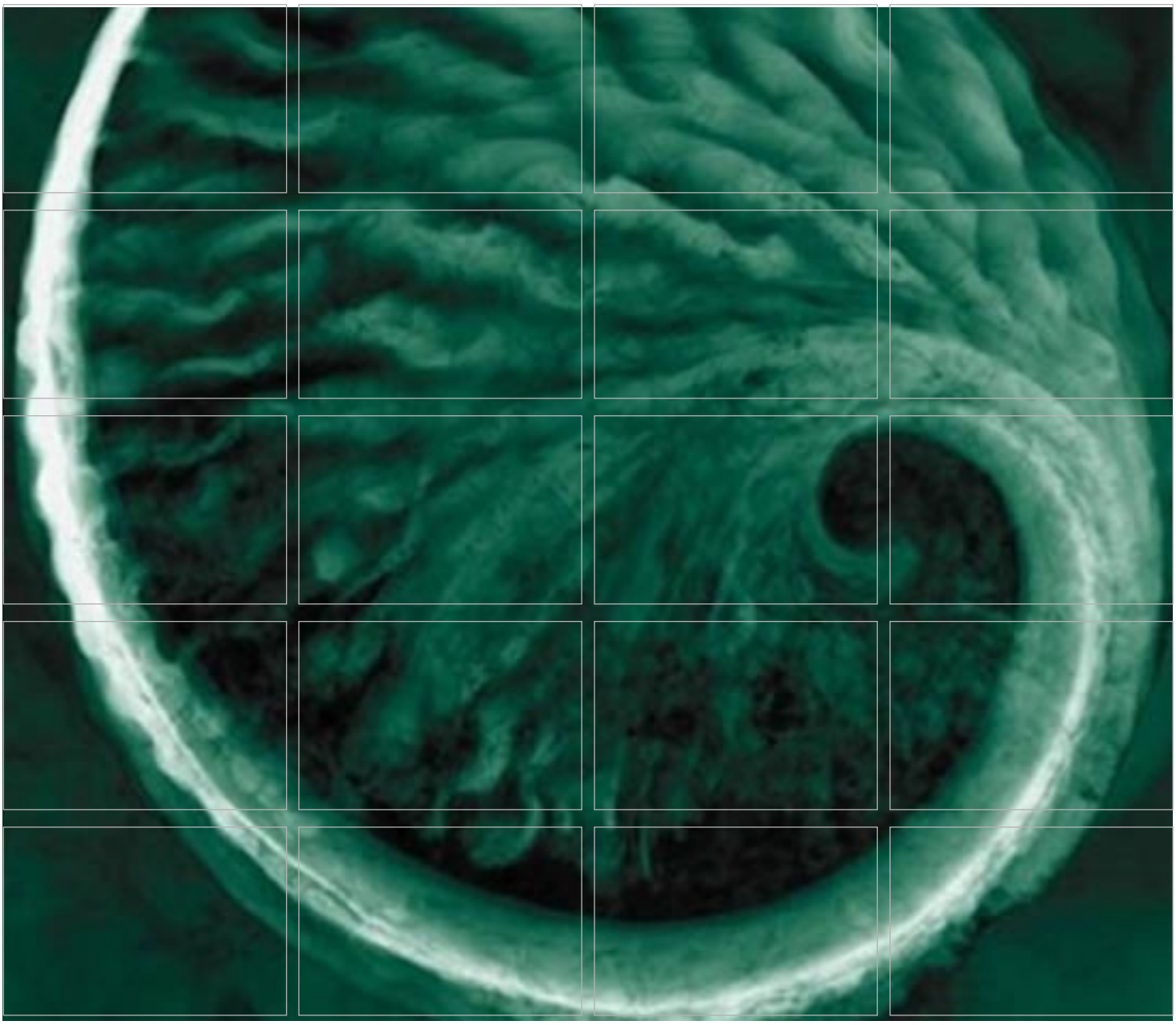

Annual Groundwater Monitoring and Corrective Action Report

CPS Energy
Calaveras Power Station – Evaporation Pond
San Antonio, Texas

February 2023

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Calaveras Power Station – Evaporation Pond

Annual Groundwater Monitoring and Corrective Action Report

February 2023

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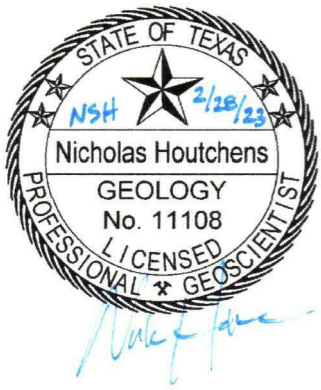

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1. *CURRENT STATUS SUMMARY*

As required in Title 40, Code of Federal Regulations, Part 257.90, this section provides an overview of the current status of the groundwater monitoring and corrective action program for the Evaporation Pond (EP) located at the CPS Energy Calaveras Power Station:

- At the start of the 2022 annual reporting period, the EP was operating under the detection monitoring program, as defined in §257.94;
- At the end of the 2022 annual reporting period, the EP was operating under the detection monitoring program, as defined in §257.94;
- At this time, there was no confirmed statistically significant increase over background for one or more constituents listed in Appendix III pursuant to §257.94(e);
- An assessment monitoring program was not required or initiated for the EP;
- A remedy was not required or selected pursuant to §257.97 during the 2022 annual reporting period; and
- No remedial activities were initiated or are ongoing pursuant to §257.98 during the 2022 annual reporting period.

2. *INTRODUCTION*

CPS Energy owns and operates the Calaveras Power Station which consists of two power plants (J.T. Deely and J.K. Spruce) that are subject to regulation under Title 40, Code of Federal Regulations, Part 257 (40 CFR §257) Subpart D (a.k.a. the CCR Rule). The Power Station is located in unincorporated Bexar County, Texas, approximately 13 miles southeast of San Antonio. Currently, two CCR units are in operation [Fly Ash Landfill (FAL) and Sludge Recycle Holding (SRH) Pond] and two CCR units are undergoing closure [Bottom Ash Ponds (BAPs) and EP]. This *Annual Groundwater Monitoring and Corrective Action Report* (Report) addresses only the EP.

This Report was produced by Environmental Resource Management, Inc. (ERM), on behalf of CPS Energy, and summarizes the groundwater monitoring activities for the EP in 2022 and provides a statistical summary of the findings for samples collected in October 2022. Consistent with the notification requirements of the CCR Rule, this Report will be posted to the operational record and notification will be made to the State of Texas. Additionally, this Report will be placed on the publicly accessible internet site (§257.105(h), §257.106(h), §257.107(h)). The table below cross references the reporting requirements under the CCR Rule with the contents of this Report.

Regulatory Requirement Cross-Reference

Regulatory Citation	Requirement (paraphrased)	Where Addressed in this Report
§257.90(e)	Status of the groundwater monitoring and corrective action program	Sections 1 and 3
§257.90(e)	Summarize key actions completed	Section 3
§257.90(e)	Describe any problems encountered and actions to resolve problems	Section 3
§257.90(e)	Key activities for upcoming year	Section 5
§257.90(e)(1)	Map or aerial image of CCR unit and monitoring wells	Figure 1
§257.90(e)(2)	Identification of new monitoring wells installed or decommissioned during the preceding year	Section 3
§257.90(e)(3)	Summary of groundwater data, monitoring wells and dates sampled, and whether sample was required under detection or assessment monitoring	Sections 3 and 4, Tables 1 through 3, and Figure 2
§257.90(e)(4)	Narrative discussion of any transition between monitoring programs	Section 5

The EP is located northeast of the Power Station generating units and is south of the FAL. The EP received boiler chemical cleaning waste and other authorized liquid wastes. The EP was originally constructed as a fly ash landfill but was converted from a landfill to an impoundment in 1996. The CCR unit location is shown on Figure 1.

3. PROGRAM STATUS

From December 2016 through October 2017, groundwater samples were collected as part of background sampling. After October 2017, groundwater samples were collected as part of Detection Monitoring. The samples were collected from the groundwater monitoring well network certified for use in determining compliance with the CCR Rule.

Historically, the groundwater monitoring well network consisted of three upgradient monitor wells (JKS-47, JKS-63R, and JKS-64) and three downgradient monitor wells (JKS-36, JKS-61, and JKS-62). As documented in the *2020 Annual Groundwater Monitoring and Corrective Action Report – Evaporation Pond* (ERM, 2020), non-proportional changes in water levels were observed during the 2020 monitoring events and a site-wide water level study (Study) was recommended to understand temporal changes in hydrogeology. ERM completed this Study by collecting five rounds of water level measurements at each CCR Unit, which included observations from other on-site monitor wells, from February to October 2021.

As documented in the Study, JKS-64 no longer appeared to be a viable background well. Therefore, ERM recommended that JKS-64 be re-designated as a downgradient well for monitoring and statistical analysis. As such, the revised groundwater monitoring well network consists of two upgradient monitor wells (JKS-47 and JKS-63R) and four downgradient monitor wells (JKS-36, JKS-61, JKS-62, and JKS-64). This revision to the groundwater monitoring network will be documented in updated *Groundwater Monitoring System and Groundwater Sampling and Analysis Program* (*GSAP*) documents for the Power Station.

All monitor wells are screened within the uppermost groundwater bearing unit (GWBU) in the vicinity of the EP. The uppermost GWBU is approximately 20 feet thick and is comprised of clayey/silty sand to well-sorted sand. The uppermost GWBU is located below unconfining units (i.e., sands, silts, and low to medium plasticity clays), and above a high plasticity clay (lower confining unit).

The monitor well locations are shown in Figure 1. No problems were encountered in the data collection or in well performance with the exception of JKS-62. A groundwater sample was not collected from JKS-62 during the October 2022 sampling event due to well performance (well went dry). No action was required to resolve any issues. As previously reported in the *2019 Groundwater Monitoring and Corrective Action Report*, JKS-63R was installed in May 2019 to replace JKS-63, which had become blocked. No other monitor wells were installed or decommissioned after the certification of the well network.

Although CPS Energy ceased operation of the EP in September 2022 in preparation for closure; the EP will continue to be monitored until the unit has completed closure.

3.1 GROUNDWATER OBSERVATIONS

Depth to groundwater surface measurements were made at each monitor well prior to each sampling event. Groundwater elevations were calculated by subtracting the depth to groundwater measurement from the surveyed reference elevation for each well.

Groundwater elevations collected during all the monitoring events are summarized in Table 1. Groundwater elevations and the potentiometric surface for the April and October 2022 monitoring events are shown on Figure 2A and Figure 2B, respectively. For both sampling events, groundwater upgradient of the EP appears to flow southeast from a potential groundwater divide (located west of the CCR unit) and northeast from the Closed Landfills (located south of the CCR unit). Downgradient of the EP, groundwater appears to flow generally east to northeast. The horizontal gradient is approximately 0.002 feet/foot and 0.004 feet/foot for the April and October 2022 monitoring events, respectively.

3.2 SAMPLING SUMMARY

A summary of the total number of samples collected from each monitor well is provided in Table 2. Groundwater analytical results for Appendix III constituents for all the monitoring events are summarized in Table 3. Laboratory data packages are provided in Appendix A.

The EP monitor wells were sampled by CPS Energy using low flow sampling techniques during the monitoring events. With the exception of JKS-62 (as noted above), no other data gaps were identified during the 2022 semi-annual groundwater monitoring events.

3.3 DATA QUALITY

ERM reviewed field and laboratory documentation to assess the validity, reliability and usability of the analytical results. Samples were sent to San Antonio Testing Laboratory (SATL), located in San Antonio, Texas for analysis. Chain-of-Custody procedures were followed throughout the sample handling process. Data quality information reviewed for these results included field sampling forms, chain-of-custody documentation, holding times, lab methods, cooler temperatures, laboratory method blanks, laboratory control sample recoveries, field duplicate samples, matrix spikes / matrix spike duplicates, quantitation limits, and equipment

blanks following data quality review guidance from the Environmental Protection Agency and the Texas Commission on Environmental Quality. A summary of the data usability qualifiers is included in Table 3. The data quality review found the results to be valid, reliable, and useable for decision making purposes with the listed qualifiers. No analytical results were rejected.

4. STATISTICAL ANALYSIS AND RESULTS

Consistent with the CCR Rule and with the *GSAP*, a prediction limit approach (40 CFR §257.93(f)) was used to identify potential impacts to groundwater. The steps outlined in the decision framework in the *GSAP* include:

- Interwell versus intrawell comparisons;
- Establishment of the upgradient dataset;
- Calculating prediction limits; and
- Conclusions.

Tables and figures generated as part of the statistical analysis, including updating of prediction limits, are provided in Appendix B. The remaining sections of the Report are focused on evaluation of the most recent October 2022 data. Note the April 2022 sampling results were evaluated as discussed in Appendix C. The April 2022 sampling results were evaluated relative to the existing prediction limits.

4.1 INTERWELL VERSUS INTRAWELL COMPARISONS

When multiple upgradient wells were available within the same unit, concentrations were compared among these wells to determine if they could be pooled to create a single, interwell, upgradient dataset. For each analyte, Boxplots (Appendix B, Figure 1) and Kruskal-Wallis test results (Appendix B, Table 1) are provided for upgradient wells. The statistical tests indicate that:

- Two analytes [Fluoride, pH] are suitable for interwell analysis, with no significant differences present in upgradient data; and
- Five analytes [Boron, Calcium, Chloride, Sulfate, Total Dissolved Solids] rely on intrawell analysis, as there are significant differences present in upgradient data.

As discussed in the *GSAP* and presented in the following sections, analytes for interwell analysis utilize a pooled dataset of all upgradient wells, whereas analytes for intrawell analysis utilize individual, separate datasets from each upgradient well.

4.2 ESTABLISHMENT OF UPGRADIENT DATASET

When evaluating the concentrations of analytes in groundwater, USEPA guidance (2009) recommends performing a careful quality check of the data to identify any anomalies. In addition to the data validation that was performed, descriptive statistics, outlier testing, and temporal stationarity checks were completed to finalize the upgradient dataset.

4.2.1 Descriptive Statistics

Descriptive statistics were calculated for the upgradient wells and analytes at the site (Appendix B, Table 2). The descriptive statistics highlight a number of relevant characteristics about the upgradient datasets including:

- There are two upgradient monitoring wells and 7 Appendix III constituents for Detection Monitoring.
- There are a total of 12 well-analyte combinations after accounting for interwell versus intrawell analysis.
- 12 well-analyte combinations have detection rates greater than or equal to 50 percent.
- No well-analyte combinations have 100 percent non-detects,
- Ten well-analyte combinations have 100 percent detects.
- Five well-analyte combinations follow a normal distribution (using Shapiro-Wilks Normality Test).
- Three well-analyte combinations follow a log-normal distribution.
- Four well-analyte combinations have no discernible distribution.

4.2.2 Outlier Determination

Both statistical and visual outlier tests were performed on the upgradient datasets. A total of three outliers were initially flagged in the upgradient datasets. Data points identified as both statistical and visual outliers (Appendix B, Table 3 and Appendix B, Figure 2) were reviewed prior to exclusion from the dataset.

Of the three data points that were flagged as outliers, all three were retained in the dataset. After review, it was determined that these values were consistent with natural fluctuations and concentrations detected in other upgradient wells or in the area prior to operation. No analytical or sampling issues were identified during data review; therefore, the three outlier values were considered valid and were retained in the upgradient datasets.

4.2.3 Check for Temporal Stability

A trend test was performed for all values in the upgradient wells with at least eight detected data points and at least 50 percent detection rate. Time series figures of upgradient wells are provided in Appendix B, Figure 3. Additionally, the Mann Kendall trend test results are provided in Appendix B, Table 4. The results of the trend analysis indicate that:

- There are a total of 12 well-analyte combinations in the upgradient dataset.
- 12 well-analyte combinations meet the data requirements of the trend test.
- Four well-analyte combinations had a significant increasing trend.
- One well-analyte combinations had a significant decreasing trend.
- Seven well-analyte combinations had no significant trend (i.e., concentrations were stable over time).

4.3 ESTABLISHING UPPER PREDICTION LIMITS

A multi-part assessment of the monitoring wells was performed to determine what type of upper prediction limit (UPL) to calculate as a compliance point. A decision framework was applied for each upgradient well based on interwell/intrawell analysis, data availability, and presence of temporal trends. A summary of the UPLs (and LPLs) and the methods used to calculate them are provided in Appendix B, Table 5.

A total of five well-analyte combinations were found to have either increasing or decreasing trends. For these well-analyte pairs, a bootstrapped UPL calculated around a Theil Sen trend was used to derive a more accurate UPL.

The remaining seven well-analyte combinations were found to have no significant trend. Sanitas was used to calculate static UPLs using an annual site-wide false positive rate of 0.1 with a 1-of-2 re-testing approach.

A final UPL was selected for each analyte and compared to the most recent sample result in each downgradient well. For pH, a final lower prediction limit (LPL) was also identified and used for comparison. For the two analytes with interwell analysis, the upgradient dataset was pooled prior to UPL calculations, resulting in a single UPL value per analyte. For the five analytes with intrawell analysis, a UPL value was calculated for each of the upgradient wells. For these wells and analytes, the maximum UPL was selected as the representative UPL for each analyte. A similar approach was used to determine the LPL for pH; however, the minimum LPL was selected in the case of intrawell analysis. All final UPL and LPL values are shown in the table below. Full upgradient well prediction limit calculations are provided in Appendix B, Table 5).

Final UPLs and LPLs Values

Analysis Type	Analyte	LPL	UPL	Unit
Intrawell	Boron	–	1.67	mg/L
Intrawell	Calcium	–	1,480	mg/L
Intrawell	Chloride	–	3,420	mg/L
Interwell	Fluoride	–	0.252	mg/L
Interwell	pH	4.94	6.51	SU
Intrawell	Sulfate	–	2,100	mg/L
Intrawell	Total Dissolved Solids	–	10,500	mg/L

4.4 CONCLUSIONS

The downgradient samples collected during the October 2022 sampling event were used for compliance comparisons. All downgradient wells were below the UPLs and above the LPLs with the following exceptions shown on the table below. Full downgradient results are provided in Appendix B, Table 6:

Potential Exceedances

Analyte	Well	LPL	UPL	Sample Date	Value	Unit
Fluoride	JKS-36	–	0.252	2022-10-25	1.73	mg/L
Fluoride	JKS-64	–	0.252	2022-10-26	0.383	mg/L
pH	JKS-36	4.94	6.51	2022-10-25	4.41	SU
pH	JKS-61	4.94	6.51	2022-10-25	7.1	SU

Initial exceedances of the UPL may be confirmed with re-testing of the downgradient wells per the 1-of-2 retesting scheme. If the initial exceedance is confirmed with re-testing results in the same well, the well-analyte pair will be declared a statistically significant increase (SSI) above background. If an SSI is found, a notification or alternate source demonstration will be prepared within 90 days. Any wells with re-testing results at or below the UPL, and at or greater than the LPL, will be considered in compliance and will not require further action. These re-testing results will be reported in the subsequent *Alternative Source Demonstration*.

All downgradient wells with initial exceedances were examined for trends to assess the stability of concentrations. A summary of these trend test results can be found in Appendix B, Table 4. Of the wells with potential SSIs, none of these wells had identifiable trends.

Trends in these wells relative to UPLs, and LPLs for pH, will be monitored closely in future monitoring events. All wells with potential SSIs are plotted in Appendix B, Figure 4. All potential SSIs are within one order of magnitude of the UPL.

5 RECOMMENDATIONS

Currently, there are no plans to transition between Detection Monitoring and Assessment Monitoring. Consistent with the 1-of-2 retesting approach described in the Unified Guidance (USEPA 2009) and the SAP, initial exceedances may be retested within 90 days. Based on these findings, Detection Monitoring and/or Assessment Monitoring will be initiated as appropriate under §257.94 and §257.95.

6. *REFERENCES*

ERM, 2017. *Groundwater Sampling and Analysis Program.* CPS Energy, Calaveras Power Station, San Antonio, Texas.

USEPA. 2009. *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities.* Unified Guidance. USEPA/530/R/09/007. Office of Resource Conservation and Recovery. Washington, D.C.

Tables

TABLE 1
Groundwater Elevations Summary
CPS Energy - Calaveras Power Station
Evaporation Pond

		JKS-47 Upgradient (1)		JKS-63 Upgradient		JKS-63R Upgradient		JKS-64 Downgradient	
		TOC Elevation	513.63	TOC Elevation	526.86	TOC Elevation	522.27	TOC Elevation	507.84
Sampling Event	Sampling Event Dates	Depth to Water (feet btoc)	Water Level (msl)	Depth to Water (feet btoc)	Water Level (msl)	Depth to Water (feet btoc)	Water Level (msl)	Depth to Water (feet btoc)	Water Level (msl)
1	12/6/16 to 12/8/16	30.98	482.65	44.45	482.41	(4)	(4)	24.98	482.86
2	2/21/17 to 2/23/17	30.64	482.99	44.25	482.61	(4)	(4)	24.24	483.60
3	3/28/17 to 3/30/17	30.47	483.16	44.12	482.74	(4)	(4)	24.21	483.63
4	5/2/17 to 5/4/17	30.29	483.34	43.89	482.97	(4)	(4)	24.46	483.38
5	6/20/17 to 6/21/17	30.40	483.23	43.85	483.01	(4)	(4)	24.40	483.44
6	7/25/17 to 7/26/17	30.62	483.01	44.00	482.86	(4)	(4)	24.78	483.06
7	8/29/17 to 8/30/17	30.50	483.13	43.90	482.96	(4)	(4)	25.70	482.14
8	10/10/17 to 10/11/17	30.71	482.92	44.05	482.81	(4)	(4)	24.95	482.89
9	4/4/18 to 4/5/18	30.42	483.21	43.81	483.05	(4)	(4)	24.67	483.17
10	10/30/18 to 10/31/18	30.90	482.73	(2)	(2)	(4)	(4)	25.46	482.38
11	4/9/19 to 4/10/19	30.17	483.46	(2)	(2)	39.27 (5)	483.00	24.50	483.34
12	10/22/19 to 10/23/19	30.87	482.76	(3)	(3)	39.48	482.79	25.30	482.54
13	4/28/20 to 4/29/20	30.60	483.03	(3)	(3)	39.36	482.91	25.15	482.69
14	10/20/20 to 10/21/20	31.28	482.35	(3)	(3)	40.25 (6)	482.02	25.88	481.96
15	4/13/21 to 4/14/21	31.24	482.39	(3)	(3)	39.85	482.42	25.88	481.96
16	10/19/21 to 10/20/21	31.12	482.51	(3)	(3)	39.91	482.36	25.12	482.72
17	4/13/22 to 4/14/22	31.26	482.37	(3)	(3)	39.90	482.37	29.58	478.26
18	10/13/22 to 10/14/22	31.73	481.90	(3)	(3)	40.32	481.95	26.20	481.64

		JKS-36 Downgradient		JKS-61 Downgradient		JKS-62 Downgradient	
		TOC Elevation	508.51	TOC Elevation	505.51	TOC Elevation	509.84
Sampling Event	Sampling Event Dates	Depth to Water (feet btoc)	Water Level (msl)	Depth to Water (feet btoc)	Water Level (msl)	Depth to Water (feet btoc)	Water Level (msl)
1	12/6/16 to 12/8/16	25.99	482.42	23.95	481.56	28.63	481.21
2	2/21/17 to 2/23/17	25.78	482.63	23.31	482.20	28.30	481.54
3	3/28/17 to 3/30/17	25.37	483.04	23.10	482.41	28.42	481.42
4	5/2/17 to 5/4/17	43.89	464.52	22.85	482.66	28.00	481.84
5	6/20/17 to 6/21/17	25.40	483.01	22.05	483.46	28.05	481.79
6	7/25/17 to 7/26/17	25.62	482.79	23.50	482.01	28.12	481.72
7	8/29/17 to 8/30/17	25.70	482.71	23.60	481.91	28.12	481.72
8	10/10/17 to 10/11/17	25.91	482.50	23.97	481.54	28.00	481.84
9	4/4/18 to 4/5/18	25.46	482.95	23.08	482.43	27.66	482.18
10	10/30/18 to 10/31/18	25.90	482.51	23.94	481.57	28.33	481.51
11	4/9/19 to 4/10/19	25.23	483.18	22.97	482.54	27.52	482.32
12	10/22/19 to 10/23/19	25.90	482.51	24.20	481.31	27.85	481.99
13	4/28/20 to 4/29/20	25.45	482.96	23.74	481.77	27.78	482.06
14	10/20/20 to 10/21/20	26.03	482.38	24.60	480.91	29.10 (6)	480.74
15	4/13/21 to 4/14/21	26.08	482.33	24.54	480.97	28.56	481.28
16	10/19/21 to 10/20/21	26.14	482.27	24.05	481.46	28.19	481.65
17	4/13/22 to 4/14/22	26.28	482.23	23.93	481.58	28.25	481.59
18	10/13/22 to 10/14/22	26.44	482.07	25.37	480.14	28.95	480.89

NOTES:
btoc = below top of casing
msl = mean sea level
(1) JKS-47 was re-sampled on 2/28/17.
(2) Blockage in JKS-63 well casing.
(3) JKS-63 was plugged and abandoned on 5/2/19
(4) JKS-63R was installed on 5/2/19.
(5) JKS-63R water level was initially measured on 8/20/19.
(6) JKS-62 and JKS-63R were gauged on 11/17/20, due to a blockage encountered in the well casing during Event 14 (October 2020)

TABLE 2
Groundwater Sampling Summary
CPS Energy - Calaveras Power Station
Evaporation Pond

CCR Unit	Well ID	Well Function	Number of Samples Collected in 2016 - 2022	2016 - 2022 Sample Dates																		Monitoring Program
				12/6/16 to 12/8/16	2/21/17 to 2/23/17	3/28/17 to 3/30/17	5/2/17 to 5/4/17	6/20/17 to 6/21/17	7/25/17 to 7/26/17	8/29/17 to 8/30/17	10/10/17 to 10/11/17	4/4/18 to 4/5/18	10/30/18 to 10/31/18	4/9/19 to 4/10/19	10/22/19 to 10/23/19	4/28/20 to 4/29/20	10/20/2020 to 10/21/20	4/13/21 to 4/14/21	10/19/21 to 1020/21	4/13/22 to 4/14/22	10/13/22 to 10/14/22	
Evaporation Pond	JKS-36	Downgradient Monitoring	18	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection
	JKS-47	Upgradient Monitoring	18	X	(1)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection
	JKS-61	Downgradient Monitoring	18	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection
	JKS-62	Downgradient Monitoring	17	X	X	X	X	X	X	X	X	X	X	X	X	X	X (6)	X	X	X	(7)	Detection
	JKS-63	Upgradient Monitoring	8	X	X	X	X	(2)	X	X	X	X	(3)	(3)								Detection
	JKS-63R	Upgradient Monitoring	7	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4) (5)	X	X	X (6)	X	X	X	X	Detection
	JKS-64	Downgradient Monitoring	18	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection

NOTES:
X = Indicates that a sample was collected.
(1) JKS-47 was re-sampled on 2/28/2017.
(2) JKS-63 was not sampled during Event 5 (June 2017), due to the well going dry during sampling activities.
(3) JKS-63 was not sampled during Event 10 (October 2018) and Event 11 (April 2019), due to blockage in the well casing. JKS-63 was plugged and abandoned on 5/2/19.
(4) JKS-63R was installed on 5/2/19.
(5) JKS-63R was initially sampled on 8/20/19.
(6) JKS-62 and JKS-63R were sampled on 11/17/20. Samples were not collected during the October 2020 sampling event due to blockages in the well casings.
(7) JKS-62 was not sampled during Event 18 (October 2022), due to the well going dry before sampling activities.

TABLE 3
Groundwater Analytical Results Summary
CPS Energy - Calaveras Power Station
Evaporation Pond

		JKS-47 Upgradient																	
	Sample Date	**12/8/16**	**2/28/17**	**3/29/17**	**5/3/17**	**6/21/17**	**7/26/17**	**8/30/17**	**10/11/17**	**4/5/18**	**10/30/18**	**4/10/19**	**10/23/19**	**4/29/20**	**10/21/20**	**4/14/21**	**10/19/21**	**4/14/22**	**10/26/22**
	Task	**Event 1**	**Event 2**	**Event 3**	**Event 4**	**Event 5**	**Event 6**	**Event 7**	**Event 8**	**Event 9**	**Event 10**	**Event 11**	**Event 12**	**Event 13**	**Event 14**	**Event 15**	**Event 16**	**Event 17**	**Event 18**
Constituents	**Unit**	**Dec 2016**	**Feb 2017**	**Mar 2017**	**May 2017**	**Jun 2017**	**Jul 2017**	**Aug 2017**	**Oct 2017**	**Apr 2018**	**Oct 2018**	**Apr 2019**	**Oct 2019**	**Apr 2020**	**Oct 2020**	**Apr 2021**	**Oct 2021**	**Apr 2022**	**Oct 2022**
Appendix III - Detection Monitoring																			
Boron	mg/L	0.824	0.838	0.696	0.817	0.804	0.828 JH	0.760	1.02	0.844	0.806	0.590	1.05	0.800	0.904 JL	0.816	0.881	0.947	0.852
Calcium	mg/L	54.0	62.1	168	26.2	71.1	62.7 JH	66.7	36.1	53.5	83.2 D	128	36.5	43.1	28.4	62.1	67.1	47.0	60.1
Chloride	mg/L	107	150	232 D	193	168	148 JH	210 D	68.5	151	186	279	53.9 X	107	60.9	154	162	123	133
Fluoride	mg/L	0.0360 U	0.0360 U	0.315	0.382 JH	0.213 JH	0.360 U	0.0960 U	0.0360 U	0.0360 U	0.0998 J	0.0985 J	0.154 JH	0.163	0.161	0.142	0.018 U	0.018 U	0.018 U
Sulfate	mg/L	213 D	267 D	369 D	299	266 D	248 JH	284 D	171	236	262	347	210 X	257	195	278	271	279	260
pH - Field Collected	SU	5.82	5.83	5.75	6.00	5.75	5.85	5.90	5.93	5.91	5.72	5.92	4.58	5.87	5.88	6.09	6.16	6.26	6.12
Total dissolved solids	mg/L	811	922	1170	1060	979	806 JH	904	677	787	727	1240	665	772	782	929	980	826	935
Appendix IV - Assessment Monitoring																			
Antimony	mg/L	0.00120 U	0.000240 U	0.000294 J	0.00120 U	0.000275 J	0.000240 U	0.000240 U	0.000240 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00442 J	0.00130 J	0.00136 J	0.00123 U	0.00185 J	0.00105 J	0.00124 J	0.000246 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.0475	0.0132	0.0180	0.0118 J	0.0154	0.00981	0.0104	0.00785	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000813 J	0.000255 J	0.000131 U	0.000654 U	0.000352 J	0.000131 U	0.000172 J	0.000131 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.000734 U	0.000637 J	0.000977 J	0.000797 J	0.000735 J	0.000611 J	0.000814 J	0.000147 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.234	0.00430	0.000988 J	0.00262 U	0.00262 J	0.000855 J	0.00130 J	0.000525 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.00915 J	0.00102 J	0.00153 J	0.00113 J	0.00227	0.000976 J	0.00107 J	0.0000699 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	0.0360 U	0.0360 U	0.315	0.382 JH	0.213 JH	0.360 U	0.0960 U	0.0360 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.00586 J	0.000950 J	0.000448 J	0.000758 U	0.00157 J	0.000202 J	0.000449 J	0.000152 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.0615	0.0478	0.00238 U	0.0207	0.0720	0.0644	0.0799	0.0521	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.0000600 J	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.0317	0.00126 J	0.00173 J	0.00128 J	0.000788 J	0.000581 J	0.000653 J	0.000255 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.0493	0.0697	0.0518	0.0564	0.0613	0.0577	0.0525	0.0854	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.00166 U	0.000332 U	0.000332 U	0.00166 U	0.000332 U	0.000332 U	0.000332 U	0.000332 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	1.2 ± 0.342	0.578 ± 0.275	0.630 ± 0.237	0.538 ± 0.192	0.729 ± 0.278	0.304 ± 0.233	1.06 ± 0.361	0.246 ± 0.180	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	1.66 ± 1.15	1.34 ± 1.05	1.27 ± 0.960 U	2.17 ± 1.01	0.664 ± 0.929	0.771 ± 1.48	1.65 ± 1.05	0.463 ± 0.886	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

NOTES:

(A) JKS-63 plugged and abandoned and replaced with JKS-63R on 5/2/19. Sample events 1 through 10 collected from JKS-63 and thereafter from JKS-63R.

(1) Sample not collected due to the well going dry during sampling activities.

(2) Sample not collected due to blockage in the well casing.

mg/L: Milligrams per Liter.

SU: Standard Units.

pCi/L: Picocuries per Liter.

-- : Laboratory did not analyze sample for indicated constituent.

B: Target analyte or common lab contaminant was identified in the method blank.

D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.

J: Analyte detected above method (sample) detection limit but below method quantitation limit.

H: Bias in sample result likely to be high.

NR: Analysis of this constituent not required for detection monitoring.

U: Analyte not detected at laboratory reporting limit (Sample Detection Limit).

X: Matrix Spike/Matrix Spike Duplicate recoveries were found to be outside of the laboratory control limits.

TABLE 3
Groundwater Analytical Results Summary
CPS Energy - Calaveras Power Station
Evaporation Pond

		JKS-63 / JKS-63R Upgradient (A)																	
	Sample Date	**12/8/16**	**2/22/17**	**3/29/17**	**5/3/17**	**6/21/17**	**7/26/17**	**8/30/17**	**10/11/17**	**4/5/18**	**10/30/18**	**8/20/19**	**10/23/19**	**4/29/20**	**11/17/20**	**4/14/21**	**10/19/21**	**4/14/22**	**10/26/22**
	Task	**Event 1**	**Event 2**	**Event 3**	**Event 4**	**Event 5**	**Event 6**	**Event 7**	**Event 8**	**Event 9**	**Event 10**	**Event 11**	**Event 12**	**Event 13**	**Event 14**	**Event 15**	**Event 16**	**Event 17**	**Event 18**
Constituents	**Unit**	**Dec 2016**	**Feb 2017**	**Mar 2017**	**May 2017**	**Jun 2017**	**Jul 2017**	**Aug 2017**	**Oct 2017**	**Apr 2018**	**Oct 2018**	**Apr 2019**	**Oct 2019**	**Apr 2020**	**Nov 2020**	**Apr 2021**	**Oct 2021**	**Apr 2022**	**Oct 2022**
Appendix III - Detection Monitoring																			
Boron	mg/L	0.800	0.866	NR	0.981	(1)	1.33 JH	1.23	1.06	1.13	(2)	2.03	1.03	0.950	1.12	1.12	1.23	1.16	1.27
Calcium	mg/L	783	914	713	1060	(1)	835	174	872	836	(2)	221	953 D	952	1050	1060	1140	1000	1200
Chloride	mg/L	1230 D	1160 D	1220 D	1340	(1)	1960 JHD	1890 D	1420	1670	(2)	2360 D	2240	2530	2830	2440	2590	2550	3020
Fluoride	mg/L	0.0573 J	0.320	0.297	0.364 JH	(1)	0.0971 JH	0.182 JH	0.0360 U	0.0360 U	(2)	0.206 J	0.352 JH	0.018 U	0.018 U	0.018 U	0.018 U	0.124	0.018 U
Sulfate	mg/L	0.0460 U	1860 D	1890 D	1860	(1)	1970 D	1920 D	1820	2110	(2)	1810 D	1750 D	1810	2120	1720	1640	1760	1820
pH - Field Collected	SU	5.61	5.35	5.60	5.85	(1)	5.88	5.82	5.63	5.64	(2)	--	4.76	5.83	5.79	5.99	6.07	6.29	6.18
Total dissolved solids	mg/L	5750	4760	4870	5560	(1)	6410	5000	5080	5220	(2)	6660	5200	7240	8190	8440	9940	8390	10700
Appendix IV - Assessment Monitoring																			
Antimony	mg/L	0.00120 U	0.000459 J	0.000695 J	0.00120 U	(1)	0.000240 U	0.000424 J	0.000240 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00332 J	0.00294	0.00128 J	0.00123 U	(1)	0.000893 J	0.000992 J	0.000246 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.0626	0.0540	0.0336	0.0316	(1)	0.0294	0.0258	0.0222	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000654 U	0.000930 J	0.000442 J	0.000654 U	(1)	0.000196 J	0.000223 J	0.000131 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.00339 J	0.00405	0.00394	0.00316 J	(1)	0.00282	0.00263	0.00285	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chromium	mg/L	1.49	0.735	0.371	0.114	(1)	0.0742	0.0584	0.0130	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.0802	0.0762	0.0546	0.0331	(1)	0.0137	0.0119	0.0119	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	0.0573 J	0.320	0.297	0.364 JH	(1)	0.0971 JH	0.182 JH	0.0360 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.00441 J	0.00599	0.00108 J	0.000758 U	(1)	0.000238 J	0.000551 J	0.000152 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.000476 U	0.116	0.00238 U	0.654	(1)	0.946	1.15	0.791	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.000236	0.000237	0.000206	0.0000400 J	(1)	0.000260	0.000441	0.000376	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.186	0.00789	0.00966	0.00419 J	(1)	0.00281	0.00180 J	0.000255 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.0188	0.0210	0.0257	0.0188	(1)	0.0288	0.0318	0.0244	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.00166 U	0.000332 U	0.000332 U	0.00166 U	(1)	0.000332 U	0.000332 U	0.000332 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	3.42 ± 0.573	2.76 ± 0.476	5.79 ± 0.790	4.57 ± 0.577	(1)	6.7 ± 0.744	7.36 ± 0.874	5.04 ± 0.711	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	2.44 ± 1.44	4.13 ± 1.21	2.04 ± 1.61 U	3.41 ± 0.968	(1)	10.9 ± 2.31	1.79 ± 1.27	6.77 ± 1.48	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

NOTES:

(A) JKS-63 plugged and abandoned and replaced with JKS-63R on 5/2/19. Sample events 1 through 10 collected from JKS-63 and thereafter from JKS-63R.

(1) Sample not collected due to the well going dry during sampling activities.

(2) Sample not collected due to blockage in the well casing.

mg/L: Milligrams per Liter.

SU: Standard Units.

pCi/L: Picocuries per Liter.

-- : Laboratory did not analyze sample for indicated constituent.

B: Target analyte or common lab contaminant was identified in the method blank.

D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.

J: Analyte detected above method (sample) detection limit but below method quantitation limit.

H: Bias in sample result likely to be high.

NR: Analysis of this constituent not required for detection monitoring.

U: Analyte not detected at laboratory reporting limit (Sample Detection Limit).

X: Matrix Spike/Matrix Spike Duplicate recoveries were found to be outside of the laboratory control limits.

TABLE 3
Groundwater Analytical Results Summary
CPS Energy - Calaveras Power Station
Evaporation Pond

		JKS-64 Downgradient																	
	Sample Date	**12/8/16**	**2/23/17**	**3/29/17**	**5/4/17**	**6/21/17**	**7/26/17**	**8/30/17**	**10/11/17**	**4/5/18**	**10/30/18**	**4/10/19**	**10/23/19**	**4/29/20**	**10/21/20**	**4/14/21**	**10/19/21**	**4/14/22**	**10/26/22**
	Task	**Event 1**	**Event 2**	**Event 3**	**Event 4**	**Event 5**	**Event 6**	**Event 7**	**Event 8**	**Event 9**	**Event 10**	**Event 11**	**Event 12**	**Event 13**	**Event 14**	**Event 15**	**Event 16**	**Event 17**	**Event 18**
Constituents	**Unit**	**Dec 2016**	**Feb 2017**	**Mar 2017**	**May 2017**	**Jun 2017**	**Jul 2017**	**Aug 2017**	**Oct 2017**	**Apr 2018**	**Oct 2018**	**Apr 2019**	**Oct 2019**	**Apr 2020**	**Oct 2020**	**Apr 2021**	**Oct 2021**	**Apr 2022**	**Oct 2022**
Appendix III - Detection Monitoring																			
Boron	mg/L	0.839	0.837	1.14	0.962	0.816	0.904 JH	0.835	0.901	0.837	0.805	0.804	0.747	0.711	0.735 JL	0.771	0.844	0.874	0.731
Calcium	mg/L	24.0	24.0	31.4	23.8	20.6	21.7 JH	21.6	25.2	23.6	24.4	23.0	24.4	20.3	20.4	23.9	0.0004 J	25.1	23.2
Chloride	mg/L	12.7	12.4	11.8	11.0	11.4	11.5	11.5	9.63	14.2	15.5	16.6	17.7	18.2	16.0	18.4	15.7	16.2	20.2
Fluoride	mg/L	0.0360 U	0.294 JH	0.332	0.188	0.231 JH	0.157 JH	0.224 JH	0.0360 U	0.0360 U	0.106 J	0.121 J	0.176 JH	0.143	0.101	0.380	0.018 U	0.183	0.383
Sulfate	mg/L	171	182	184	174	172	170 JH	172	164	189	196	193	192 X	209	212	218	196	202	209
pH - Field Collected	SU	6.46	5.50	6.30	6.33	6.21	6.09	6.20	6.21	6.13	5.97	6.14	4.82	5.86	5.96	6.07	6.19	6.36	6.20
Total dissolved solids	mg/L	594	585	611	581	572	555 JH	463	576	549	525	551	588	569	664	586	597	573	677
Appendix IV - Assessment Monitoring																			
Antimony	mg/L	0.000240 U	0.000240 U	0.000240 U	0.00120 U	0.000240 U	0.000240 U	0.000240 U	0.000240 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.000911 J	0.000730 J	0.000556 J	0.00123 U	0.000476 J	0.000490 J	0.000519 J	0.000246 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.00768	0.00451	0.00392 J	0.00410 J	0.00320 J	0.00324 J	0.00275 BJ	0.000484 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000131 U	0.000131 U	0.000131 U	0.000654 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.000147 U	0.000147 U	0.000147 U	0.000734 U	0.000147 U	0.000147 U	0.000147 U	0.000147 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.000525 U	0.000905 J	0.000525 U	0.00262 U	0.000867 J	0.000637 J	0.000961 J	0.000525 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.000998 J	0.000952 J	0.000851 J	0.000859 J	0.000745 J	0.000856 J	0.000889 J	0.0000699 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	0.0360 U	0.294 JH	0.332	0.188	0.231 JH	0.157 JH	0.224 JH	0.0360 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.000186 J	0.000152 U	0.000152 U	0.000758 U	0.000152 U	0.000152 U	0.000152 U	0.000152 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.0173 J	0.0146 J	0.00238 U	0.0152 J	0.0173 J	0.0181 J	0.0252	0.0208	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.0000263 UX	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	0.0000540 J	0.0000263 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.000398 J	0.000317 J	0.000255 U	0.00128 U	0.000265 J	0.000255 U	0.000273 J	0.000255 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.000512 J	0.000550 J	0.000495 J	0.00227 U	0.000468 J	0.000468 J	0.000454 U	0.000454 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.000332 U	0.000332 U	0.000332 U	0.00166 U	0.000332 U	0.000332 U	0.000332 U	0.000332 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	0.981 ± 0.400	1.16 ± 0.408	0.530 ± 0.284	0.231 ± 0.174	0.258 ± 0.175	0.286 ± 0.247	1.05 ± 0.361	0.531 ± 0.276	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	0.429 ± 1.56	2.07 ± 1.22	-0.102 ± 1.07 U	0.408 ± 0.764	0.699 ± 0.761	2.49 ± 1.54	0.26 ± 0.639	1 ± 0.834	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

NOTES:

(A) JKS-63 plugged and abandoned and replaced with JKS-63R on 5/2/19. Sample events 1 through 10 collected from JKS-63 and thereafter from JKS-63R.

(1) Sample not collected due to the well going dry during sampling activities.

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mg/L: Milligrams per Liter.

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J: Analyte detected above method (sample) detection limit but below method quantitation limit.

H: Bias in sample result likely to be high.

NR: Analysis of this constituent not required for detection monitoring.

U: Analyte not detected at laboratory reporting limit (Sample Detection Limit).

X: Matrix Spike/Matrix Spike Duplicate recoveries were found to be outside of the laboratory control limits.

TABLE 3
Groundwater Analytical Results Summary
CPS Energy - Calaveras Power Station
Evaporation Pond

		JKS-36 Downgradient																	
	Sample Date	**12/8/16**	**2/23/17**	**3/29/17**	**5/4/17**	**6/21/17**	**7/26/17**	**8/30/17**	**10/11/17**	**4/5/18**	**10/30/18**	**4/10/19**	**10/22/19**	**4/29/20**	**10/21/20**	**4/14/21**	**10/19/21**	**4/13/22**	**10/25/22**
	Task	**Event 1**	**Event 2**	**Event 3**	**Event 4**	**Event 5**	**Event 6**	**Event 7**	**Event 8**	**Event 9**	**Event 10**	**Event 11**	**Event 12**	**Event 13**	**Event 14**	**Event 15**	**Event 16**	**Event 17**	**Event 18**
Constituents	**Unit**	**Dec 2016**	**Feb 2017**	**Mar 2017**	**May 2017**	**Jun 2017**	**Jul 2017**	**Aug 2017**	**Oct 2017**	**Apr 2018**	**Oct 2018**	**Apr 2019**	**Oct 2019**	**Apr 2020**	**Oct 2020**	**Apr 2021**	**Oct 2021**	**Apr 2022**	**Oct 2022**
Appendix III - Detection Monitoring																			
Boron	mg/L	0.308	0.671	0.748	0.731	0.581	0.625 JH	0.663	0.637	0.625	0.686	0.663	0.632	0.459	0.456 JL	0.436	0.630	0.556	0.431
Calcium	mg/L	69.7	165	147	282	247	255 JHX	241	289	281	311 D	315 D	265 D	175	259	268	299	260	173
Chloride	mg/L	14.5	199 D	37.0	355	364 D	379 JHD	319 D	328	347 X	313	285	274	63.3	319	316	260	295	383
Fluoride	mg/L	0.0360 U	0.439 JH	0.330	1.53	1.26	1.37 JH	1.30	1.32	1.95 X	1.47	1.45	1.41	1.18	1.07	1.02	0.018 U	1.71	1.73
Sulfate	mg/L	49.2	409 D	271 D	726	731 D	775 JHD	707 D	741	816 X	946	697	756 D	189	890	923	727	769	1080
pH - Field Collected	SU	6.71	4.96	6.98	4.04	3.72	3.80	5.20	3.24	3.48	3.61	3.71	3.66	3.42	3.98	4.29	5.96	6.78	4.41
Total dissolved solids	mg/L	368	1010	591	1610	1820	1700 JH	1220	1770	1650	1630	1520	1600	1790	1930	2100	1640	2200	2410
Appendix IV - Assessment Monitoring																			
Antimony	mg/L	0.00120 U	0.000240 U	0.00123 J	0.00120 U	0.000240 U	0.00121 J	0.000240 U	0.000240 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00123 U	0.000588 J	0.00134 J	0.00324 J	0.00276	0.00369	0.00341	0.00372	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.0988	0.0967	0.139	0.0270	0.0187	0.0207	0.0372	0.0225	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000654 U	0.00198 J	0.000131 U	0.0259	0.0226	0.0261	0.0212	0.0259	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.00257 J	0.00510	0.000548 J	0.0118	0.0102	0.0117	0.0101	0.0113	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.00262 U	0.00608	0.0409	0.0100 J	0.00968	0.0156	0.00792	0.0132	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.000579 J	0.0871	0.00751	0.220	0.186	0.216	0.195	0.215	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	0.0360 U	0.439 JH	0.330	1.53	1.26	1.37 JH	1.30	1.32	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.000758 U	0.000152 U	0.000152 U	0.000758 U	0.000164 J	0.000220 J	0.000261 J	0.000152 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.0123 J	0.119	0.00238 U	0.326	0.340	0.371	0.372	0.379	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.000834	0.000289	0.00143	0.00240	0.00244	0.00160	0.00113	0.00226	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.00397 J	0.00261	0.0686	0.00183 J	0.000704 J	0.000791 J	0.00151 J	0.000255 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.0334	0.0448	0.0313	0.0673	0.0616	0.0697	0.0633	0.0663	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.00166 U	0.000487 J	0.000332 U	0.00166 U	0.000876 J	0.00114 J	0.000889 J	0.000332 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	0.0888 ± 0.151	1.12 ± 0.342	0.453 ± 0.276	4.85 ± 0.656	4.02 ± 0.608	4.32 ± 0.667	6.28 ± 0.845	3.6 ± 0.600	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	2.14 ± 1.02	2.17 ± 0.979	0.166 ± 0.861 U	4.28 ± 1.19	3.44 ± 1.04	3.95 ± 1.79	2.63 ± 0.928	3.3 ± 1.33	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

NOTES:

(A) JKS-63 plugged and abandoned and replaced with JKS-63R on 5/2/19. Sample events 1 through 10 collected from JKS-63 and thereafter from JKS-63R.

(1) Sample not collected due to the well going dry during sampling activities.

(2) Sample not collected due to blockage in the well casing.

mg/L: Milligrams per Liter.

SU: Standard Units.

pCi/L: Picocuries per Liter.

-- : Laboratory did not analyze sample for indicated constituent.

B: Target analyte or common lab contaminant was identified in the method blank.

D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.

J: Analyte detected above method (sample) detection limit but below method quantitation limit.

H: Bias in sample result likely to be high.

NR: Analysis of this constituent not required for detection monitoring.

U: Analyte not detected at laboratory reporting limit (Sample Detection Limit).

X: Matrix Spike/Matrix Spike Duplicate recoveries were found to be outside of the laboratory control limits.

TABLE 3
Groundwater Analytical Results Summary
CPS Energy - Calaveras Power Station
Evaporation Pond

		JKS-61 Downgradient																		
	Sample Date	**12/7/16**	**2/23/17**	**3/29/17**	**5/3/17**	**6/21/17**	**7/26/17**	**8/30/17**	**10/11/17**	**4/5/18**	**10/31/18**	**4/10/19**	**10/22/19**	**4/29/20**	**10/21/20**	**4/13/21**	**10/19/21**	**2/22/22**	**4/13/22**	**10/25/22**
	Task	**Event 1**	**Event 2**	**Event 3**	**Event 4**	**Event 5**	**Event 6**	**Event 7**	**Event 8**	**Event 9**	**Event 10**	**Event 11**	**Event 12**	**Event 13**	**Event 14**	**Event 15**	**Event 16**	**Event 17**	**Event 17**	**Event 18**
Constituents	**Unit**	**Dec 2016**	**Feb 2017**	**Mar 2017**	**May 2017**	**Jun 2017**	**Jul 2017**	**Aug 2017**	**Oct 2017**	**Apr 2018**	**Oct 2018**	**Apr 2019**	**Oct 2019**	**Apr 2020**	**Oct 2020**	**Apr 2021**	**Oct 2021**	**Feb 2022**	**Apr 2022**	**Oct 2022**
Appendix III - Detection Monitoring																				
Boron	mg/L	1.07	1.29	1.15	1.18	0.960	1.01 JH	0.994	0.997	1.09	3.25	2.72	2.90	1.82	1.82 JL	1.57	1.95	1.86	1.83	1.33
Calcium	mg/L	134	95.9	155	113	115	107 JH	105	135	171	197 D	176	168 D	154	172	122	130	--	144	104
Chloride	mg/L	198	158	162	168	193	190 JH	218 D	210	285	213	253	248	312	281	204	207	--	248	201
Fluoride	mg/L	0.393	0.503	0.522	0.643 JH	0.459 JH	0.479 JH	0.0960 U	0.0360 U	0.406 J	0.430 J	0.403 J	0.480 J	0.494	0.366	0.216	0.018 U	--	0.363	0.018 U
Sulfate	mg/L	401 D	377 JD	382 D	388	408 D	390 JHD	385 D	401	562	548	619	548 D	604	533	393	397	--	420	407
pH - Field Collected	SU	6.72	6.51	6.48	6.68	6.53	6.55	7.40	6.27	6.42	6.38	6.52	5.61	6.27	6.57	6.40	6.52	6.58	6.83	7.10
Total dissolved solids	mg/L	1400	1180	1190	1260	1430	1290 JH	1170	1280	1620	514	1650	1790	1870	2000	1320	1380	--	1410	1280
Appendix IV - Assessment Monitoring																				
Antimony	mg/L	0.00120 U	0.000240 U	0.000240 U	0.00120 U	0.000240 U	0.000240 U	0.000240 U	0.000240 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00123 U	0.000768 J	0.000709 J	0.00123 U	0.000563 J	0.000622 J	0.000569 J	0.000246 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.0364	0.0186	0.0173	0.0178 J	0.0148	0.0167	0.0153	0.0162	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000654 U	0.000131 U	0.000131 U	0.000654 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.000734 U	0.000147 U	0.000147 U	0.000734 U	0.000147 U	0.000147 U	0.000147 U	0.000147 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.00262 U	0.000911 J	0.000525 U	0.00262 U	0.000525 U	0.000604 J	0.000808 J	0.000525 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.000719 J	0.000725 J	0.000769 J	0.000779 J	0.000805 J	0.000765 J	0.000855 J	0.0000699 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	0.393	0.503	0.522	0.643 JH	0.459 JH	0.479 JH	0.0960 U	0.0360 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.000758 U	0.000152 U	0.000152 U	0.000758 U	0.000152 U	0.000152 U	0.000152 U	0.000152 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.000476 U	0.0158 J	0.00238 U	0.0120 J	0.0342	0.0336	0.0443	0.0335	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.00165 J	0.00129 J	0.000984 J	0.00128 U	0.000776 J	0.000742 J	0.000712 J	0.000255 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.00227 U	0.00123 J	0.00123 J	0.00227 U	0.00185 J	0.00154 J	0.00172 J	0.000454 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.00166 U	0.000332 U	0.000332 U	0.00166 U	0.000332 U	0.000332 U	0.000332 U	0.000332 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	1.15 ± 0.429	0.723 ± 0.306	0.256 ± 0.237 U	0.237 ± 0.193	0.398 ± 0.239	0.511 ± 0.223	0.821 ± 0.324	0.485 ± 0.212	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	2.79 ± 1.44	0.358 ± 1.06	0.761 ± 0.688 U	-0.064 ± 0.607	2.03 ± 0.997	0.491 ± 0.813	0.247 ± 0.710	1.64 ± 1.08	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

NOTES:

(A) JKS-63 plugged and abandoned and replaced with JKS-63R on 5/2/19. Sample events 1 through 10 collected from JKS-63 and thereafter from JKS-63R.

(1) Sample not collected due to the well going dry during sampling activities.

(2) Sample not collected due to blockage in the well casing.

mg/L: Milligrams per Liter.

SU: Standard Units.

pCi/L: Picocuries per Liter.

-- : Laboratory did not analyze sample for indicated constituent.

B: Target analyte or common lab contaminant was identified in the method blank.

D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.

J: Analyte detected above method (sample) detection limit but below method quantitation limit.

H: Bias in sample result likely to be high.

NR: Analysis of this constituent not required for detection monitoring.

U: Analyte not detected at laboratory reporting limit (Sample Detection Limit).

X: Matrix Spike/Matrix Spike Duplicate recoveries were found to be outside of the laboratory control limits.

TABLE 3
Groundwater Analytical Results Summary
CPS Energy - Calaveras Power Station
Evaporation Pond

		JKS-62 Downgradient																	
	Sample Date	**12/8/16**	**2/23/17**	**3/29/17**	**5/4/17**	**6/21/17**	**7/26/17**	**8/30/17**	**10/11/17**	**4/5/18**	**10/30/18**	**4/10/19**	**10/23/19**	**4/29/20**	**11/17/20**	**4/14/21**	**10/19/21**	**4/13/22**	**10/25/22**
	Task	**Event 1**	**Event 2**	**Event 3**	**Event 4**	**Event 5**	**Event 6**	**Event 7**	**Event 8**	**Event 9**	**Event 10**	**Event 11**	**Event 12**	**Event 13**	**Event 14**	**Event 15**	**Event 16**	**Event 17**	**Event 18**
Constituents	**Unit**	**Dec 2016**	**Feb 2017**	**Mar 2017**	**May 2017**	**Jun 2017**	**Jul 2017**	**Aug 2017**	**Oct 2017**	**Apr 2018**	**Oct 2018**	**Apr 2019**	**Oct 2019**	**Apr 2020**	**Nov 2020**	**Apr 2021**	**Oct 2021**	**Apr 2022**	**Oct 2022**
Appendix III - Detection Monitoring																			
Boron	mg/L	0.549	0.481	0.597	0.601	0.501	0.485 JH	0.485	0.549	0.522	0.559	0.612	0.528	0.484	0.537	0.541	0.558	0.874	(1)
Calcium	mg/L	155	152	220	156	150	134 JH	150	158	160	161 D	205 D	151 D	122	144	149	159	25.1	(1)
Chloride	mg/L	257 D	279 DX	279 D	278	291 D	260 JHD	281 D	241	312	279	336	276	284	284	279	270	16.2	(1)
Fluoride	mg/L	0.246	0.362 JH	0.418	0.388	0.366 JH	0.342 JH	0.233 JH	0.0360 U	0.353 J	0.309 J	0.356 J	0.380 J	0.331	0.295	0.258	0.018 U	0.183	(1)
Sulfate	mg/L	190	187	193	188	184	181 JH	188 D	175	200	183	191	183	190	212	191	180	202	(1)
pH - Field Collected	SU	6.79	6.67	6.63	6.71	6.68	6.82	7.51	6.52	6.72	6.58	6.29	5.43	6.54	6.55	6.61	6.67	6.89	(1)
Total dissolved solids	mg/L	1120	1170	1140	1100	1080	976 JH	1080	1080	1110	956	1190	1160	1100	1040	1100	1070	573	(1)
Appendix IV - Assessment Monitoring																			
Antimony	mg/L	0.000240 U	0.000240 U	0.000240 U	0.00120 U	0.000240 U	0.000240 U	0.000240 U	0.000240 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.000684 J	0.000293 J	0.000246 U	0.00123 U	0.000254 J	0.000246 U	0.000246 U	0.000246 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.0825	0.0786	0.0813	0.0747	0.0734	0.0737	0.0708	0.0793	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000131 U	0.000131 U	0.000131 U	0.000654 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.000147 U	0.000147 U	0.000147 U	0.000734 U	0.000147 U	0.000147 U	0.000147 U	0.000147 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.00186 J	0.00109 J	0.000525 U	0.00262 U	0.000551 J	0.000691 J	0.00107 J	0.000525 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.00110 J	0.000198 J	0.000744 J	0.000350 U	0.000278 J	0.000211 J	0.0000699 U	0.0000699 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	0.246	0.362 JH	0.418	0.388	0.366 JH	0.342 JH	0.233 JH	0.0360 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.000588 J	0.000152 U	0.000152 U	0.000758 U	0.000154 J	0.000152 U	0.000152 U	0.000152 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.000476 U	0.0129 J	0.00238 U	0.00134 J	0.0353	0.0305	0.0457	0.0263	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.0000540 J	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.000414 J	0.000259 J	0.000255 U	0.00128 U	0.000255 U	0.000255 U	0.000255 U	0.000255 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.222	0.192	0.196	0.195	0.185	0.181	0.191	0.208	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.000332 U	0.000332 U	0.000332 U	0.00166 U	0.000332 U	0.000332 U	0.000332 U	0.000332 U	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	0.485 ± 0.229	0.402 ± 0.220	0.665 ± 0.321	0.0997 ± 0.153	0.425 ± 0.233	0.399 ± 0.220	2.02 ± 0.489	0.669 ± 0.279	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	2.15 ± 1.38	1.53 ± 1.28 U	0.305 ± 1.10 U	-0.138 ± 0.656	0.66 ± 0.760	1.07 ± 0.949	0.673 ± 0.821	0.371 ± 0.631	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

NOTES:

(A) JKS-63 plugged and abandoned and replaced with JKS-63R on 5/2/19. Sample events 1 through 10 collected from JKS-63 and thereafter from JKS-63R.

(1) Sample not collected due to the well going dry during sampling activities.

(2) Sample not collected due to blockage in the well casing.

mg/L: Milligrams per Liter.

SU: Standard Units.

pCi/L: Picocuries per Liter.

-- : Laboratory did not analyze sample for indicated constituent.

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J: Analyte detected above method (sample) detection limit but below method quantitation limit.

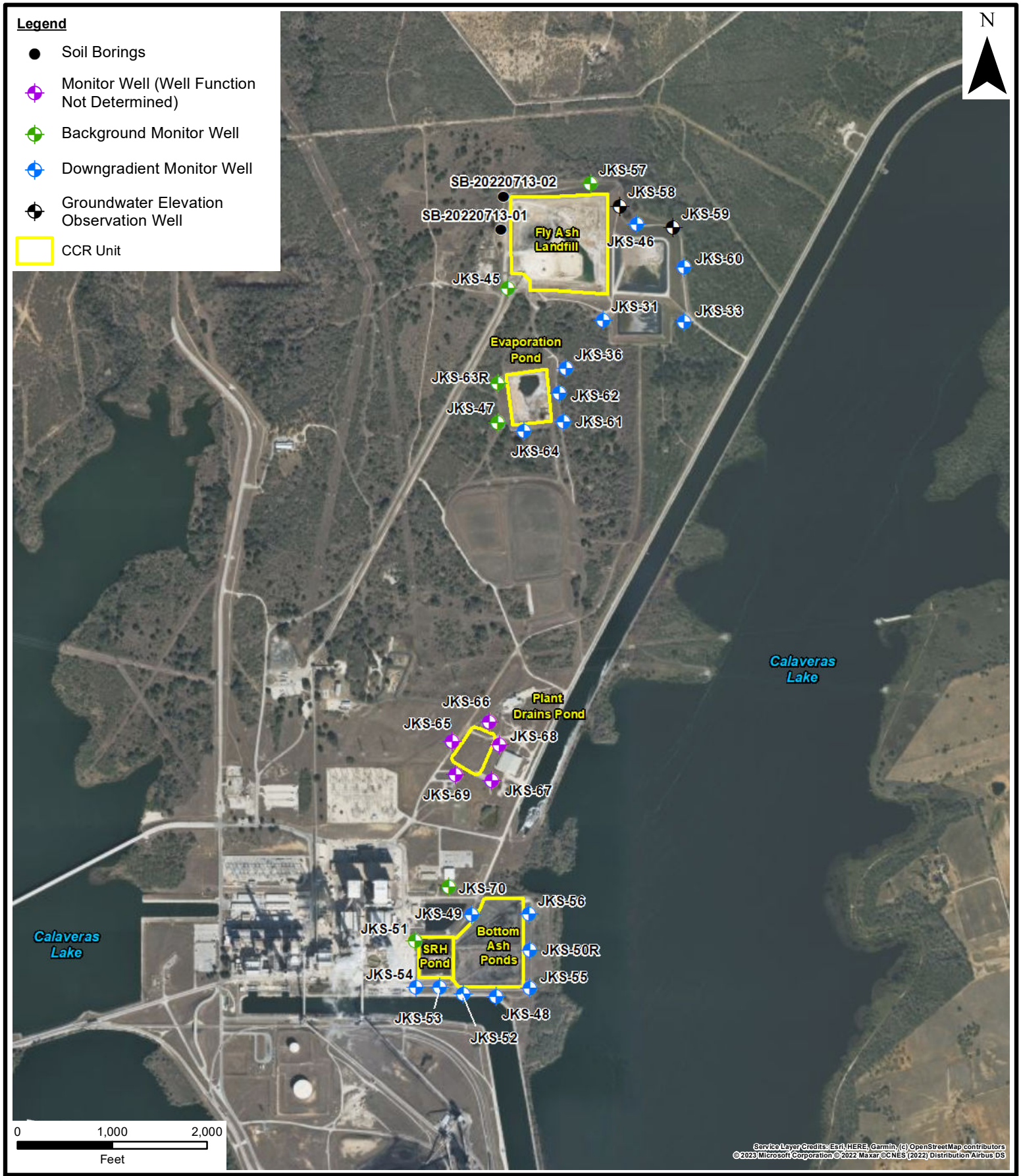
H: Bias in sample result likely to be high.

NR: Analysis of this constituent not required for detection monitoring.

U: Analyte not detected at laboratory reporting limit (Sample Detection Limit).

X: Matrix Spike/Matrix Spike Duplicate recoveries were found to be outside of the laboratory control limits.

Figures



Environmental Resources Management

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DATE:	02/16/2023	SCALE:	AS SHOWN	REVISION:	1

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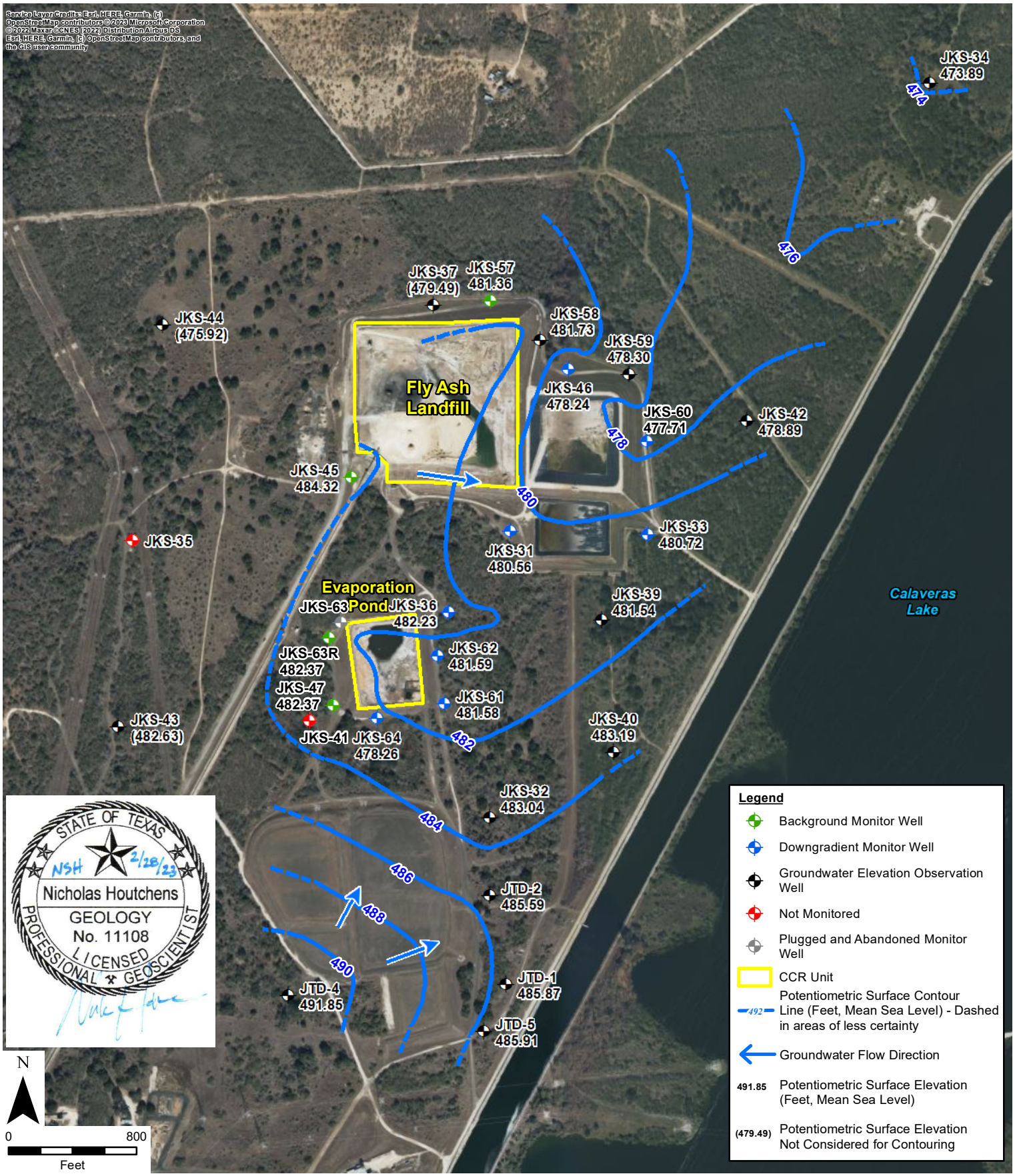
FIGURE 1
CCR WELL NETWORK LOCATION MAP
CPS Energy - Calaveras Power Station
San Antonio, Texas

ERM



Environmental Resources Management

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DATE:	06/02/2023	SCALE:	AS SHOWN	REVISION:	0

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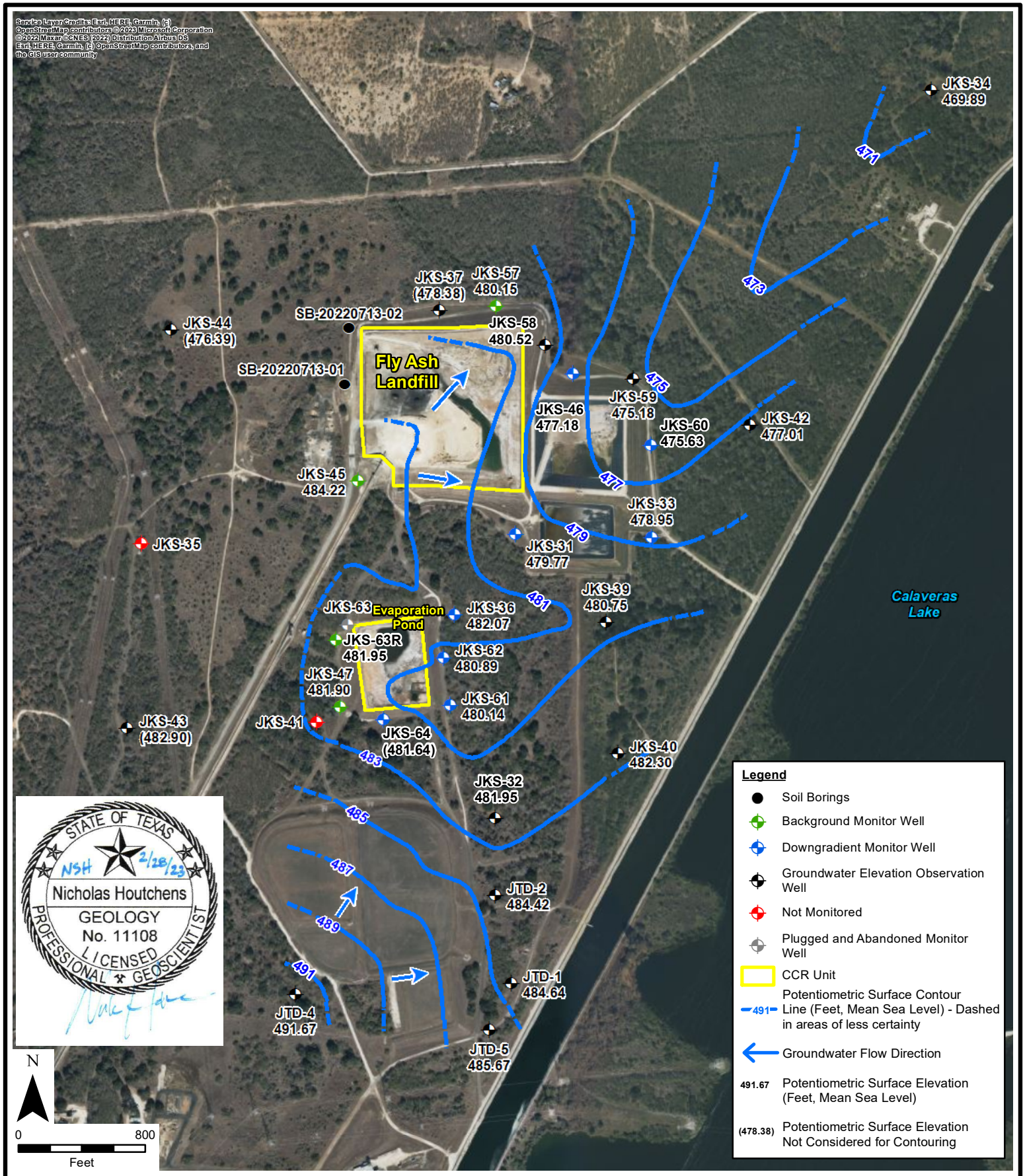
FIGURE 2A
POTENTIOMETRIC SURFACE MAP - April 2022
Northern CCR Units
CPS Energy - Calaveras Power Station
San Antonio, Texas

ERM



Environmental Resources Management

DESIGN: NH	DRAWN: LM	CHKD.: WZ
DATE: 14/02/2023	SCALE: AS SHOWN	REVISION: 0

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FIGURE 2B
POTENTIOMETRIC SURFACE MAP - October 2022
Northern CCR Units
CPS Energy - Calaveras Power Station
San Antonio, Texas

ERM

Laboratory Data Packages

Appendix A

(*Data Packages Available Upon Request*)

Statistical Analysis Tables and Figures

Appendix B

Appendix B - Table 1
Kruskal-Wallis Test Comparisons of Upgradient Wells
Calaveras Power Station
Evaporation Pond

Analyte	N	N Detect	Percent Detect	DF	statistic	p-value	Conclusion	UPL Type
Boron	34	34	100.00%	1	16.8	<0.001	Significant Difference	Intrawell
Calcium	35	35	100.00%	1	25.3	<0.001	Significant Difference	Intrawell
Chloride	35	35	100.00%	1	25.3	<0.001	Significant Difference	Intrawell
Fluoride	35	19	54.29%	1	0.0806	0.777	No Significant Difference	Interwell
pH	35	35	100.00%	1	1.67	0.196	No Significant Difference	Interwell
Sulfate	35	34	97.14%	1	19.4	<0.001	Significant Difference	Intrawell
Total dissolved solids	35	35	100.00%	1	25.3	<0.001	Significant Difference	Intrawell

Notes
Non-detects were substituted with a value of half the detection limit for calculations
N: number of data points
DF: degrees of freedom
statistic: Kruskal Wallis test statistic
p-value: P-values below 0.05 indicate that the median concentrations in the upgradient wells are significantly different from each other and the upgradient wells should not be pooled.
p-value: P-values equal or above 0.05 indicate that the median concentrations in the upgradient wells are not significantly different from each other and the upgradient wells can be pooled.

Appendix B - Table 2
Descriptive Statistics for Upgradient Wells
Calaveras Power Station
Evaporation Pond

Analyte	Well	Units	N	N Detect	Percent Detect	Min ND	Max ND	Min Detect	Median	Mean	Max Detect	SD	CV	Distribution
Boron	JKS-47	mg/L	19	19	100.00%			0.59	0.824	0.827	1.05	0.112	0.13569234	Normal
Boron	JKS-63	mg/L	15	15	100.00%			0.8	1.12	1.15	2.03	0.284	0.24626483	Lognormal
Calcium	JKS-47	mg/L	19	19	100.00%			26.2	62.1	66.1	168	34.7	0.52566413	Lognormal
Calcium	JKS-63	mg/L	16	16	100.00%			174	933	860	1200	290	0.33660468	NDD
Chloride	JKS-47	mg/L	19	19	100.00%			53.9	151	154	279	60.4	0.39307154	Normal
Chloride	JKS-63	mg/L	16	16	100.00%			1160	2100	2030	3020	623	0.30740467	Normal
Fluoride	Pooled	mg/L	35	19	54.29%	0.009	0.18	0.0573	0.0985	0.127	0.382	0.124	0.97822788	NDD
pH	Pooled	SU	35	35	100.00%			4.58	5.85	5.79	6.29	0.352	0.06068104	NDD
Sulfate	JKS-47	mg/L	19	19	100.00%			171	266	267	369	52.3	0.19600102	Normal
Sulfate	JKS-63	mg/L	16	15	93.75%	0.023	0.023	1640	1820	1740	2120	482	0.27657539	NDD
Total dissolved solids	JKS-47	mg/L	19	19	100.00%			665	904	905	1240	173	0.19092815	Normal
Total dissolved solids	JKS-63	mg/L	16	16	100.00%			4760	6080	6710	10700	1900	0.28327671	Lognormal

Notes

Non-detects were substituted with a value of half the detection limit for calculations
Well = Pooled, indicates that the summary statistics were produced for the pooled upgradient wells based on the Kruskal-Wallis test (Table 1).
SU: Standard units
N: number of data points
ND: Non-detect
SD: Standard Deviation
CV: Coefficient of Variation (standard deviation divided by the mean)

Appendix B - Table 3
Potential Outliers in Upgradient Wells
Calaveras Power Station
Evaporation Pond

Well	Sample	Date	Analyte	Units	Detect	Concentration	UPL type	Distribution	Statistical Outlier	Visual Outlier	Normal Outlier	Log Statistical Outlier	Log Visual Outlier	Lognormal Outlier	Statistical and Visual Outlier	Final Outlier Decision	Notes
JKS-47	JKS 47565343-007	10/11/2017	Boron	mg/L	TRUE	1.02	Intrawell	Normal		X			X				
JKS-47	JKS-47002	10/23/2019	Boron	mg/L	TRUE	1.05	Intrawell	Normal		X			X				
JKS-47	JKS-47-20220414-EP	04/14/2022	Boron	mg/L	TRUE	0.947	Intrawell	Normal		X			X				
JKS-63	63R001	08/20/2019	Boron	mg/L	TRUE	2.03	Intrawell	Lognormal	X	X	X	X	X	X	0		
JKS-47	JKS-47547201-003	02/23/2017	Calcium	mg/L	TRUE	99.4	Intrawell	Lognormal		X							
JKS-47	JKS-47549681-004	03/29/2017	Calcium	mg/L	TRUE	168	Intrawell	Lognormal	X	X	X		X				
JKS-47	JKS47620699-005	04/10/2019	Calcium	mg/L	TRUE	128	Intrawell	Lognormal		X			X				
JKS-47	JKS-47-WG-20170223	02/23/2017	pH	SU	TRUE	5.42	Interwell	NDD		X			X				
JKS-47	JKS-47-WG-20191023-02	10/23/2019	pH	SU	TRUE	4.58	Interwell	NDD	X	X	X	X	X	X	0		
JKS-63	JKS-63-WG-20170222	02/22/2017	pH	SU	TRUE	5.35	Interwell	NDD		X			X				
JKS-63	JKS-63R-WG-20191023-02	10/23/2019	pH	SU	TRUE	4.76	Interwell	NDD	X	X	X	X	X	X	0		
JKS-47	JKS-47547201-003	02/23/2017	pH	mg/L	TRUE	361	Intrawell	Normal		X			X				
JKS-47	JKS-47549681-004	03/29/2017	Sulfate	mg/L	TRUE	369	Intrawell	Normal		X							
JKS-47	JKS47620699-005	04/10/2019	Sulfate	mg/L	TRUE	347	Intrawell	Normal		X			X				
JKS-63	WELL 63581537-002	04/05/2018	Sulfate	mg/L	TRUE	2110	Intrawell	NDD		X			X				
JKS-63	JKS 63R-20201117-CCR	11/17/2020	Sulfate	mg/L	TRUE	2120	Intrawell	NDD		X							
JKS-47	JKS-47547201-003	02/23/2017	Total dissolved solids	mg/L	TRUE	1230	Intrawell	Normal		X							
JKS-47	JKS-47549681-004	03/29/2017	Total dissolved solids	mg/L	TRUE	1170	Intrawell	Normal		X							

Notes
NDD: No Discernible Distribution
SU: Standard units
Outlier tests were performed on detected data only.
Statistical outliers were determined using a Dixon's test for N < 25 and with Rosner's test for N > 25.
Visual outliers were identified if they fall above the confidence envelope on the QQ plot.
Data points were considered potential outliers if they were both statistical and visual outliers.
NDD wells had data points considered as potential outliers if they were either a normal or lognormal outlier.
[Blank] data distribution indicates that the well data did not have enough detected data points for outlier analysis.
Lognormally distributed data was first log-transformed before visual and statistical outlier tests were performed.
Normal data distribution indicates that the well data was directly used for statistical and visual outlier tests.
NDD indicates that both the untransformed and transformed data were examined with statistical and visual outlier tests.
'0' indicates that the data point was a statistical and visual outlier but was retained after review by the hydrogeologist.

Appendix B - Table 4
Mann Kendall Test for Trends in Upgradient Wells
Calaveras Power Station
Evaporation Pond

Analyte	UPL Type	Well	N	Num Detects	Percent Detect	p-value	tau	Conclusion
Boron	Intrawell	JKS-47	19	19	100.00%	0.0933	0.287	Stable, No Trend
Boron	Intrawell	JKS-63	15	15	100.00%	0.0664	0.356	Stable, No Trend
Calcium	Intrawell	JKS-47	19	19	100.00%	0.401	-0.141	Stable, No Trend
Calcium	Intrawell	JKS-63	16	16	100.00%	0.00597	0.51	Increasing Trend
Chloride	Intrawell	JKS-47	19	19	100.00%	0.195	-0.218	Stable, No Trend
Chloride	Intrawell	JKS-63	16	16	100.00%	<0.001	0.783	Increasing Trend
Fluoride	Interwell	JKS-47, JKS-63	35	19	54.29%	0.0278	-0.277	Decreasing Trend
pH	Interwell	JKS-47, JKS-63	35	35	100.00%	<0.001	0.481	Increasing Trend
Sulfate	Intrawell	JKS-47	19	19	100.00%	0.447	-0.135	Stable, No Trend
Sulfate	Intrawell	JKS-63	16	15	93.75%	0.343	-0.177	Stable, No Trend
Total dissolved solids	Intrawell	JKS-47	19	19	100.00%	0.368	-0.158	Stable, No Trend
Total dissolved solids	Intrawell	JKS-63	16	16	100.00%	<0.001	0.683	Increasing Trend

Notes

Non-detects were substituted with a value of zero for trend calculations

N: number of data points

tau: Kendall's tau statistic

p-value: A two-sided p-value describing the probability of the H0 being true (α=0.05)

Trend tests were performed on all upgradient data, only if the dataset met the minimum data quality criteria (ERM 2017)

Appendix B - Table 5
Calculated UPLs for Upgradient Datasets
Calaveras Power Station
Evaporation Pond

Analyte	UPL Type	Trend	Well	N	Num Detects	Percent Detects	LPL	UPL	Units	ND adjustment	Transformation	Alpha	Method	Final LPL	Final UPL	Notes
Boron	Intrawell	Stable, No Trend	JKS-47	19	19	100.00%		1.03	mg/L				95% UPL (t)			
Boron	Intrawell	Stable, No Trend	JKS-63	15	15	100.00%		1.67	mg/L				95% UPL (t)		X	
Calcium	Intrawell	Stable, No Trend	JKS-47	19	19	100.00%		137	mg/L				95% UPL (t)			
Calcium	Intrawell	Increasing Trend	JKS-63	16	16	100.00%		1480	mg/L	None	No		NP Detrended UPL		X	
Chloride	Intrawell	Stable, No Trend	JKS-47	19	19	100.00%		261	mg/L				95% UPL (t)			
Chloride	Intrawell	Increasing Trend	JKS-63	16	16	100.00%		3420	mg/L	None	No		NP Detrended UPL		X	
Fluoride	Interwell	Decreasing Trend	JKS-47, JKS-63	35	19	54.29%		0.252	mg/L	None	No		NP Detrended UPL		X	
pH	Interwell	Increasing Trend	JKS-47, JKS-63	35	35	100.00%	4.94	6.51	SU	None	No		NP Detrended UPL	X	X	
Sulfate	Intrawell	Stable, No Trend	JKS-47	19	19	100.00%		360	mg/L				95% UPL (t)			
Sulfate	Intrawell	Stable, No Trend	JKS-63	16	15	93.75%		2100	mg/L				95% UPL (t)		X	
Total dissolved solids	Intrawell	Stable, No Trend	JKS-47	19	19	100.00%		1210	mg/L				95% UPL (t)			
Total dissolved solids	Intrawell	Increasing Trend	JKS-63	16	16	100.00%		10500	mg/L	None	No		NP Detrended UPL		X	

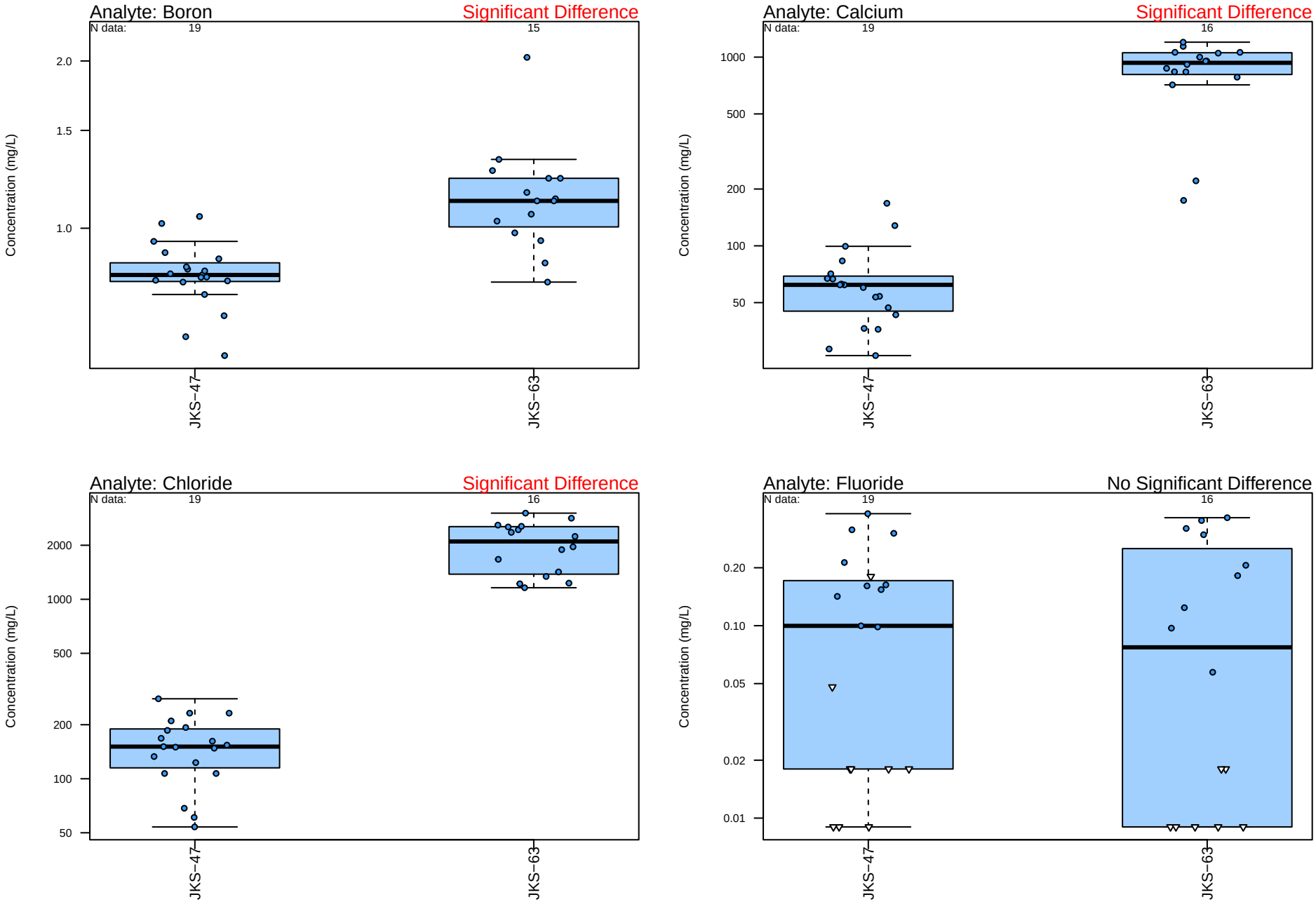
Notes
Non-detects were substituted with a value of half the detection limit for calculations
UPL: upper prediction limit
LPL: Lower prediction limit. These were only calculated for pH
UPLs were constructed with a site wide false positive rate of 0.1 and a 1 of 2 retesting.
UPLs were calculated using Sanitas Software.
SU: Standard units
NP: non parametric
RL: Reporting Limit
Intra: indicates an intrawell UPL was used
Inter: indicates an interwell UPL was used
In the case where multiple UPLs were calculated for an analyte, the maximum UPL was used as the final UPL.
In the case where multiple LPLs were calculated for an pH the minimum LPL was used as the final LPL.

Appendix B - Table 6
Comparisons of Downgradient Wells to UPLs
Calaveras Power Station
Evaporation Pond

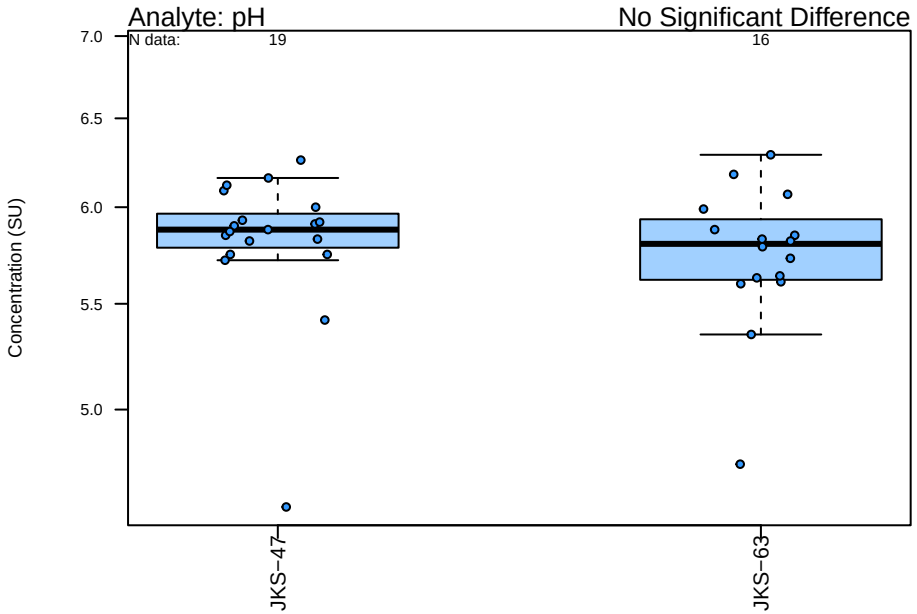
Analyte	Well	LPL	UPL	Units	Recent Date	Observation	Qualifier	Obs > UPL	Notes	Mann Kendall p-value	Mann Kendall tau	WRS p-value	WRS Conclusion	Exceed Median	Overall Conclusion
Boron	JKS-36		1.67	mg/L	10/25/2022	0.431						1	NS		No Exceedance
Boron	JKS-61		1.67	mg/L	10/25/2022	1.33						0.82	NS		No Exceedance
Boron	JKS-62		1.67	mg/L	04/13/2022	0.609						1	NS		No Exceedance
Boron	JKS-64		1.67	mg/L	10/26/2022	0.731						1	NS		No Exceedance
Calcium	JKS-36		1480	mg/L	10/25/2022	173						1	NS		No Exceedance
Calcium	JKS-61		1480	mg/L	10/25/2022	104						1	NS		No Exceedance
Calcium	JKS-62		1480	mg/L	04/13/2022	165						1	NS		No Exceedance
Calcium	JKS-64		1480	mg/L	10/26/2022	23.2						1	NS		No Exceedance
Chloride	JKS-36		3420	mg/L	10/25/2022	383						1	NS		No Exceedance
Chloride	JKS-61		3420	mg/L	10/25/2022	201						1	NS		No Exceedance
Chloride	JKS-62		3420	mg/L	04/13/2022	313						1	NS		No Exceedance
Chloride	JKS-64		3420	mg/L	10/26/2022	20.2						1	NS		No Exceedance
Fluoride	JKS-36		0.252	mg/L	10/25/2022	1.73		X	Trend Test: Stable, No Trend	0.289	0.184	<0.001	***	X	Both Exceedance
Fluoride	JKS-61		0.252	mg/L	10/25/2022	0.009	ND					0.0637	NS		No Exceedance
Fluoride	JKS-62		0.252	mg/L	04/13/2022	0.328		X	Trend Test: Stable, No Trend	0.091	-0.303	0.0342	*	X	Both Exceedance
Fluoride	JKS-64		0.252	mg/L	10/26/2022	0.383		X	Trend Test: Stable, No Trend	0.909	-0.02	0.991	NS		UPL Exceedance
pH	JKS-36	4.94	6.51	SU	10/25/2022	4.41		X	Trend Test: Stable, No Trend	0.598	-0.103	0.189	NS		UPL Exceedance
pH	JKS-61	4.94	6.51	SU	10/25/2022	7.1		X	Trend Test: Stable, No Trend	0.909	-0.0197	0.388	NS		UPL Exceedance
pH	JKS-62	4.94	6.51	SU	10/25/2022		ND	X	Trend Test: Stable, No Trend	0.15	-0.249	0.013	*	X	Both Exceedance
pH	JKS-64	4.94	6.51	SU	10/26/2022	6.2						1	NS		No Exceedance
Sulfate	JKS-36		2100	mg/L	10/25/2022	1080						1	NS		No Exceedance
Sulfate	JKS-61		2100	mg/L	10/25/2022	407						1	NS		No Exceedance
Sulfate	JKS-62		2100	mg/L	04/13/2022	199						1	NS		No Exceedance
Sulfate	JKS-64		2100	mg/L	10/26/2022	209						1	NS		No Exceedance
Total dissolved solids	JKS-36		10500	mg/L	10/25/2022	2410						1	NS		No Exceedance
Total dissolved solids	JKS-61		10500	mg/L	10/25/2022	1280						1	NS		No Exceedance
Total dissolved solids	JKS-62		10500	mg/L	04/13/2022	1160						1	NS		No Exceedance
Total dissolved solids	JKS-64		10500	mg/L	10/26/2022	677						1	NS		No Exceedance

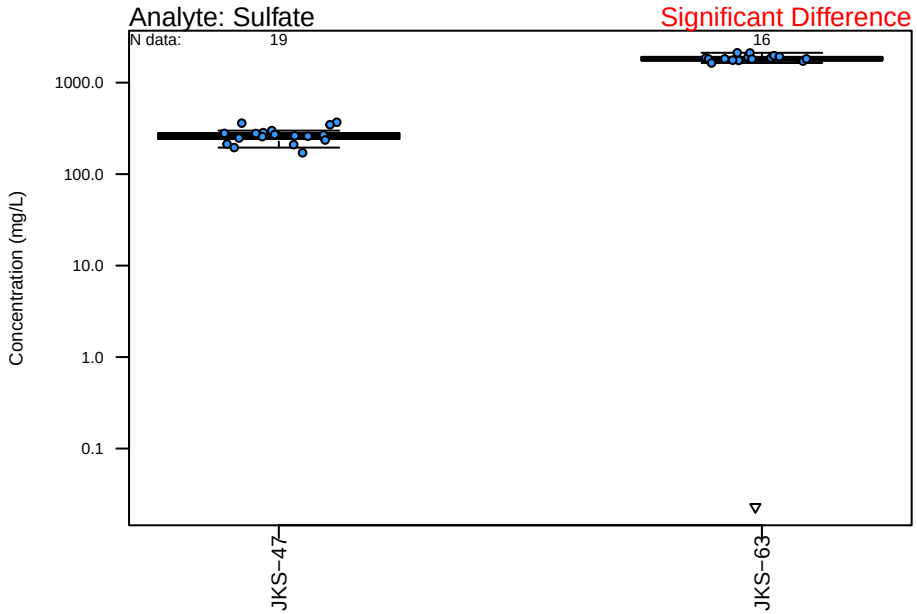
Notes
Non-detects were substituted with a value of zero for trend calculations
UPL: Upper Prediction Limit
ND: Not detected
SU: Standard units
tau: Kendall's tau statistic
Obs > UCL: Exceed 'X' indicates that the most recent observed value is higher than the UPL (or out of range of the LPL and UPL in the case of pH.)
Obs > UCL: Exceed 'X0' indicates that the two most recent values are higher than the UPL, but the upgradient well is 100% ND.
Obs > UCL: Exceed '0' indicated that the most recent observed value is higher than the UPL, but is not scored as an SSI due to Double Quantification Rule (ERM 2017).
WRS: Wilcoxon Rank Sum test comparing if median of downgradient well is larger than the UPL (for pH, also checks if median is less than LPL)
WRS p-value: A one-sided p-value describing the probability of the H0 (UPL/LPL) being true (a=0.05)
Overall: UPL Exceedance - most recent sampling event exceeds the UPL, but median of the well is not greater than UPL
Overall: WRS Exceedance - most recent sampling event does not exceed the UPL, but median of the well is greater than UPL
Overall: Both Exceedance - most recent sampling event exceeds the UPL and median of the well is larger than the UPL

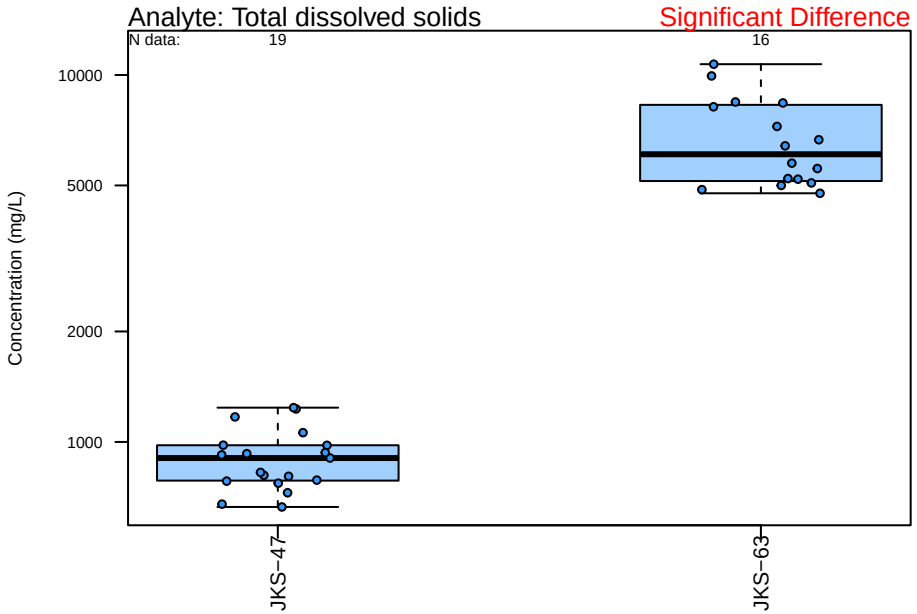
Appendix B − Figure 1
Unit: Evaporation Pond
Boxplots of Upgradient Wells



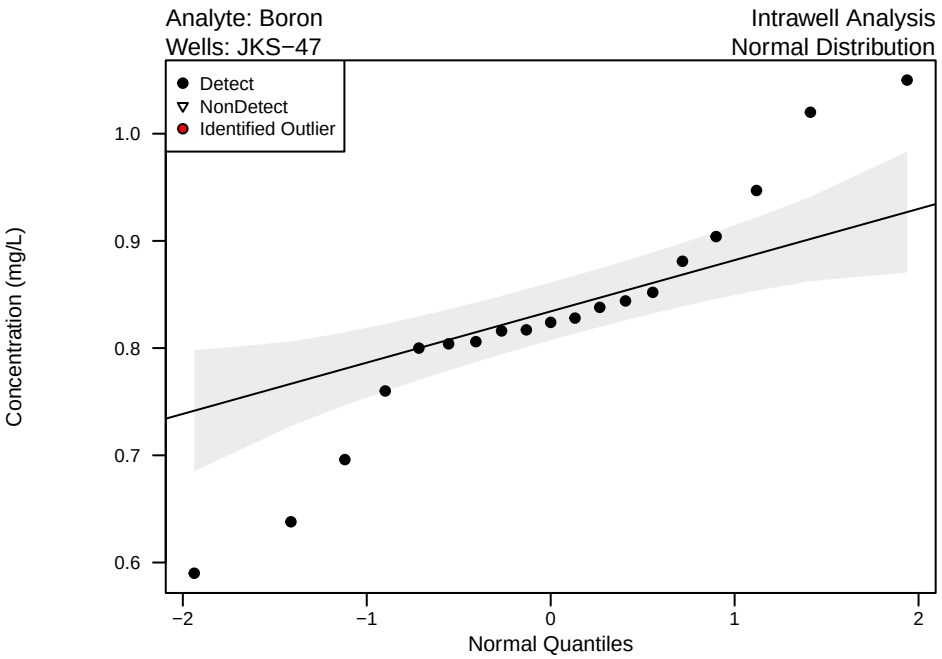
Appendix B − Figure 1
Unit: Evaporation Pond
Boxplots of Upgradient Wells







Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells



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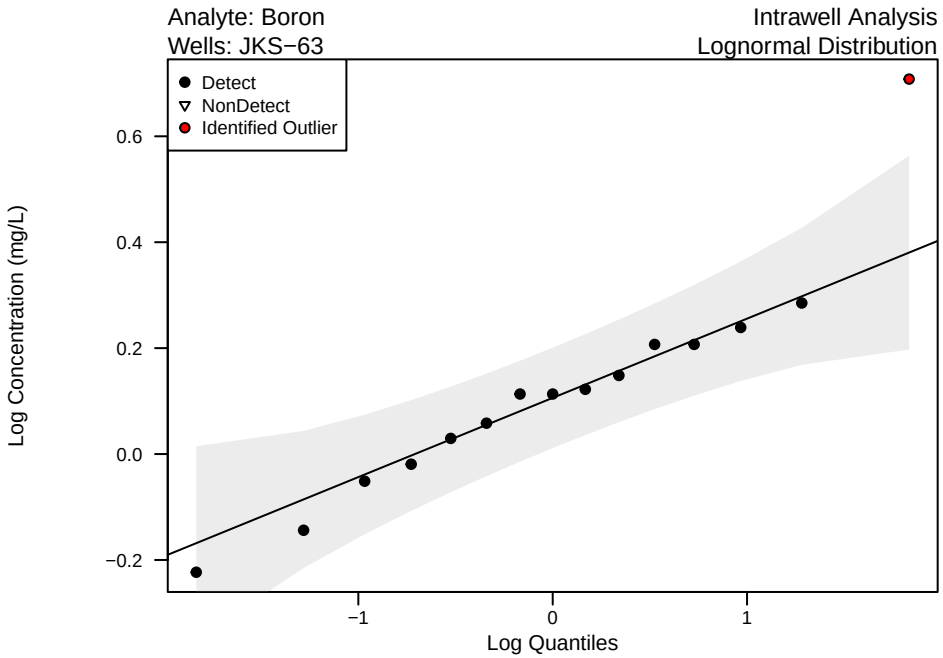

Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells

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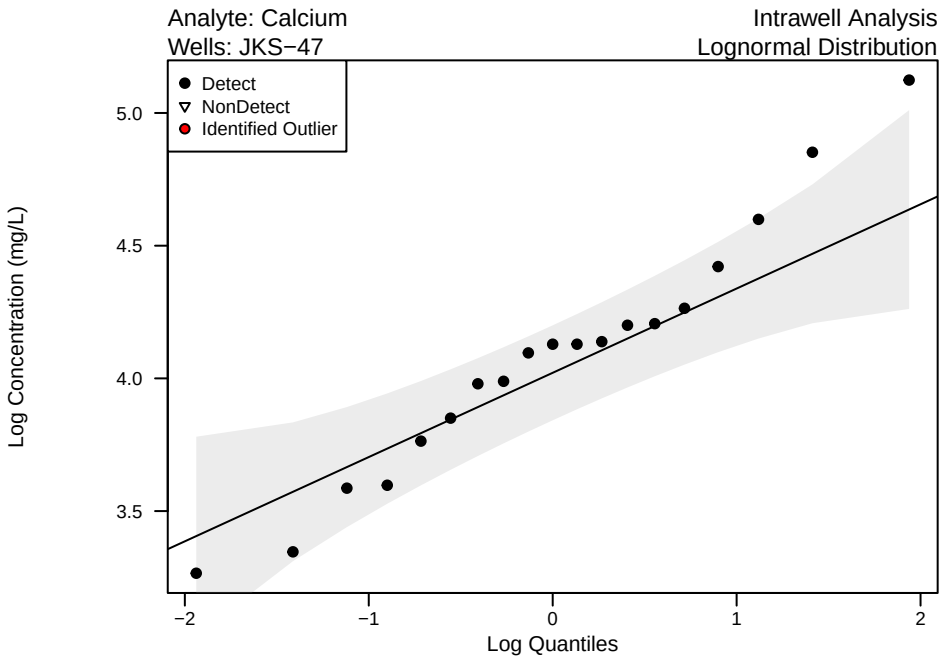
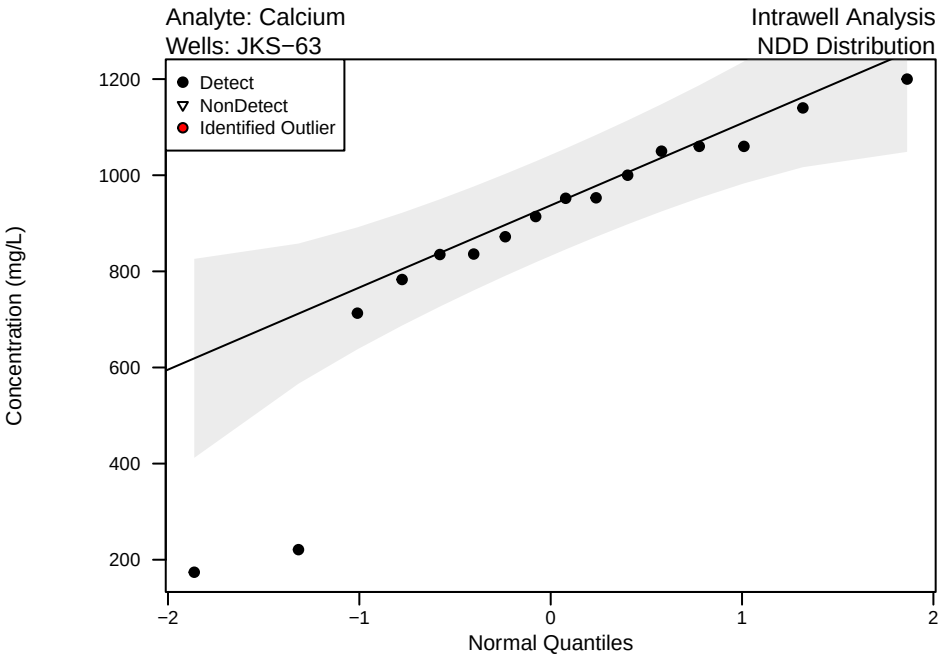
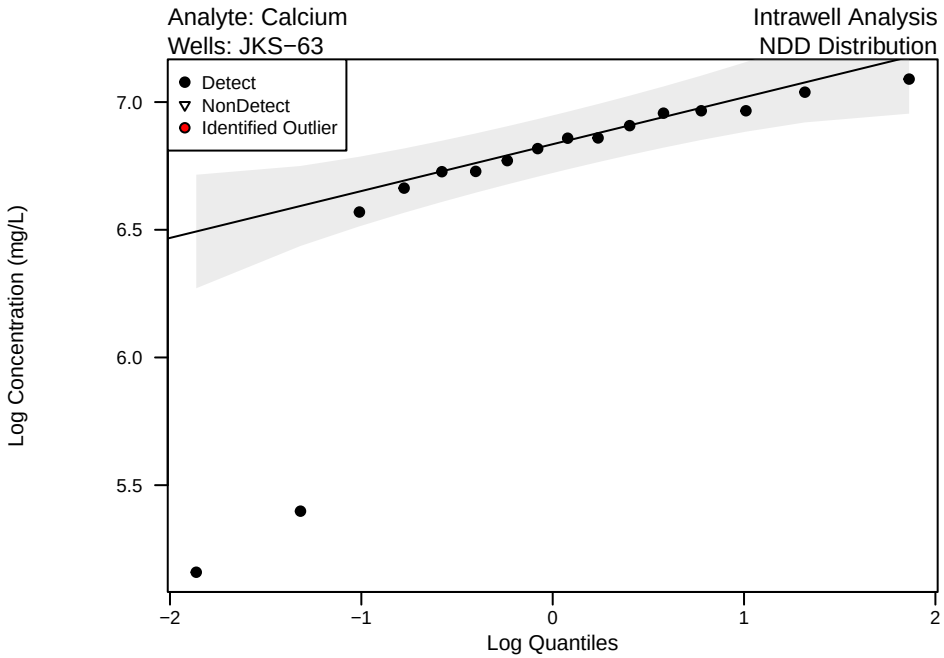
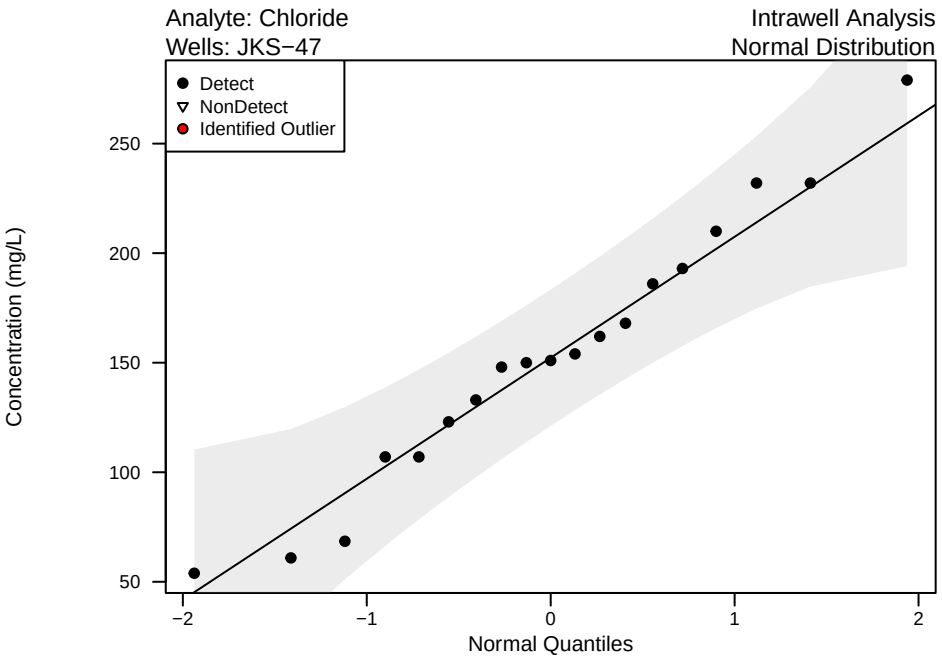






Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells



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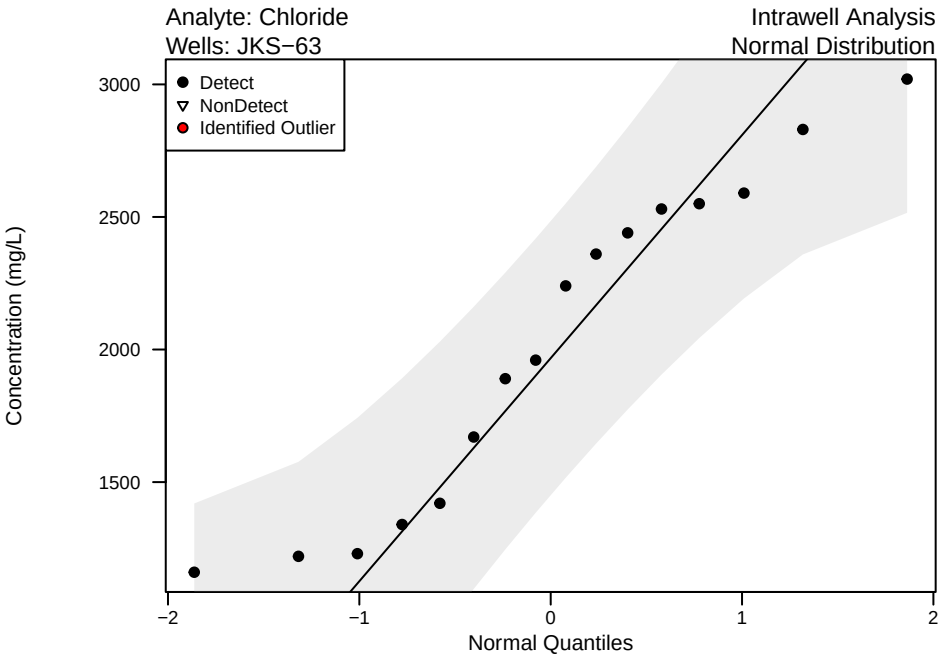

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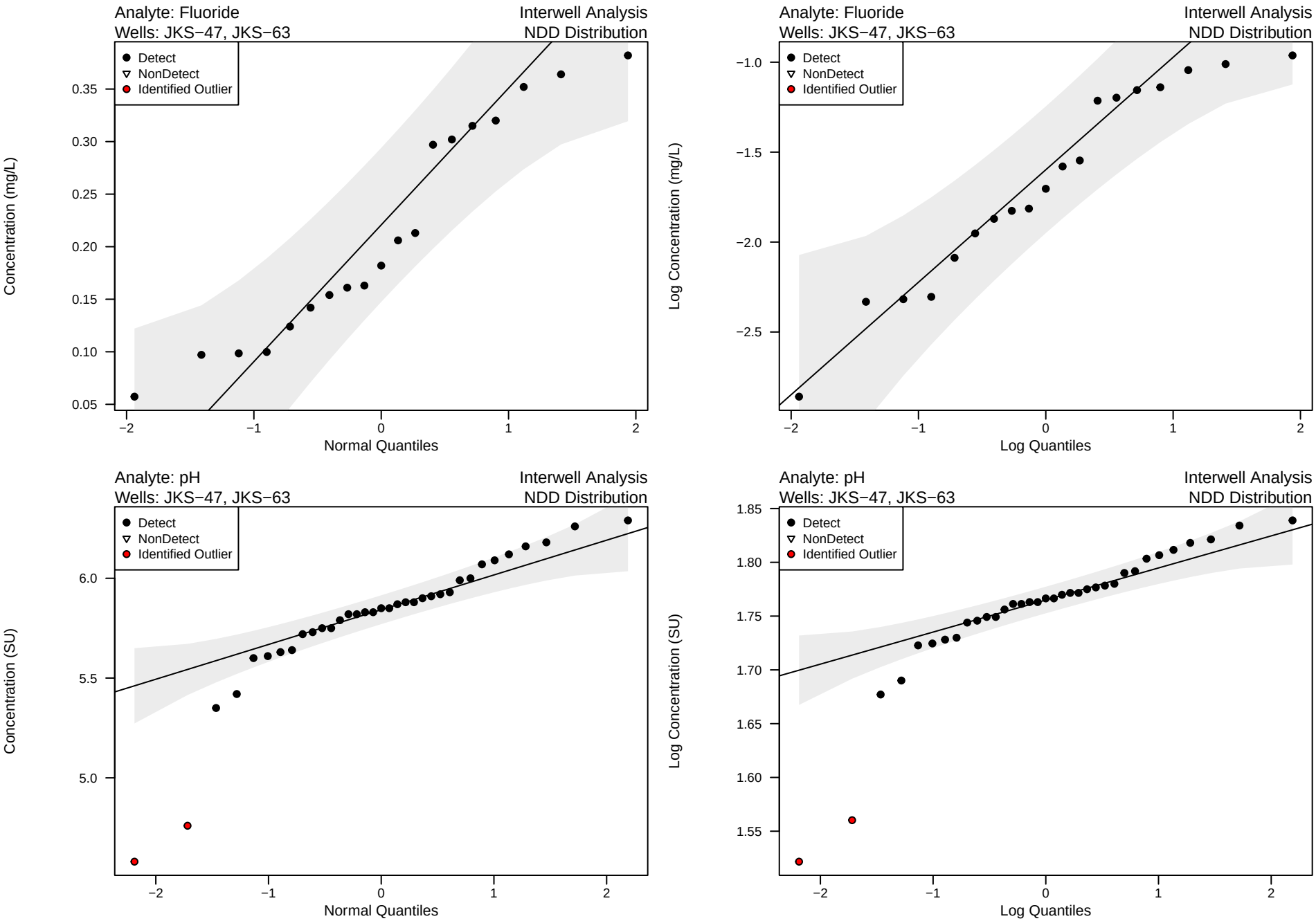
Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells



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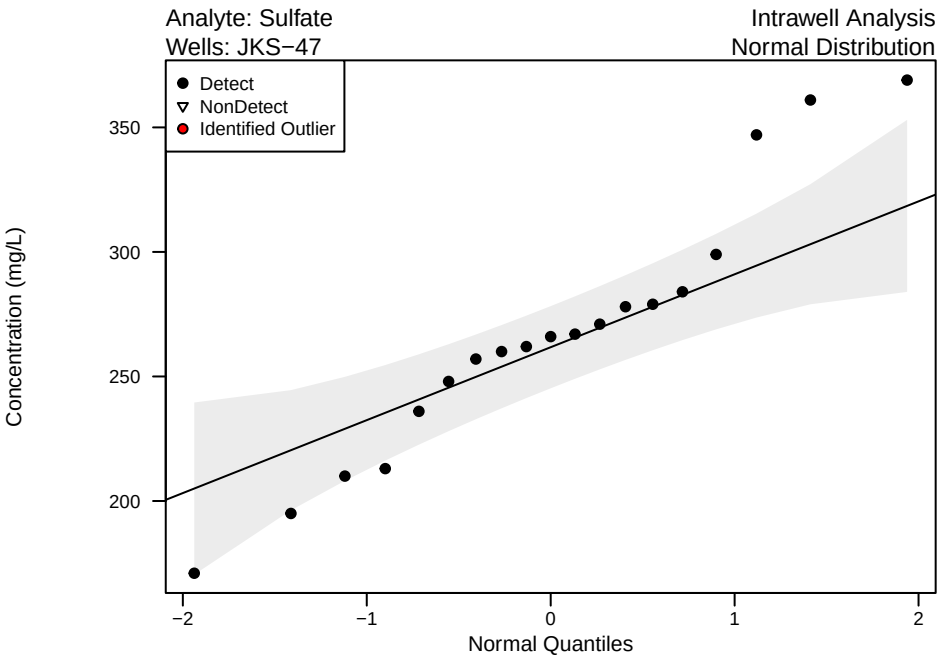
Unit: Evaporation Pond
QQ Plots of Upgradient Wells



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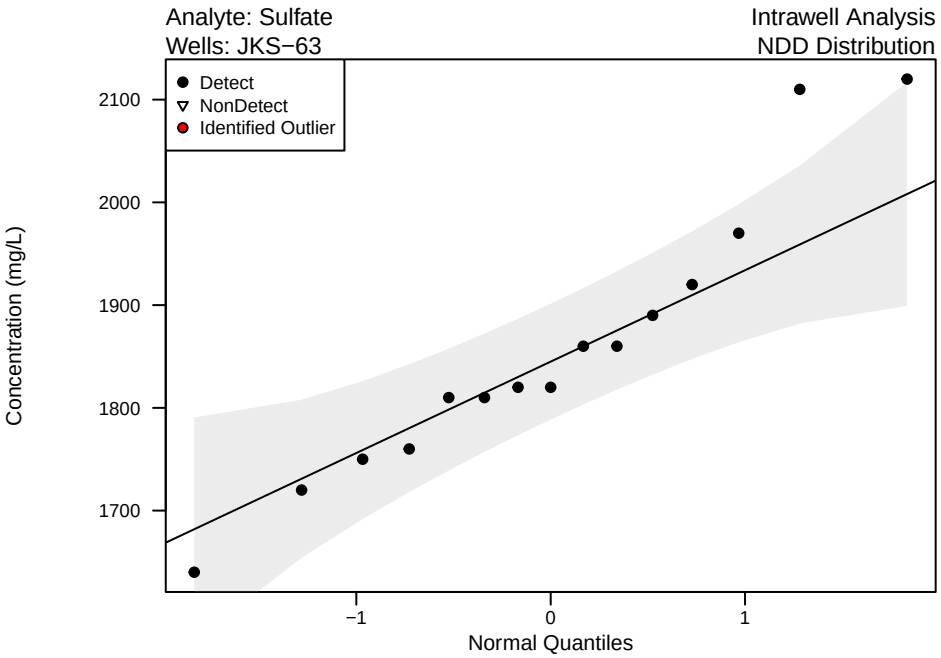
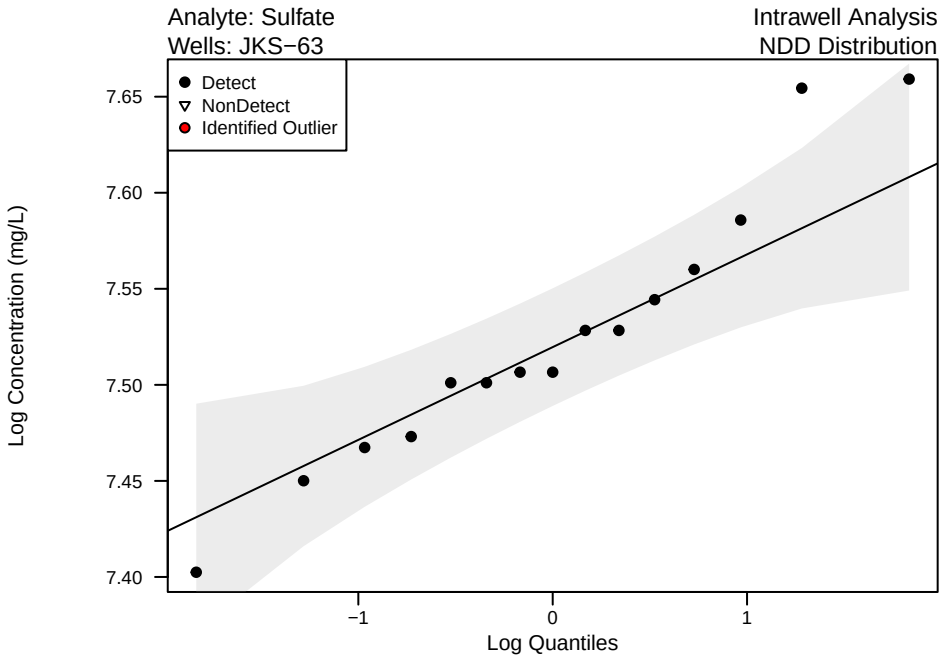
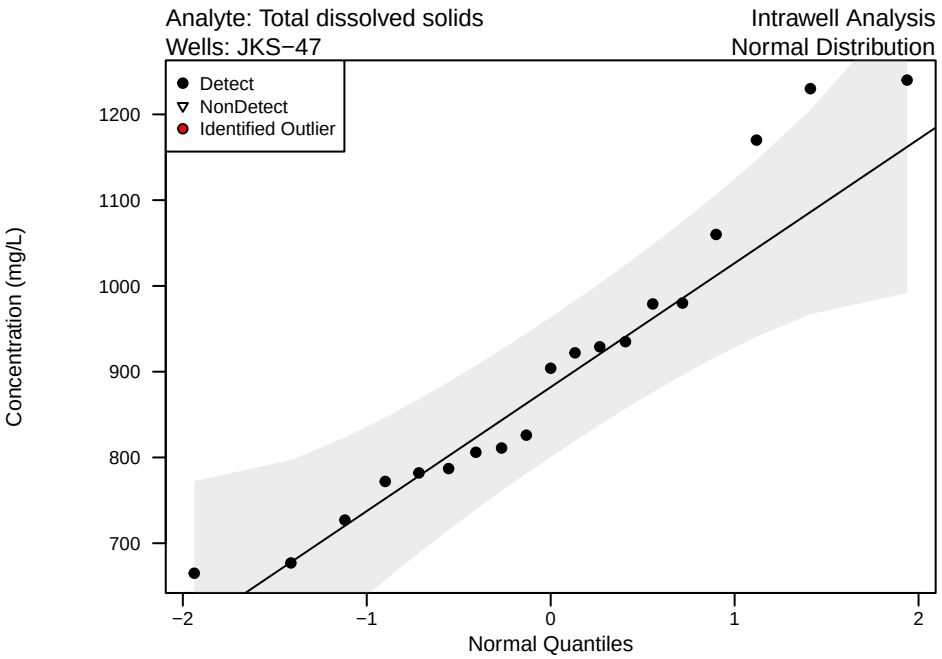




Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells



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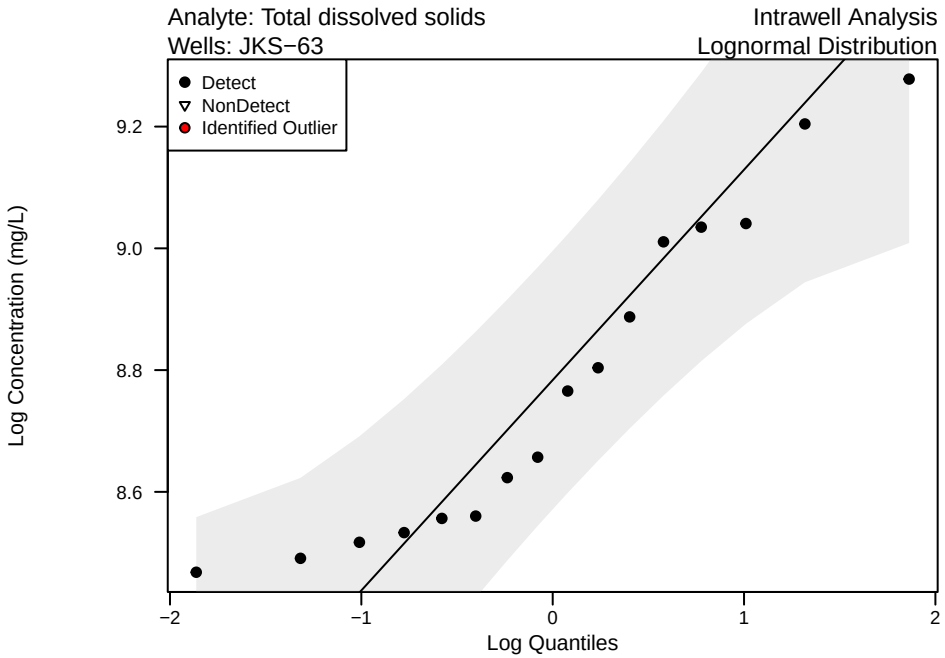
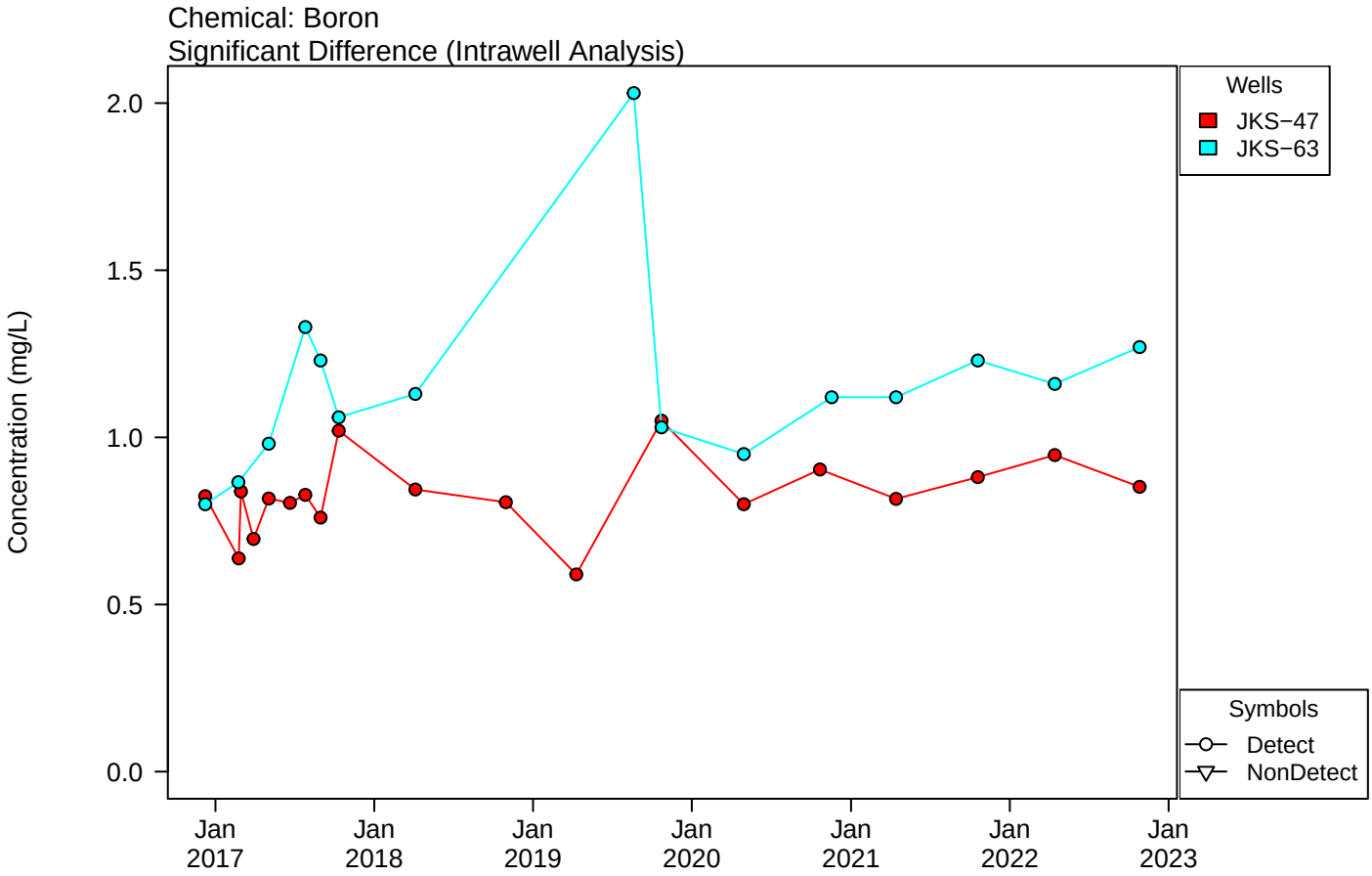
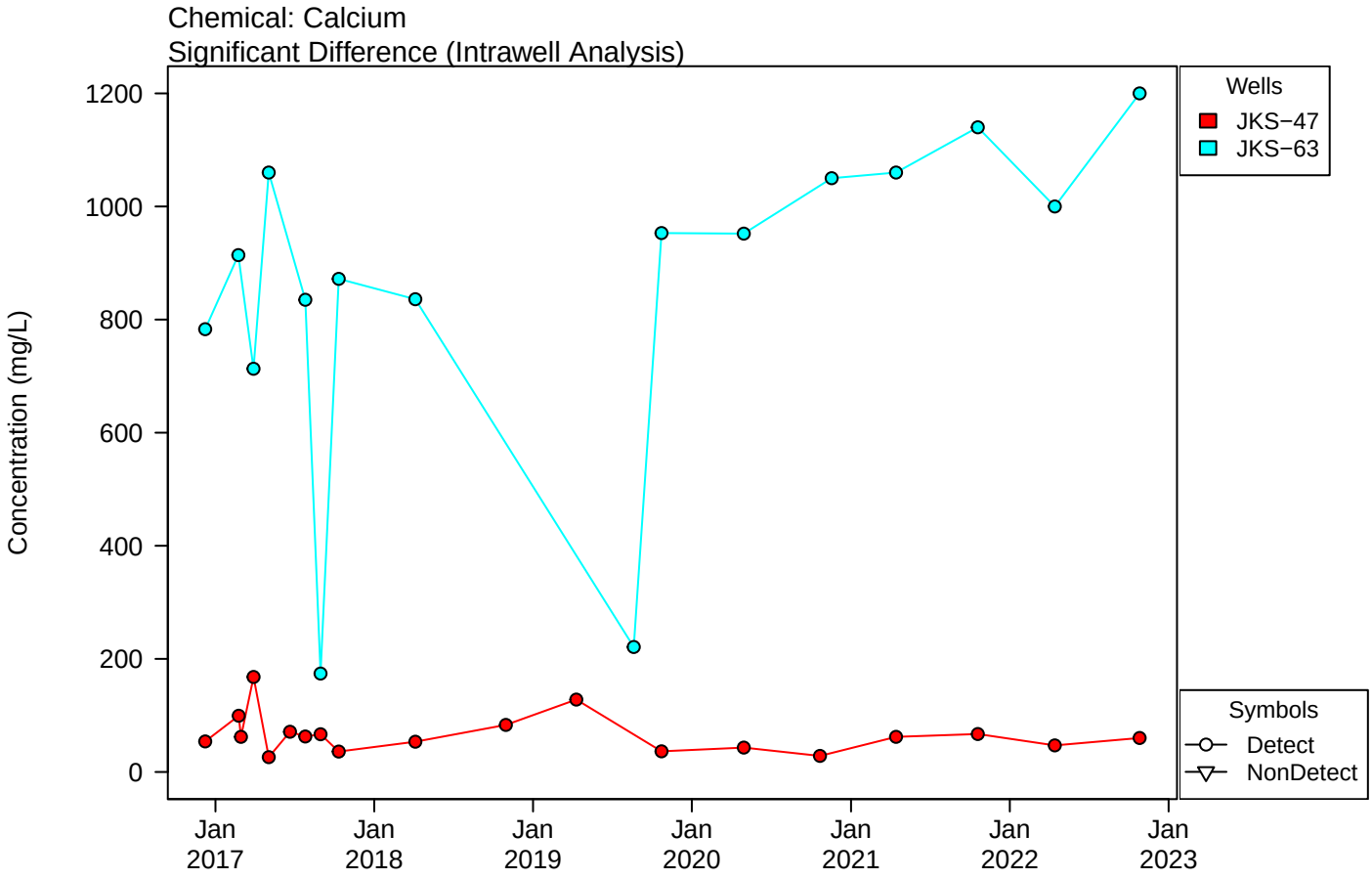
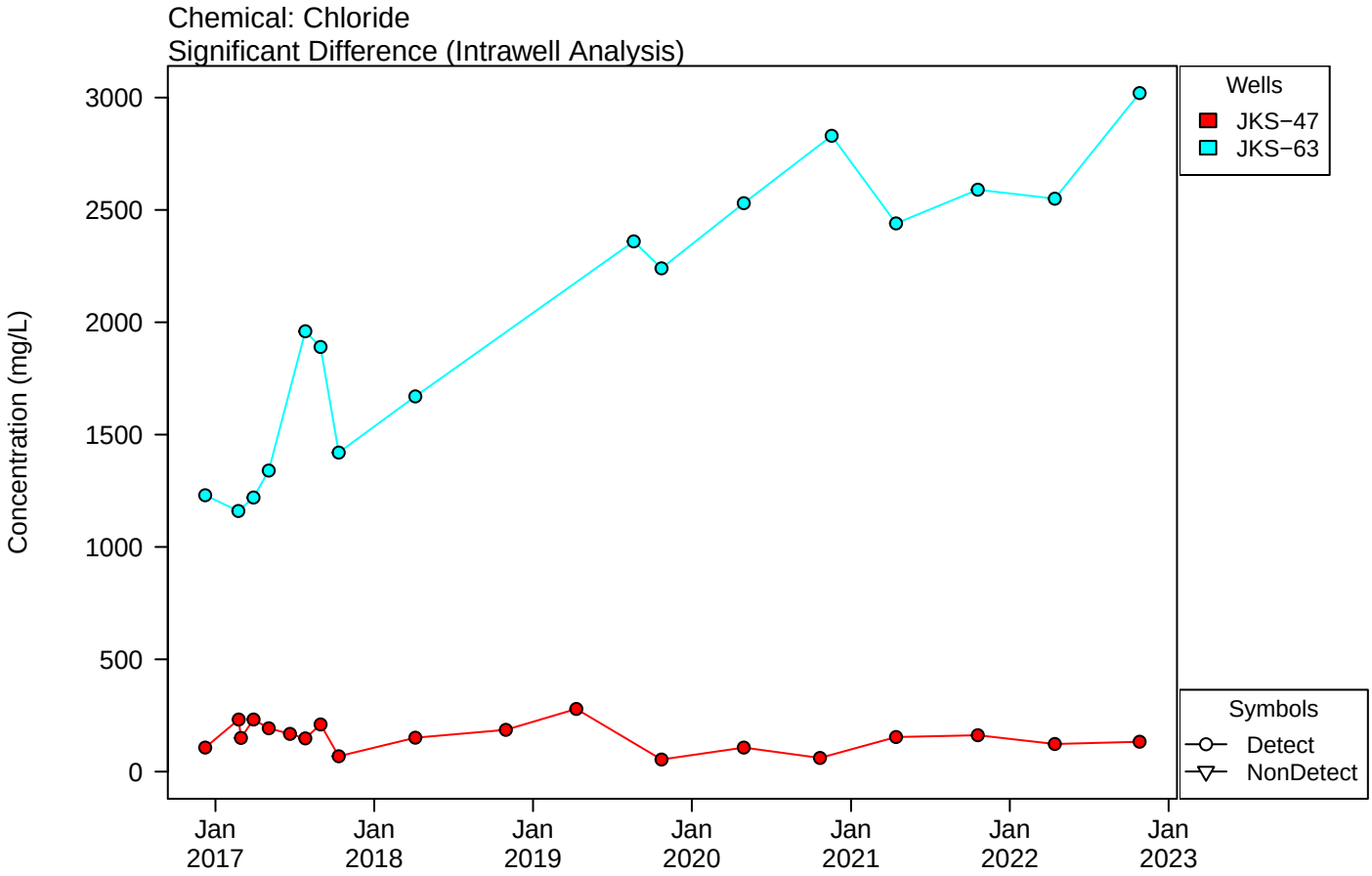


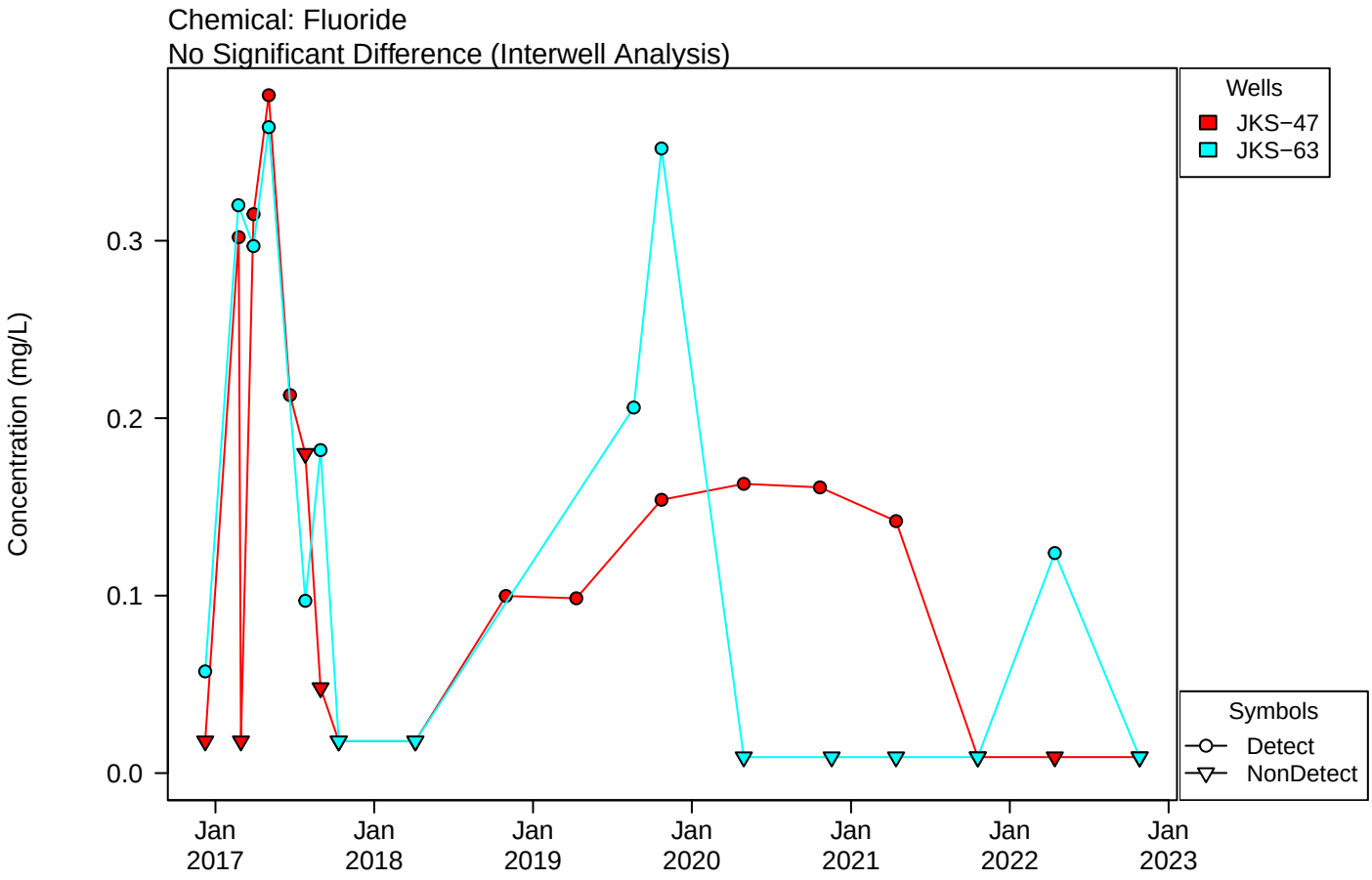
Appendix B − Figure 3
Unit: Evaporation Pond
Timeseries of Upgradient Wells



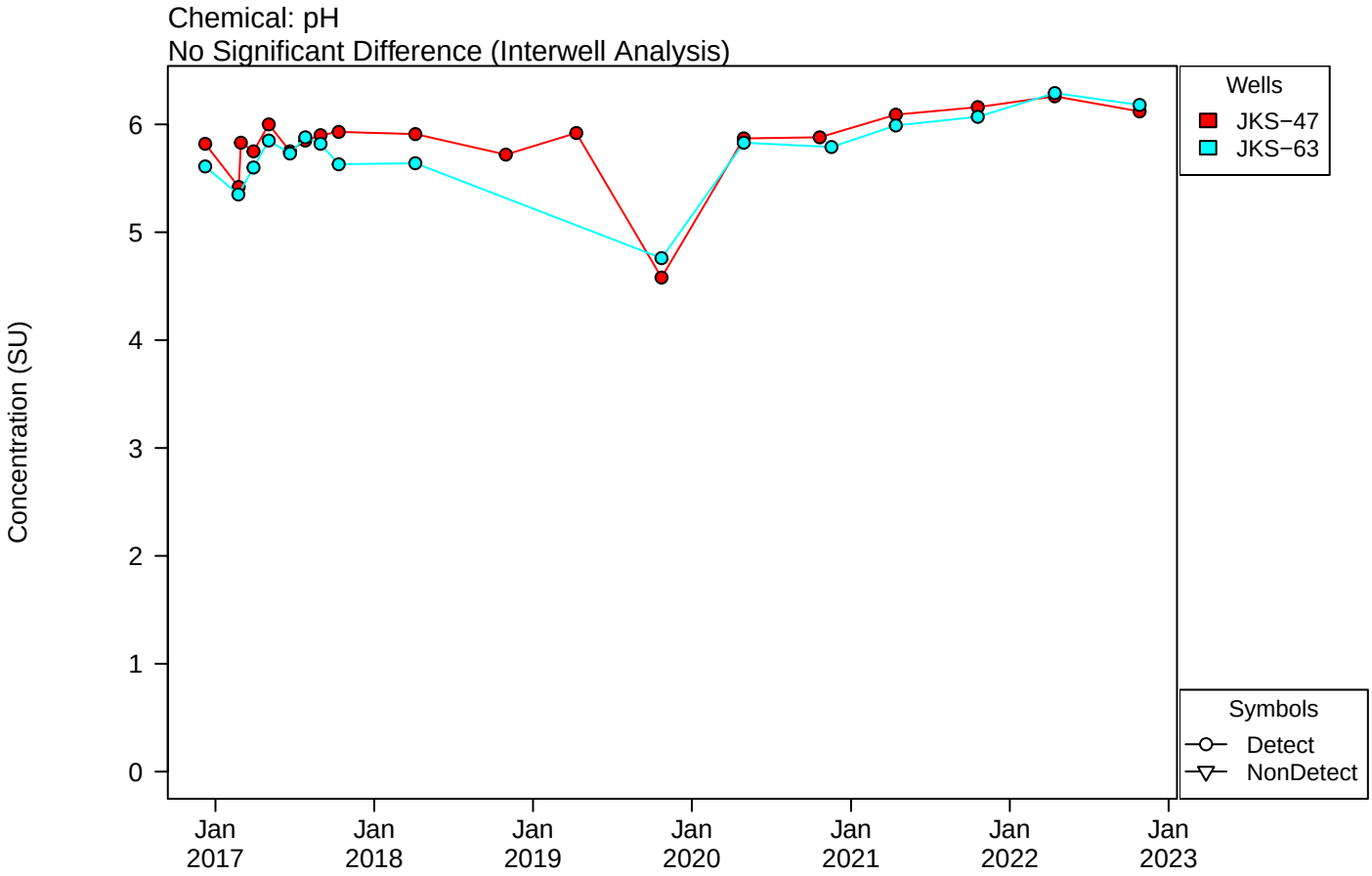


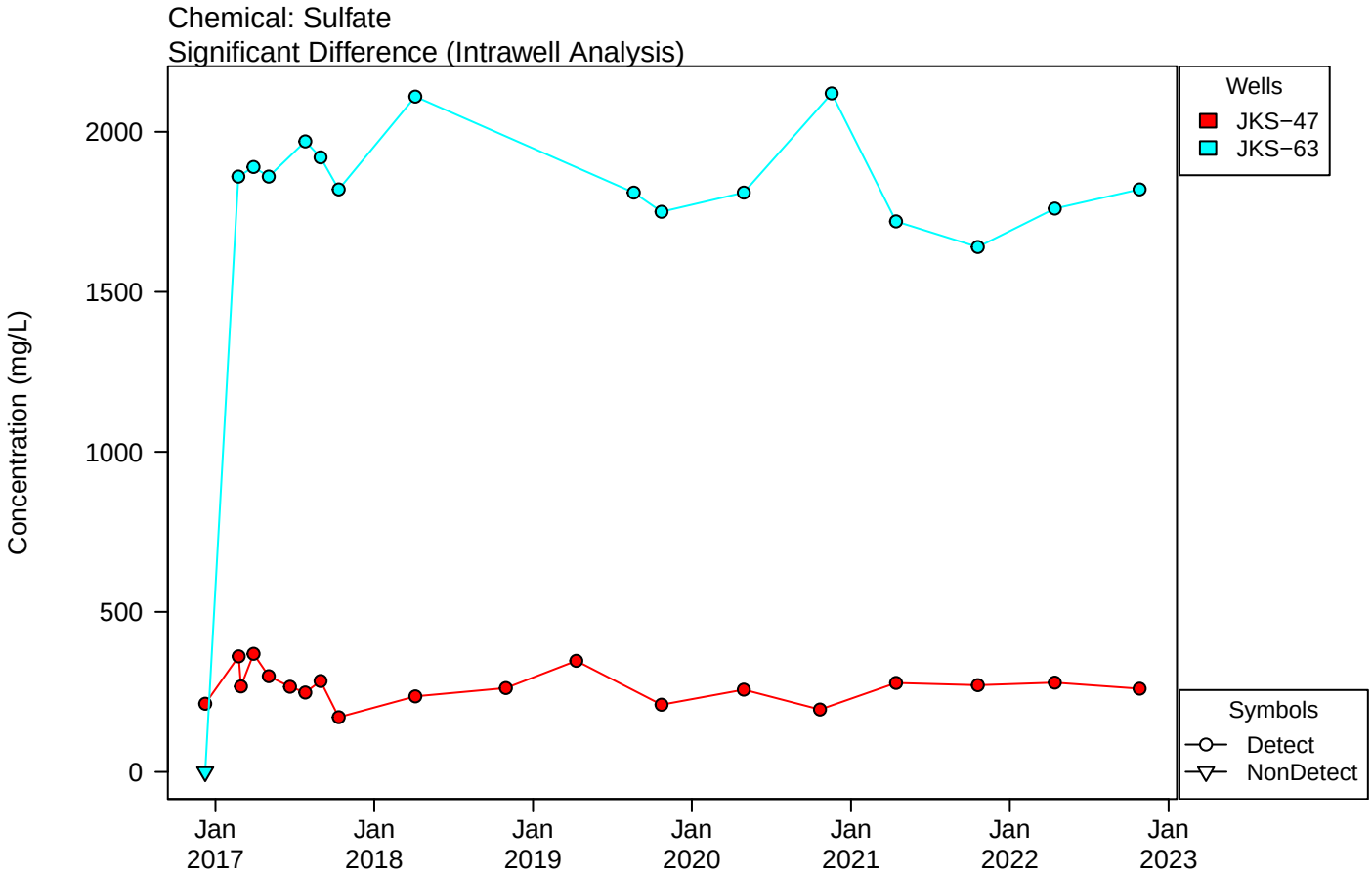
Appendix B − Figure 3
Unit: Evaporation Pond
Timeseries of Upgradient Wells



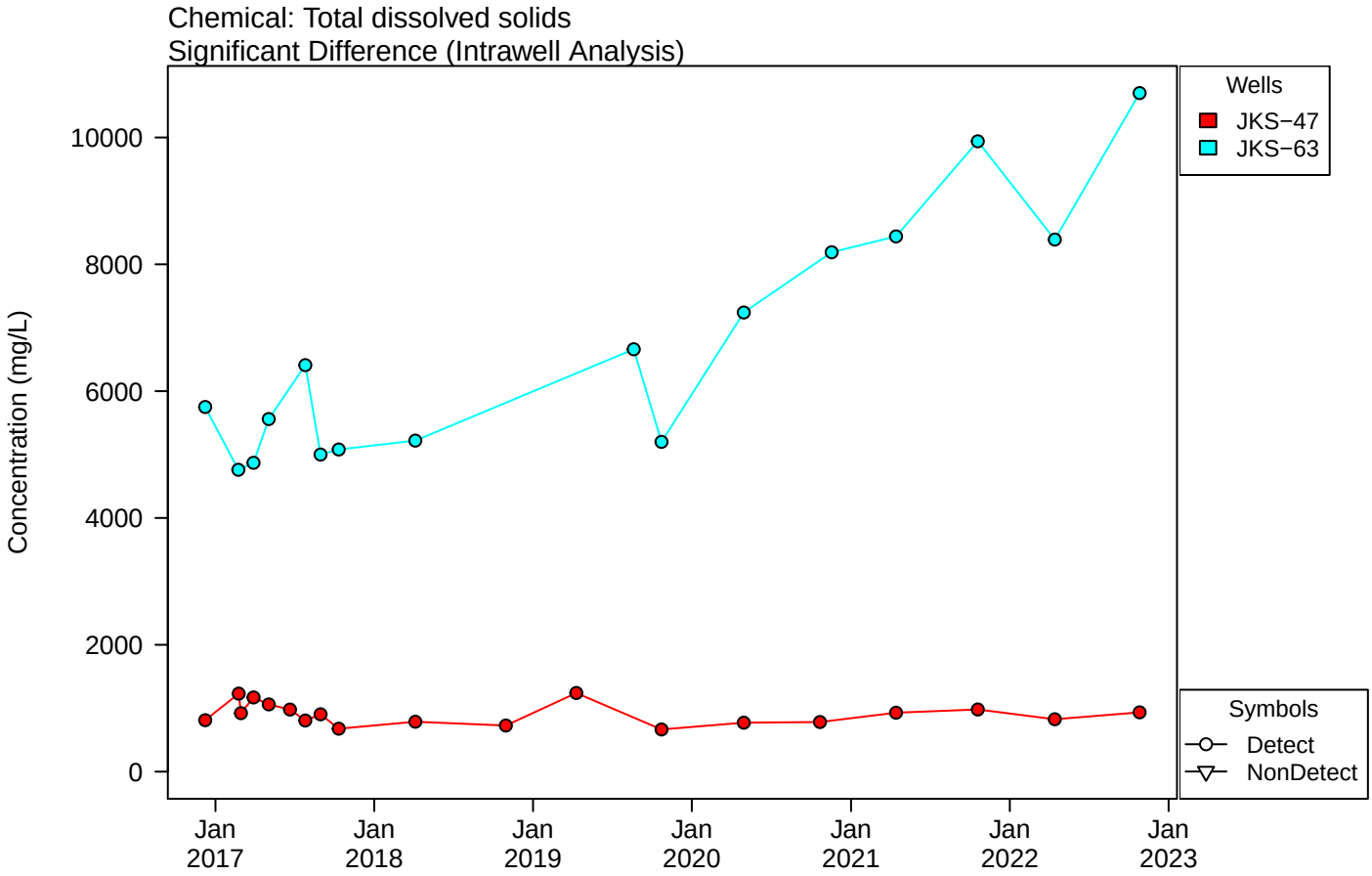


Appendix B − Figure 3
Unit: Evaporation Pond
Timeseries of Upgradient Wells

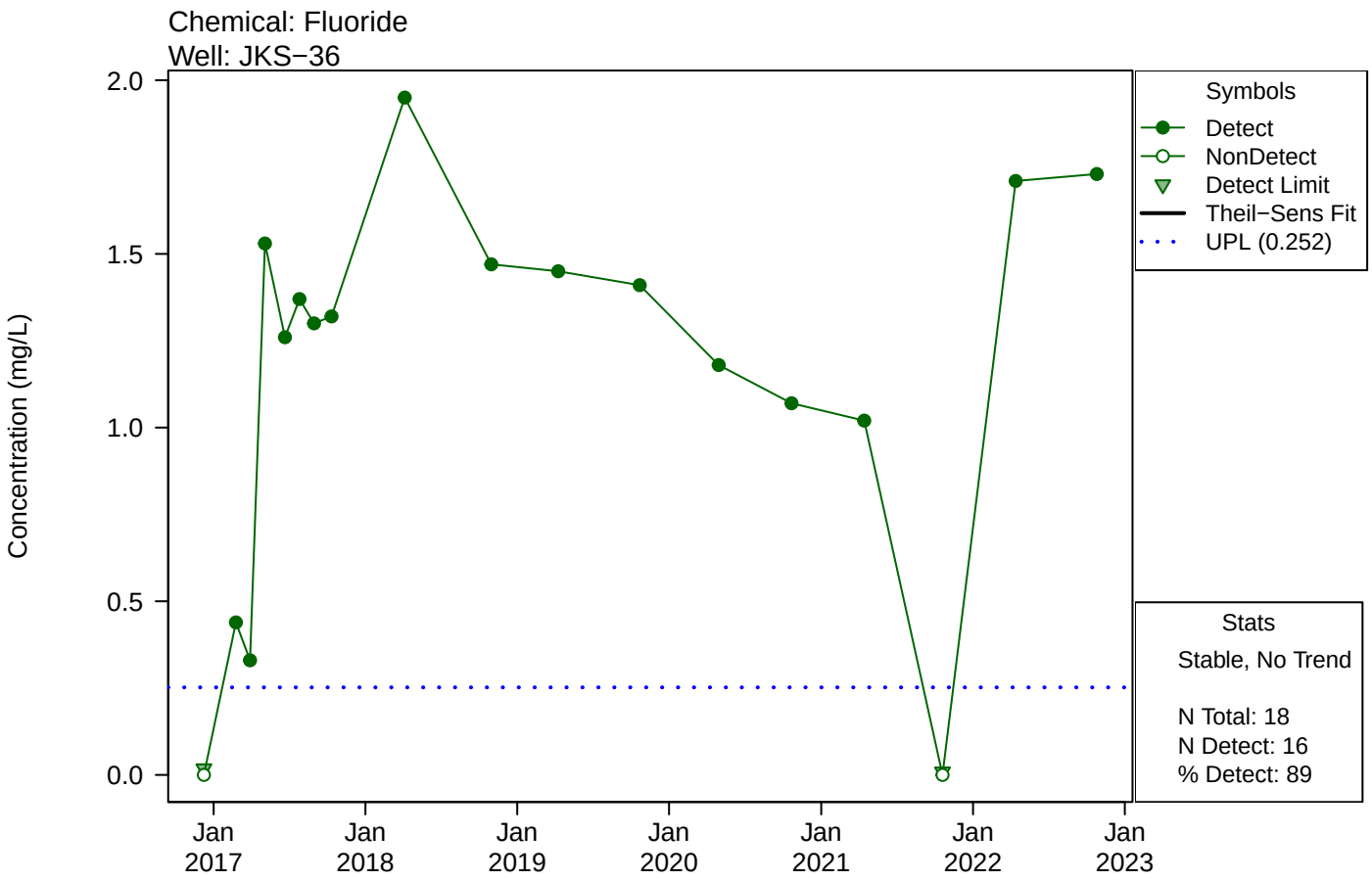


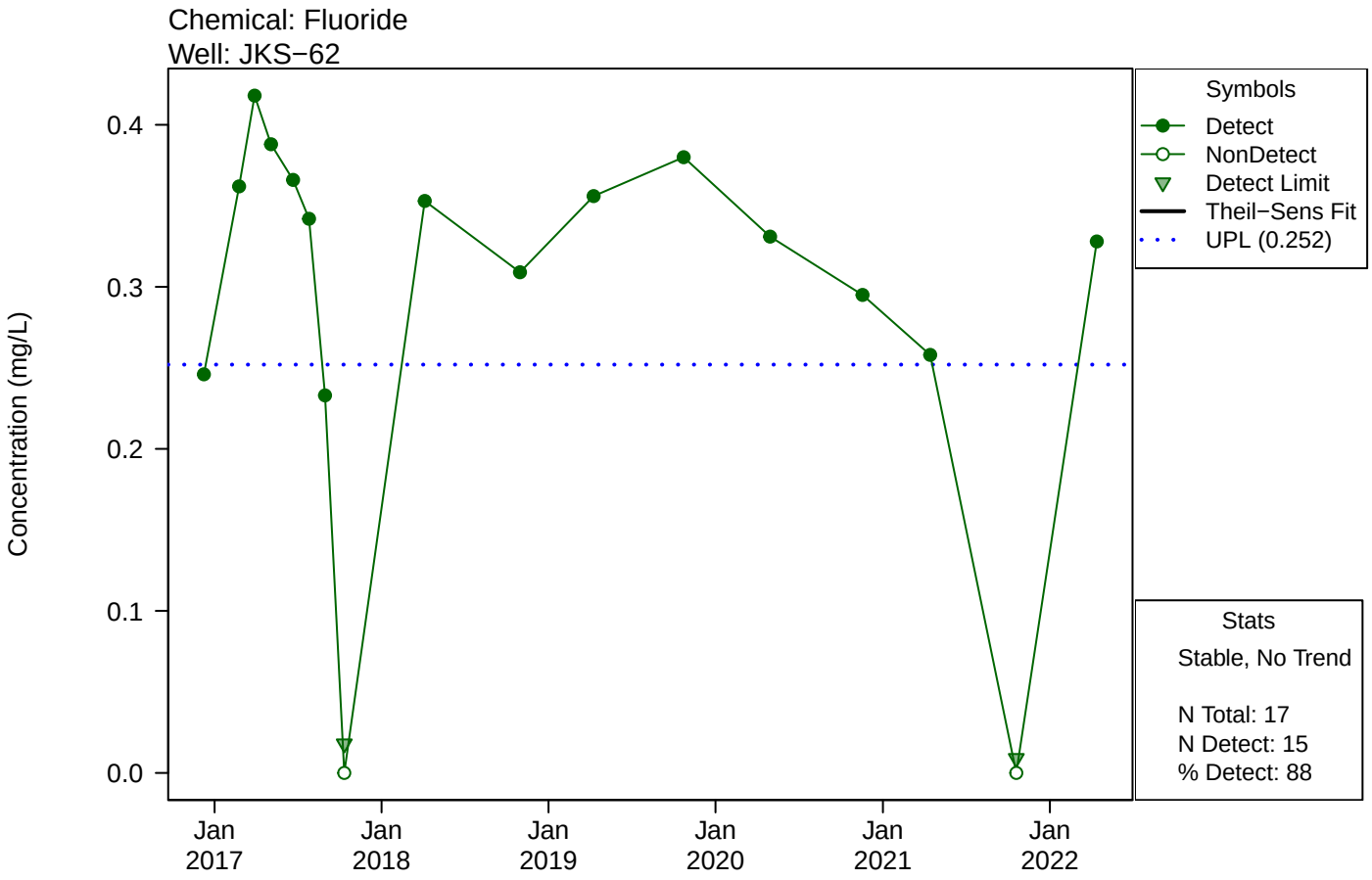


Appendix B − Figure 3
Unit: Evaporation Pond
Timeseries of Upgradient Wells

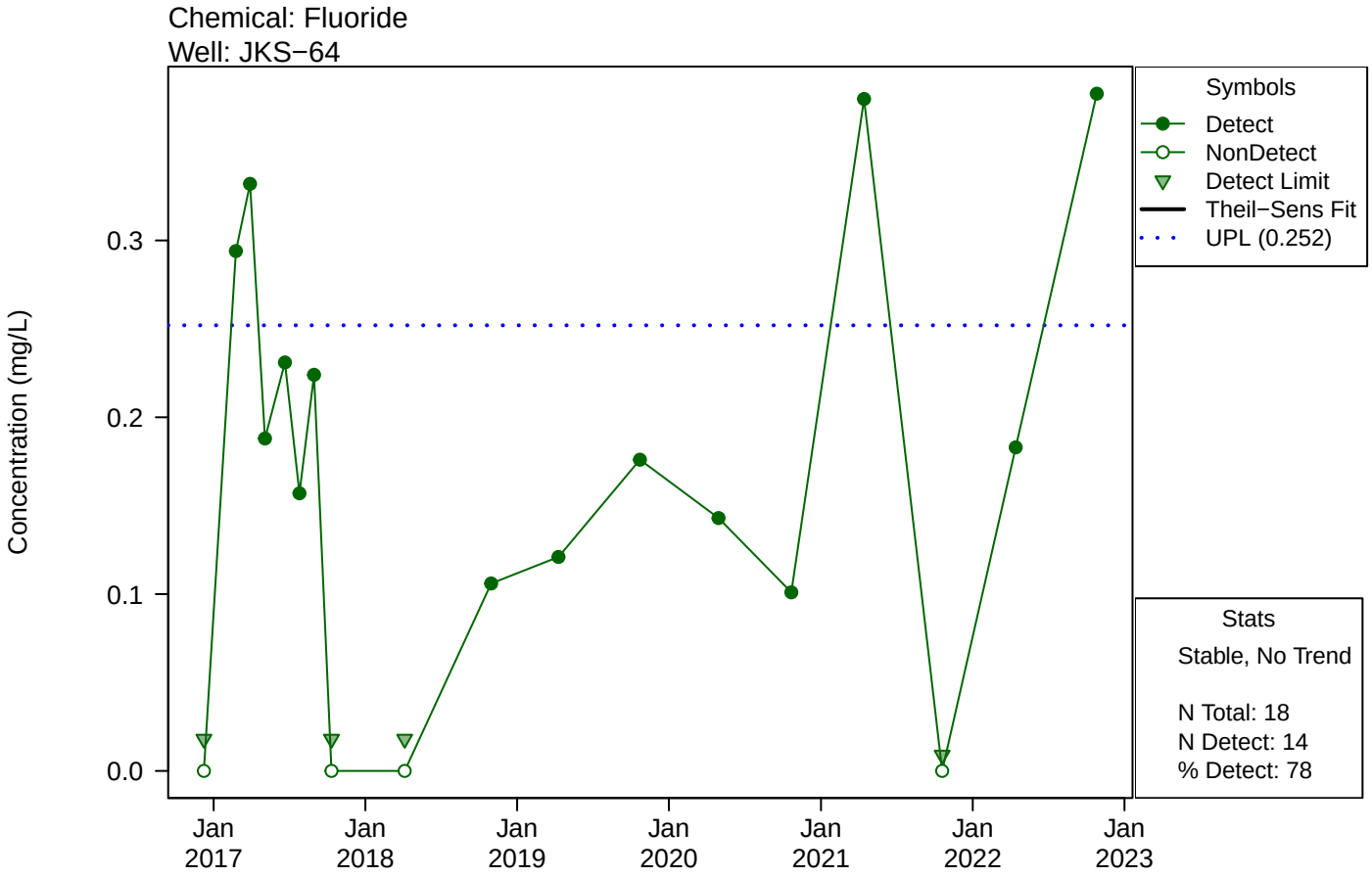


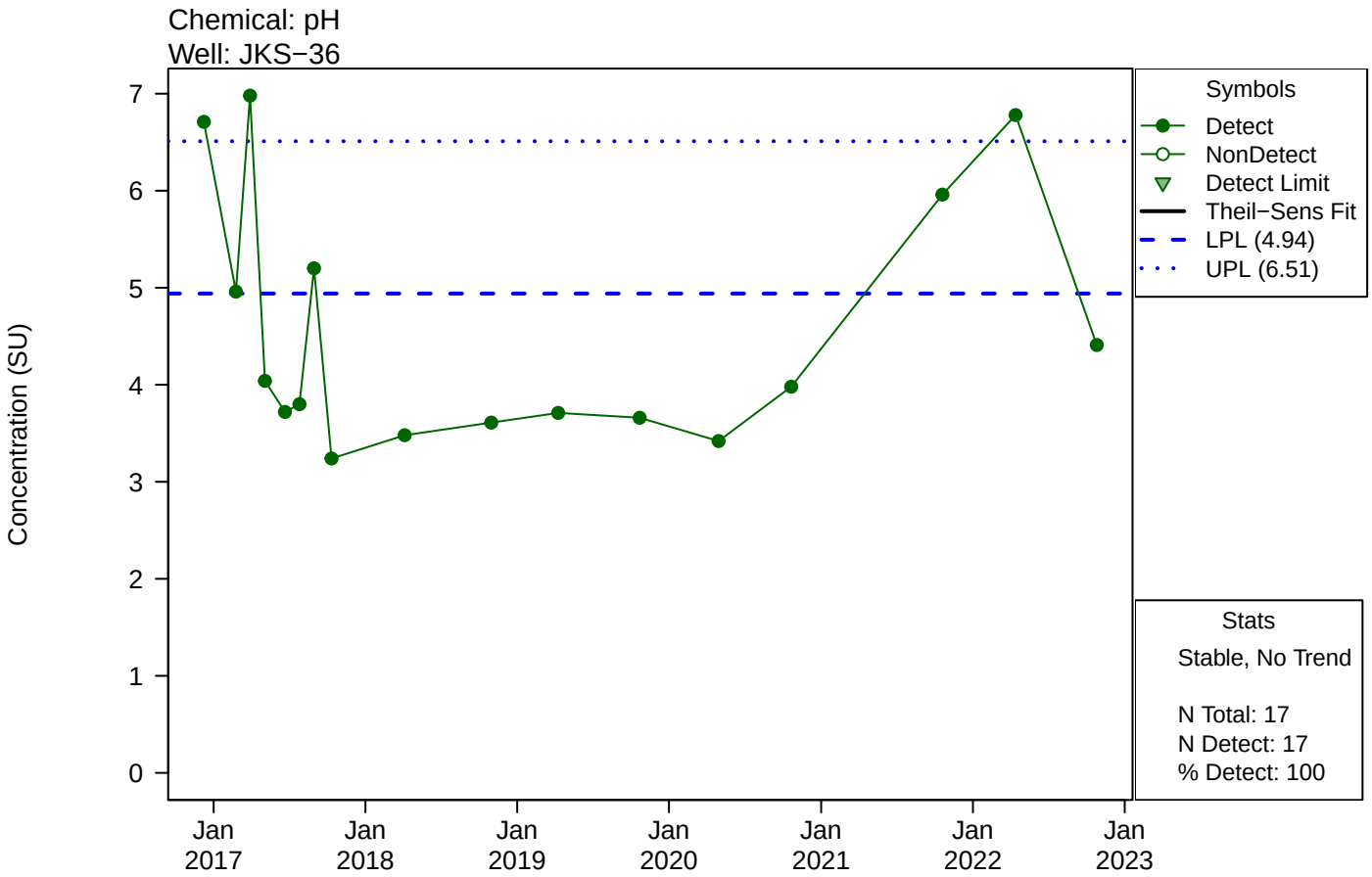
Appendix B − Figure 4
Unit: Evaporation Pond
Trend Analysis of Downgradient Wells with Exceedances



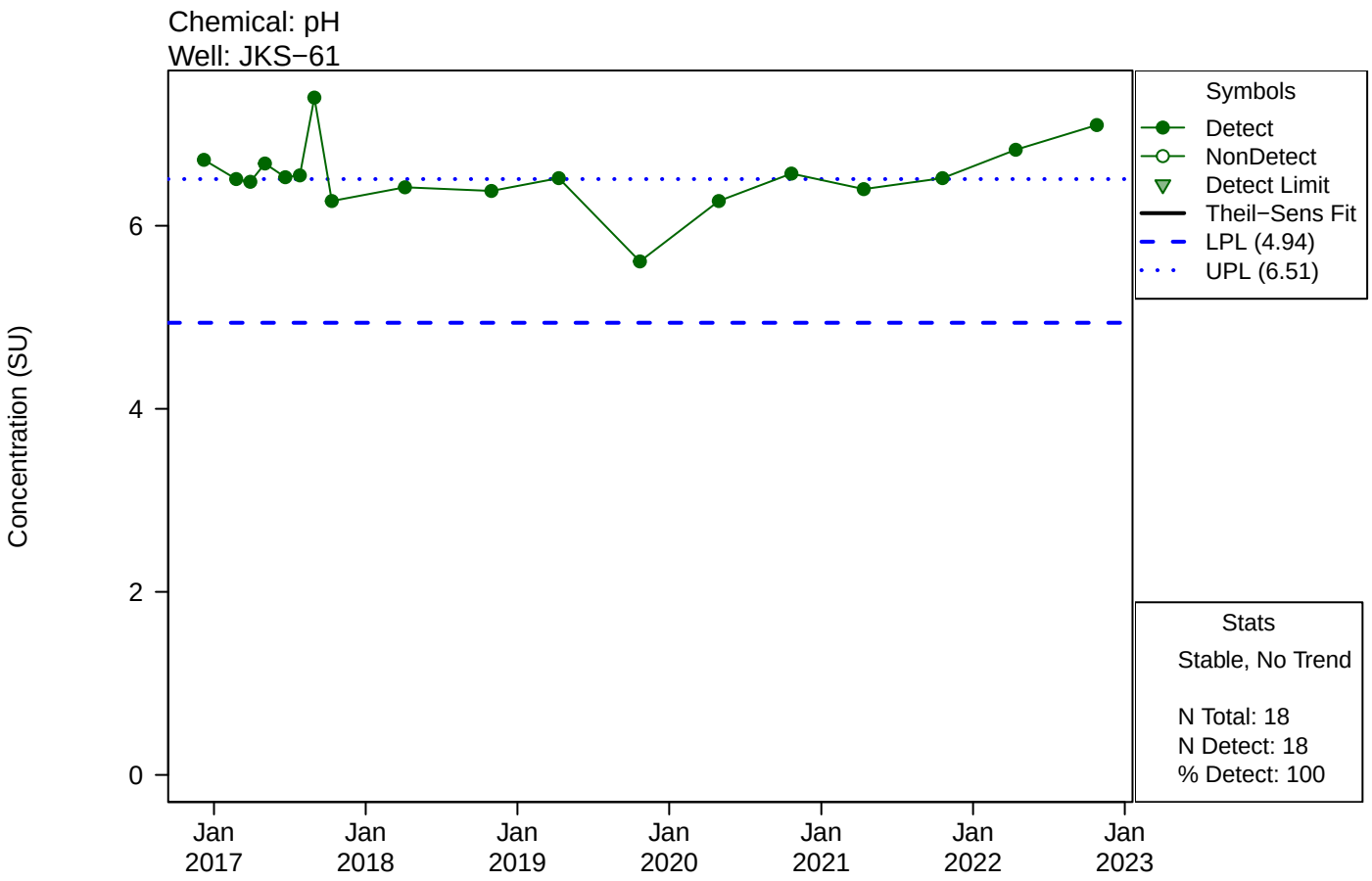


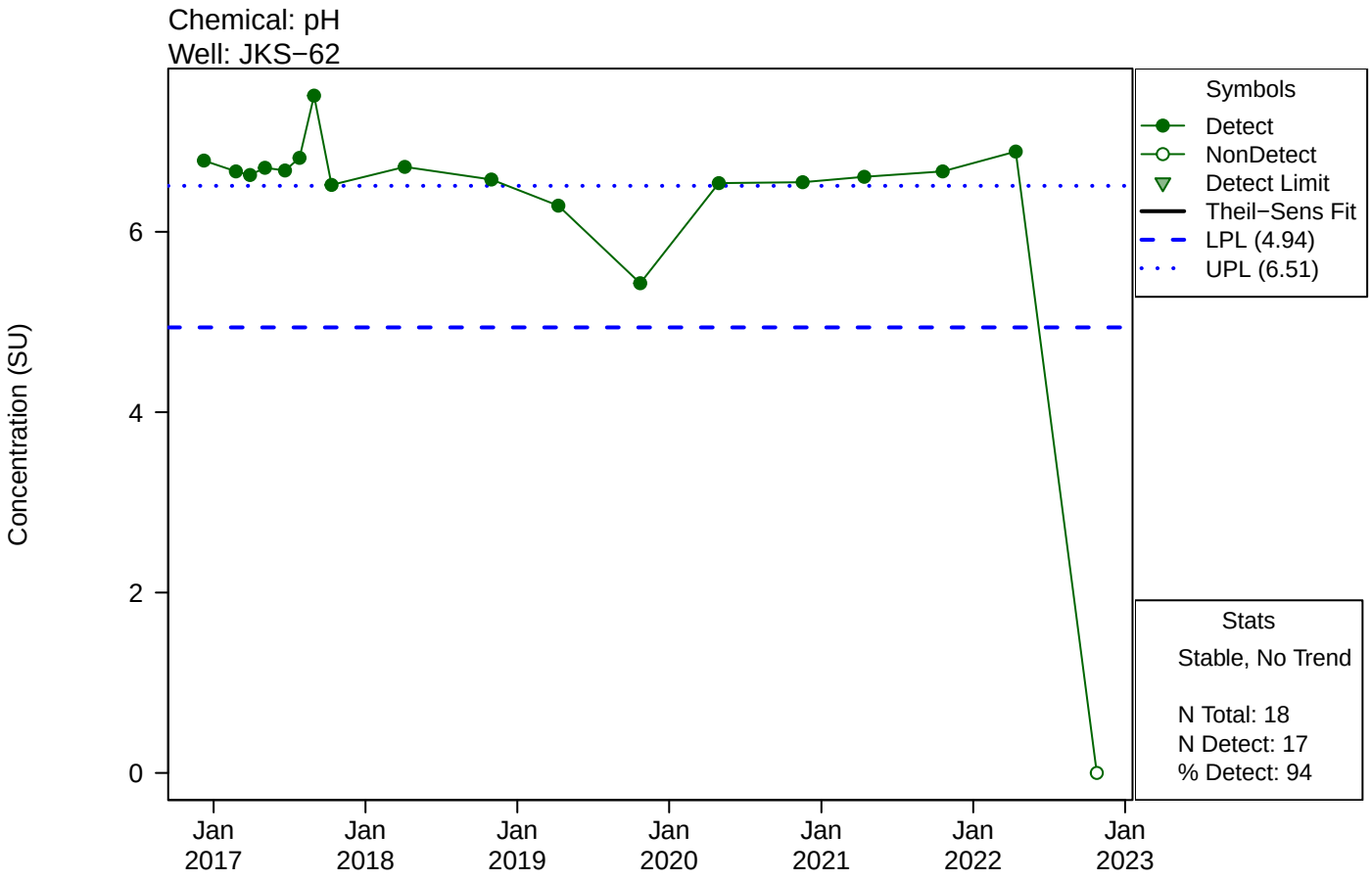
Appendix B − Figure 4
Unit: Evaporation Pond
Trend Analysis of Downgradient Wells with Exceedances





Appendix B − Figure 4
Unit: Evaporation Pond
Trend Analysis of Downgradient Wells with Exceedances





April 2022 Groundwater Sampling Results

Appendix C

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September 20, 2022

Mr. Michael Malone
CPS Energy
500 McCullough Avenue
San Antonio, Texas 78215

Reference: 0636109

Subject: April 2022 Groundwater Sampling Event
Calaveras Power Station CCR Units
San Antonio, Texas

Introduction

Title 40 Code of Federal Regulations, Part 257, (40 CFR §257) Subpart D [a.k.a. Coal Combustion Residual (CCR) Rule] was published in the Federal Register in April 2015 and became effective in October 2015. One of the many requirements of the CCR Rule was for CPS Energy to determine if there are impacts to groundwater from the surface impoundments [Evaporation Pond (EP), Bottom Ash Ponds (BAPs), and Sludge Recycling Holding (SRH) Pond] and the landfill [Fly Ash Landfill (FAL)] that contain CCR at the Calaveras Power Station.

In the initial *2017 Annual Groundwater Monitoring and Corrective Action Report* for each CCR unit, the downgradient monitoring well results from the October 2016 sampling event were compared to Upper Prediction Limits (UPLs) and Lower Prediction Limits (LPLs). UPLs and LPLs were calculated in the *Annual Groundwater Monitoring and Corrective Action Reports* for the purpose of determining a potential statistically significant increase (SSI) over background levels. In the subsequent *2018*, *2019, 2020, and 2021 Annual Groundwater Monitoring and Corrective Action Reports* for each CCR unit, the downgradient monitoring well results from the October 2017, October 2018, October 2019, and October 2021 sampling events were compared to updated UPLs and LPLs. These updated UPLs and LPLs were recalculated in the respective *Annual Groundwater Monitoring and Corrective Action Reports* using the additional data collected from the previous year. The April 2022 groundwater sample results were compared to the updated UPLs and LPLs and the evaluations of the sample results indicated a potential SSI for a limited number of constituents from the EP, FAL, and BAPs. No potential SSIs were identified for any constituents from the SRH Pond.

According to the CCR Rule [§257.94(e)], if the owner or operator of a CCR unit determines there is a SSI over background levels for one or more Appendix III constituents, the owner or operator may demonstrate that a source other than the CCR unit caused the SSI over background levels or that the SSI resulted from error in sampling, analysis, statistical evaluation or natural variation in groundwater quality. The CCR Rule also indicates that the owner or operator must complete the written demonstration within 90 days of detecting an SSI over the background levels. If a successful demonstration is completed within the 90-day period, the owner or operator may continue with a detection monitoring program.

To address the potential SSIs identified in the previous four *Annual Groundwater Monitoring and Corrective Action Reports*, CPS Energy prepared five *Written Demonstrations – Responses to Potential Statistically Significant Increases*[1] (dated 4 April 2018; 27 February 2019; 27 April 2020; 18 June 2021; and 26 April 2022, respectively). Based on the evidence provided in the *Written/ Alternative Source Demonstrations*, no SSIs over background levels were determined for any of the CPS Energy CCR units (EP, FAL, BAPs, and SRH Pond) and therefore, CPS Energy continued with a detection monitoring program that would include semiannual sampling.

Sampling Events Summary

The first semiannual groundwater sampling event for 2022 was conducted on April 13 through April 14, 2022. The sampling event included the collection of water level measurements and groundwater samples from all the background and downgradient monitoring wells in the CCR monitoring program. Monitoring wells were gauged and then sampled by CPS Energy using low flow sampling techniques during the sampling event. The groundwater samples were analyzed for Appendix III constituents.

For each CCR unit, the downgradient monitoring well results from the April 2022 sampling event were compared to the updated UPLs and LPLs recalculated in their respective *2021 Annual Groundwater Monitoring and Corrective Action Report*. The April 2022 groundwater sample results for the downgradient monitoring wells in each CCR unit are summarized in Attachment 1.

Although the evaluations of the April 2022 groundwater sample results indicate a potential SSI for a limited number of constituents, the constituents associated with the potential SSIs are the same constituents, detected at similar concentrations, which were previously identified in one or all of the *Written/ Alternative Source Demonstrations*. The evaluations of the April 2022 groundwater sample results with potential SSIs are summarized below.

EP – The constituents associated with potential SSIs include boron in JKS-61; fluoride in JKS-36; and pH in JKS-36, JKS-61, and JKS-62. As previously presented in the *Written/ Alternative Source Demonstrations*, the concentrations of boron, fluoride, and pH appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. The reported April 2022 concentrations were within the range of naturally occurring concentrations identified in the *Written/ Alternative Source Demonstrations*.

FAL – The constituents associated with potential SSIs include pH in JKS-31 and JKS-46. As previously presented in the *Written/ Alternative Source Demonstrations*, the concentrations of pH appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. The reported April 2022 concentrations were within the range of naturally occurring concentrations identified in the *Written/ Alternative Source Demonstrations*.

BAPs – The constituents associated with potential SSIs include boron in JKS-50R and JKS-56. As previously presented in the *Written/ Alternative Source Demonstrations*, the concentrations of boron appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. The

[1] The term *'Written Demonstration'* was historically used for a document that provided responses to potential SSIs. Starting with the 26 April 2022 document, the term *'Alternative Source Demonstration'* was used for these types of documents.

reported April 2022 concentrations were within the range of naturally occurring concentrations identified in the *Written/ Alternative Source Demonstrations*.

Conclusions

Based on the April 2022 groundwater sample results and the evidence provided in one or all of the *Written/ Alternative Source Demonstrations*, no SSIs over background levels have been determined for any of the CPS Energy CCR units (EP, FAL, BAPs, and SRH Pond) and therefore, CPS Energy should continue with a detection monitoring program. The second semiannual sampling event should be performed in October 2022.

We appreciate the opportunity to work with you on this project. Please contact me if you should have any questions.

Sincerely,

Environmental Resources Management Southwest, Inc.

Nicholas Houtchens
Senior Geologist

ATTACHMENT 1 APRIL 2022 GROUNDWATER SAMPLE RESULTS

April 2022 Groundwater Sample Results
CCR Unit: Evaporation Pond
CPS Energy Calaveras Power Station
San Antonio, TX

			CCR Unit	EP	EP	EP
			Well Designation	Downgradient	Downgradient	Downgradient
			Well ID	JKS-36	JKS-61	JKS-62
			Sample Date	4/13/2022	4/13/2022	4/13/2022
			Sample Type Code	N	N	N
Constituent	Units	2021 LPL - EP	2021 UPL - EP			
Boron	mg/L	--	1.80	0.556	1.83	0.609
Calcium	mg/L	--	1,410	260	144	165
Chloride	mg/L	--	3,320	295	248	313
Fluoride	mg/L	--	0.364	1.71	0.363	0.328
pH, Field	SU	4.58	6.26	6.78	6.83	6.89
Sulfate	mg/L	--	2,120	769	420	199
Total Dissolved Solids	mg/L	--	9,620	2,200	1,410	1,160

NOTES:

Shaded results either exceed of the Upper Prediction Limit (UPL) or are below the Lower Prediction Limit (LPL) for this CCR unit.
Sample Type Code: N - Normal

April 2022 Groundwater Sample Results
CCR Unit: Fly Ash Landfill
CPS Energy Calaveras Power Station
San Antonio, TX

			CCR Unit	FAL	FAL	FAL	FAL	FAL
			Well Designation	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient
			Well ID	JKS-31	JKS-33	JKS-46	JKS-46	JKS-60
			Sample Date	4/13/2022	4/13/2022	4/13/2022	4/13/2022	4/13/2022
			Sample Type Code	N	N	N	FD	N
Constituent	Units	2021 LPL - FAL	2021 UPL - FAL					
Boron	mg/L	--	5.77	0.460	1.02	0.736	0.765	0.573
Calcium	mg/L	--	794	339	499	181	196	438
Chloride	mg/L	--	1,850	525	731	14.8	15.2	324
Fluoride	mg/L	--	4.29	0.018 U	0.018 U	2.55	3.09	0.018 U
pH, Field	SU	4.87	6.73	4.04	6.55	3.45	3.45	6.36
Sulfate	mg/L	--	7,810	1,400	1,560	1,370	1,290	1,200
Total Dissolved Solids	mg/L	--	18,800	3,170	3,960	1,870	1,890	2,680

NOTES:

Shaded results either exceed of the Upper Prediction Limit (UPL) or are below the Lower Prediction Limit (LPL) for this CCR unit.
Sample Type Code: N - Normal; FD - Field Duplicate
U: Analyte not detected at laboratory reporting limit (Sample Detection Limit).

April 2022 Groundwater Sample Results
CCR Unit: Bottom Ash Ponds
CPS Energy Calaveras Power Station
San Antonio, TX

			CCR Unit	BAP	BAP	BAP	BAP	BAP	BAP
			Well Designation	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient
			Well ID	JKS-48	JKS-50R	JKS-52	JKS-52	JKS-55	JKS-56
			Sample Date	4/13/2022	4/14/2022	4/13/2022	4/13/2022	4/14/2022	4/13/2022
			Sample Type Code	N	N	N	FD	N	N
Constituent	Units	2021 LPL - BAP	2021 UPL - BAP						
Boron	mg/L	--	2.63	2.23	6.28	1.84	1.81	0.778	3.83
Calcium	mg/L	--	386	124	128	161	178	131	110
Chloride	mg/L	--	638	481	70.0	381	378	443	100
Fluoride	mg/L	--	0.894	0.810	0.284	0.418	0.491	0.557	0.367
pH, Field	SU	5.48	7.31	6.94	6.66	6.97	6.97	6.84	6.81
Sulfate	mg/L	--	485	199	189	299	296	178	121
Total Dissolved Solids	mg/L	--	2,500	1,480	887	1,470	1,520	1,370	838

NOTES:

Shaded results either exceed of the Upper Prediction Limit (UPL) or are below the Lower Prediction Limit (LPL) for this CCR unit.
Sample Type Code: N - Normal; FD - Field Duplicate

April 2022 Groundwater Sample Results
CCR Unit: SRH Pond
CPS Energy Calaveras Power Station
San Antonio, TX

			CCR Unit	SRH Pond	SRH Pond	SRH Pond	SRH Pond
			Well Designation	Downgradient	Downgradient	Downgradient	Downgradient
			Well ID	JKS-52	JKS-52	JKS-53	JKS-54
			Sample Date	4/13/2022	4/13/2022	4/13/2022	4/13/2022
			Sample Type Code	N	FD	N	N
Constituent	Units	2021 LPL - SRH	2021 UPL - SRH				
Boron	mg/L	--	2.64	1.84	1.81	1.68	1.16
Calcium	mg/L	--	377	161	178	115	149
Chloride	mg/L	--	640	381	378	403	472
Fluoride	mg/L	--	0.894	0.418	0.491	0.263	0.473
pH, Field	SU	5.48	7.31	6.97	6.97	6.82	6.84
Sulfate	mg/L	--	487	299	296	274	446
Total Dissolved Solids	mg/L	--	2,440	1,470	1,520	1,330	1,680

NOTES:

Shaded results either exceed of the Upper Prediction Limit (UPL) or are below the Lower Prediction Limit (LPL) for this CCR unit.
Sample Type Code: N - Normal; FD - Field Duplicate