Annual Groundwater Monitoring and Corrective Action Report

CPS Energy
Calaveras Power Station – Bottom Ash Ponds
San Antonio, Texas

January 2022

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TABLE OF CONTENTS

3.1 GROUNDWATER OBSERVATIONS

Depth to groundwater surface measurements were made at each monitoring well prior to sampling. Groundwater elevations were calculated by subtracting the depth to ground-water measurement from the surveyed reference elevation for each well. Groundwater elevations collected during the monitoring events are summarized in Table 1. Groundwater elevations

4. STATISTICAL ANALYSIS AND RESULTS

Consistent with the CCR Rule and with the SAP,

A total of three 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 ten 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 one analyte with interwell analysis, the upgradient dataset was pooled prior to UPL calculations, resulting in a single UPL value per analyte. For the six 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 intr

Tables

TOC Elevation	**498.63**	**TOC Elevation**	**496.92**	**TOC Elevation**	

	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	10/20/20 to 10/21/20	4/13/21 to 4/14/21	10/19/21 to 10/20/2021

TABLE 3

TABLE 3
Groundwater Analytical Results Summary
CPS Energy - Calaveras Power Station
Bottom Ash Ponds

Constituents	Unit
Boron	mg/L
Calcium	mg/L
Chloride	mg/L
Fluoride	mg/L
Sulfate	mg/L
pH - Field Collected	SU
Total dissolved solids	mg/L

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Figures

2021 Water Level Study Report

Appendix A

Annual Groundwater Monitoring and Corrective Action Reports have been completed for each of

TABLE 1
Groundwater Elevations Summary - CCR Unit Wells
CPS Energy - Calaveras Power Station

Well	CCR Unit	Well Elevation (ft msl)	Event No.	Date	Depth to Water (ft btoc)	Water Level (ft msl)
JKS-45 Upgradient	FAL	531.46	1	12/6/2016	46.83	484.63
JKS-45 Upgradient	FAL	531.46	2	2/21/2017	46.64	484.82
JKS-45 Upgradient	FAL	531.46	3	3/28/2017	46.52	484.94

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Well	CCR Unit	Well Elevation (ft msl)	Event No.	Date	Depth to Water (ft btoc)	Water Level (ft msl)
JKS-61 Downgradient	EP	505.51	1	12/6/2016	23.95	481.56
JKS-61 Downgradient	EP	505.51	2	2/21/2017	23.31	482.20
JKS-61 Downgradient	EP	505.51	3	3/28/2017	23.10	482.41
JKS-61 Downgradient	EP	505.51	4	5/2/2017	22.85	482.66
JKS-61 Downgradient	EP	505.51	5	6/20/2017	22.05	483.46
JKS-61 Downgradient	EP	505.51	6	7/25/2017	23.50	482.01
JKS-61 Downgradient	EP	505.51	7	8/29/2017	23.60	481.91
JKS-61 Downgradient	EP	505.51	8	10/10/2017	23.97	481.54
JKS-61 Downgradient	EP	505.51	9	4/4/2018	23.08	482.43
JKS-61 Downgradient	EP	505.51	10	10/30/2018	23.94	481.57
JKS-61 Downgradient	EP	505.51	11	4/9/2019	22.97	482.54
JKS-61 Downgradient	EP	505.51	12	10/22/2019	24.20	481.31
JKS-61 Downgradient	EP	505.51	13	4/23/2020	23.74	481.77
JKS-61 Downgradient	EP	505.51	14	10/15/2020	24.60	480.91

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CPS Energy - Calaveras Power Station

Well	CCR Unit	Well Elevation (ft msl)	Event No.	Date	Depth to Water

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CPS Energy - Calaveras Power Station

Well	CCR Unit	Well Elevation (ft msl)	Event No.	Date	Depth to Water (ft btoc	(ft msl	Do Wat Leveler

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TABLE 2
Groundwater Elevations Summary - Non-CCR Unit Observation Wells
CPS Energy - Calaveras Power Station

Well	Well Elevation (ft msl)	Event No.	Date	Depth to Water (ft btoc)	Water No. (ft msl)

FIGURES

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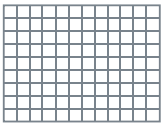

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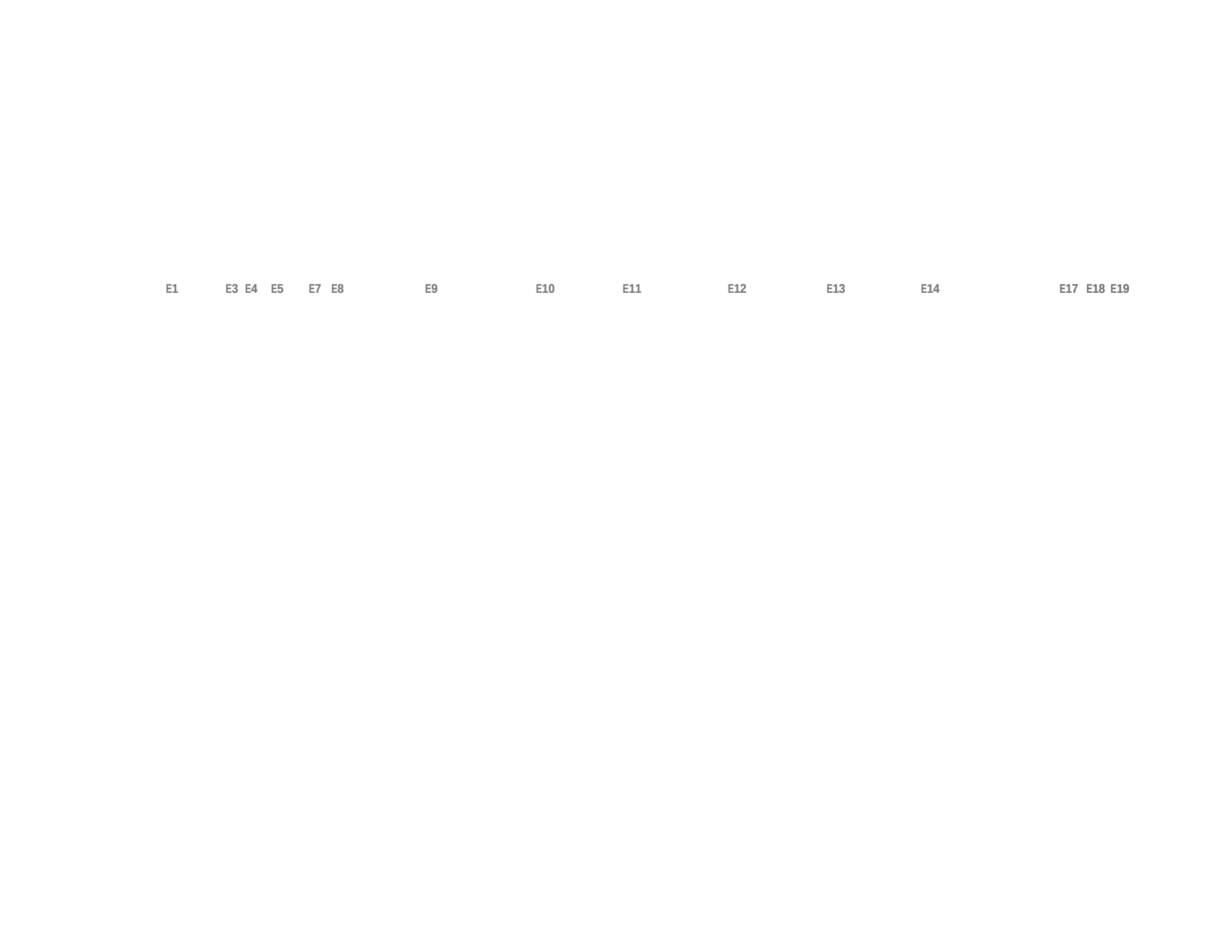
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Laboratory Data Packages

Appendix B

(*Data Packages Available Upon Request***)**

Statistical Analysis Tables and Figures

Appendix C

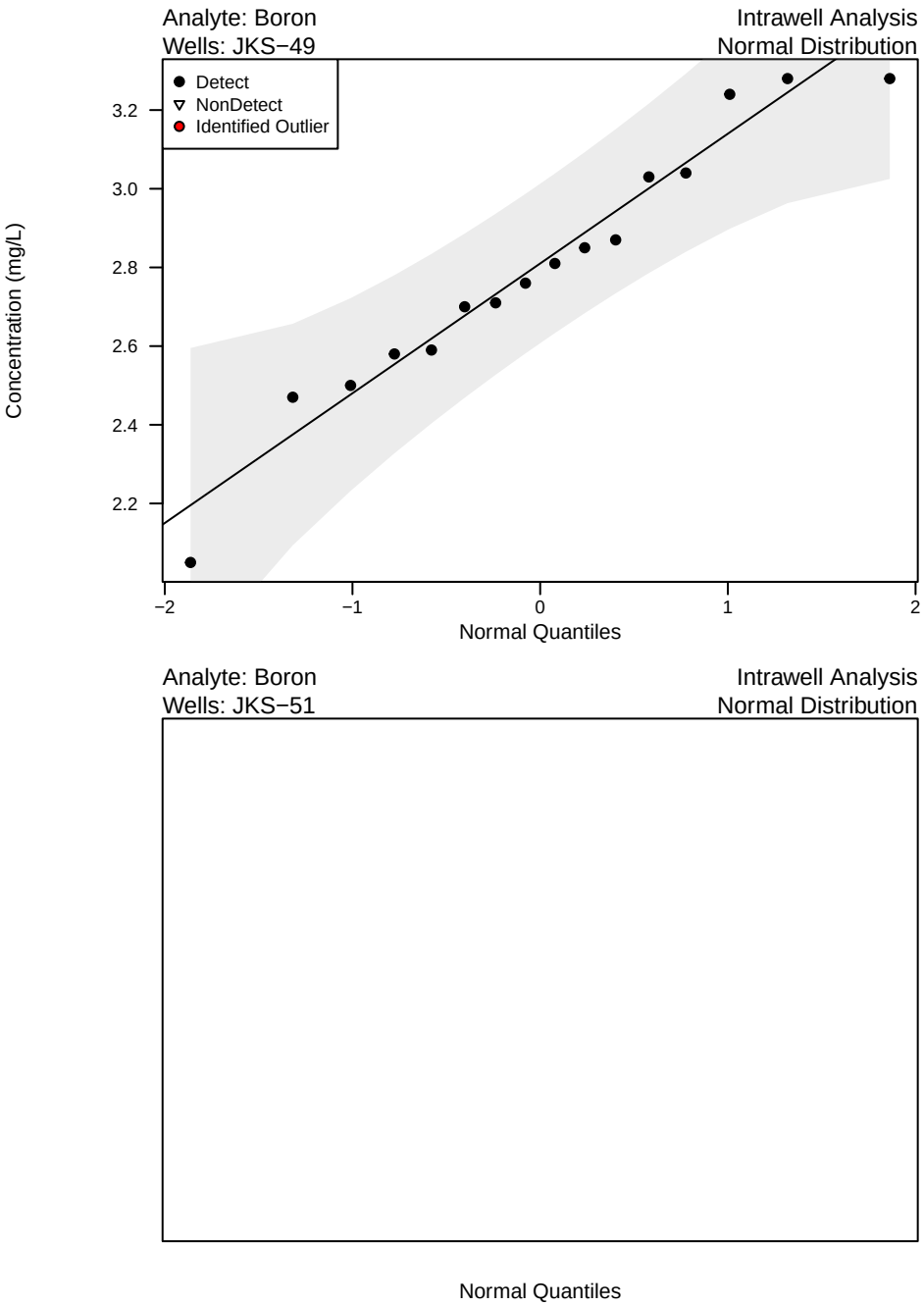
Appendix C π Table 1
KruskalπWallis Test Comparisons of Upgradient Wells
Calaveras Power Station
Bottom Ash Ponds

Analyte	N	N

Appendix C – Table 6
Comparisons of Downgradient Wells to UPLs
Calaveras Power Station
Bottom Ash Ponds

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-														

Appendix C − Figure 2
Unit: Bottom Ash Ponds
QQ Plots of Upgradient Wells



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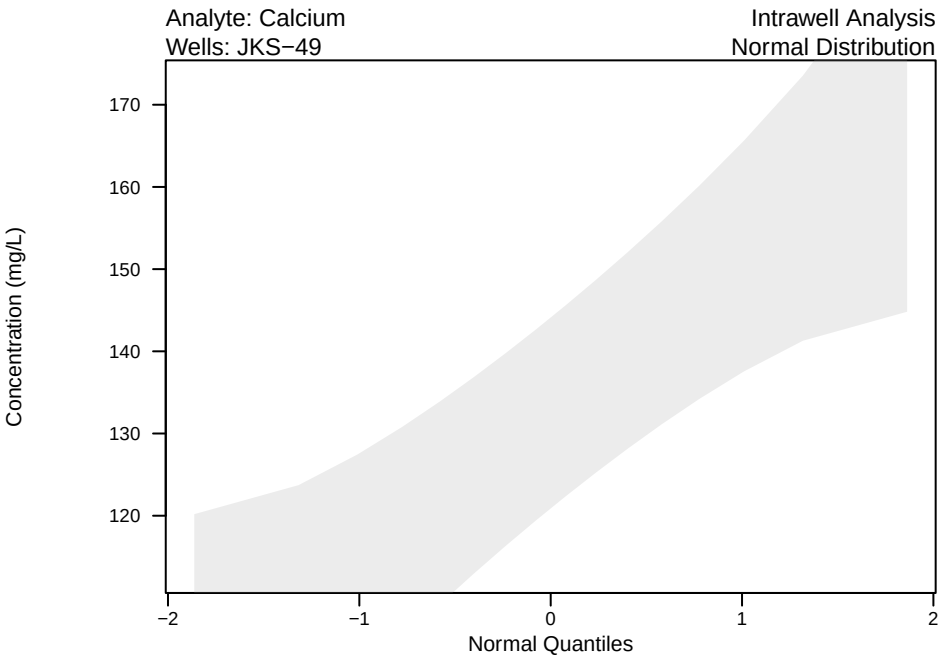
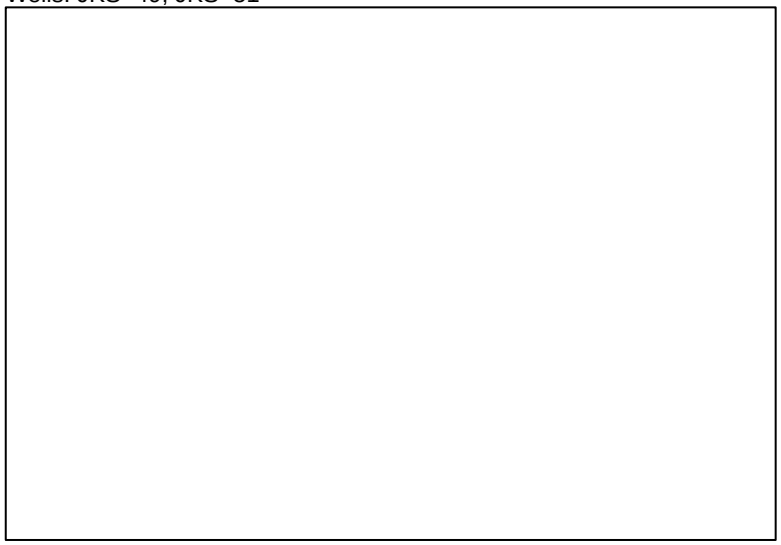
Appendix C − Figure 2
Unit: Bottom Ash Ponds
QQ Plots of Upgradient Wells



Appendix C − Figure 2
Unit: Bottom Ash Ponds
QQ Plots of Upgradient Wells

Analyte: Chloride
Wells: JKS−49, JKS−51



Appendix C − Figure 2
Unit: Bottom Ash Ponds

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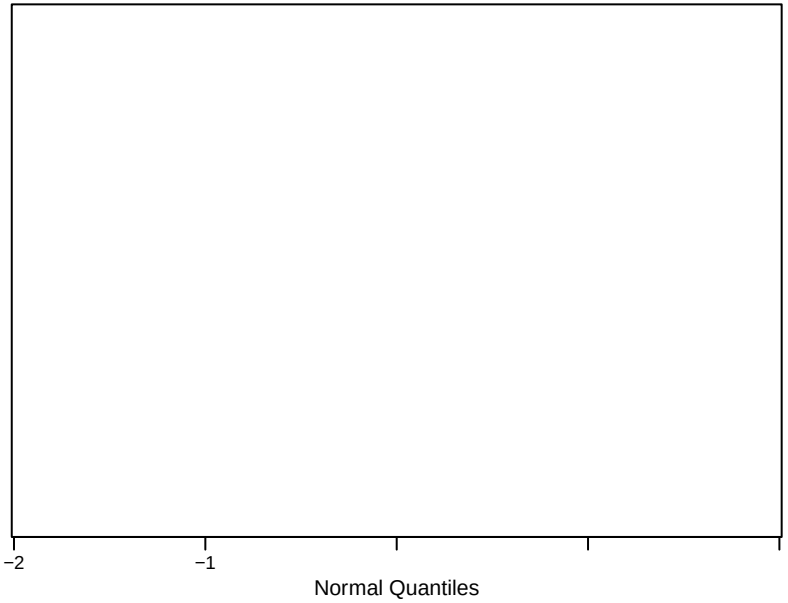
Unit: Bottom Ash Ponds
QQ Plots of Upgradient Wells

Analyte: pH
Wells: JKS−51

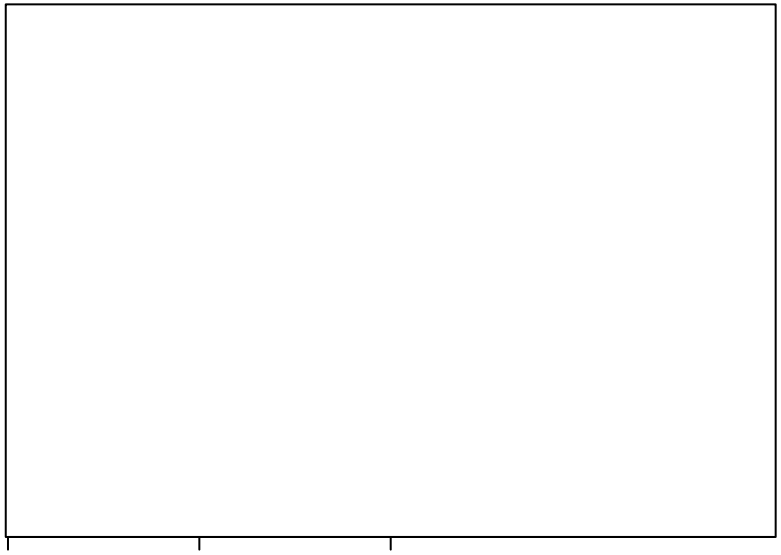
Intrawell Analysis
NDD Distribution



Appendix C − Figure 2
Unit: Bottom Ash Ponds
QQ Plots of Upgradient Wells

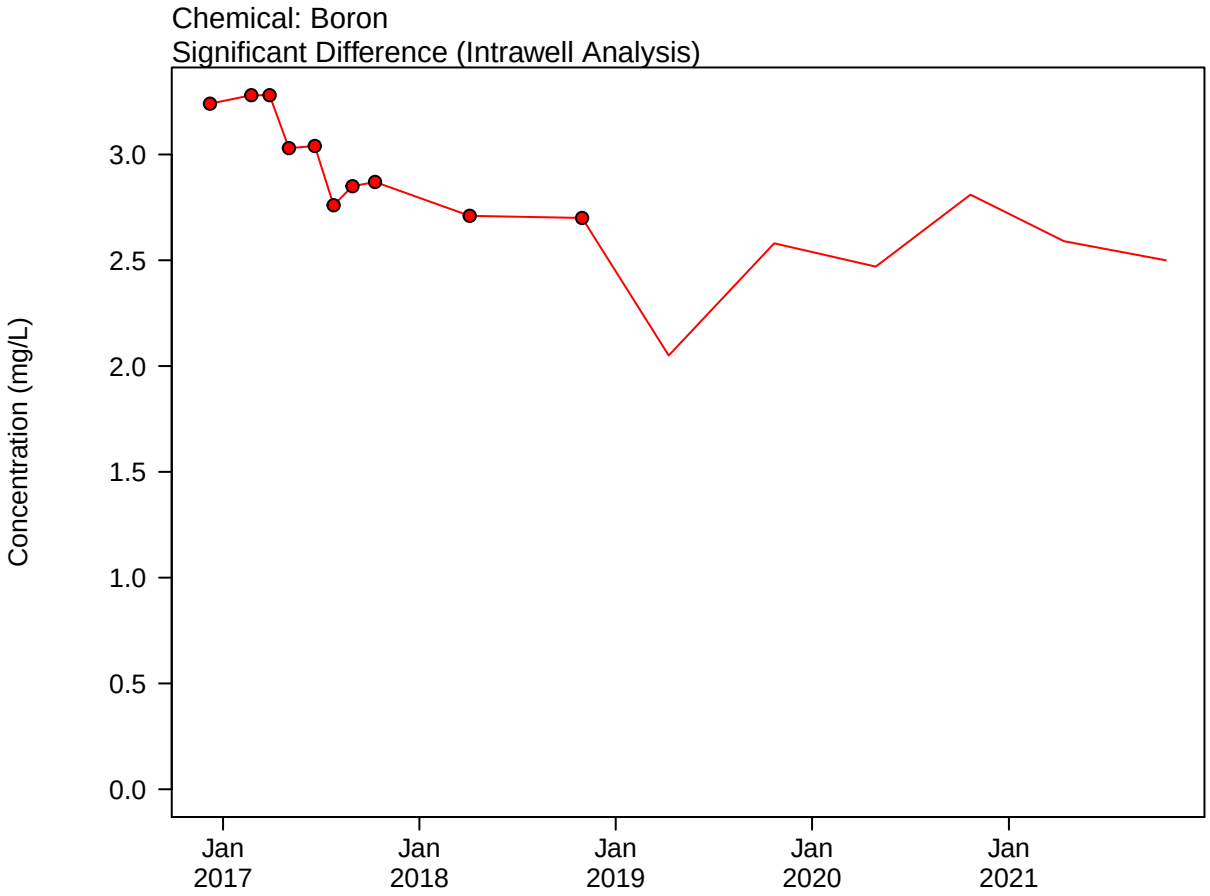
Analyte: Total dissolved solids
Wells: JKS−51

Intrawell Analysis
Normal Distribution



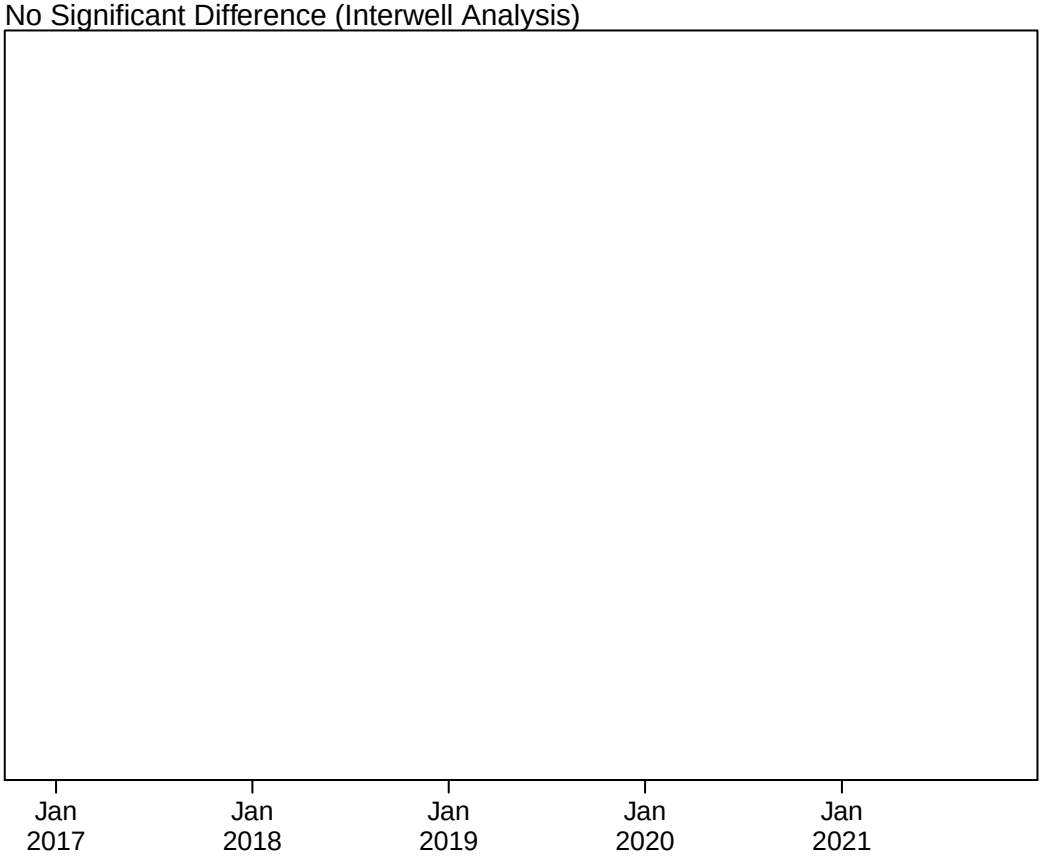
Normal Quantiles

Appendix C − Figure 3
Unit: Bottom Ash Ponds
Timeseries of Upgradient Wells



Appendix C − Figure 3
Unit: Bottom Ash Ponds
Timeseries of Upgradient Wells

Chemical: Chloride
No Significant Difference (Interwell Analysis)



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Unit: Bottom Ash Ponds
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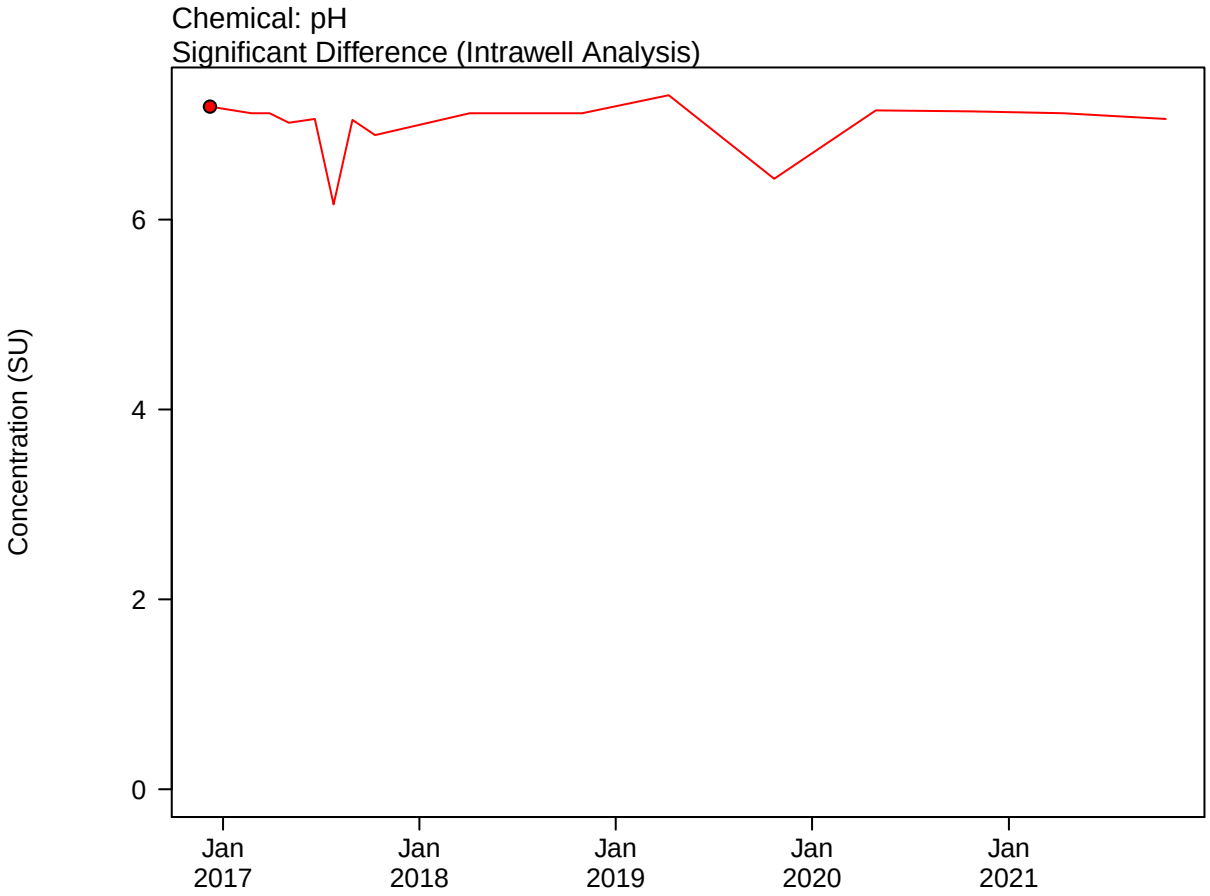
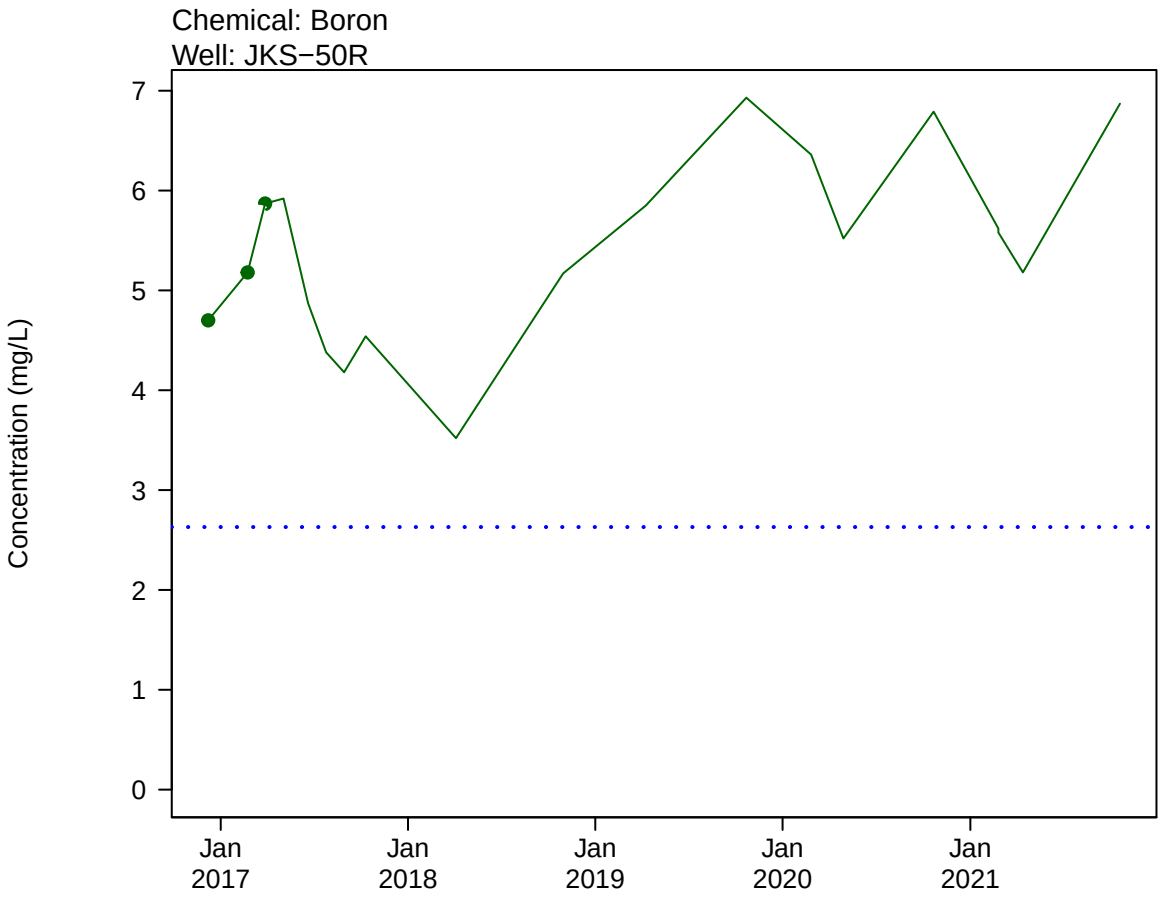


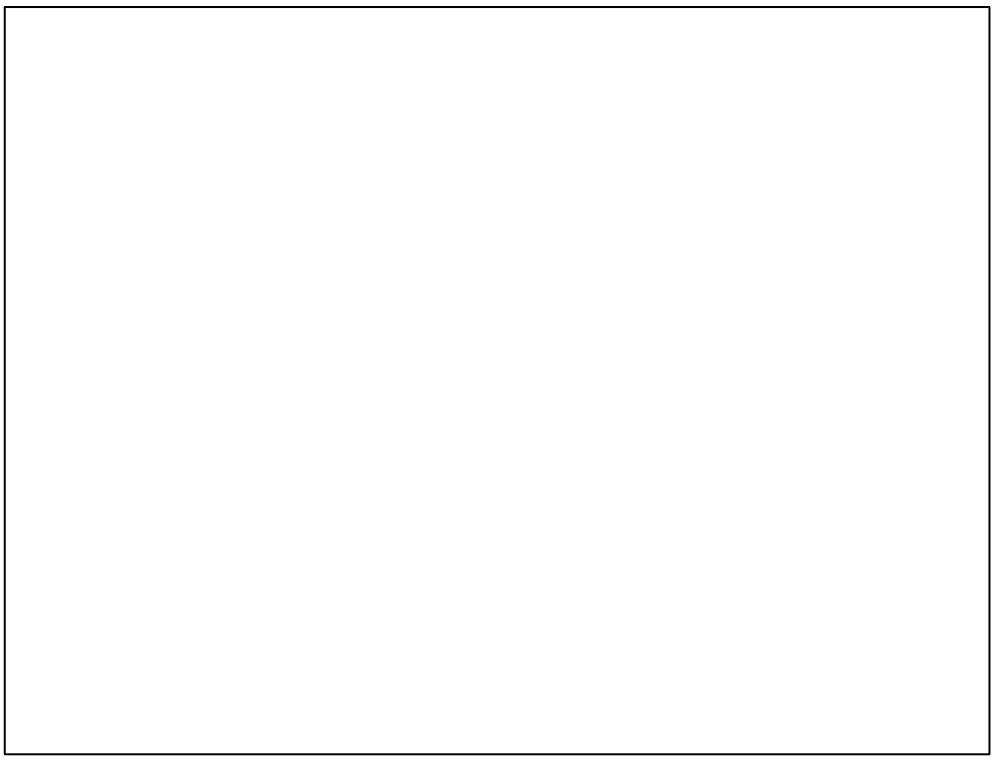
Appendix C − Figure 3
Unit: Bottom Ash Ponds
Timeseries of Upgradient Wells

Appendix C − Figure 4
Unit: Bottom Ash Ponds
Trend Analysis of Downgradient Wells with Exceedances



Appendix C − Figure 4
Unit: Bottom Ash Ponds
Trend Analysis of Downgradient Wells with Exceedances

Chemical: Fluoride



April 2021 Groundwater Sampling Event and August 2021 Resampling Event – Calaveras Power Station CCR Units

Appendix D

ERM

q105.9601 Tc125.52 291 Tw281.88 cm/Im0 Do98 refBT1qs/TT0 1 T8i0.58.14 2 Tc18.14 371 rq653.

ATTACHMENT 1 APRIL AND AUGUST 2021 GROUNDWATER SAMPLE RESULTS

Constituent	Units	2020 LPL - BAP	2020 UPL - BAP	BAP Downgradient JKS-48 4/13/2021 N	BAP Downgradient JKS-50R 4/13/2021 N	BAP Downgradient JKS-52 4/13/2021 N	BAP Downgradient JKS-55 4/13/2021 N	BAP Downgradient JKS-56 4/13/2021 N
Boron	mg/L	--	2.65	2.19	5.18	2.51	0.762	3.16
Calcium	mg/L	--	387	140	139	209	146	111
Chloride	mg/L	--	607	477	110	470	440	176
Fluoride	mg/L	--						

Constituent	Units	2020 LPL - SRH	2020 UPL - SRH	SRH Pond Downgradient JKS-52 4/13/2021 N	SRH Pond Downgradient JKS-53 4/13/2021 N	SRH Pond Downgradient JKS-54 4/13/2021 N
Boron	m					