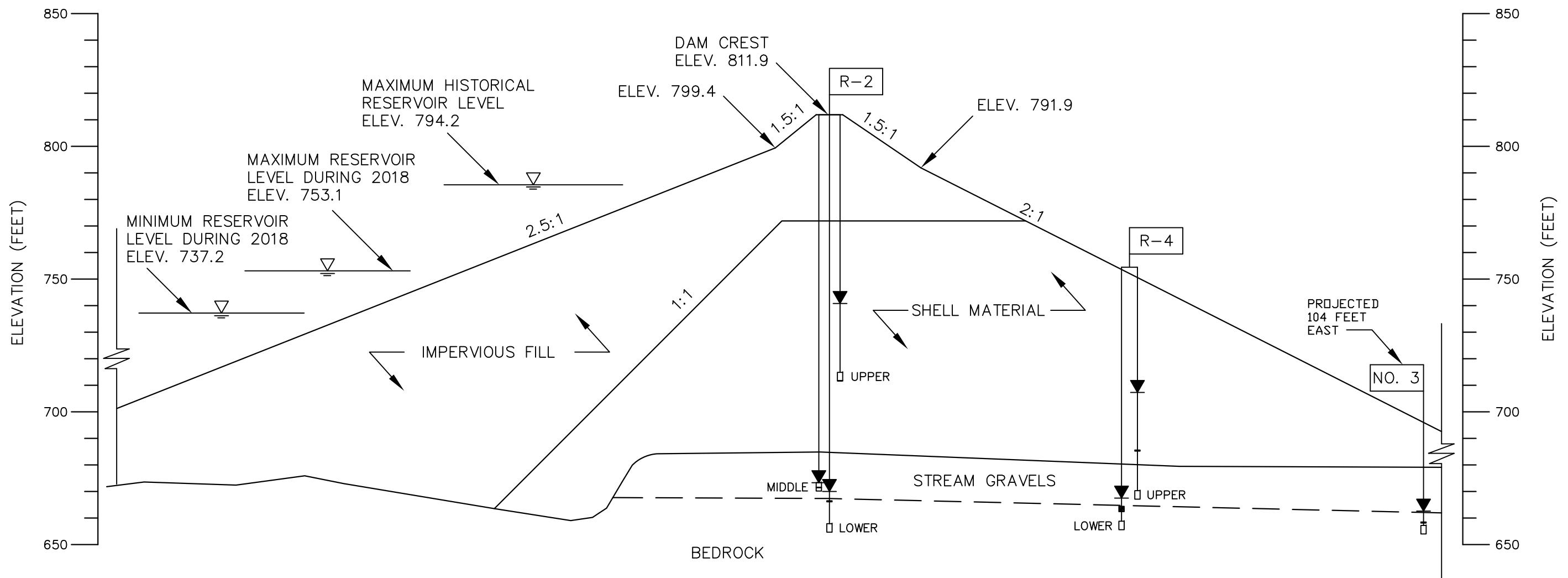
NOTE: SECTIONS A-A', B-B' AND C-C' ARE SHOWN ON FIGURES 1B, 1C AND 1D RESPECTIVELY.



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Engineering & Geotechnical Services
Irvine, California

SANTIAGO CREEK DAM

SITE AND INSTRUMENTATION PLAN		
PROJECT NO.	DATE	FIGURE
397E-IRW	JUNE 2019	1A



SECTION A-A'
MAXIMUM SECTION
(APPROX. STA. 2+50)

40' 0' 40'

 SCALE: 1"=40'
 HORIZONTAL=VERTICAL

NOTES:
1. QUESTIONABLE READINGS ARE NOT SHOWN.
2. LOCATION OF SECTION IS SHOWN ON FIGURE 1A

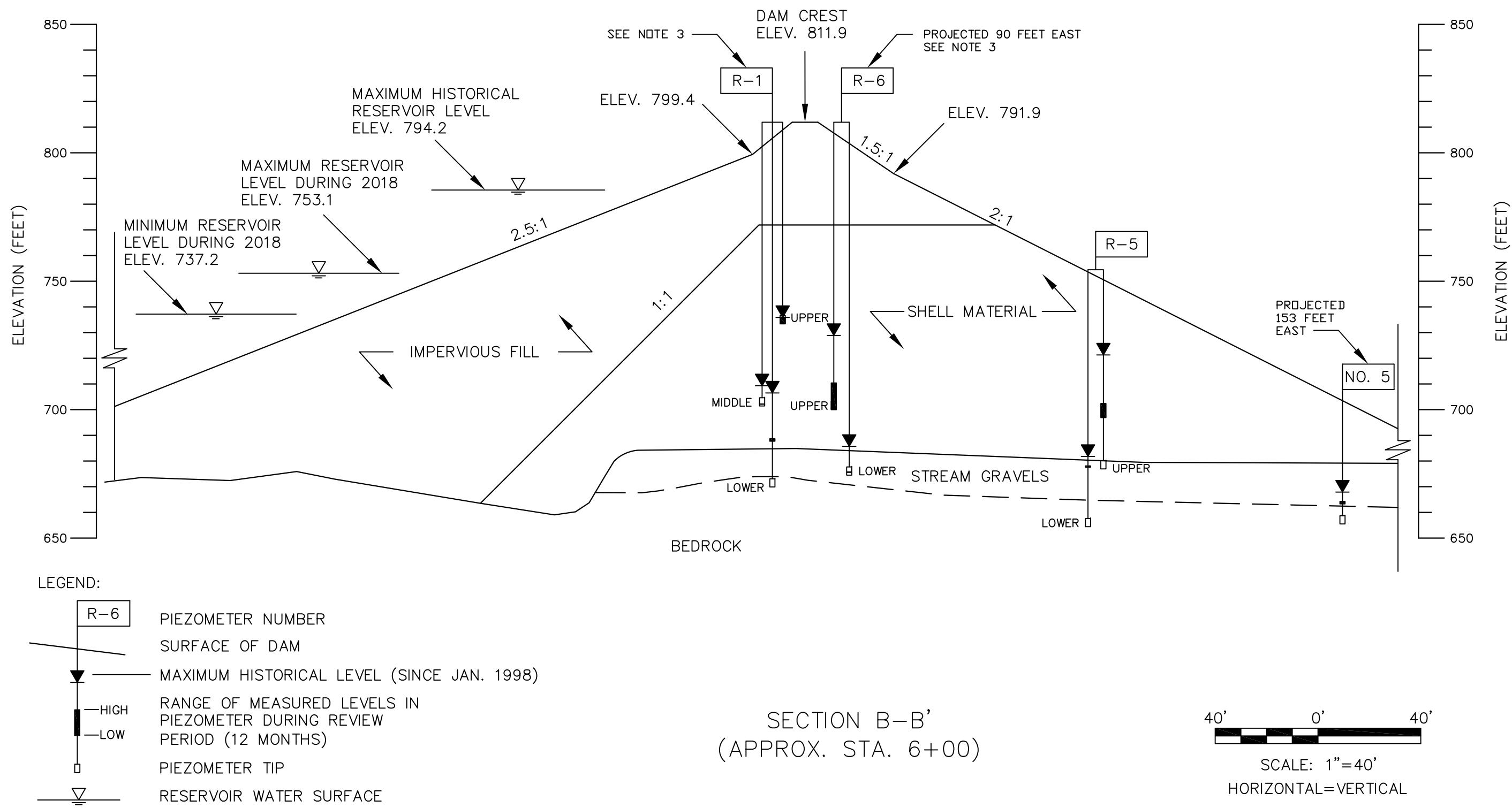


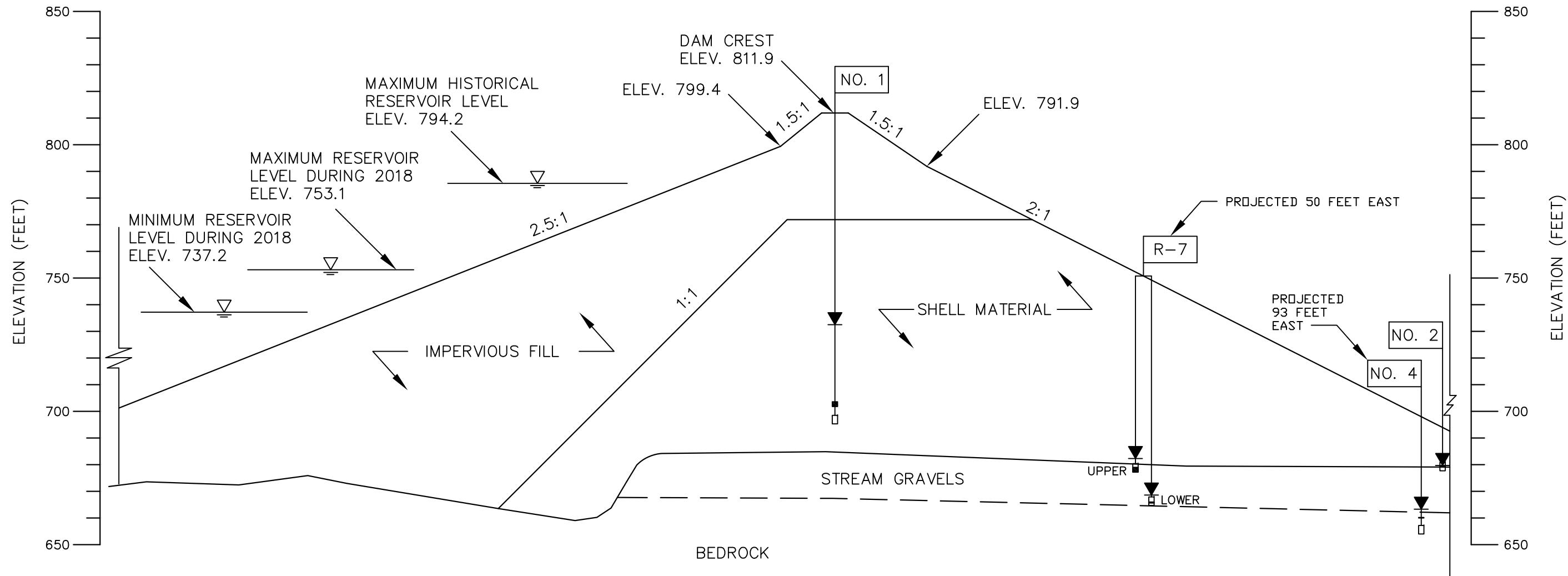
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Irvine, California

SANTIAGO CREEK DAM

SECTION A-A'

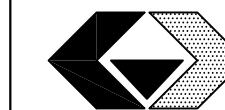
PROJECT NO.	DATE	FIGURE
397E-IRW	JUNE 2019	1B





NOTES:

1. QUESTIONABLE READINGS ARE NOT SHOWN.
2. LOCATION OF SECTION IS SHOWN ON FIGURE 1A.



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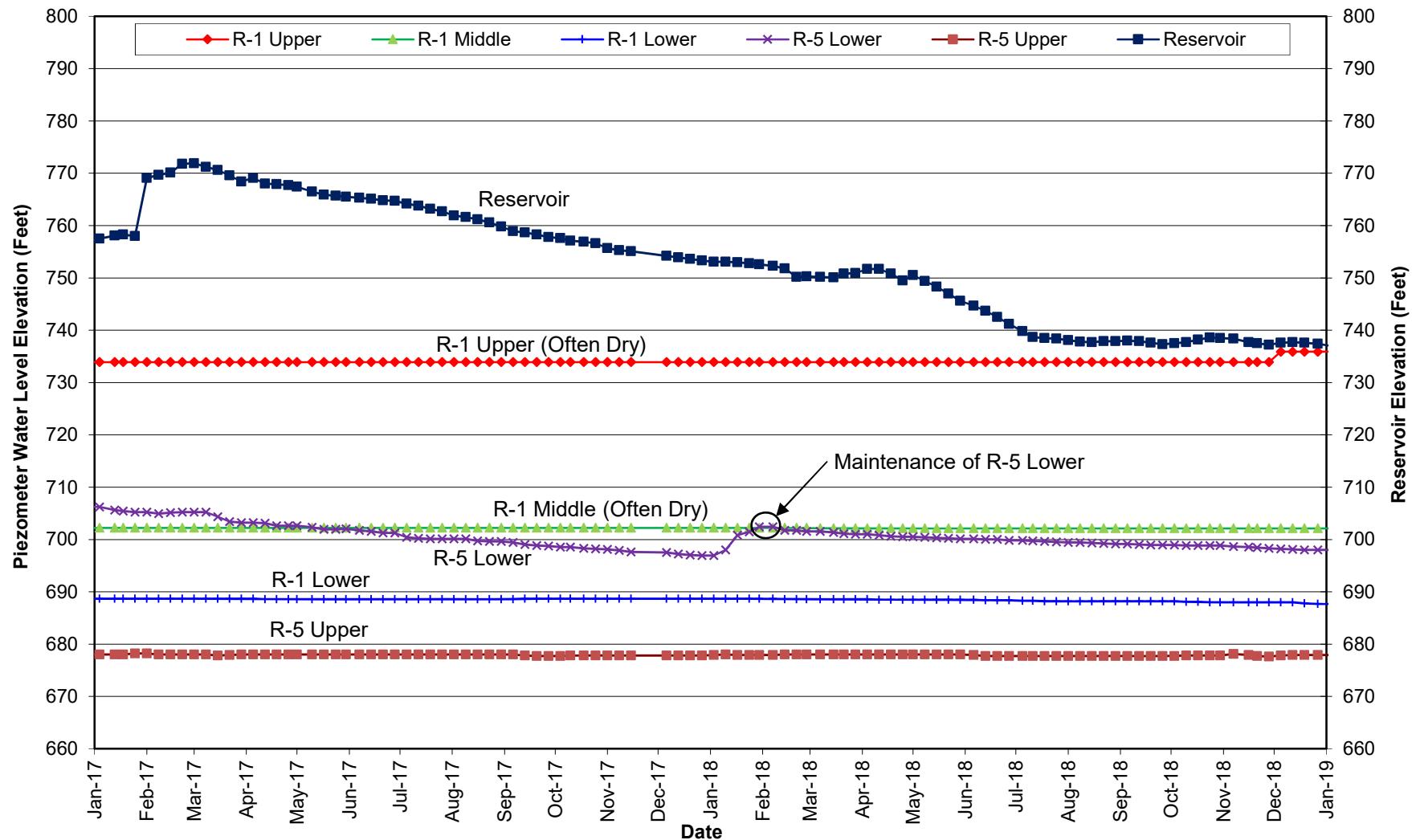
SANTIAGO CREEK DAM

SECTION C-C'

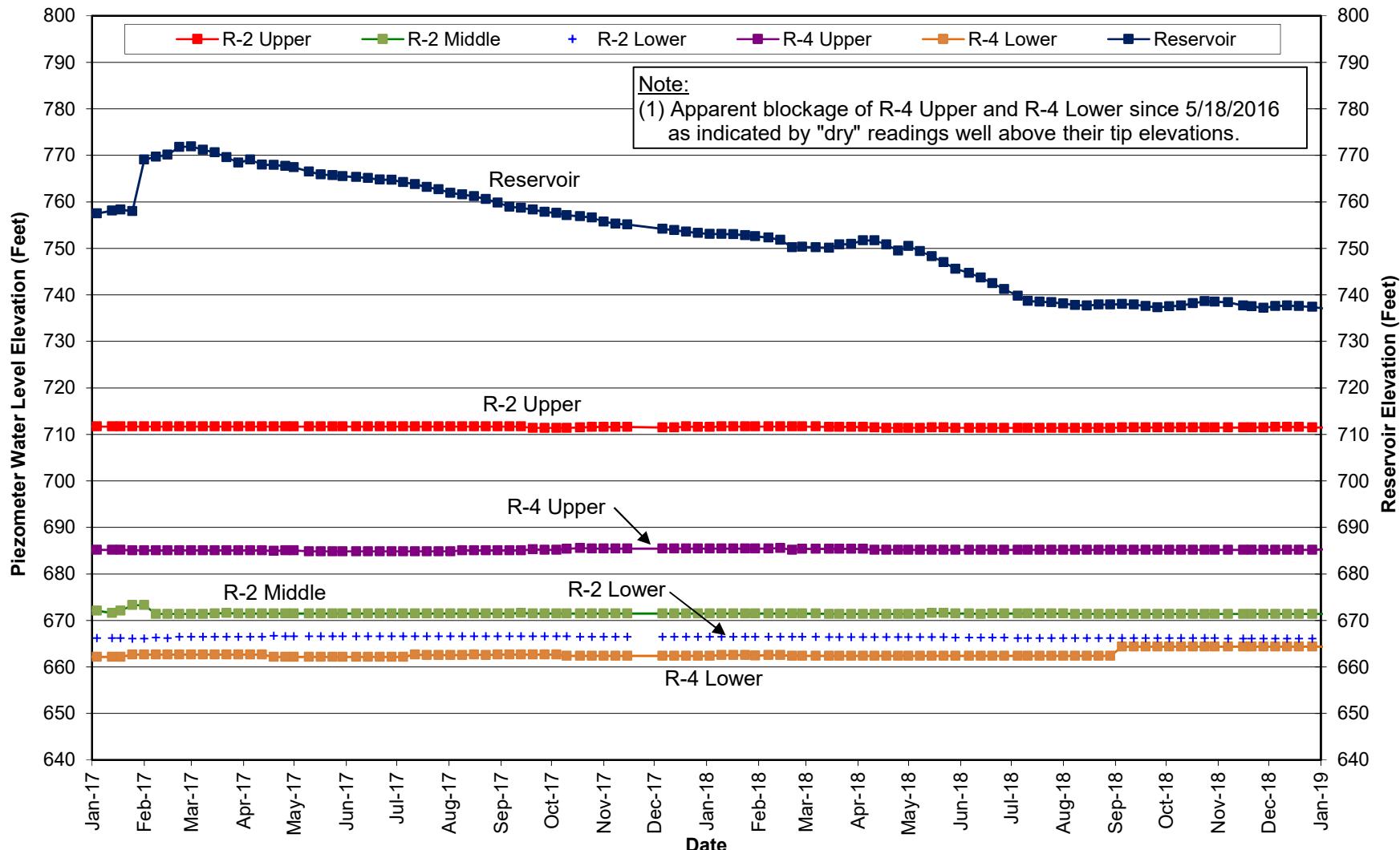
PROJECT NO.	DATE	FIGURE
397E-IRW	JUNE 2019	1D

40' 0' 40'
SCALE: 1"=40'
HORIZONTAL=VERTICAL

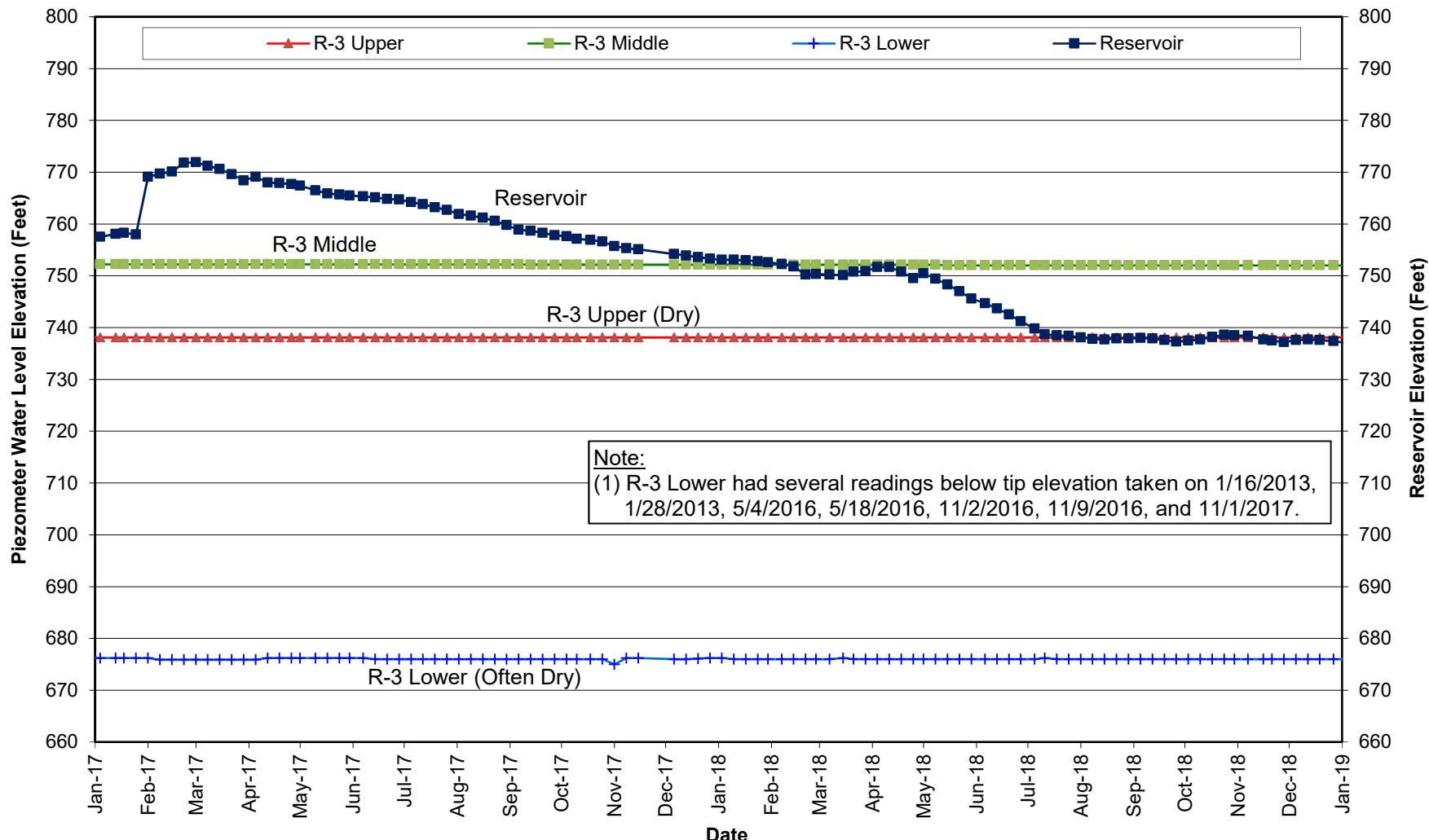
**SANTIAGO CREEK DAM
2-YR PIEZOMETER LEVELS
PIEZOMETERS R-1 AND R-5
JANUARY 2017 THROUGH DECEMBER 2018**



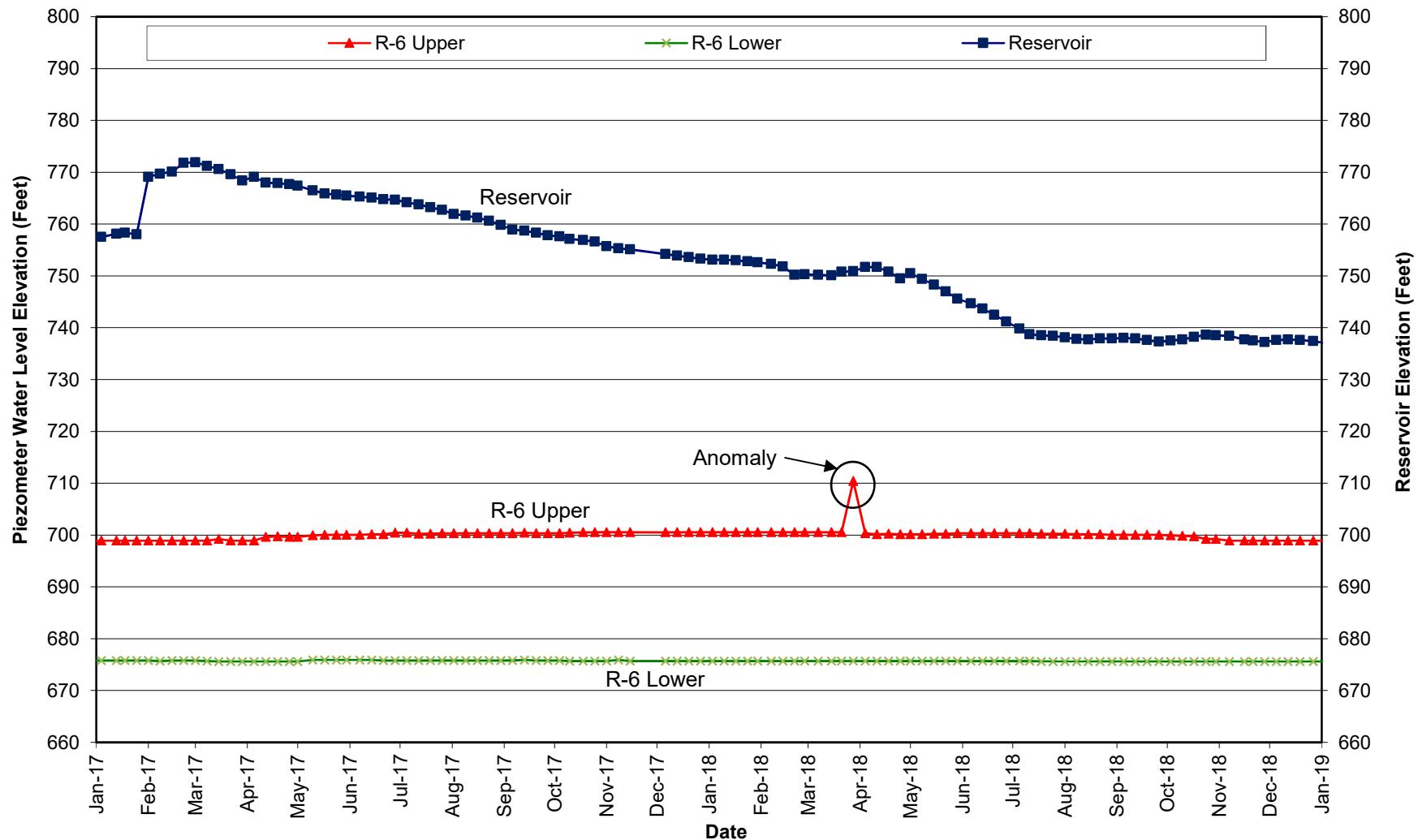
**SANTIAGO CREEK DAM
2-YR PIEZOMETER LEVELS
PIEZOMETERS R-2 AND R-4
JANUARY 2017 THROUGH DECEMBER 2018**



**SANTIAGO CREEK DAM
2-YR PIEZOMETER LEVELS
PIEZOMETER R-3
JANUARY 2017 THROUGH DECEMBER 2018**



**SANTIAGO CREEK DAM
2-YR PIEZOMETER LEVELS
PIEZOMETER R-6
JANUARY 2017 THROUGH DECEMBER 2018**

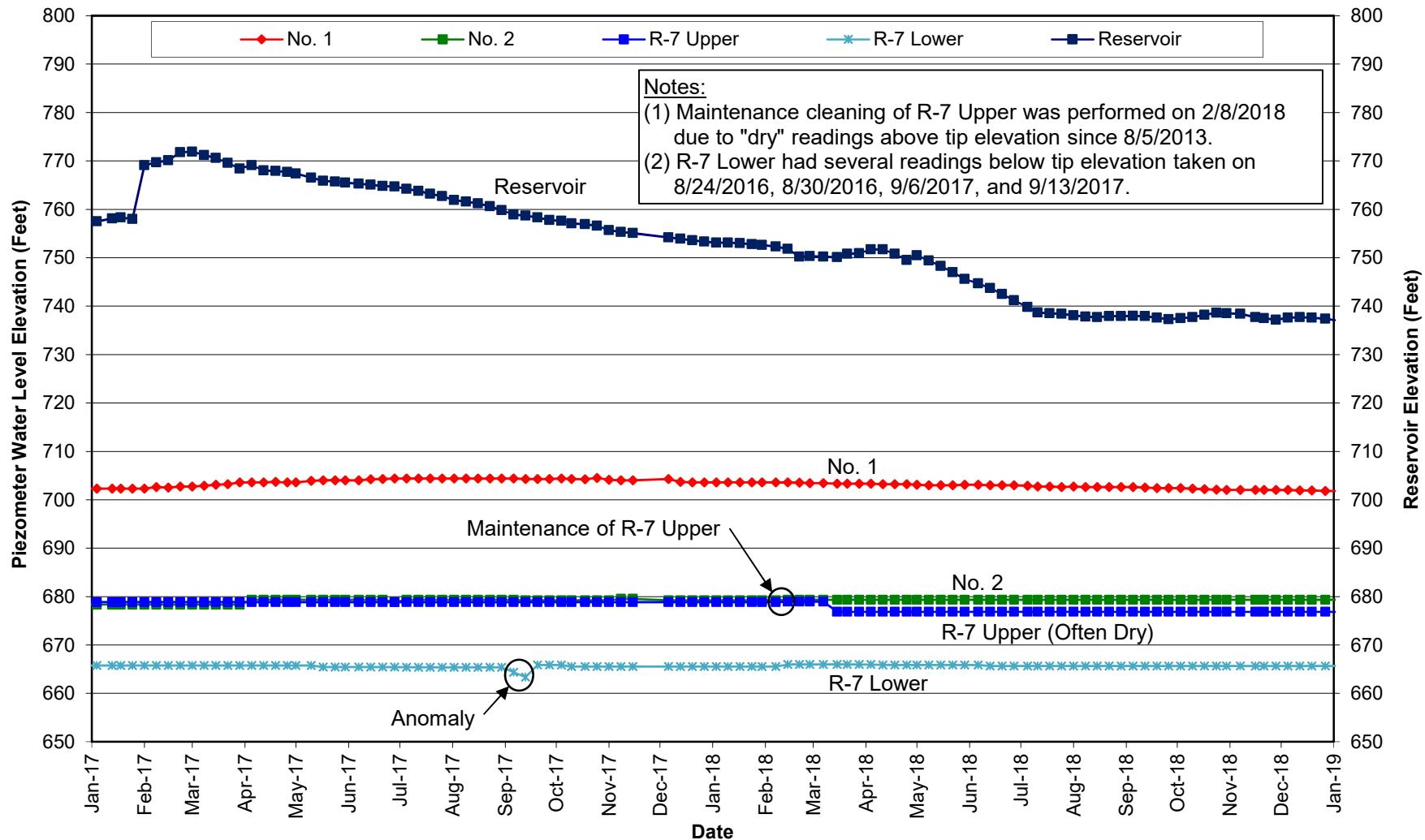


NAVD88 DATUM

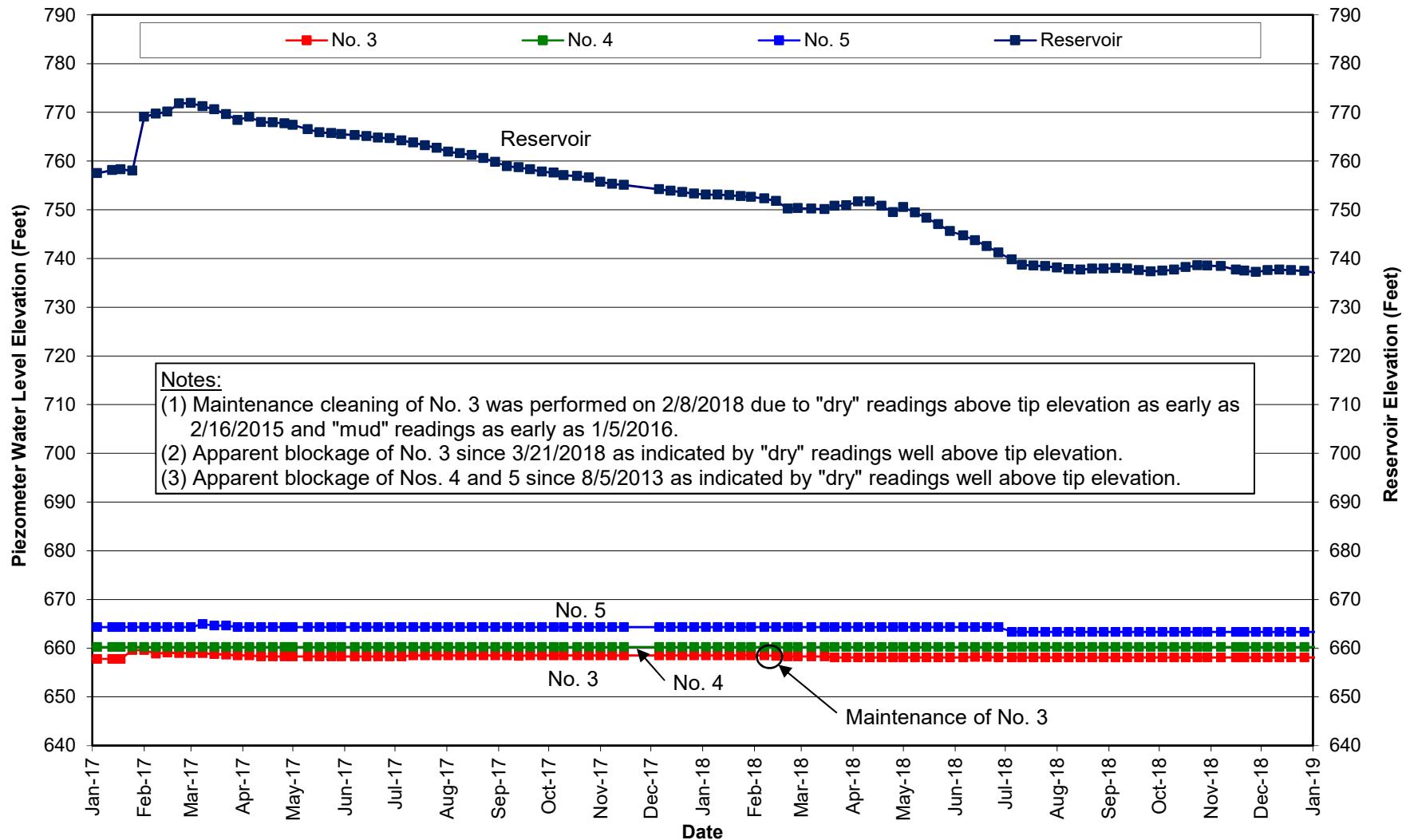
IRVINE RANCH WATER DISTRICT

FIGURE 2D

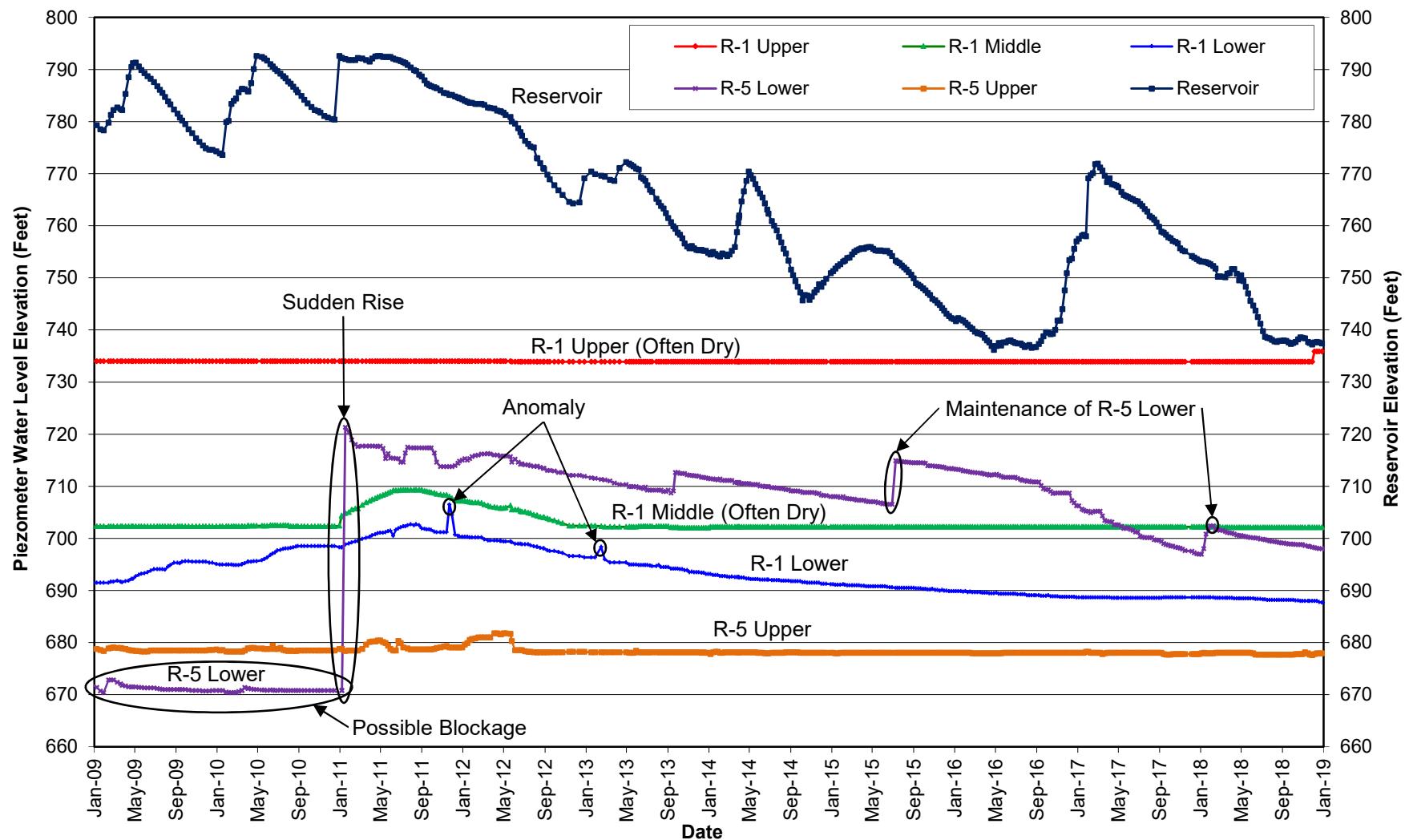
**SANTIAGO CREEK DAM
2-YR PIEZOMETER LEVELS
PIEZOMETERS No. 1, No. 2, AND R-7
JANUARY 2017 THROUGH DECEMBER 2018**



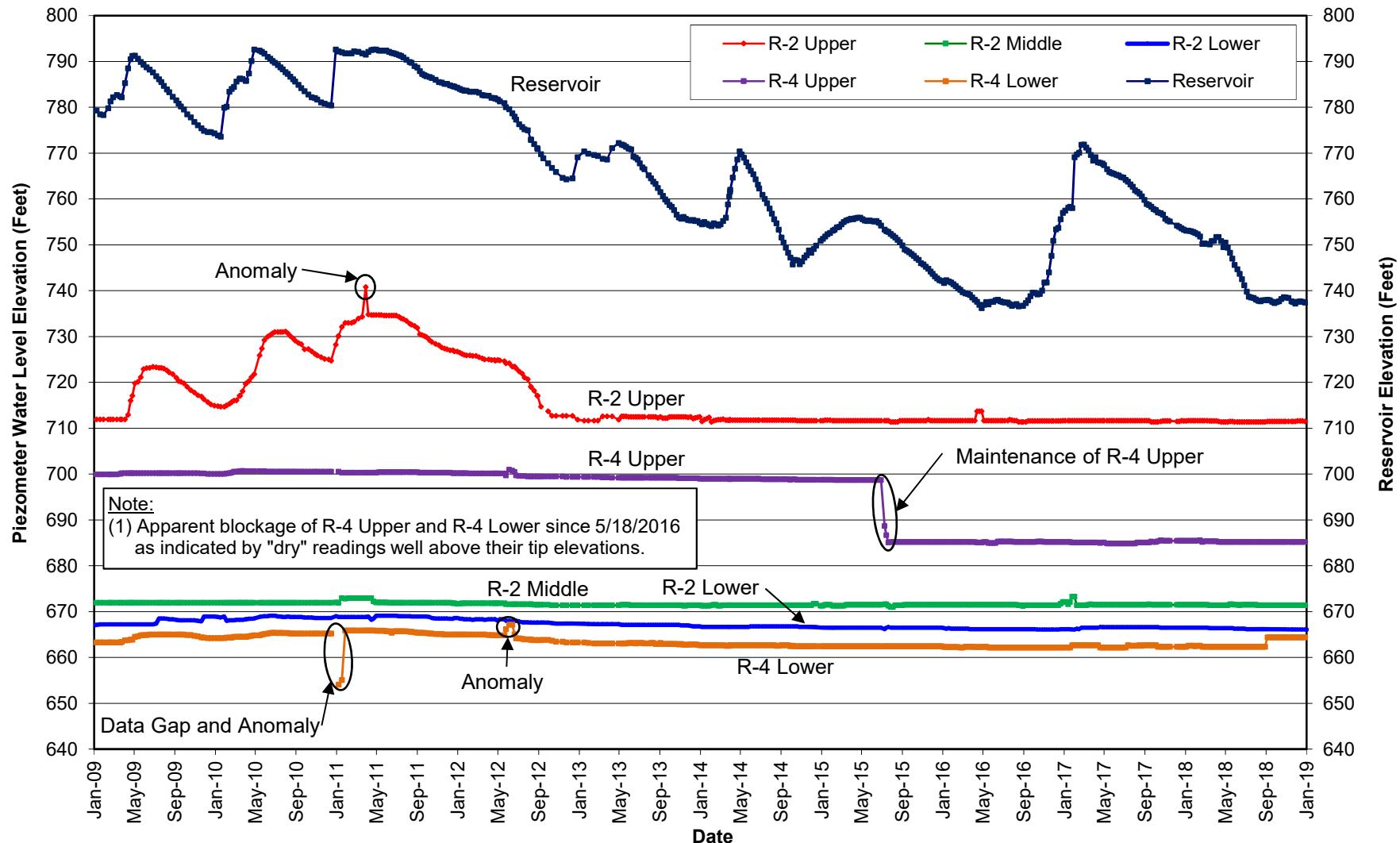
**SANTIAGO CREEK DAM
2-YR PIEZOMETER LEVELS
PIEZOMETERS No. 3, No. 4, and No. 5
JANUARY 2017 THROUGH DECEMBER 2018**



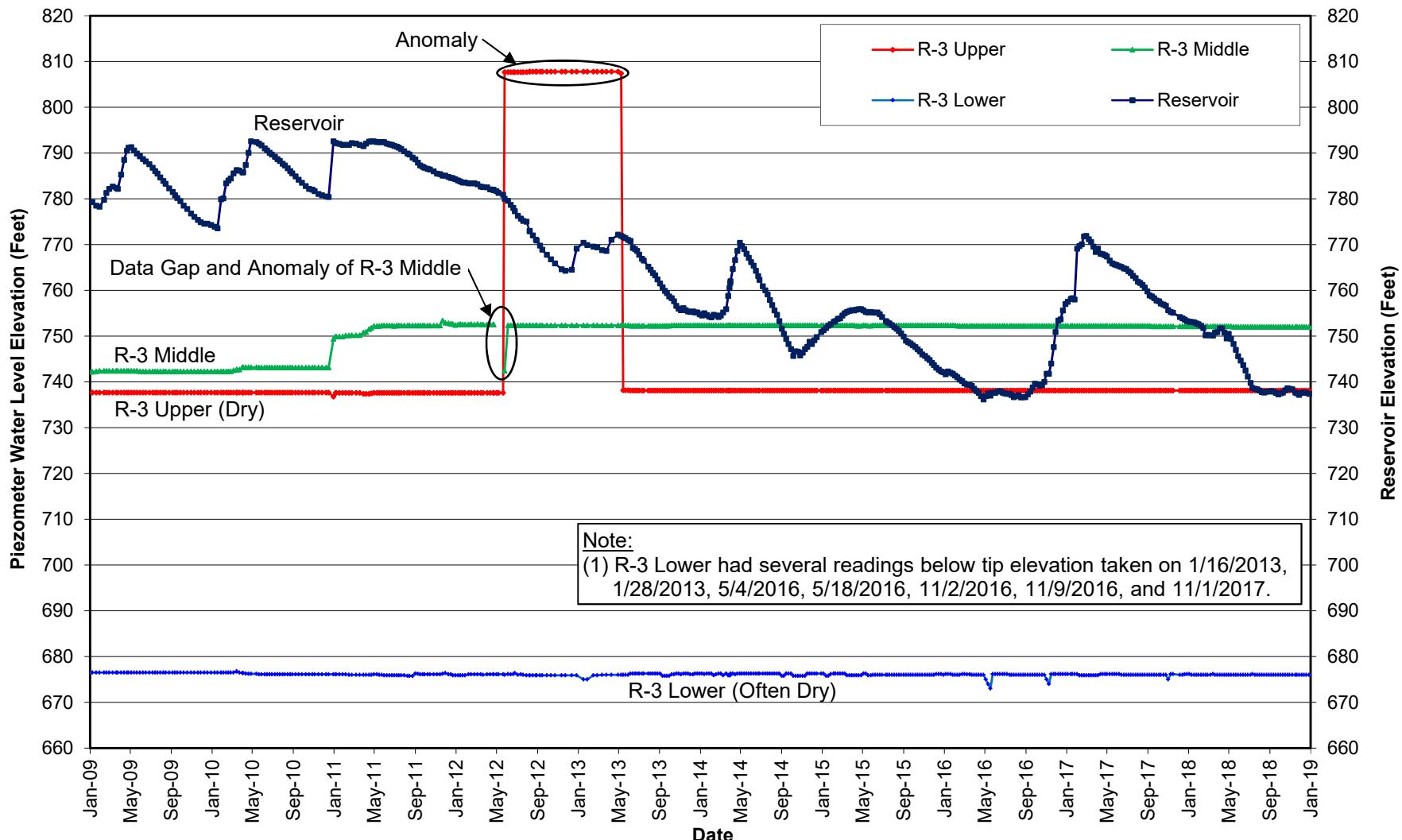
SANTIAGO CREEK DAM
10-YR HISTORICAL PIEZOMETER LEVELS
PIEZOMETERS R-1 AND R-5
JANUARY 2009 THROUGH DECEMBER 2018



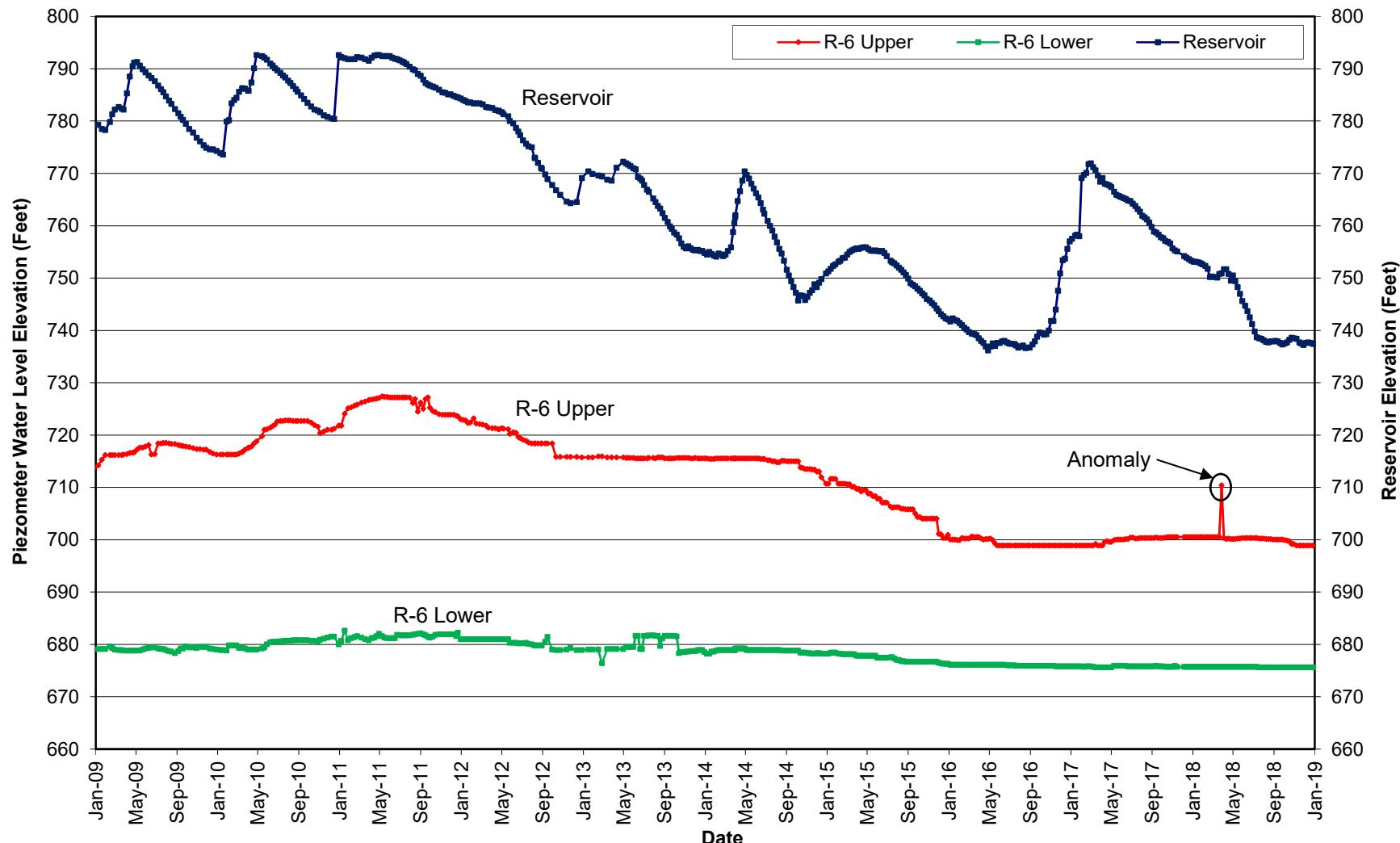
SANTIAGO CREEK DAM
10-YR HISTORICAL PIEZOMETETER LEVELS
PIEZOMETERS R-2 AND R-4
JANUARY 2009 THROUGH DECEMBER 2018



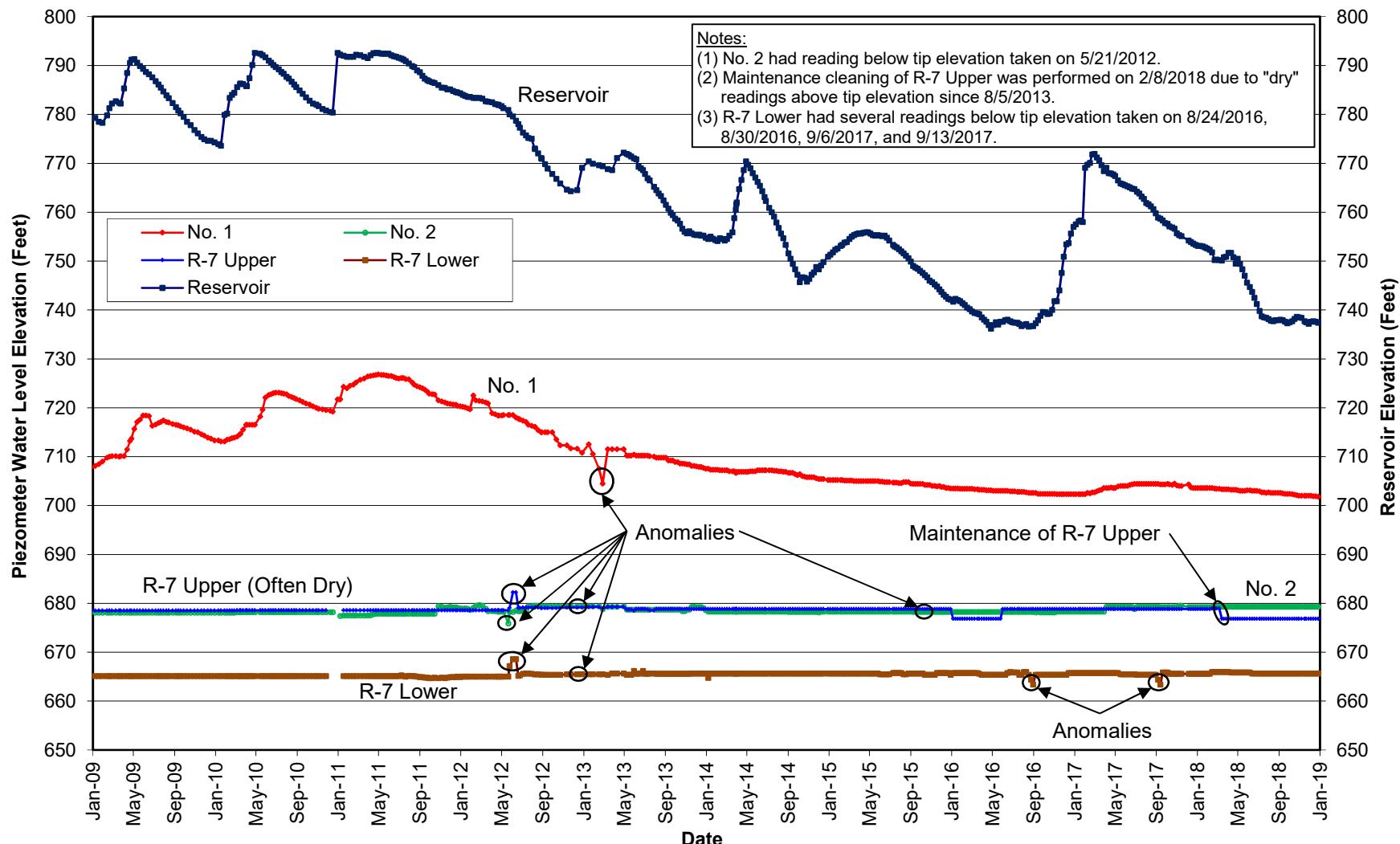
SANTIAGO CREEK DAM
10-YR HISTORICAL PIEZOMETER LEVELS
PIEZOMETER R-3
JANUARY 2009 THROUGH DECEMBER 2018



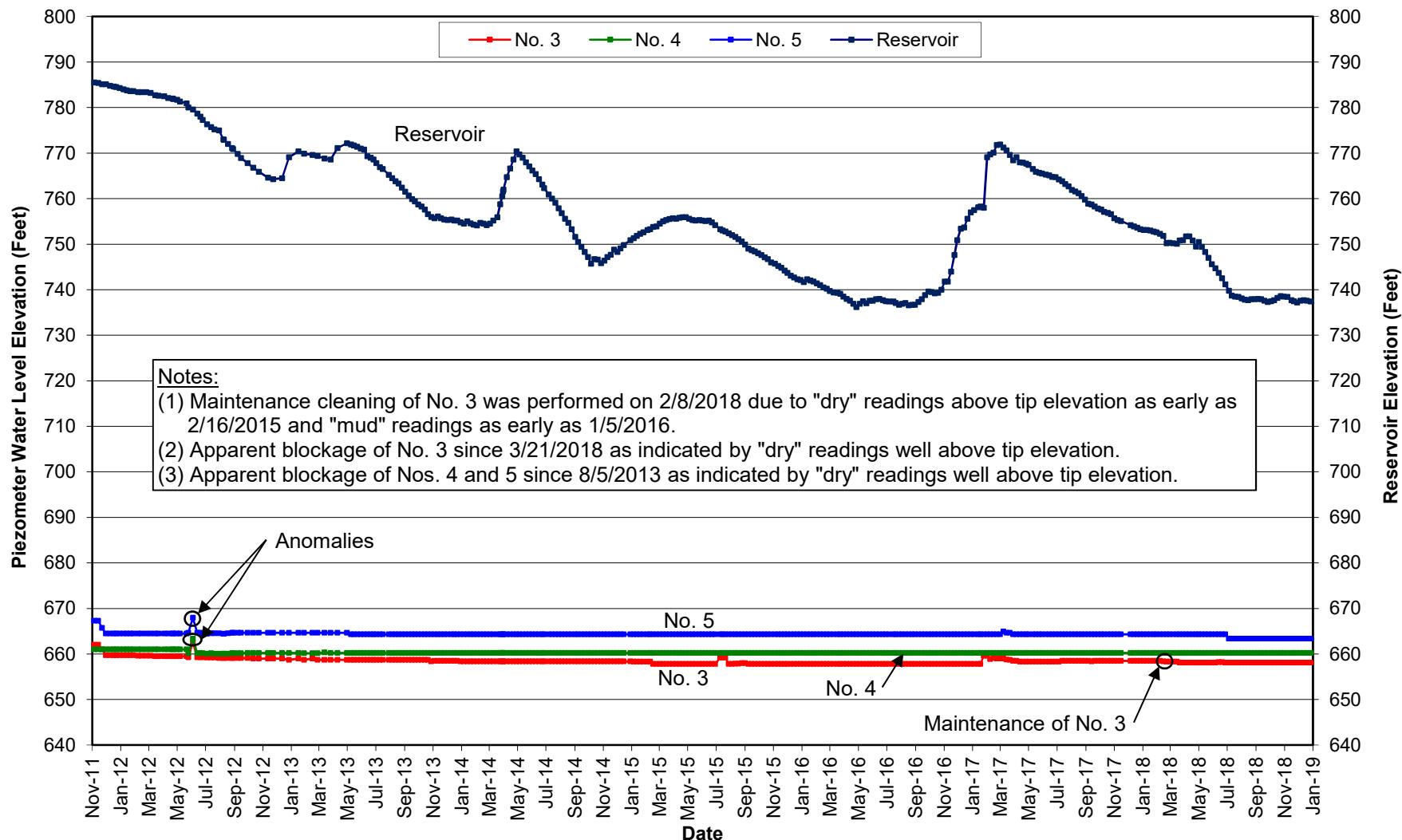
**SANTIAGO CREEK DAM
10-YR HISTORICAL PIEZOMETER LEVELS
PIEZOMETER R-6
JANUARY 2009 THROUGH DECEMBER 2018**



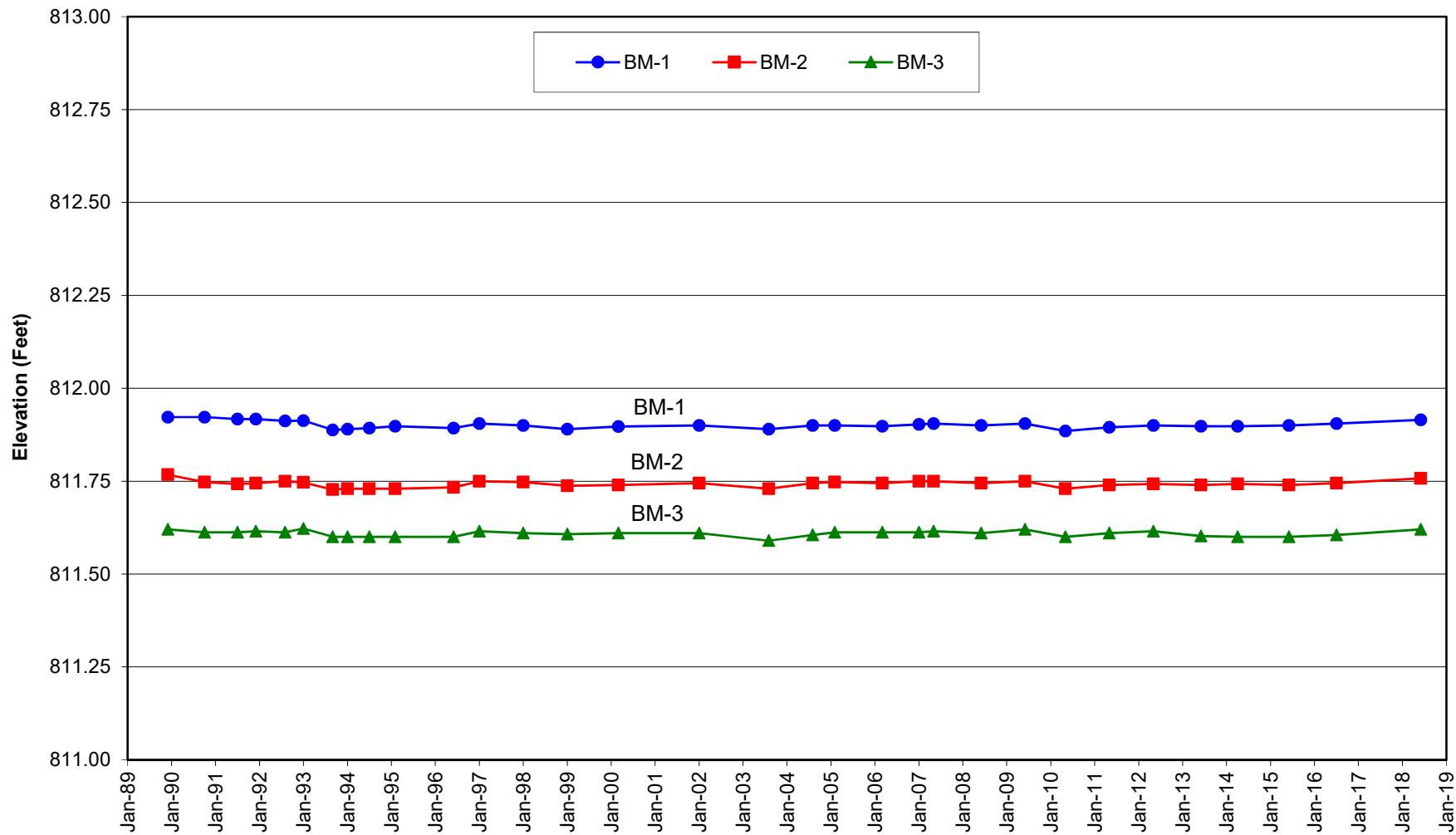
**SANTIAGO CREEK DAM
10-YR HISTORICAL PIEZOMETER LEVELS
PIEZOMETERS No. 1, No. 2, AND R-7
JANUARY 2009 THROUGH DECEMBER 2018**



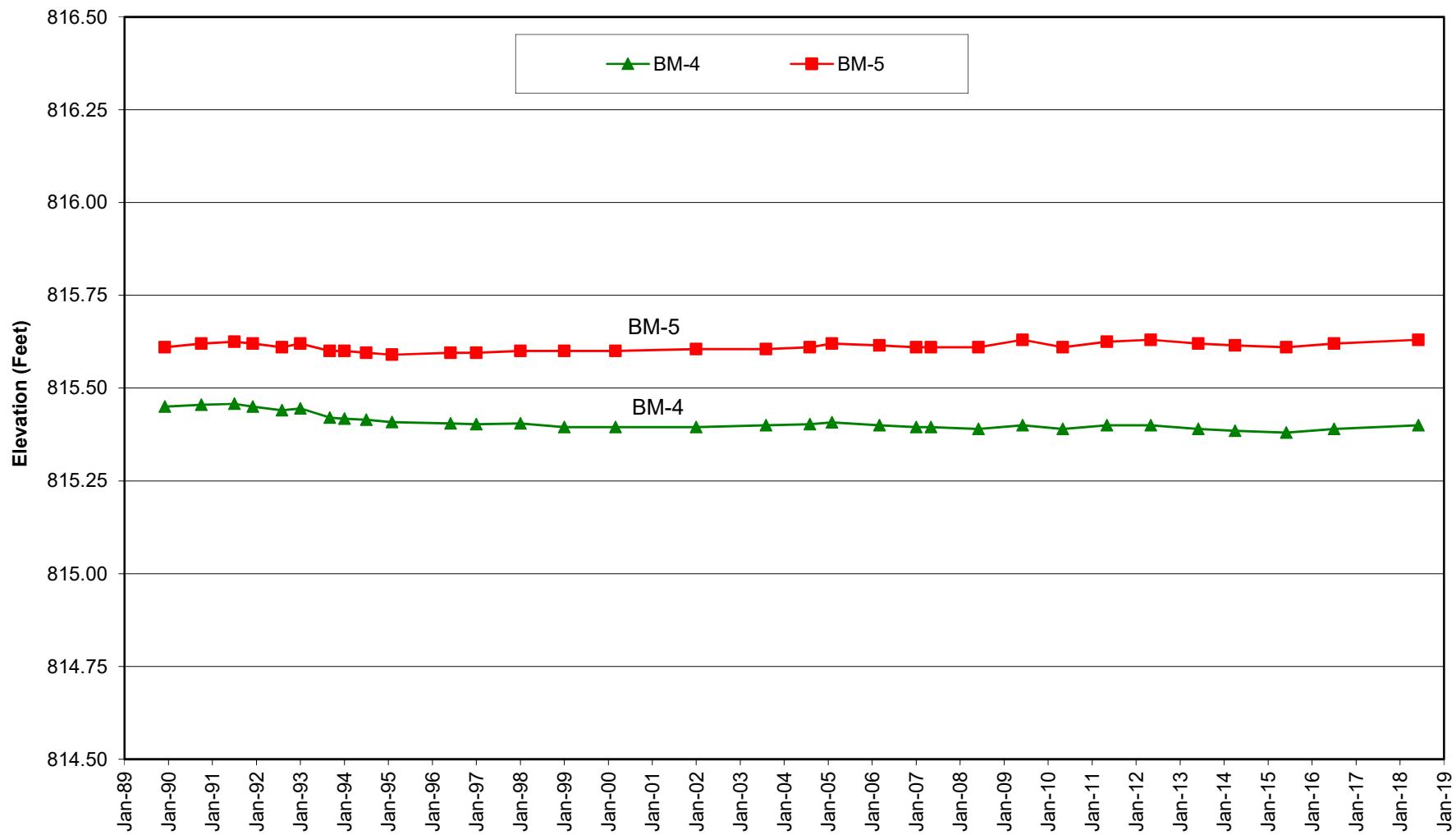
SANTIAGO CREEK DAM
7-YR HISTORICAL PIEZOMETER LEVELS
PIEZOMETERS No. 3, No. 4, and No. 5
NOVEMBER 2011 THROUGH DECEMBER 2018



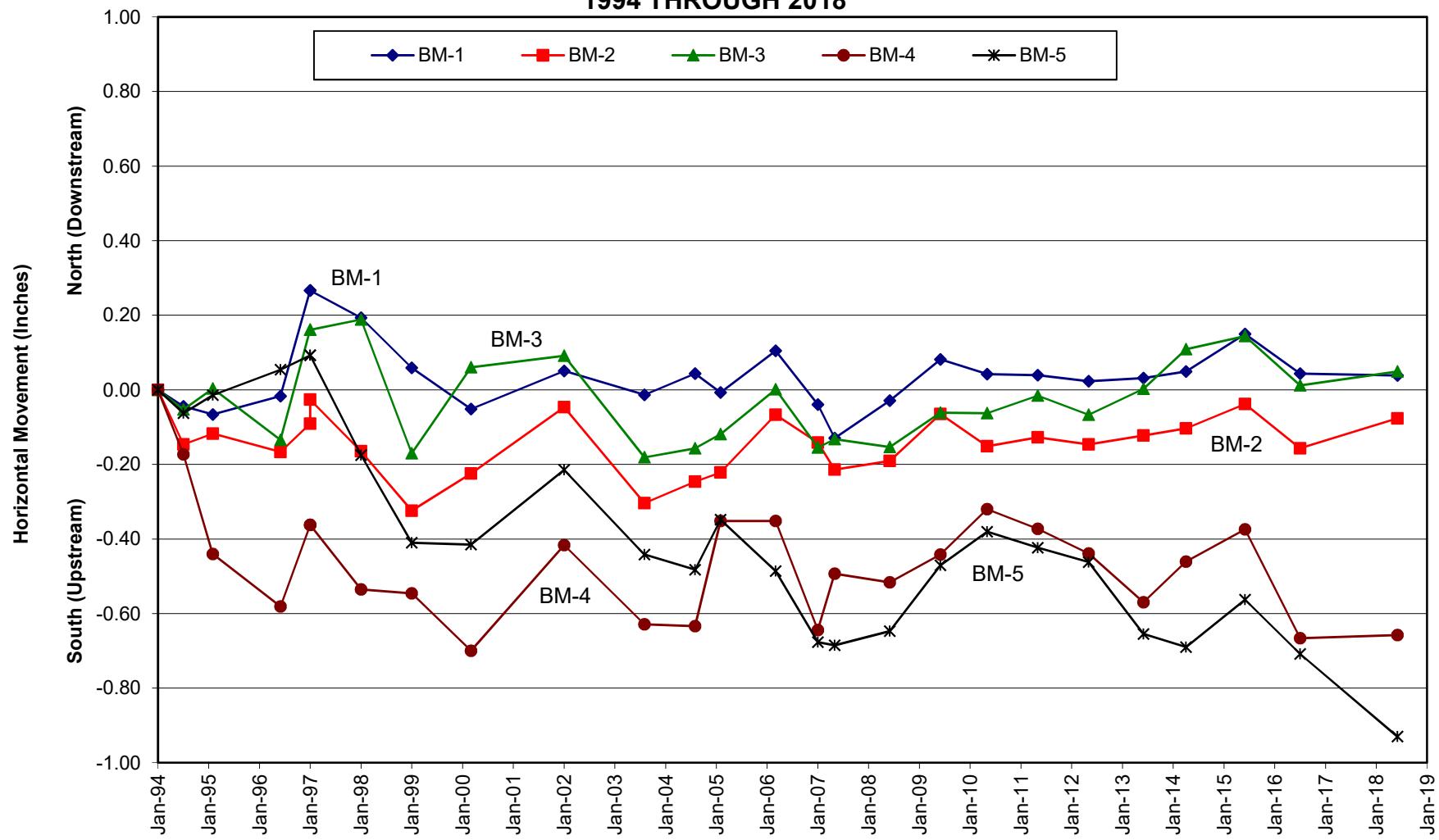
SANTIAGO CREEK DAM
ELEVATIONS OF SURVEY MONUMENTS BM-1, BM-2, AND BM-3
1989 THROUGH 2018



**SANTIAGO CREEK DAM
ELEVATIONS OF SURVEY MONUMENTS BM-4 AND BM-5
1989 THROUGH 2018**



**SANTIAGO CREEK DAM
NET HORIZONTAL DISPLACEMENTS OF SURVEY MONUMENTS
BM-1, BM-2, BM-3, BM-4, AND BM-5
IN THE NORTH-SOUTH DIRECTION
1994 THROUGH 2018**



SANTIAGO CREEK DAM
NET HORIZONTAL DISPLACEMENTS OF SURVEY MONUMENTS
BM-1, BM-2, BM-3, BM-4, AND BM-5
IN THE EAST-WEST DIRECTION
1994 THROUGH 2018

