LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

2.0 PROJECT DESCRIPTION

The Calaveras Power Station is located in Bexar County, Texas, southeast of San Antonio. The Power Station is located immediately adjacent to Calaveras Lake, but there are no towns in proximity to the Power Station as shown in Figure 1. This EAP covers potential emergencies at the following CCR units

It is estimated that approximately 118 acre-feet is the maximum inventory of CCR to beinv( )Tj0.001

3.4.3 Level 3: Imminent Failure (Emergency)

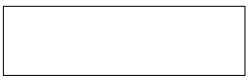
Level 3

slumping of the failed section of berm. This is anticipated to be slow enough to

4.0 GENERAL RESPONSIBILITIES

4.1

Figures




NORTH BOTTOM
ASH POND

PROFESSIONAL ENGINEER CERTIFICATION

I hereby certify that I, or an agent under my review, have prepared this Emergency Action Plan

[illegible]

[illegible]

[illegible]

[illegible]

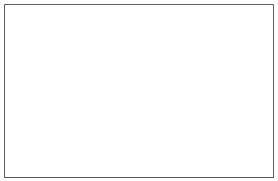
information contained in this EAP is true, complete, and accurate.

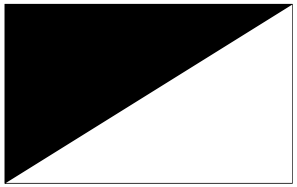
[illegible]

Date: 5/11/11

[illegible]

94591





ERM

CityCentre Four
840 W. Sam Houston Pkwy N.
Suite 600
Houston, Texas 77024

Telephone: +1 281 600 1000
Fax: +1 281 520 4625

www.erm.com

October 17, 2016

Environmental Resources Management
CityCentre Four

Sludge Recycle Holding (SRH) Pond (separated into the north pond and south pond by a concrete dividing wall); and

Evaporation Pond (EP).

CPS Energy formerly operated two CCR surface impoundments at the Power Station:

North Bottom Ash Pond (BAP); and

South BAP.

The J.T. Deely Power Plant3,tttc

Based on our evaluation of the available information for the operating surface impoundments, the construction, operation, and maintenance of the CCR units are consistent with recognized and generally accepted good engineering practices a

HTS, Inc. Consultants
416 Pickering Street, Houston, TX 77091
www.htshouston.com
Phone 713-692-8370
Fax 713-692-8502

HTS, INC.
CONSULTANTS

July 20, 2016

ERM, Inc.
840 W. Sam Houston Parkway N
Suite 600
Houston, Texas 77024

Attn: Mr. Chris Cunningham P.E.

Re: Letter Report
Slope Stability Analysis
Ash Pond Berms - Spruce/Deely Generation Units
San Antonio, Texas

HTS Project No.: 16-S-303

Dear Mr. Cunningham:

This letter provides results of the slope stability analyses performed on the 2 sections provided by ERM, Inc. The original geotechnical investigation (report dated May 7, 2014) was performed by Rabb Webber Engineering Group. HTS was retained to perform slope stability analyses for the [illegible] RKC report and the subsoil profile defined by Geotechnical Boring No. 7 which is located near section "A" as presented in RKC report (Figure A-1 and C-1). The 2 sections [illegible] to the ground surface for a conservative analysis. The results of these analyses are shown below and in Appendix B.

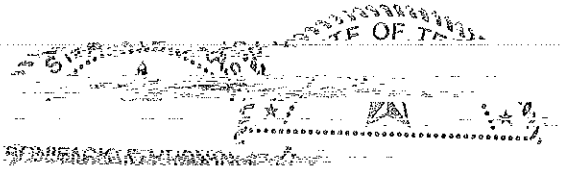
SECTION	FACTOR OF SAFETY (LONG TERM CONDITION)
Section Along CSA	4.06
Section Along CSB	4.08

The results of the stability analyses using the shear strength parameters as indicated above

long term conditions.

Should you have any questions or require additional information, please call me at your convenience.

Sincerely,



Senior Engineer

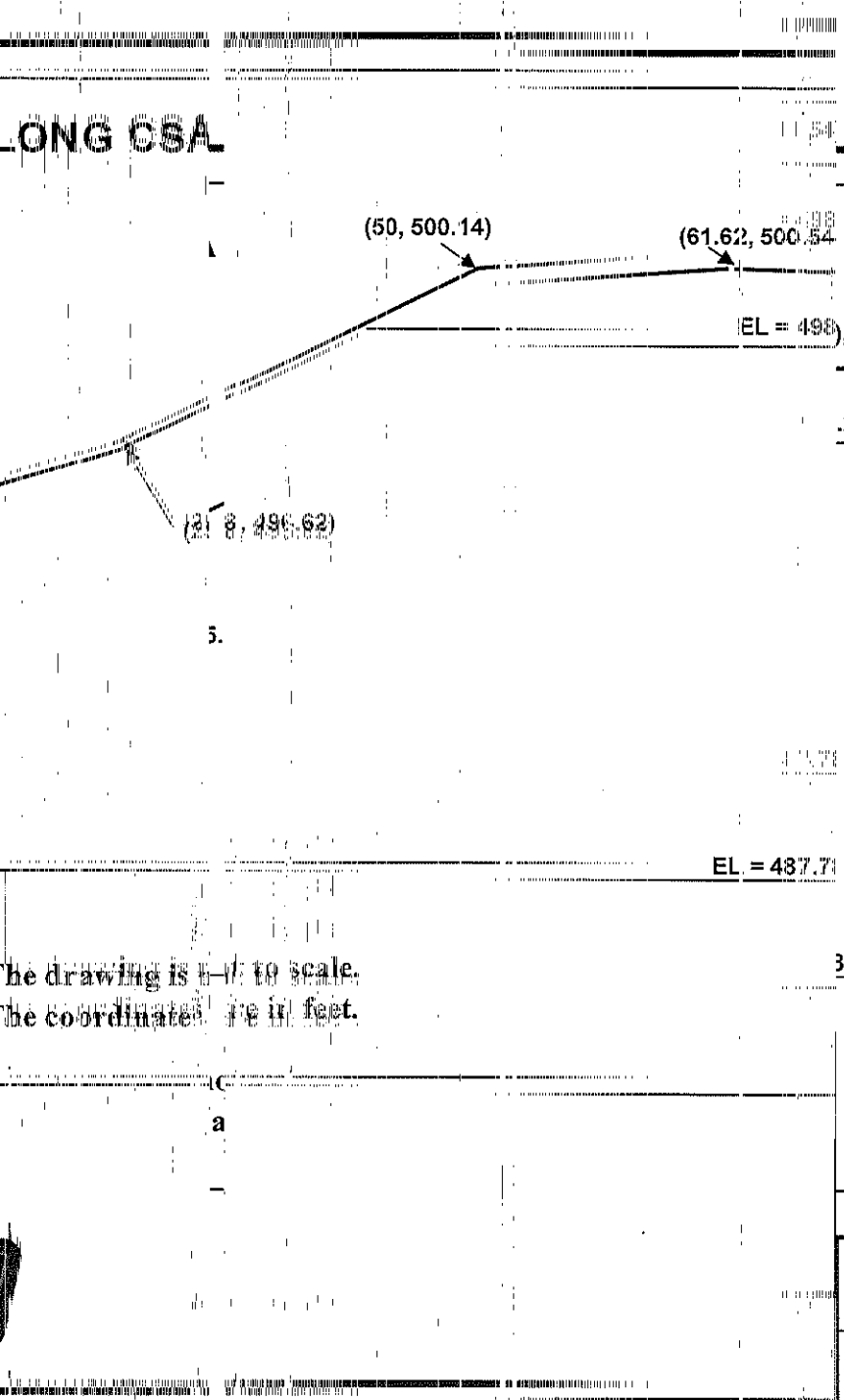
HTS, Inc. Consultants

Attachments: Appendix A – Slope Section Configurations

BFM/ba/cg

h:\word\2016\300-349\16-305

APPENDIX A


LONG CSA
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(61.62, 500.54
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(2 8, 496.62)
EL = 487.7
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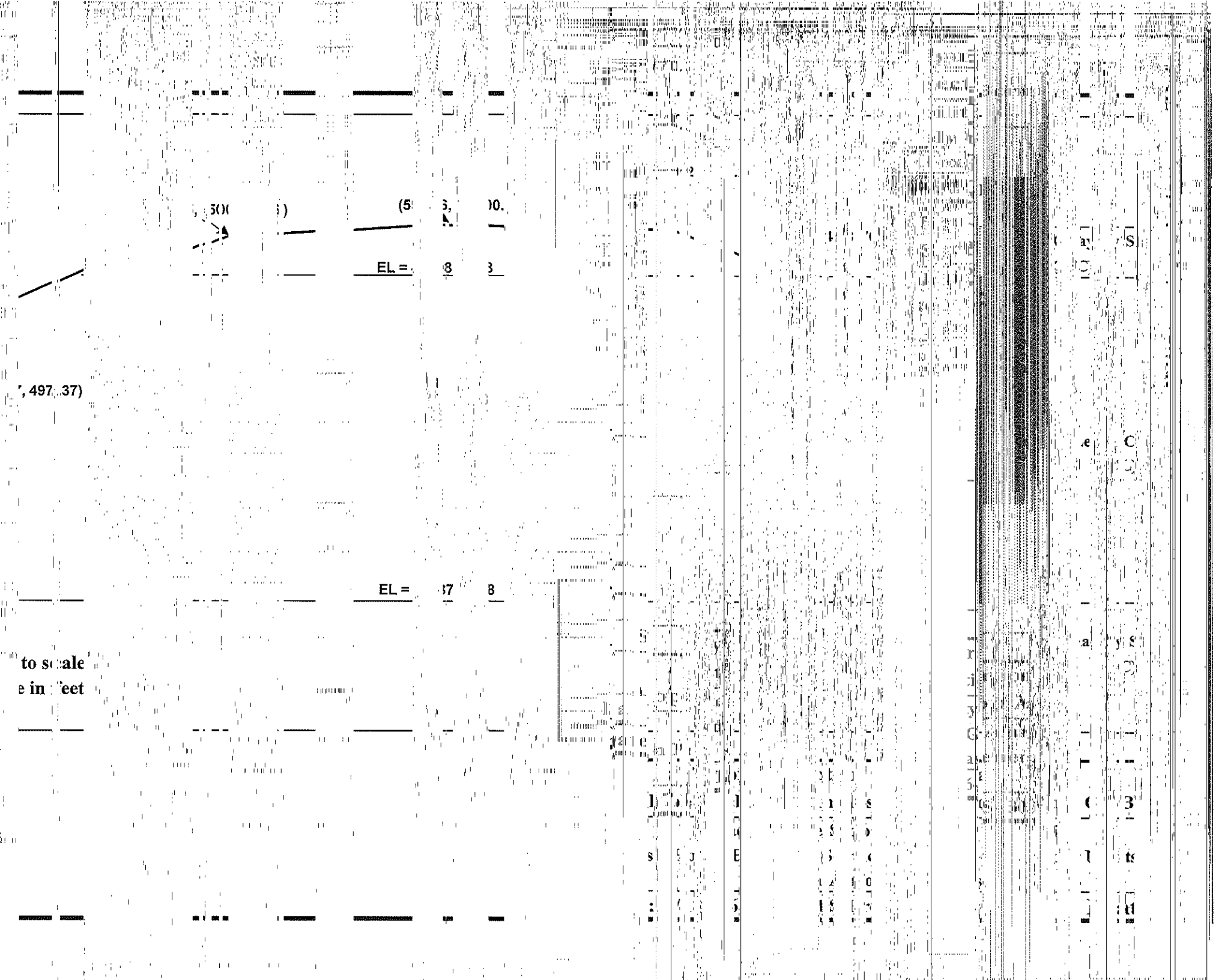
EL =
EL =
to scale
e in feet

monitoring wells are being used in monitorinn

April 4, 2018

In addition, the statistical analysis shows that no other Appendix III constituents are elevated above background concentrations. If the elevated boron concentration was associated with a release, other elevated Appendix III constituent concentrations would also be expected (Milligan and Ruane, 1980).

Finally, the concentration of boron within the BAPs was considered with respect to concentrations in the surrounding monitoring wells. During two sampling events in February 2018, groundwater from the BAPs had boron concentrations [illegible] saflument

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Environmental Resou Ma agemen t 873 7 \ 910

ERM

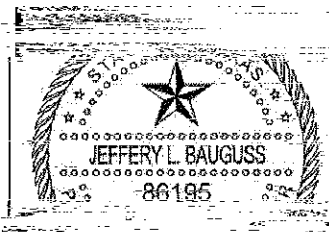
Evaporation Pond (EP)

Downgradient monitoring well results determined to be a potential

CPS Energy

CERTIFICATION

I hereby verify the accuracy of the information provided in this *Written Demonstration* in



Texas Licensed Professional Engineer No. 86195

ERM

27 April 2020

Reference: Project No. 0(ec220)]TJ1-4.160 0Tdm( )Tj-1-4.160 -1.560T

(Houston

WRITTEN DEMONSTRATION CERTIFICATION

Calaveras Power Station
San Antonio, Texas
CPS Energy

CERTIFICATION

I hereby verify the accuracy of the information provided in this *Written Demonstration* in accordance with the requirements of 40 CFR Part 82, Subpart F, §82.166(f).

Jeffrey Rauch, P.E.
Texas Licensed Professional Engineer No. 86195

ATTACHMENT 1 CERTIFICATION

Annual Groundwater

Tables

TOC Elevation

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

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
Appendix IV - Assessment Monitoring	
Antimony	mg/L
Arsenic	mg/L

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
Appendix IV - Assessment Monitoring	
Antimony	mg/L
Arsenic	mg/L
Barium	mg/L
Beryllium	mg/L
Cadmium	mg/L
Chrmhmg/L	
C l u o r i d e m g / L	

BerpH -rtalbden (g/)0291 -0.0024 T T*umBeriumg/ L
erumg/228gdBer6.1 (m)T2T3(Botg(oun)-7Ci [Ber) T*[6.1 (m)T2T3(Botith4O)]TJ adUT1 (m (ES:-3.6 (a)-2.5 (l dis)-12.5 .9539aly)241 Tc T12 Tw T*[1 Tf -(A)27.2 (p1 Tf -:A)27.2 in)TJ adUi Tgr1 (m (d s)-12.12 Tw T*L)]TJ /TT per1 (m ((C)A)27.2 e s)-12.r1 (m (.30LE 9.0143 Tc 9.0141 (Analy)277m)T2T3SU:.6 (nd38 Tc T* Td]TJ -0 (.30LE 9.012 Tc 9.0145 (Analy)

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

Figures

DESIGN:		
DATE:		

DESIGN:		
DATE:		

Statistical Analysis Tables and Figures

Appendix B

Analyte	N	Num Detects	Percent Detect	DF	KW Statistic	p-value	Conclusion	UPL Type
Boron	28	28	100.00%	1	20.3	<0.001	Significant Difference	Intrawell
Calcium	28	28	100.00%	1	19.5	<0.001	Significant Difference	Intrawell
Chloride	28	28	100.00%	1	0.256	0.613	No Significant Difference	Interwell
Fluoride	28	26	92.86%	1	19.9	<0.001	Significant Difference	Intrawell
pH	28	28	100.00%	1	12.7	<0.001	Significant Difference	Intrawell
Sulfate	28	28	100.00%	1	19.9	<0.001	Significant Difference	Intrawell
Total dissolved solids	28	28	100.00%	1	9.64	0.00191	Significant Difference	Intrawell

NOTES:

Analyte	Well	Units	N	Num Detect	Percent Detect	Min ND	Max ND	Min Detect	Median	Mean	Max Detect	SD	CV	Distribution
Boron	JKS-49	mg/L	14	14	100.00%			2.05	2.83	2.83	3.28	0.339	0.119722997	Normal
Boron	JKS-51	mg/L	14	14	100.00%			0.347	0.512	0.522	0.668	0.0844	0.161632889	Normal
Calcium	JKS-49	mg/L	14	14	100.00%			113	131	134	JKS-49	19.3457	97.8	mg/L (1338014 | 141457 | 127 | 179.72889)	1758.80%	(normal)	TJ -4

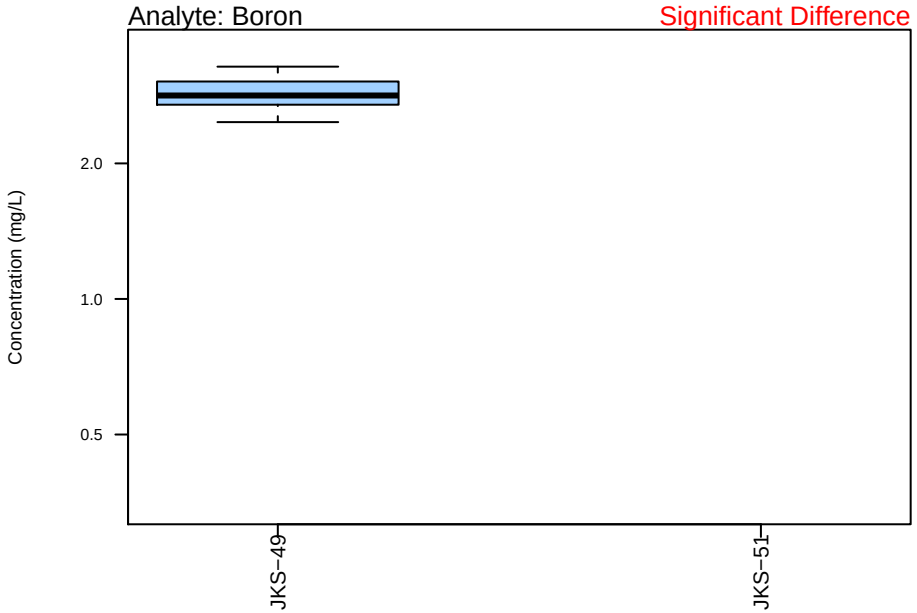
Well

Analyte	UPL Type	Well	N	Num Detects	Percent Detect	p-value	tau	Conclusion
Boron	Intrawell	JKS-49	14	14	100.00%	<0.001	-0.685	Decreasing Trend

Boron Intrawell JKS-49 14 14 1008665Boron

Analyte	Well	LPL	UPL	Units	Recent Date	Observation	Obs > UPL	Notes	Notes

Appendix B − Figure 1
Unit: Bottom Ash Ponds
Boxplots of Upgradient Wells

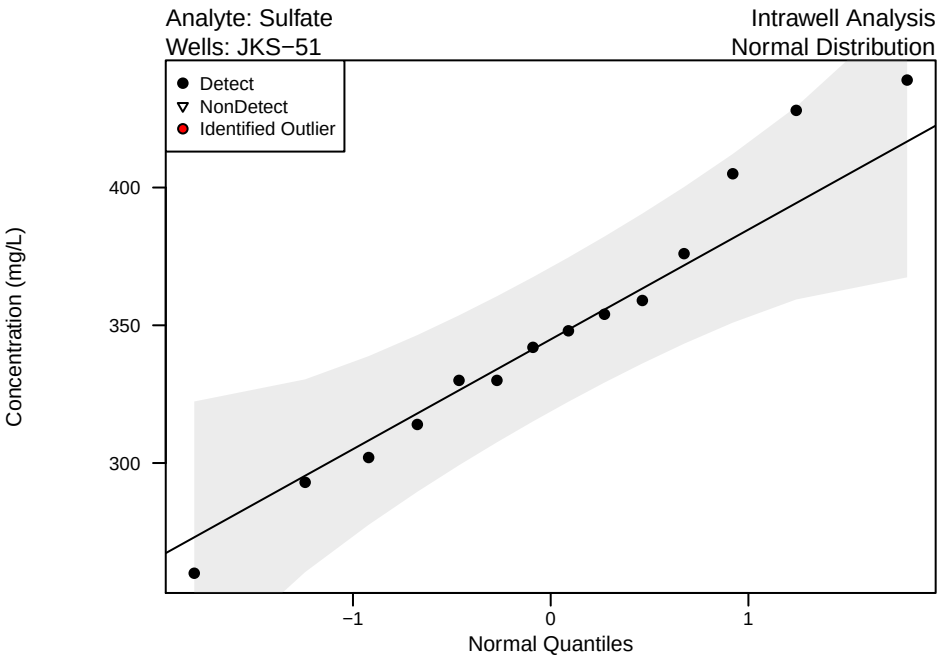


Appendix B − Figure 2

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

Appendix B − Figure 2
Unit: Bottom Ash Ponds

Appendix B − Figure 2
Unit: Bottom Ash Pond 1 − CCR Monofill − Phase 1 − Intrawell Analysis
QC Tests: JKS−51 Wells: JKS−51 Normal Distribution



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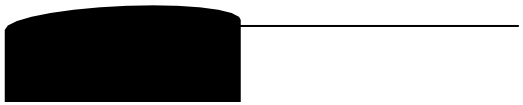
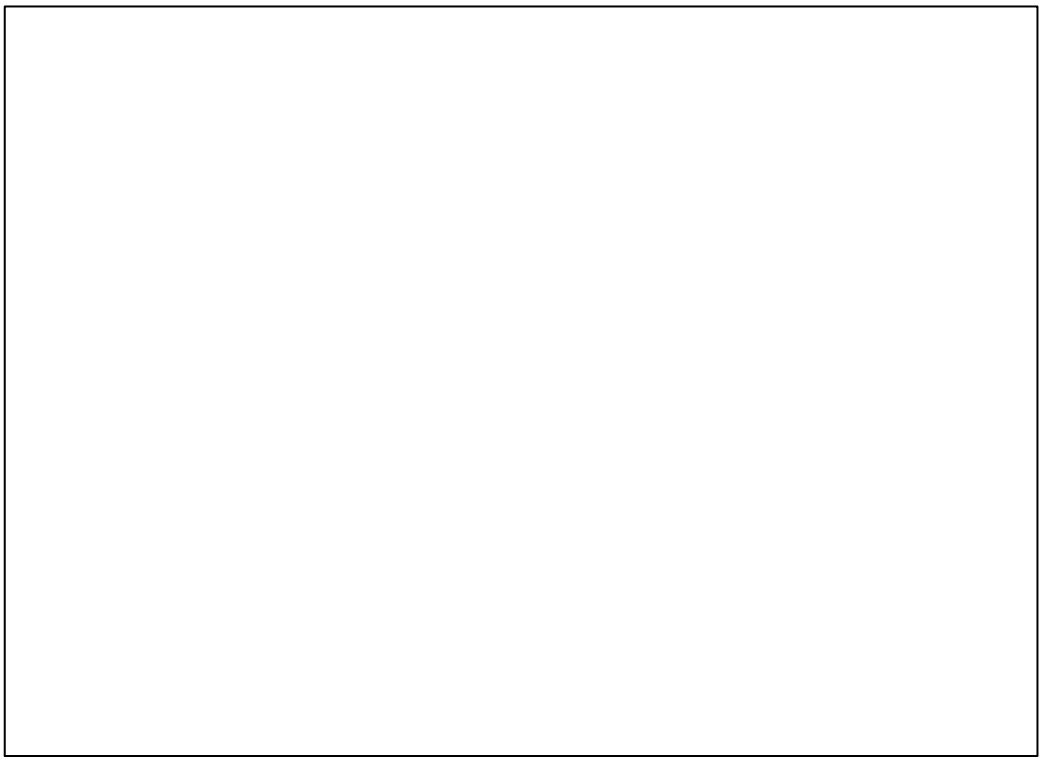
not Lognormal/NDD distribution.

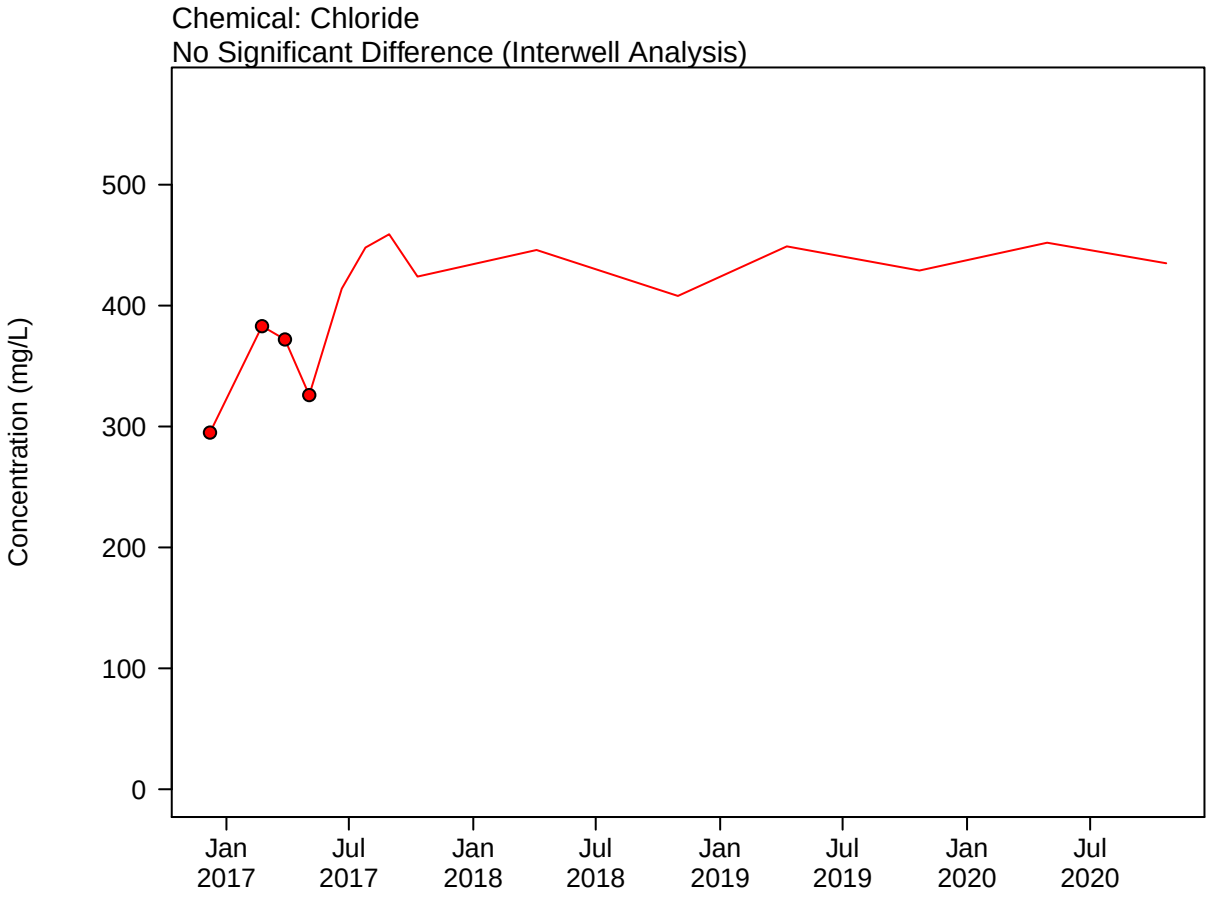


Appendix B − Figure 3
Unit: Bottom Ash Ponds
Timeseries of Upgradient Wells

Chemical: Boron

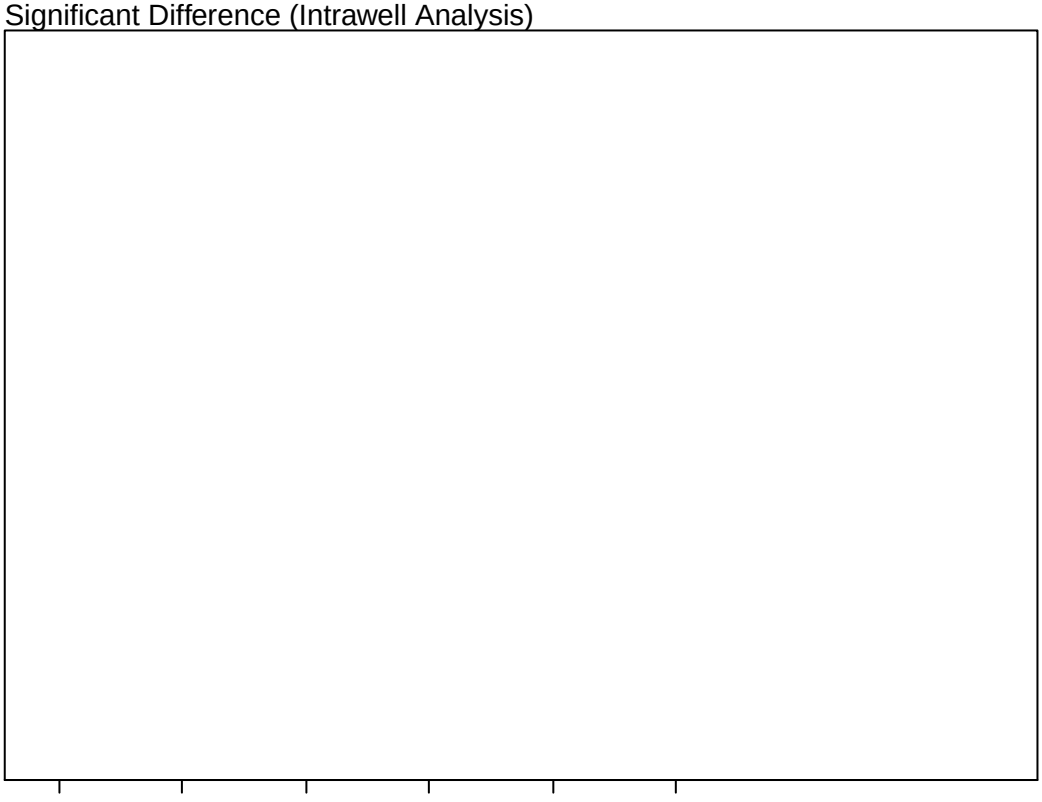


Appendix B − Figure 3
Unit: Bottom Ash Ponds
Timeseries of Upgradient Wells



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

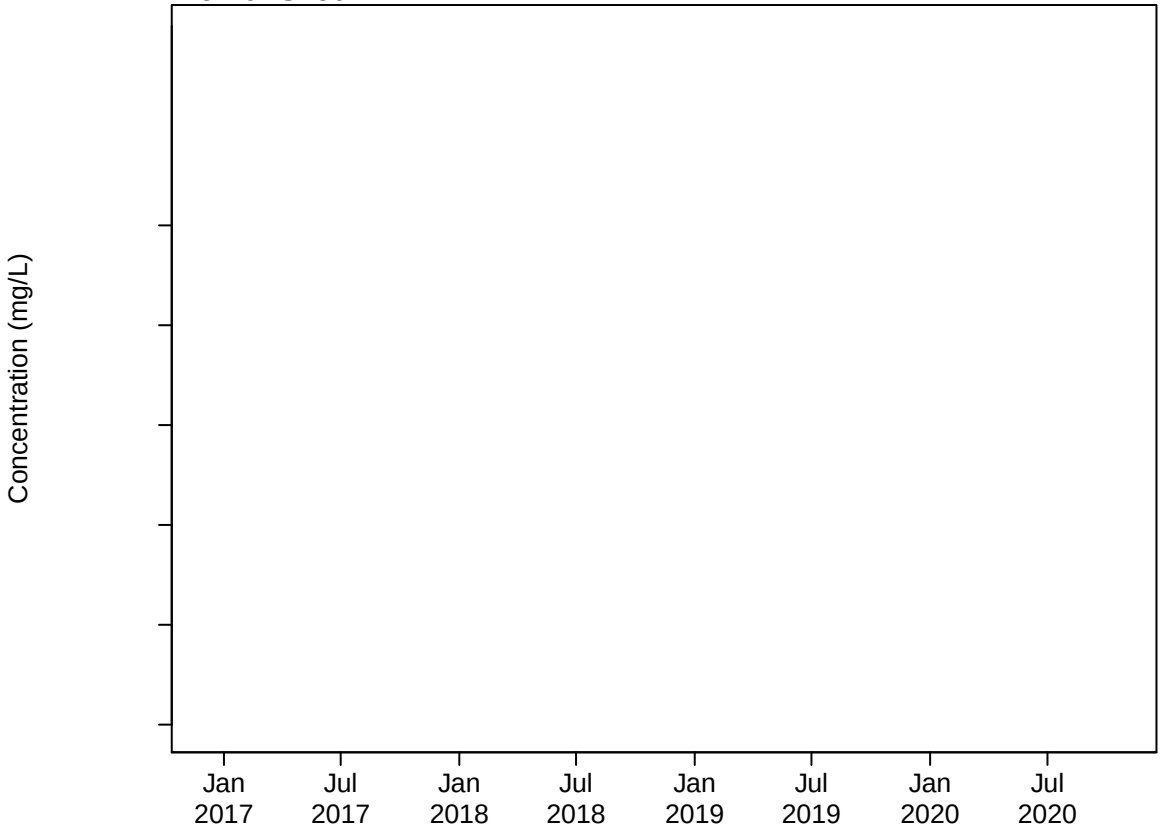
Chemical: pH
Significant Difference (Intrawell Analysis)



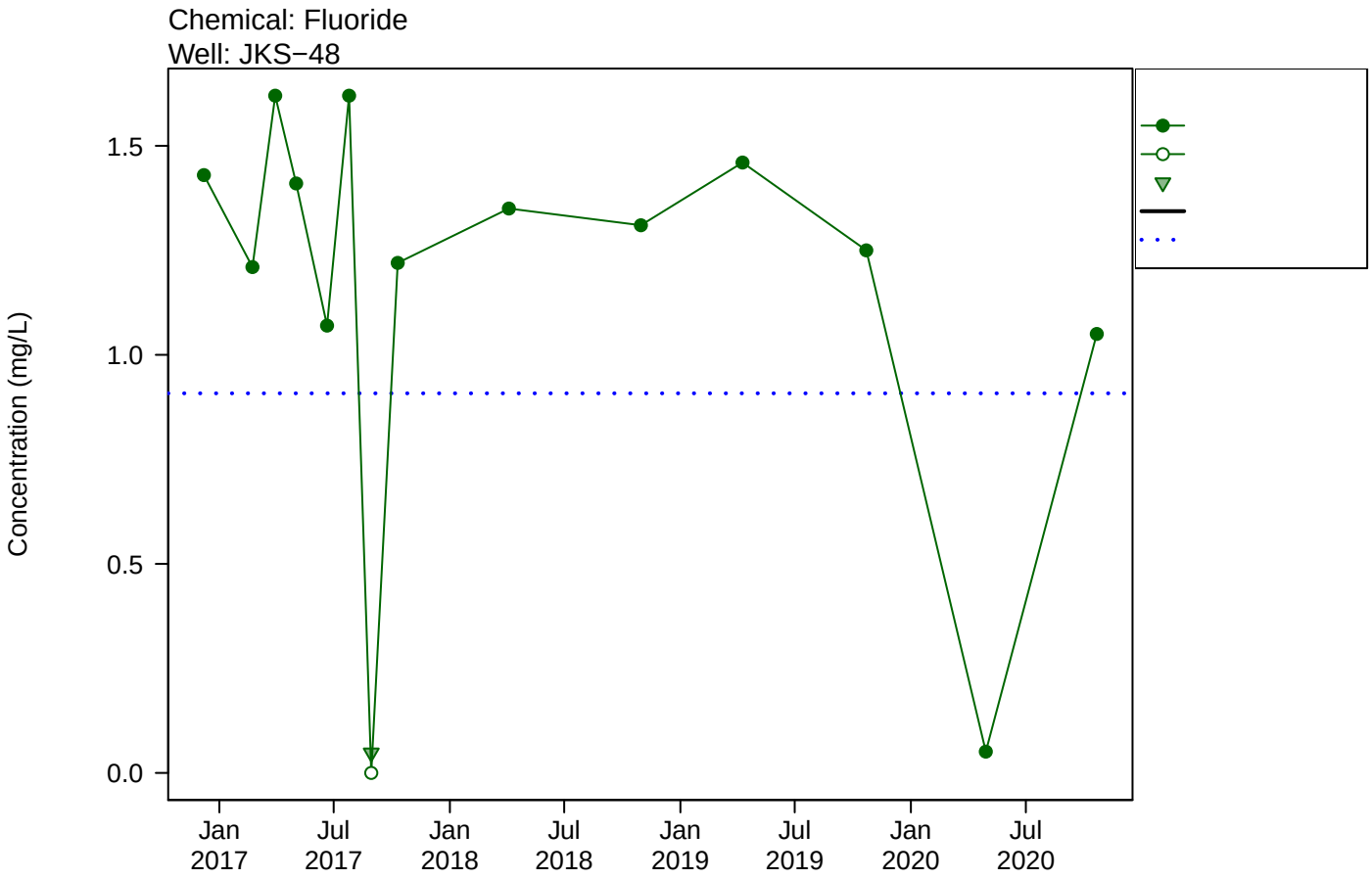
Appendix B − Figure 3
Unit: Bottom Ash Ponds

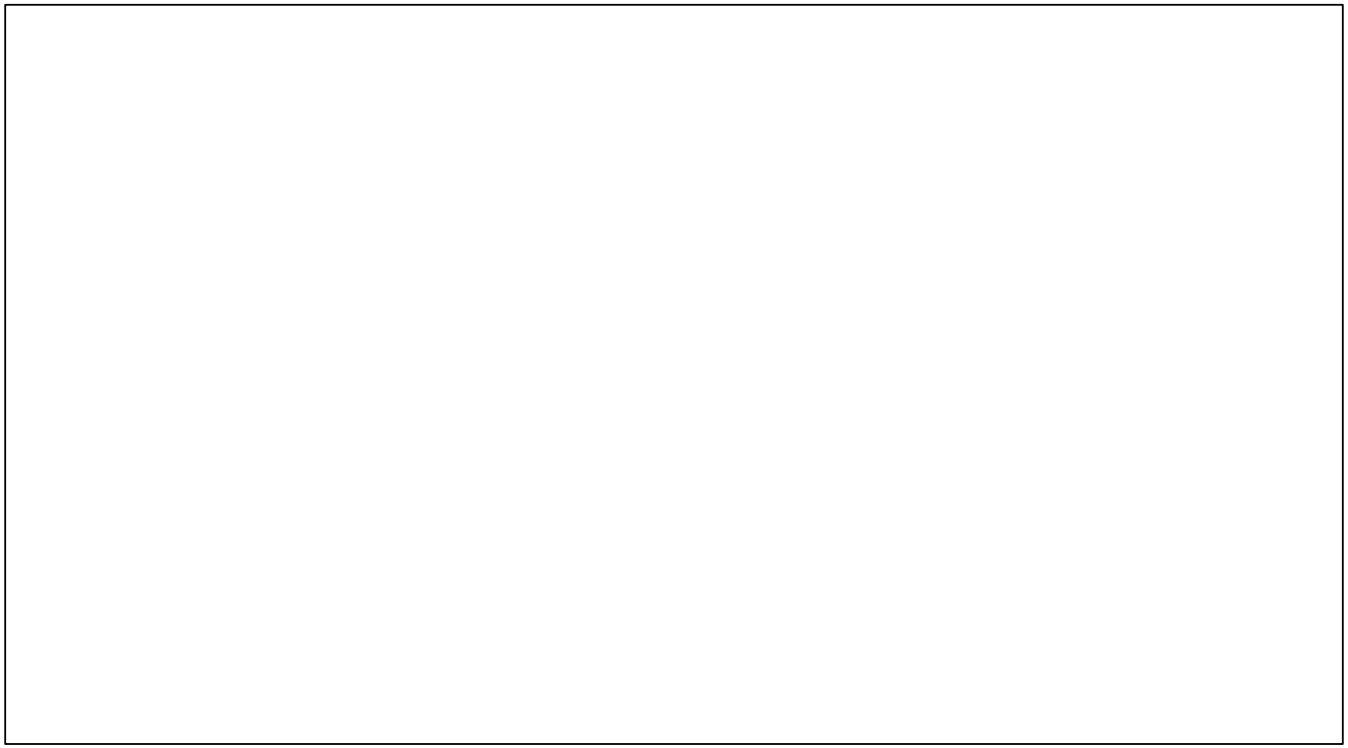
Appendix B − Figure 4
Unit: Bottom Ash Ponds
Trend Analysis of Downgradient Wells with Exceedances

Chemical: Boron
Well: JKS−50R

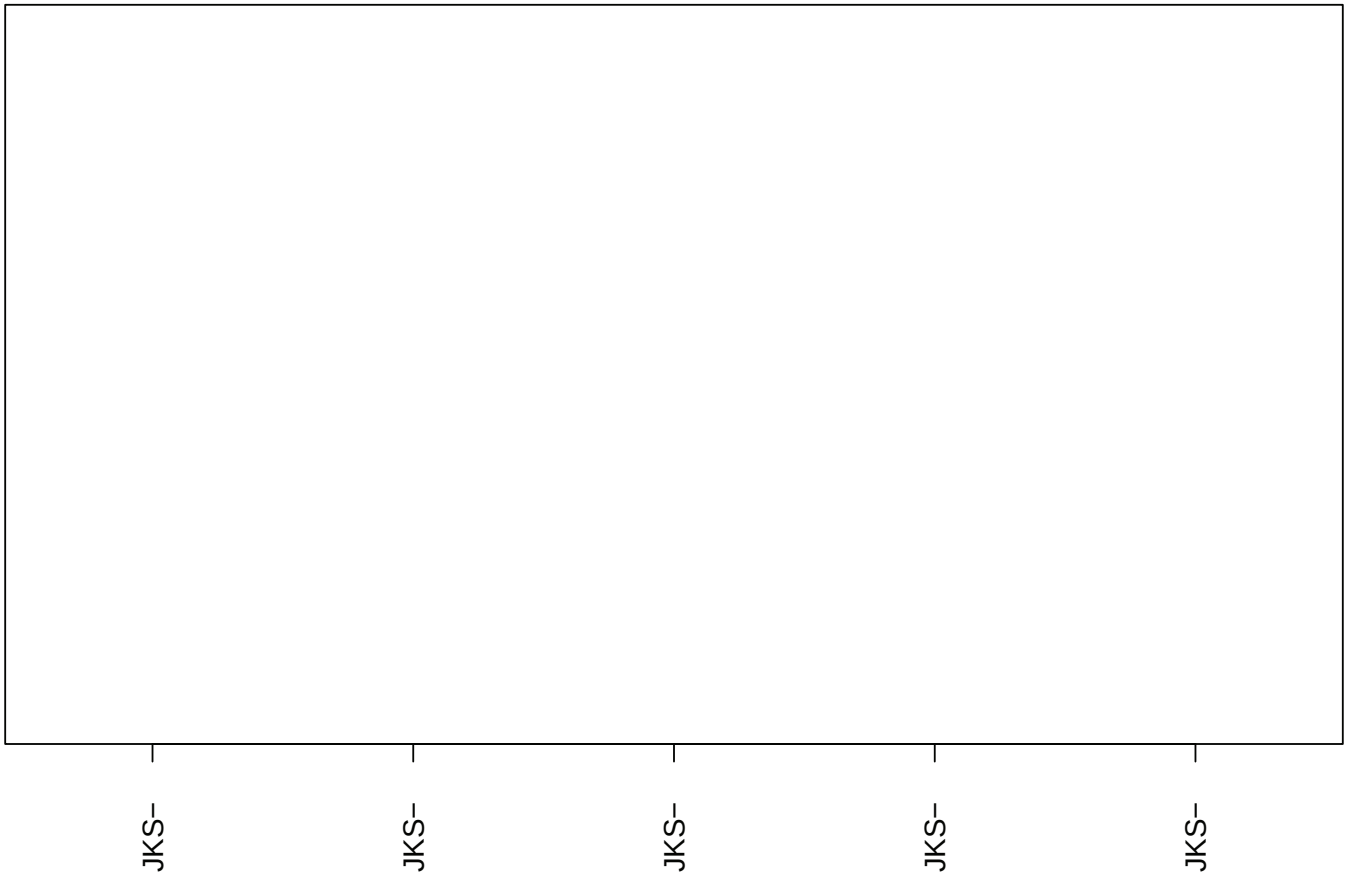


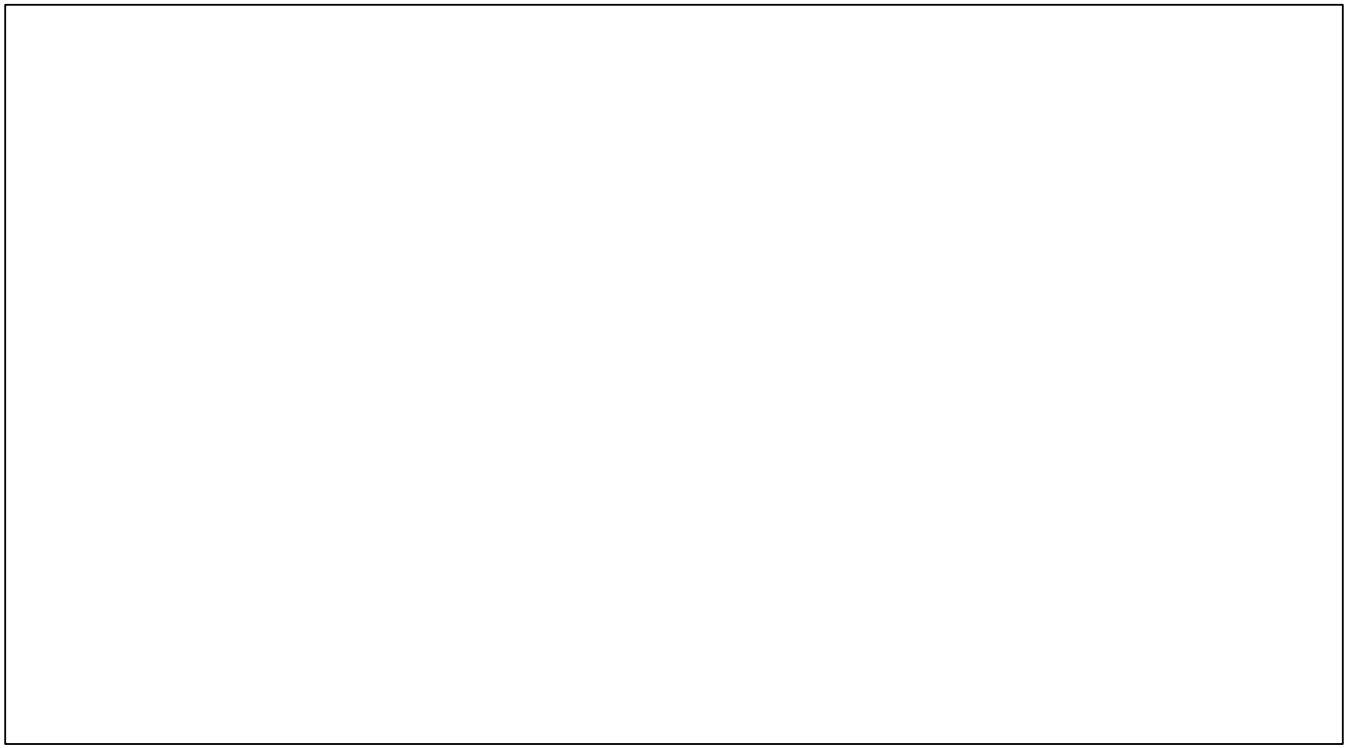
Appendix B − Figure 4
Unit: Bottom Ash Ponds
Trend Analysis of Downgradient Wells with Exceedances





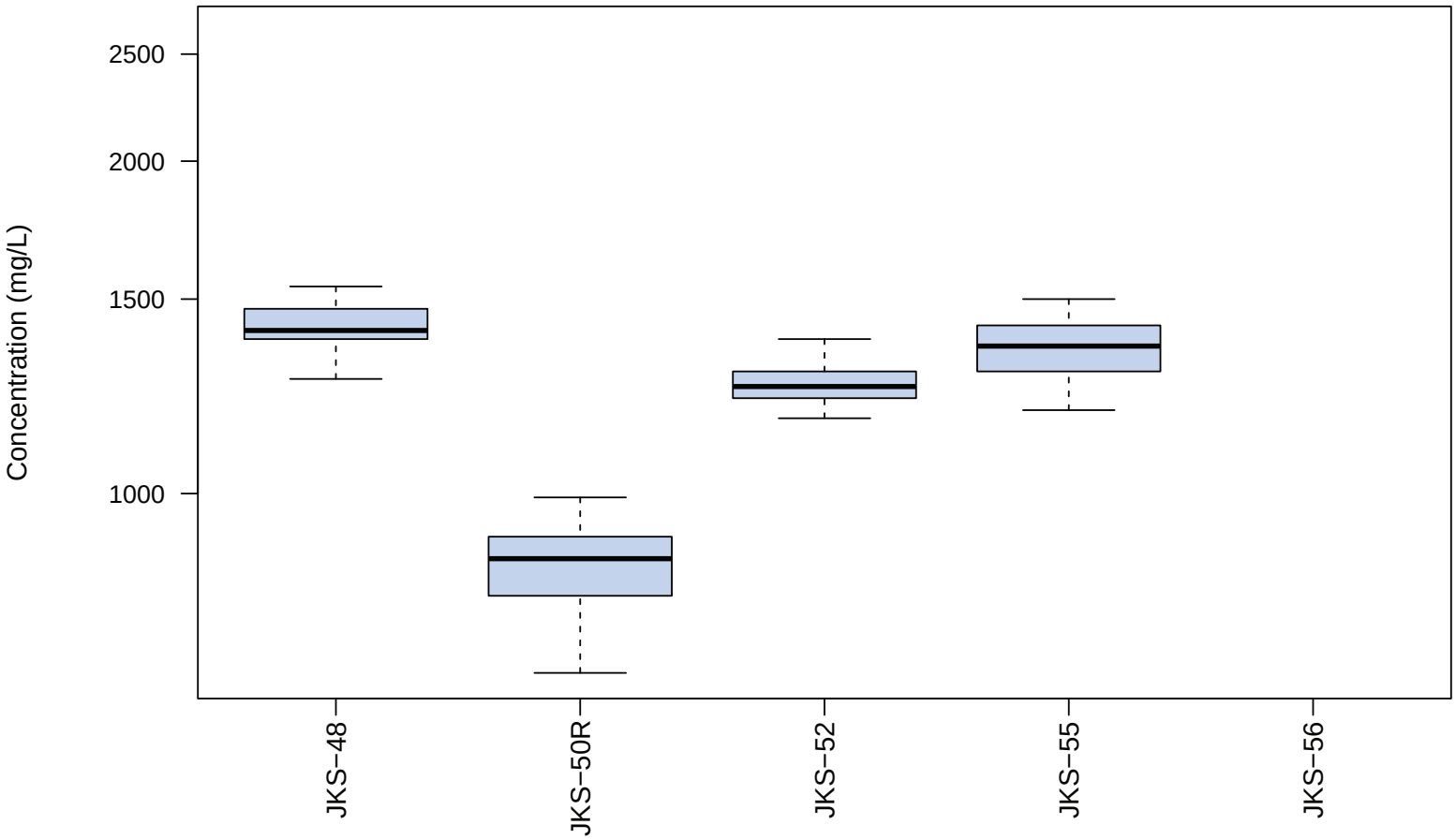
Chemical: Calcium

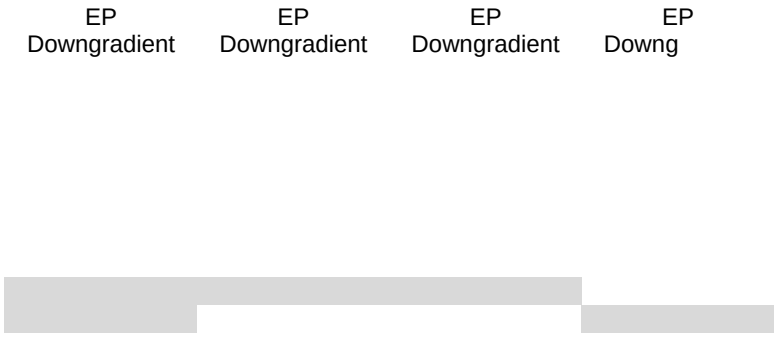




Chemical: Sulfate

Chemical: Total Dissolved Solids

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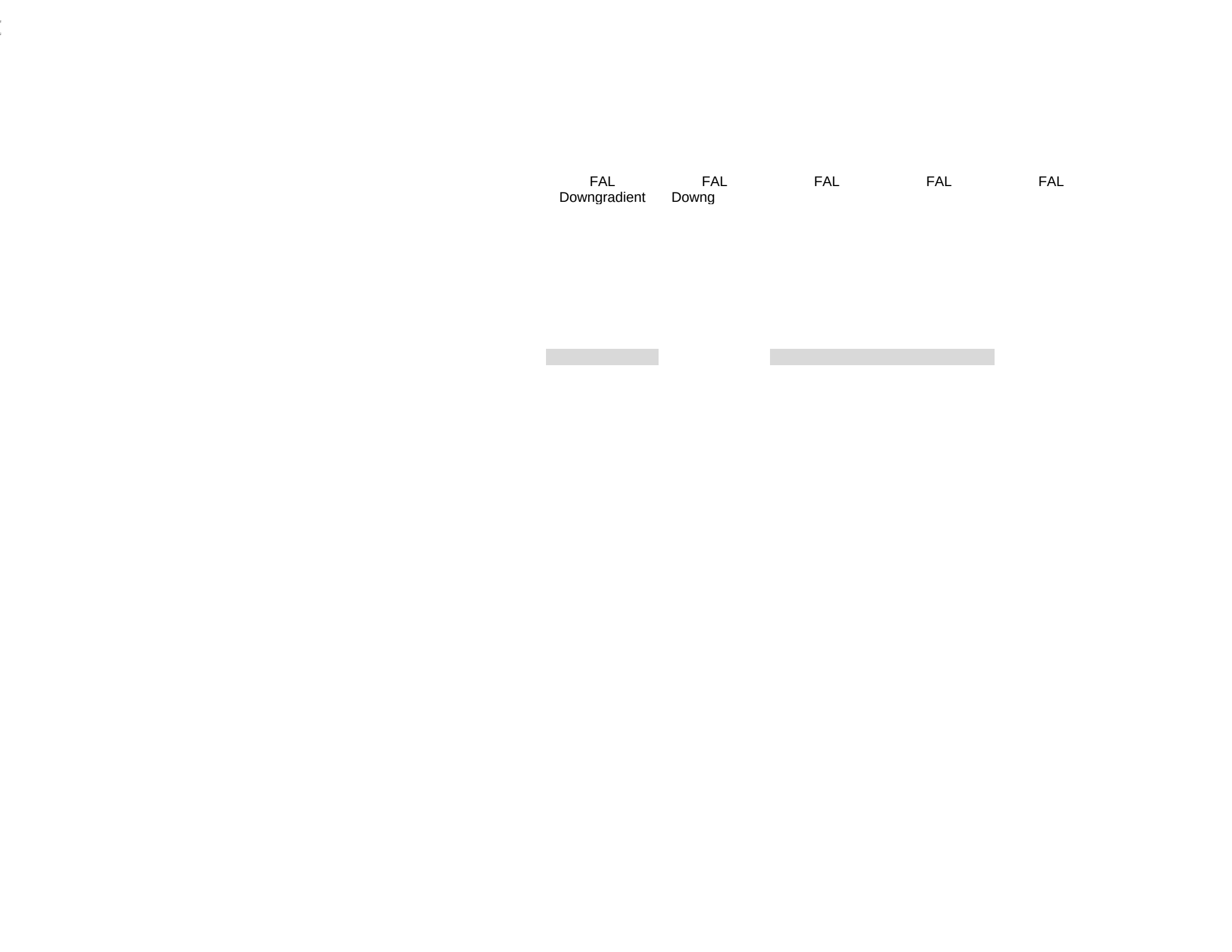
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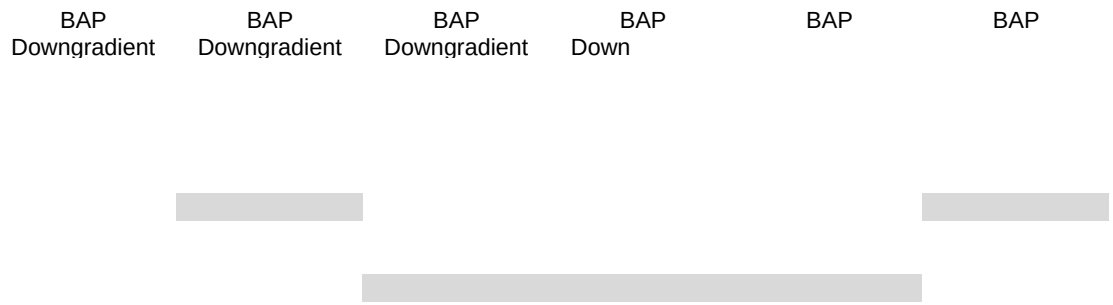
BAP Downgradient
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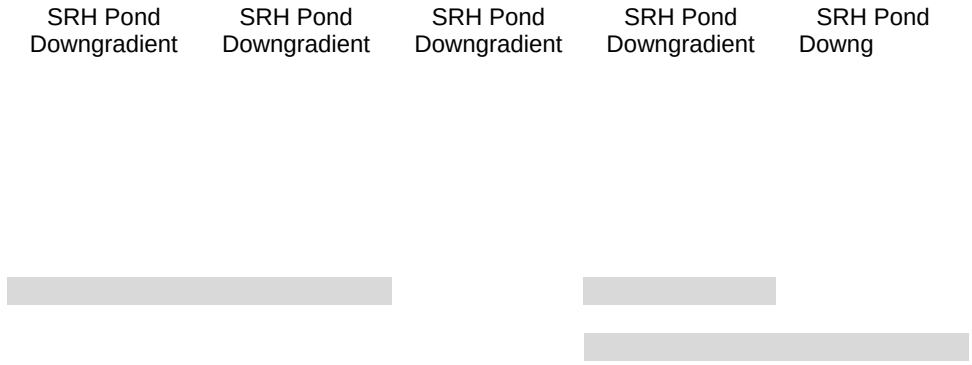
SRH Pond Downgradient
SRH Pond Downgradient
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SRH Pond Downg

Tables

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	10/20/2020 to 10/21/20

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

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

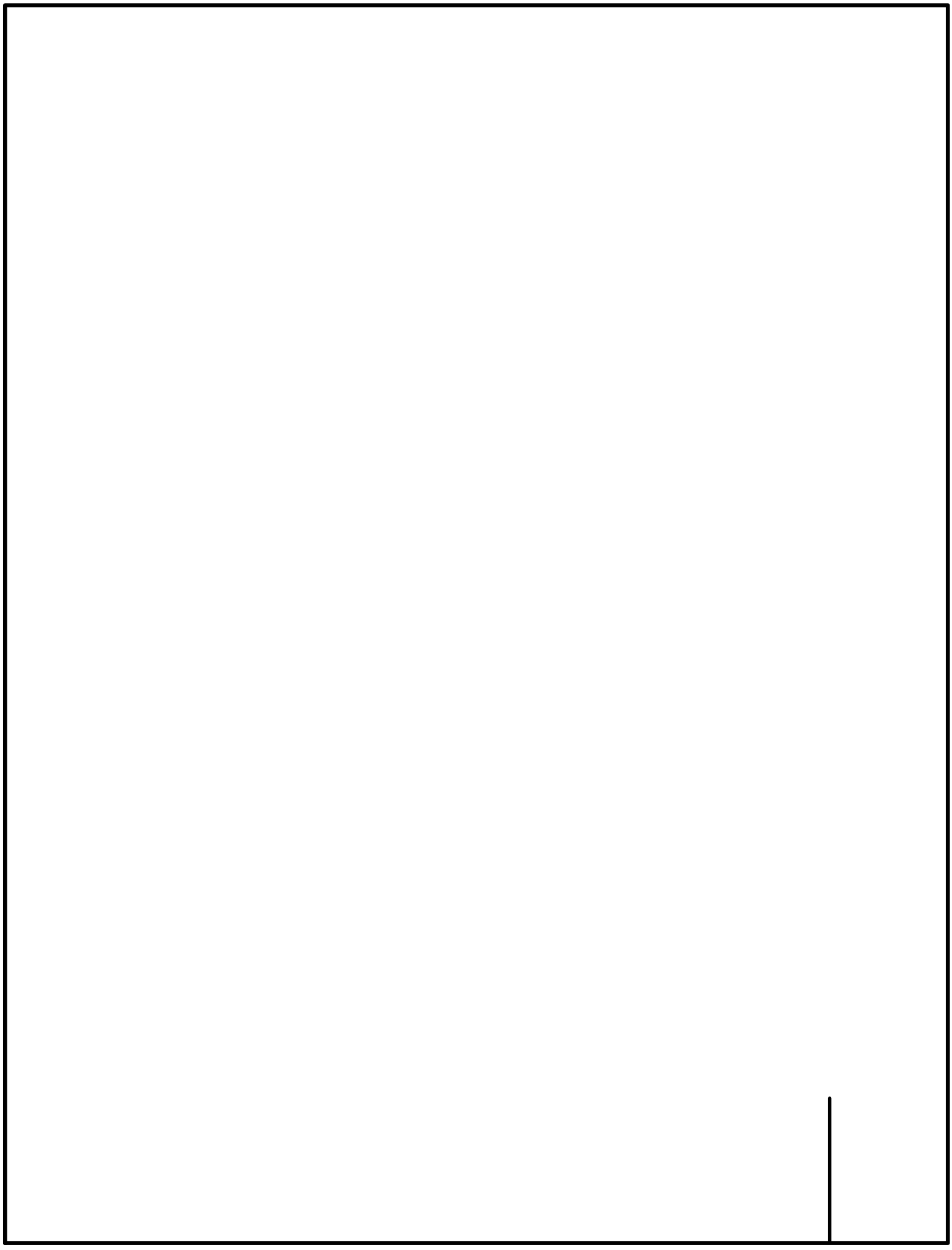
Constituents	Unit

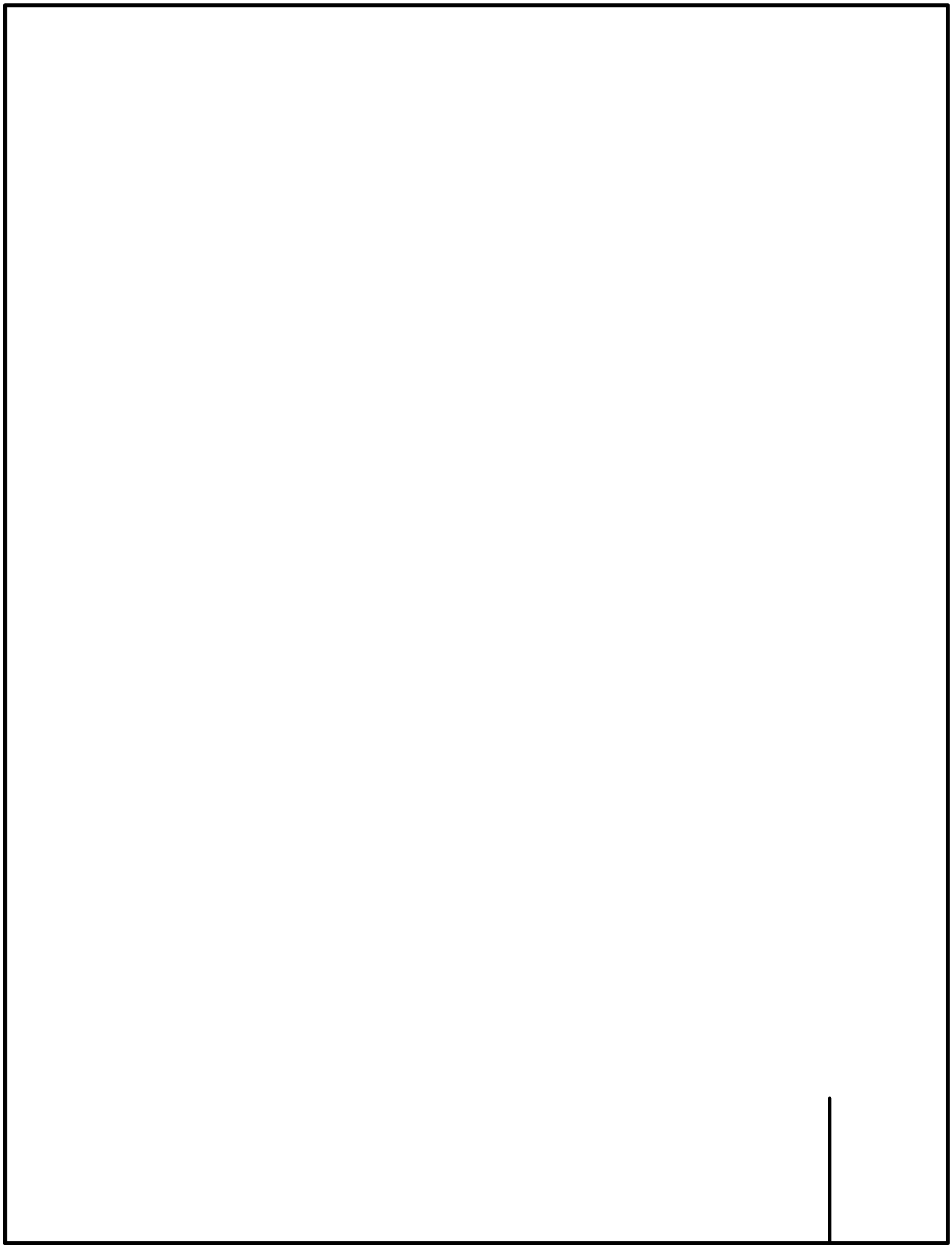
TABLE 3
Groundwater Analytical Results Summary

TABLE 3

TABLE 3
Groundwater Analytical Results Summary

Figures





Laboratory Data Packages

Appendix A

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

Analyte	Well	Units	N	Num Detects	Percent Detect	Min ND	Max ND	Min Detect	Median	Mean	Max Detect	SD	CV	Distribution

Well	Sample	Date	Analyte

Analyte	UPL Type	Well	N	Num Detects	Percent Detect	p-value	tau	Conclusion
Boron	Intrawell	JKS-47	14	14	100.00%	0.667	0.0989	Stable, No Trend
Boron	Intrawell	JKS-63	11	11	100.00%	0.359	0.236	Stable, No Trend
Boron	Intrawell	JKS-64	14	14	100.00%	<0.001	-0.663	Decreasing Trend
Calcium	Intrawell	JKS-47	14	14	100.00%	0.518	-0.143	Stable, No Trend
Calcium	Intrawell	JKS-63	12	12	100.00%	0.311	0.242	Stable, No Trend
Calcium	Intrawell	JKS-64	14	14	100.00%	0.17	-0.278	Stable, No Trend
Chloride	Intrawell	JKS-47	14	14	100.00%	0.324	-0.199	Stable, No Trend
Chloride	Intrawell	JKS-63	12	12	100.00%	<0.001	0.758	Increasing Trend
Chloride	Intrawell	JKS-64	14	14	100.00%	0.0283	0.442	Increasing Trend
Fluoride	Interwell	JKS-47, JKS-63, JKS-64	40	27	67.50%	0.217	-0.141	Stable, No Trend

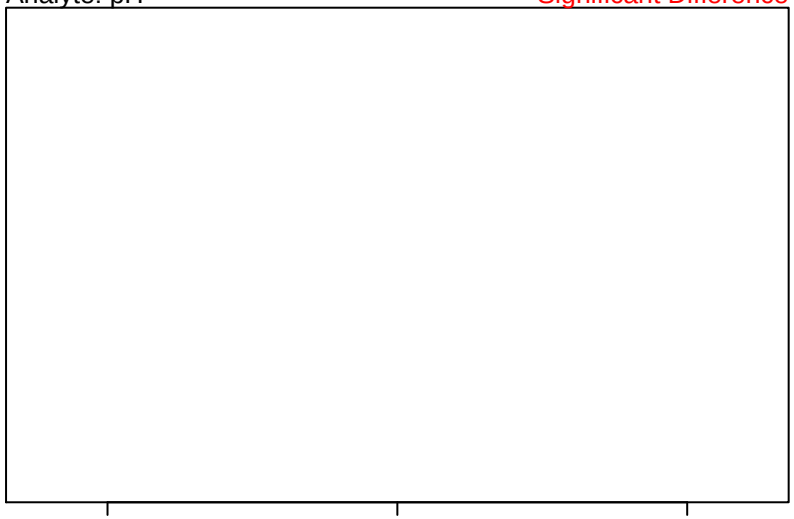
Analyte	UPL Type	Trend	Well	N	Num Detects	Percent Detects	LPL	UPL	Units

Analyte	Well	LPL	UPL	Units	Recent Date	Observation	Obs > UPL	Notes

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

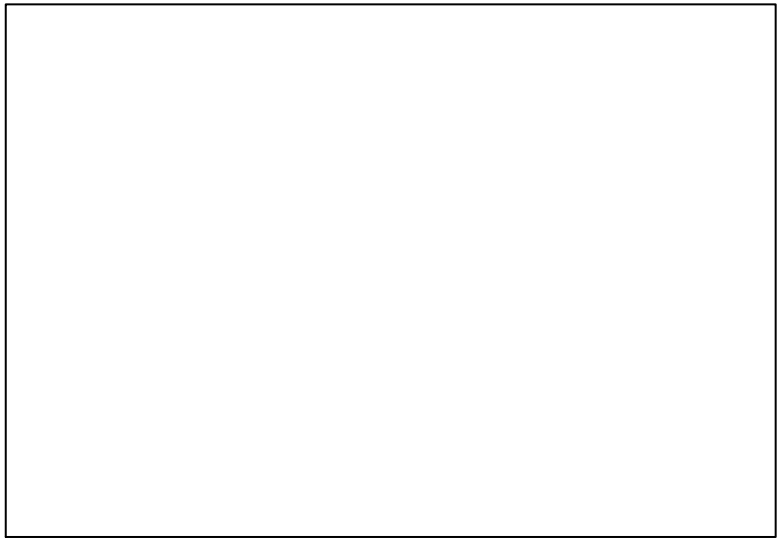
Analyte: pH

Significant Difference



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

Analyte: Boron



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

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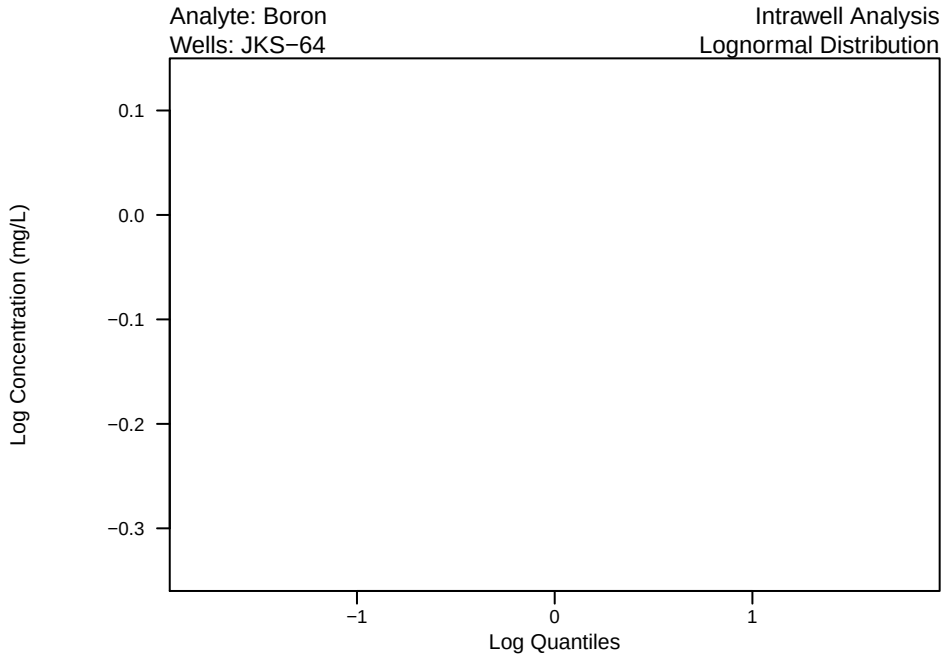
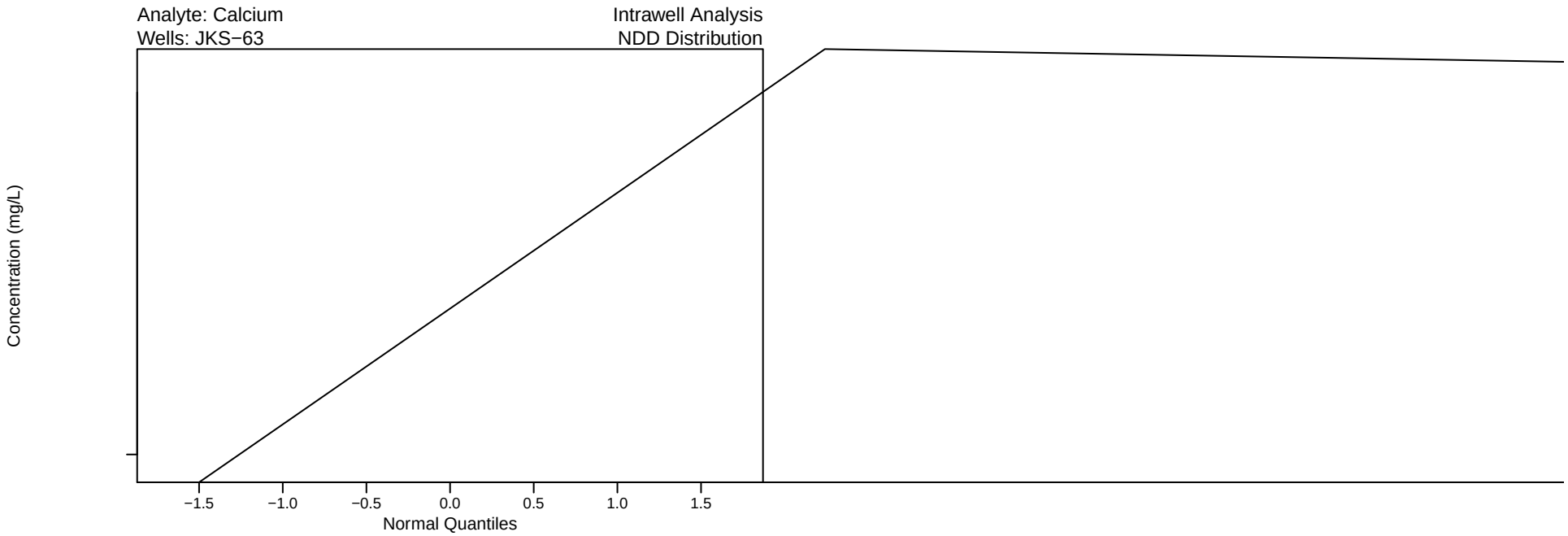
not Normal/NDD distribution.

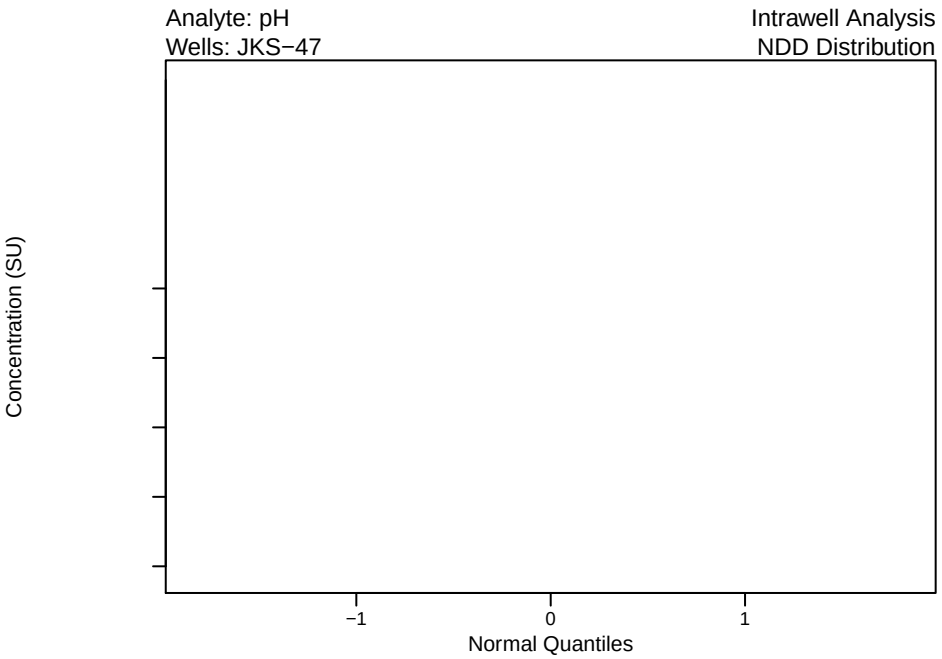


Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells



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

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

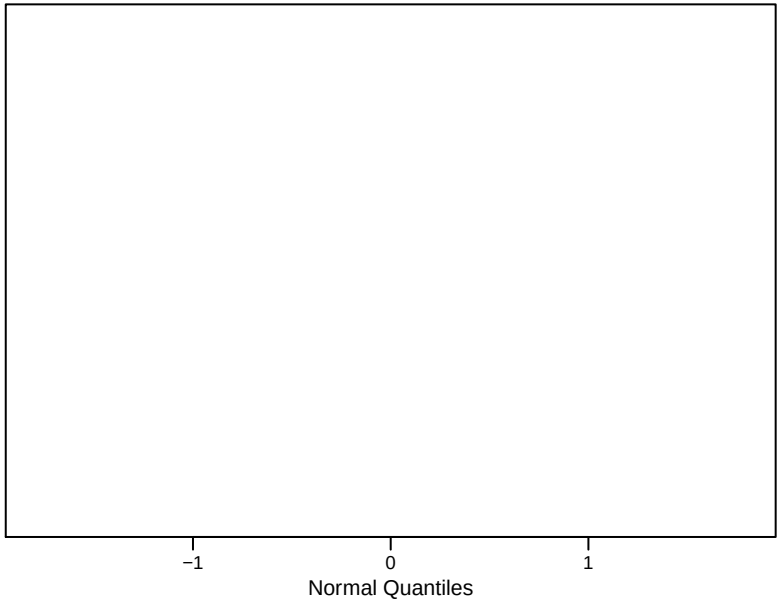


Concentra 43.6 q 1 0 0 1 167.99 316.51 cm 0 0 m 148.

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

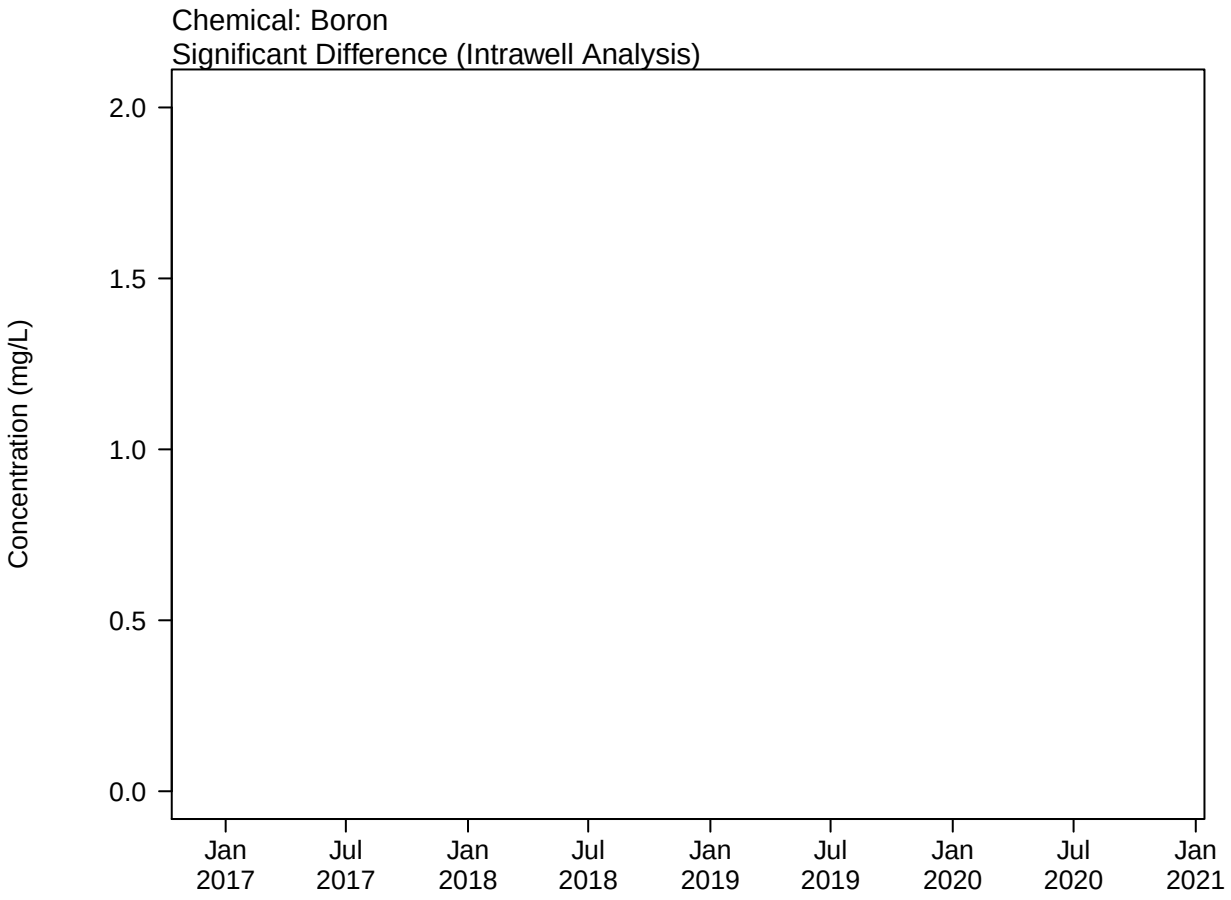
Analyte: pH
Wells: JKS−64

Intrawell Analysis
NDD Distribution

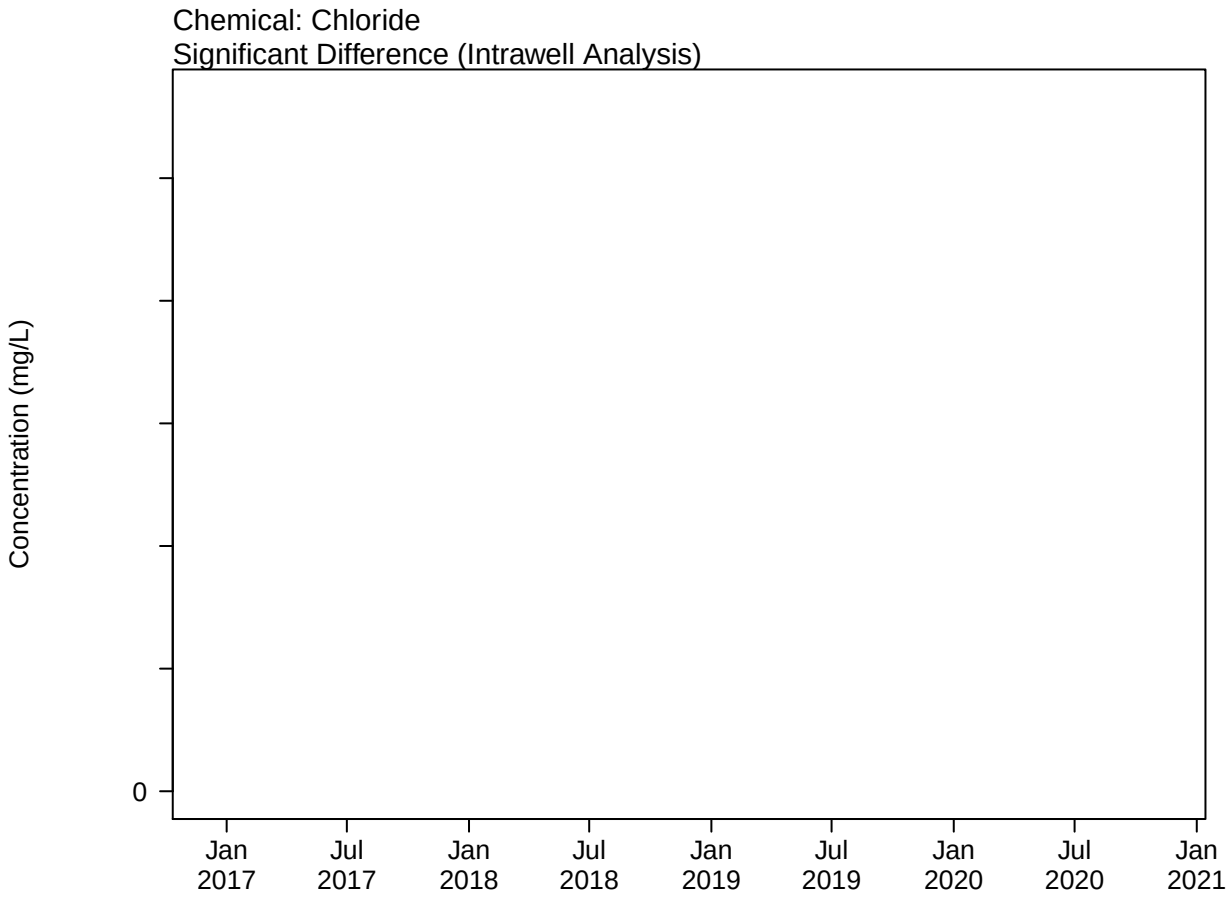


Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells

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

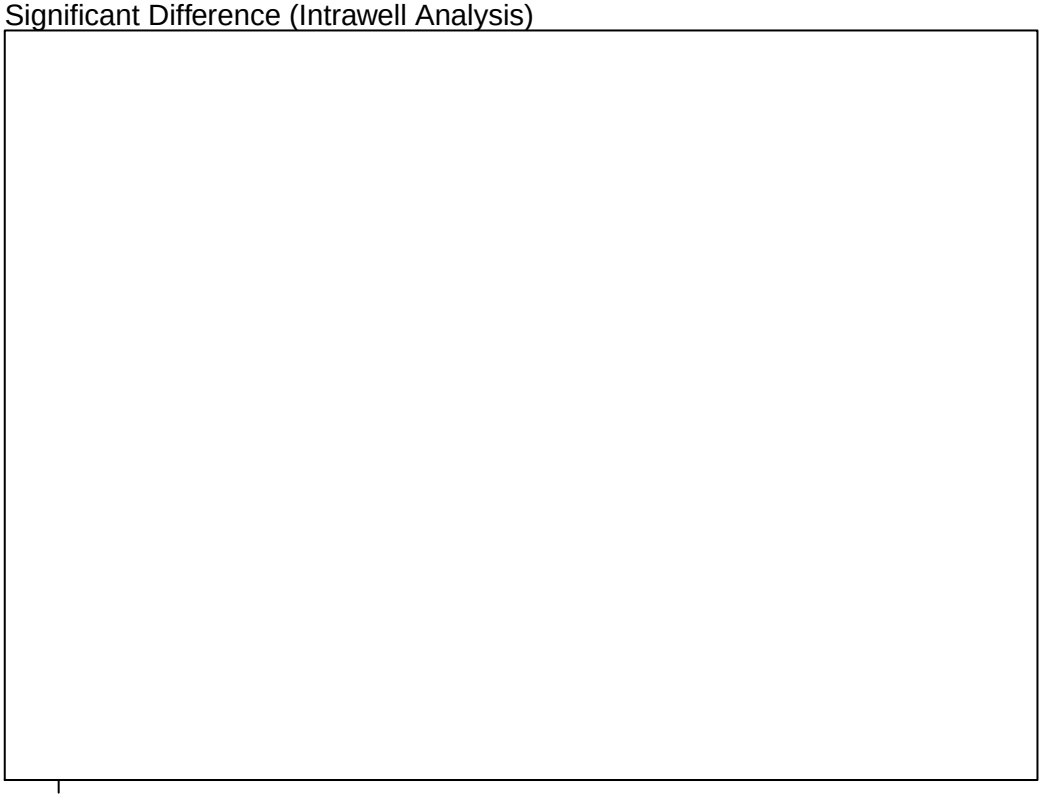


Appendix B − Figure 3
Unit: Evaporation Pond
Timeseries of Upgradient Wells



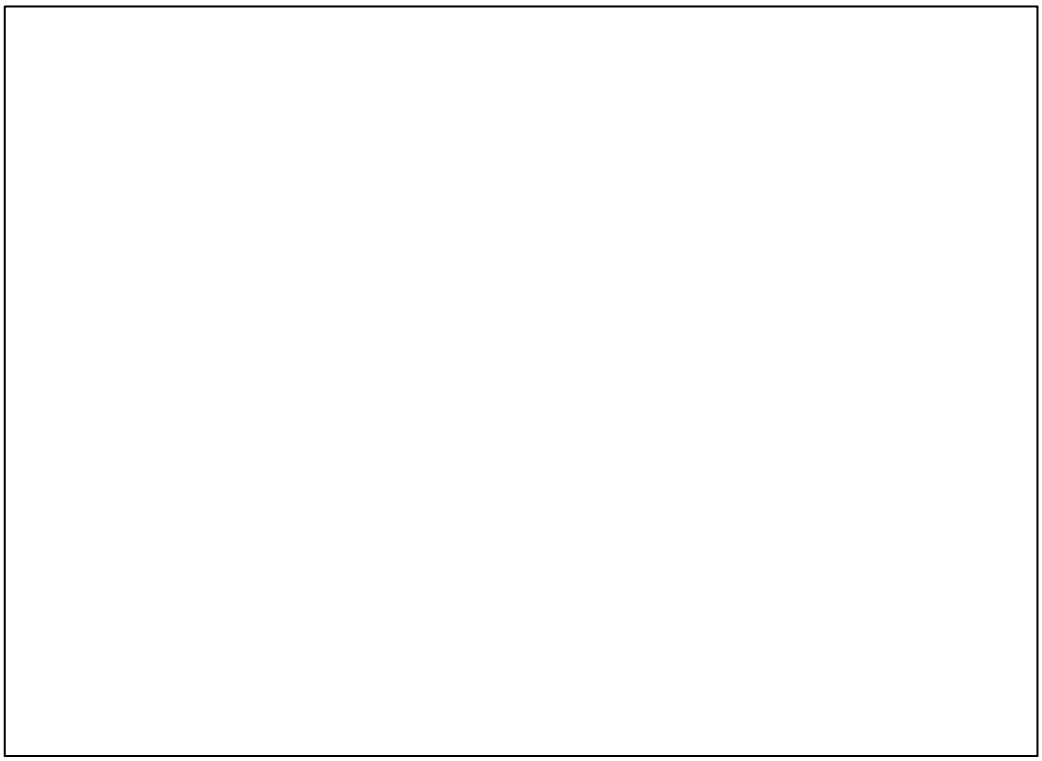
Appendix B − Figure 3
Unit: Evaporation Pond
Timeseries of Upgradient Wells

Chemical: pH
Significant Difference (Intrawell Analysis)

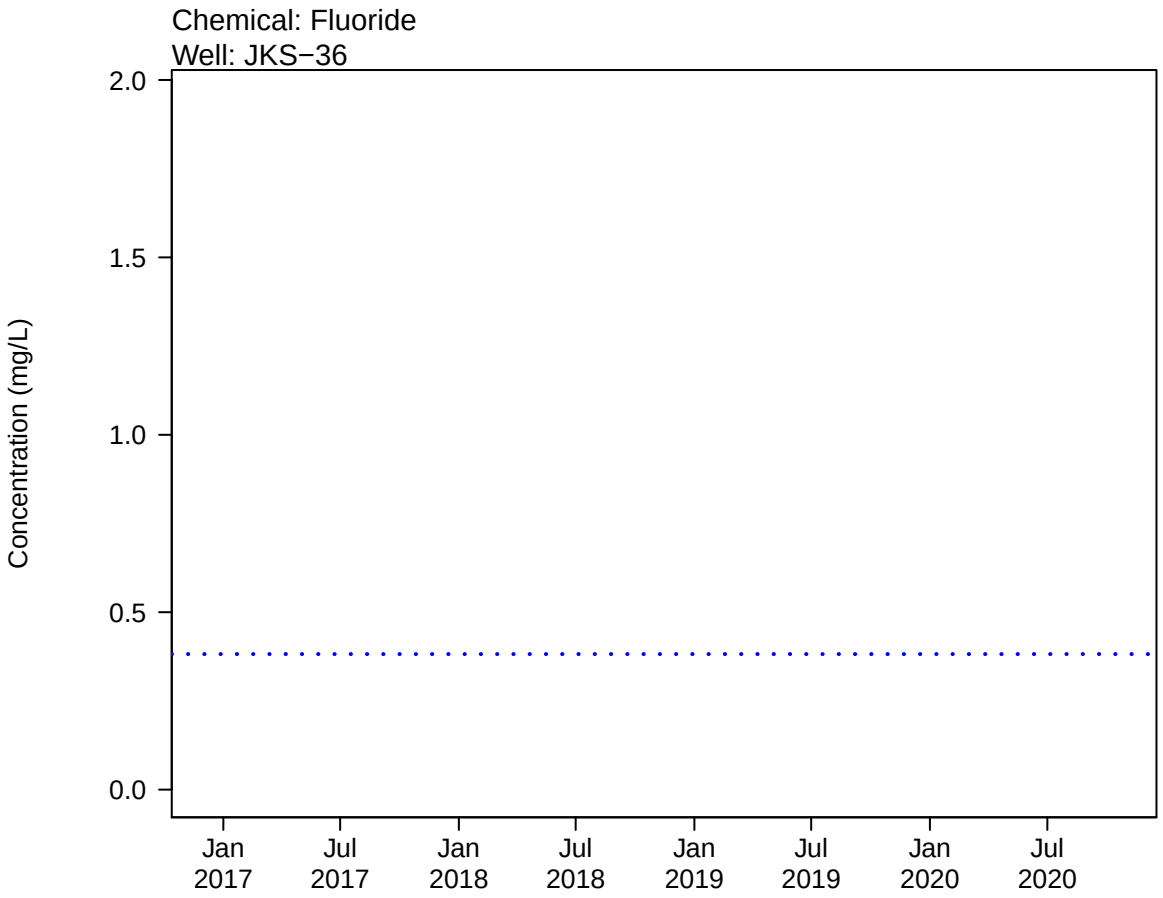


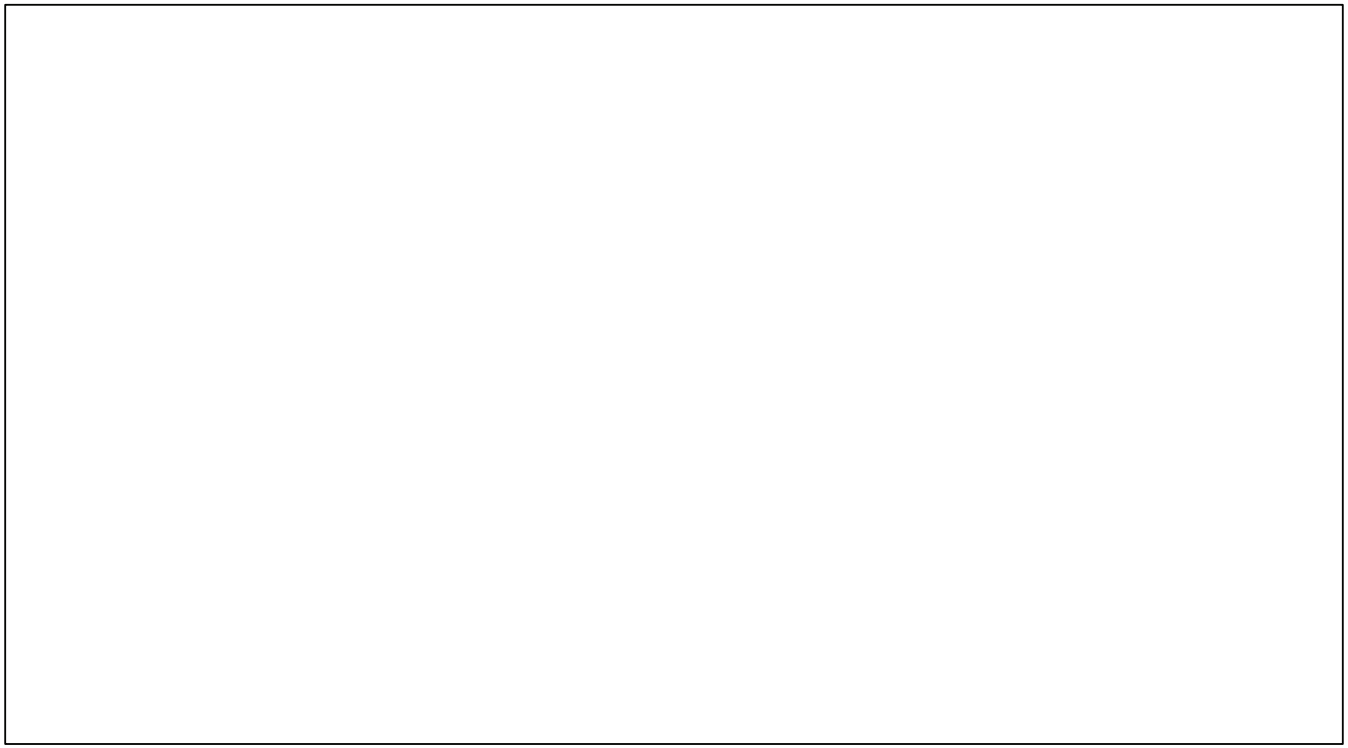
Appendix B − Figure 3
Unit: Evaporation Pond
Timeseries of Upgradient Wells

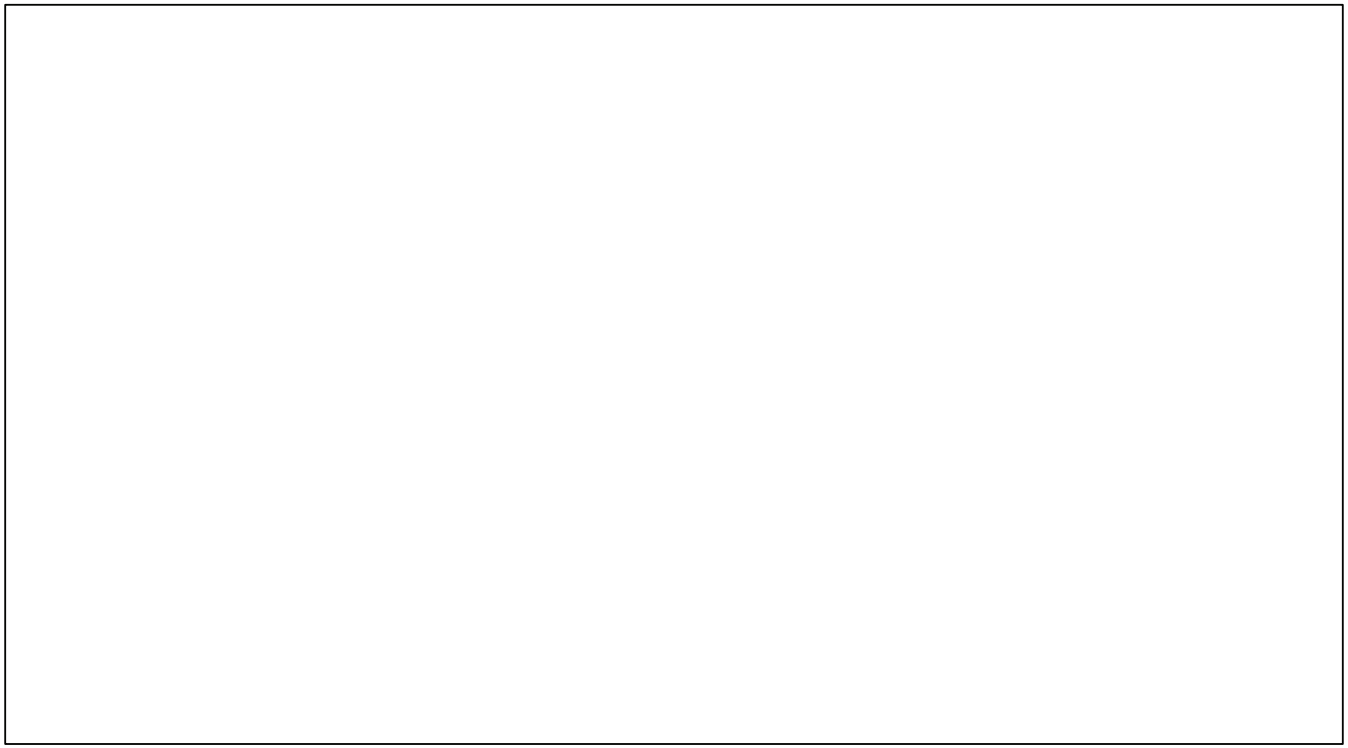
Chemical: Total dissolved solids



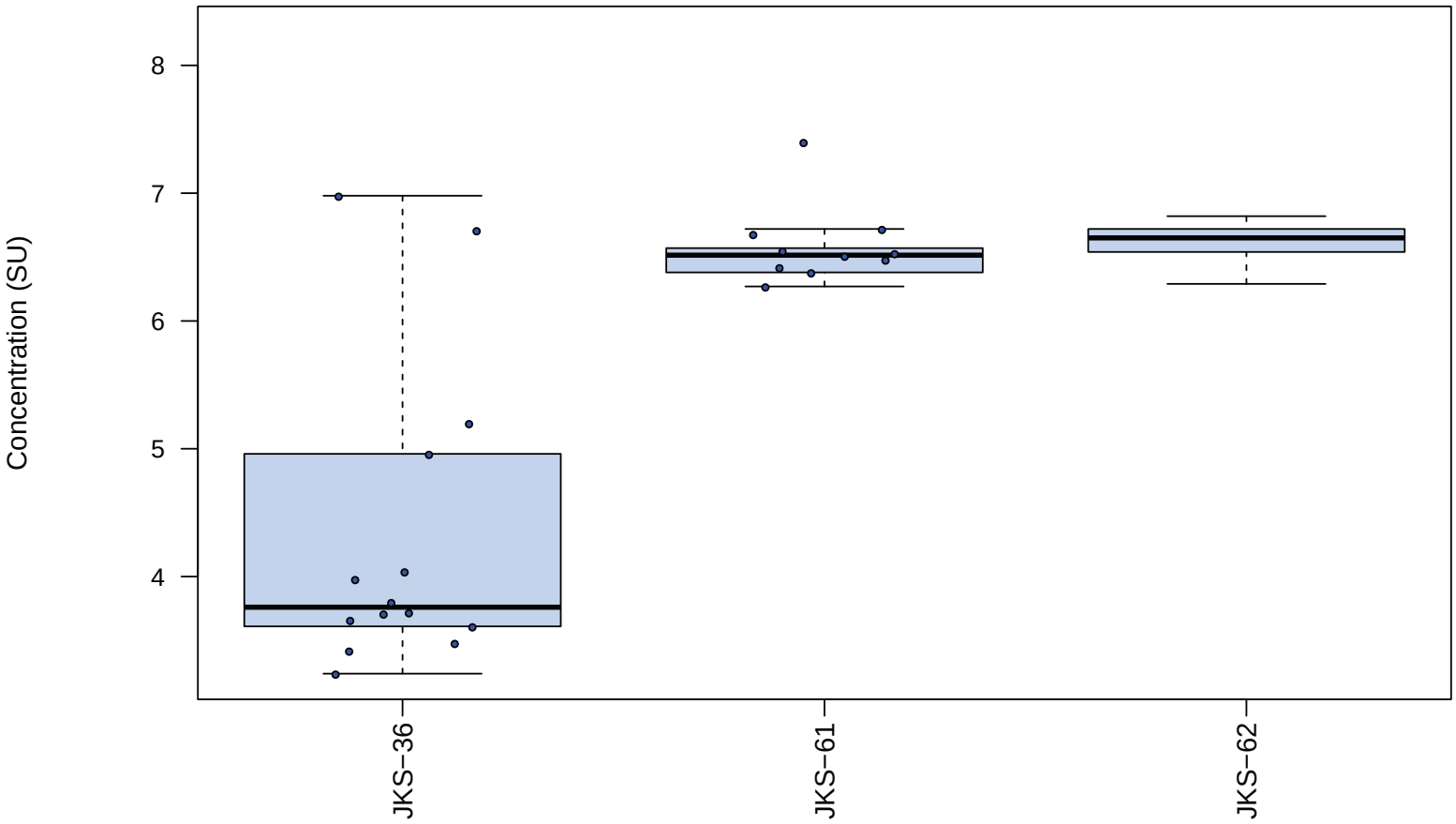
Appendix B − Figure 4
Unit: Evaporation Pond
Trend Analysis of Downgradient Wells with Exceedances

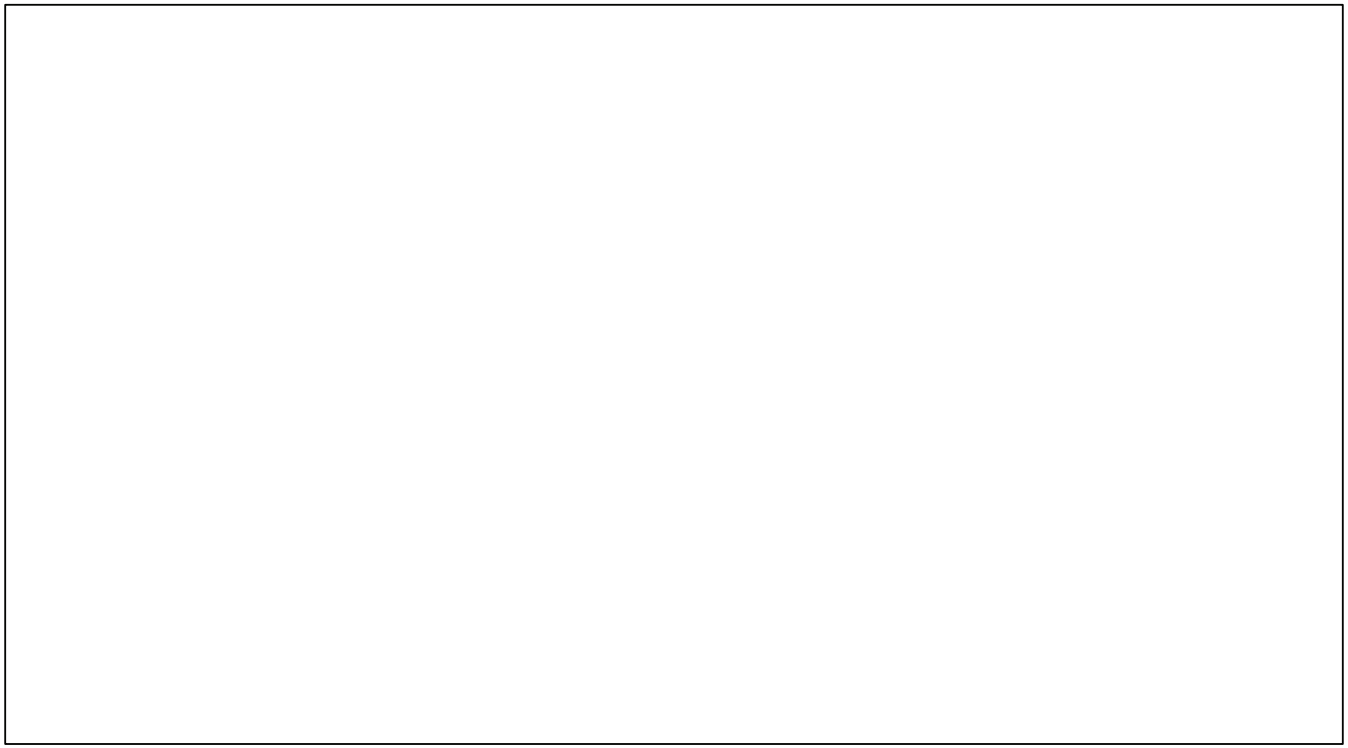




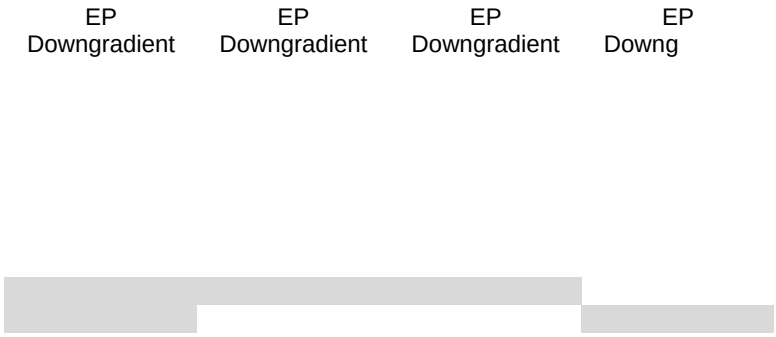


Chemical: pH





April 2020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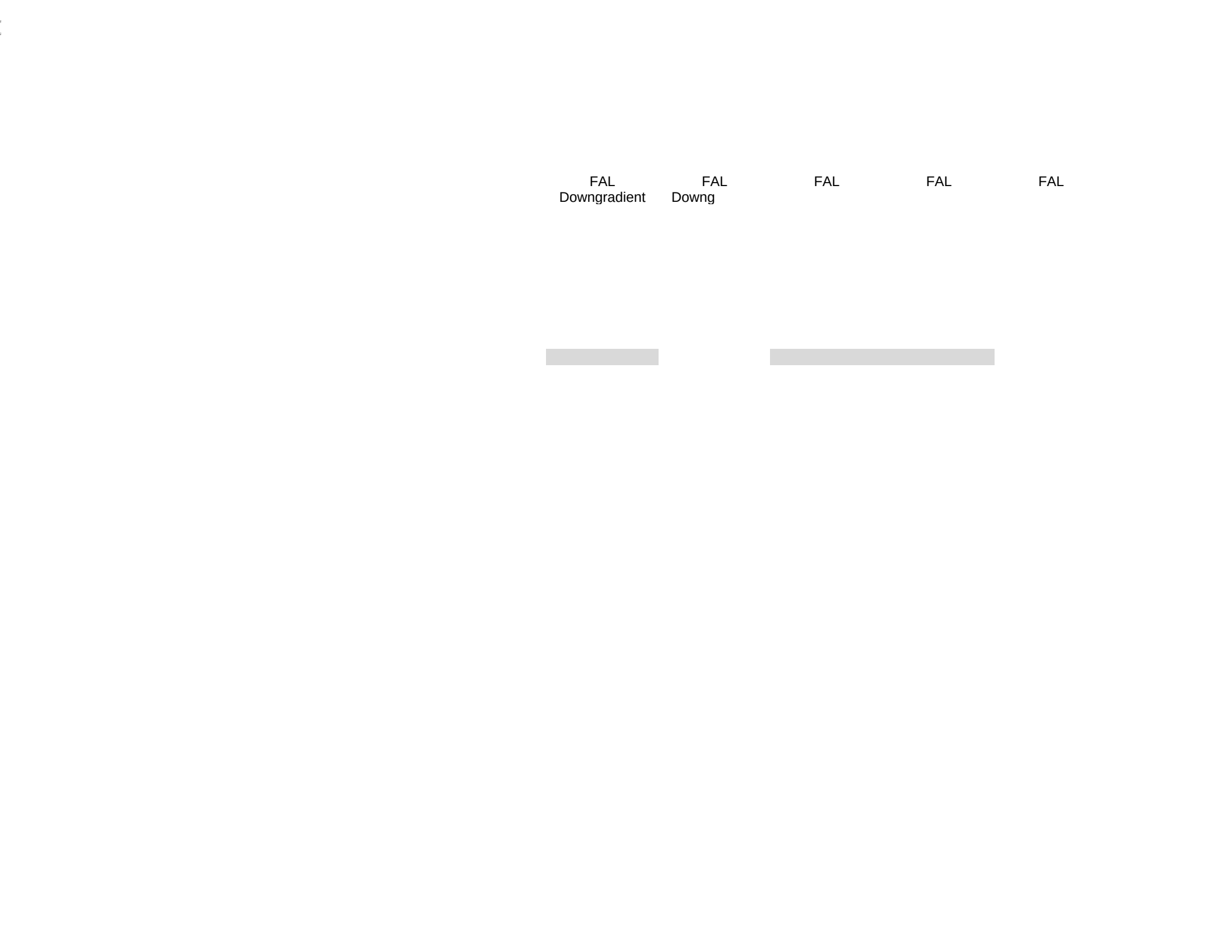
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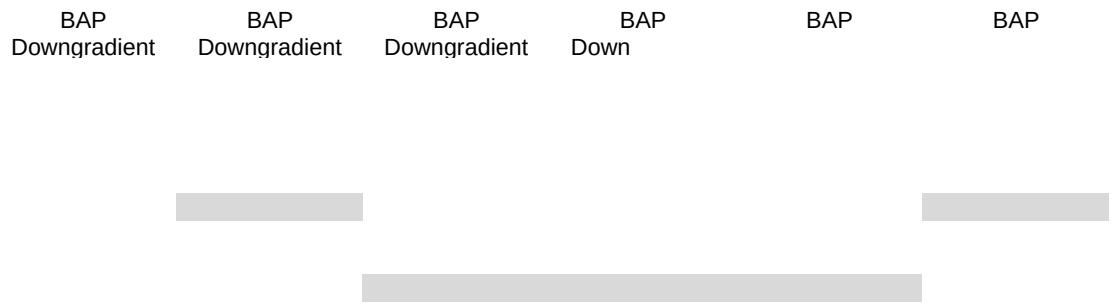
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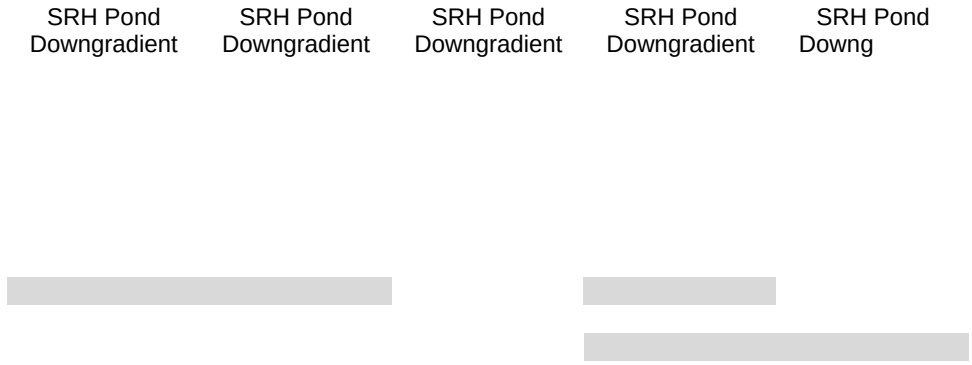
SRH Pond Downgradient
SRH Pond Downgradient
SRH Pond Downgradient
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SRH Pond Downg

The remaining sections of this Report are focused on evaluation of the October 2020 sampling results. Note the April 2020 sampling results were evaluated as discussed in the *April 2020 Groundwater Sampling Event – Calaveras Power Station CCR Units* (ERM, 2020) provided in Appendix B.

5.

Tables

		TOC Elevation	531.46	TOC Elevation	506.91	TOC Elevation	504.45	TOC Elevation	496.45
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	46.83	484.63	19.89	487.02	18.85	485.60	15.67	480.78
2	2/21/17 to 2/23/17	46.64	484.82	18.95	487.96	15.95	488.50	14.12	482.33
3	3/28/17 to 3/30/17	46.52	484.94	18.20	488.71	15.10	489.35	14.12	482.33
4	5/2/17 to 5/4/17	46.35	485.11	18.80	488.11	16.50	487.95	14.94	481.51
5	6/20/17 to 6/21/17	46.64	484.82	20.23	486.68	18.38	486.07	16.46	479.99
6	7/25/17 to 7/26/17	46.38	485.08	21.16	485.75	15.63	488.82	17.80	478.65
7	8/29/17 to 8/30/17	46.73	484.73	19.44	487.47	19.90	484.55	17.77	478.68
8	10/10/17 to 10/11/17	46.50	484.96	21.67	485.24	20.67	483.78	18.00	478.45

			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	
JKS-31	Downgradient Monitoring	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection
JKS-33	Downgradient Monitoring	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection
JKS-45	Upgradient Monitoring	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection
JKS-46	Downgradient Monitoring	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection
JKS-57	Upgradient Monitoring	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection
JKS-60	Downgradient Monitoring	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection

NOTES:
X = Indicates that a sample was collected.

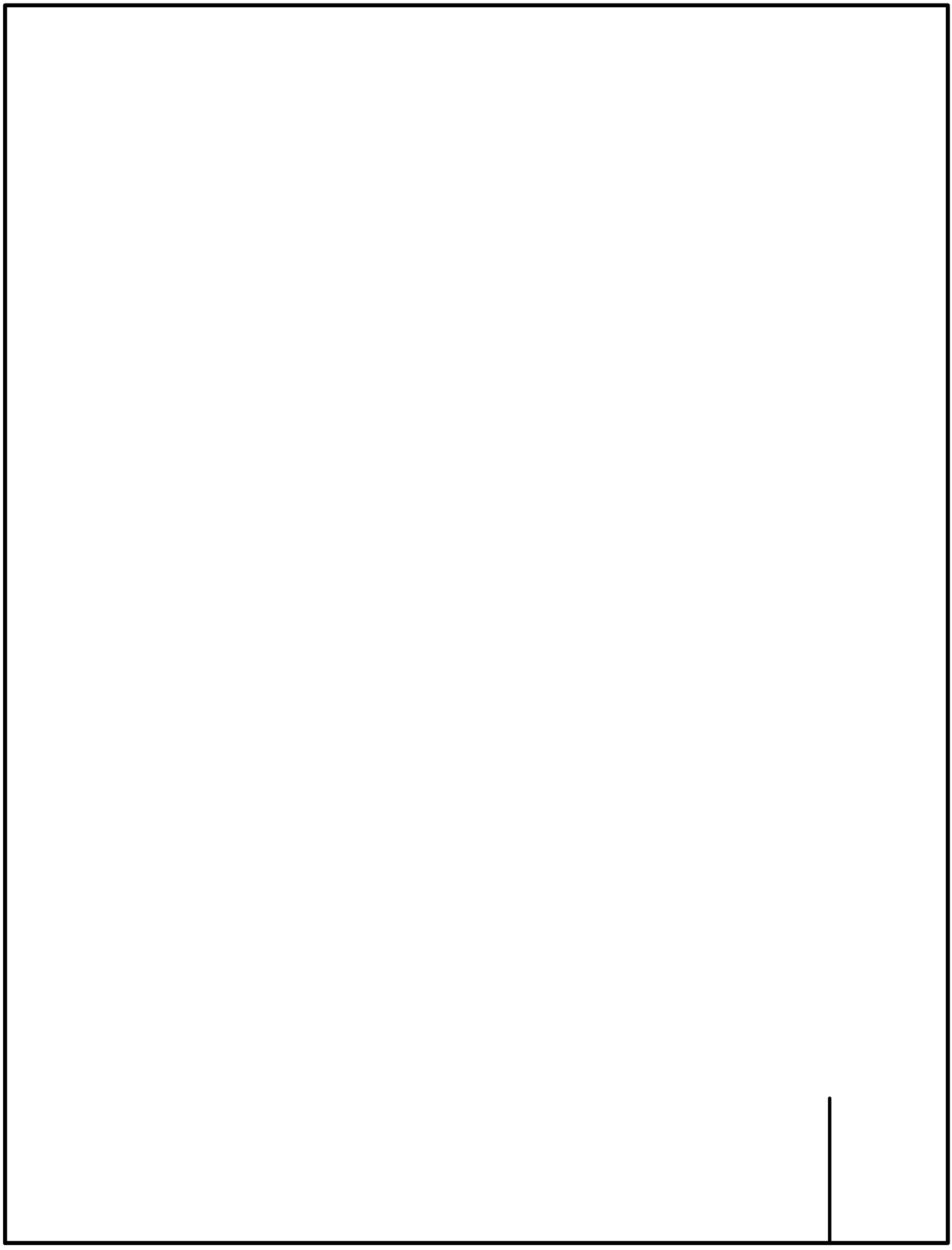
TABLE 3
Groundwater Analytical Results Summary
CPS Energy - Calaveras Power Station
Fly Ash Landfill

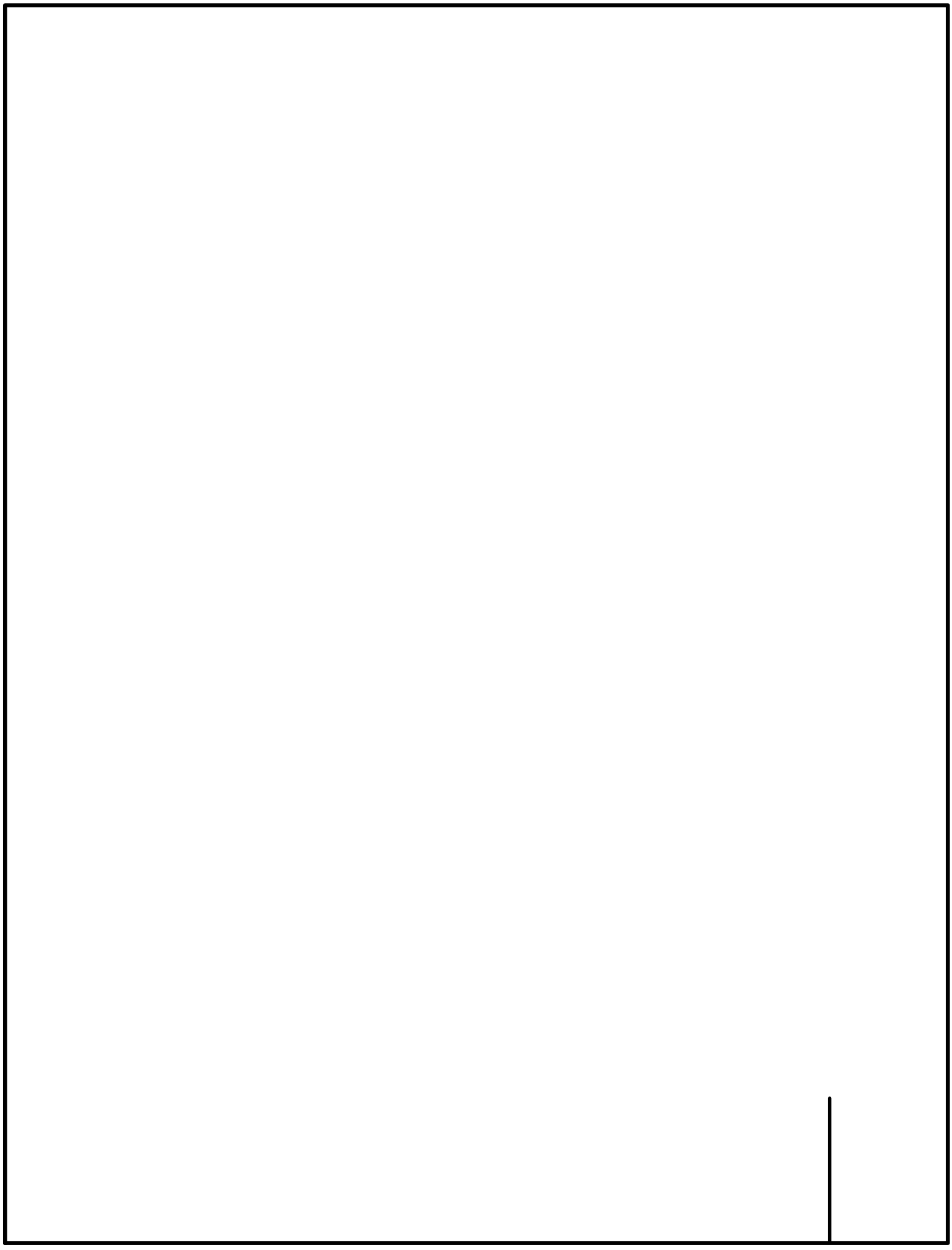
Constituents	Unit	12/6/16	2/23/17	3/28/17	5/3/17	6/20/17	7/25/17	8/29/17	10/10/17	4/4/18	10/30/18	4/10/19	10/23/19	4/28/20	10/21/20

TABLE 3
Groundwater Analytical Results Summary
CPS Energy - Calaveras Power Station
Fly Ash Landfill

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

Figures





Statistical Analysis Tables and Figures

Appendix B

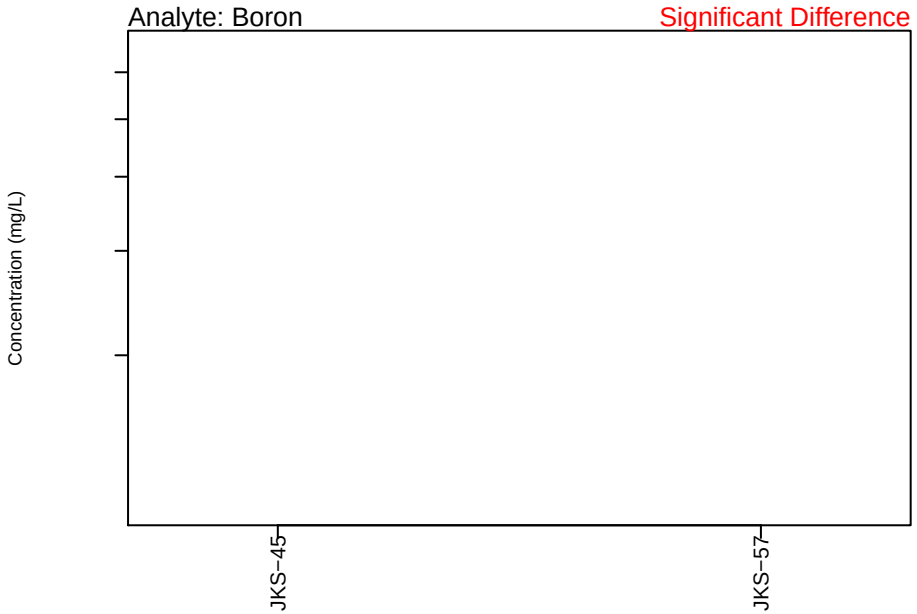
Analyte	Well	Units	N	Num Detects	Percent

	Well	Sample		Date	Analyte	Units	Detect	Concentration	UPL type	Distribution	Statistical Outlier	Visual Outlier	Normal Log-Normal Outlier and Visual Outlier		Final Outlier Decision				
31381-013	4/4/2018	Boron	mg/L	TRUE	4.49	Intrawell	NDD		XJKS-57	JKS-57-20200429-CCR		4/28/2020	Boron	mg/L	TRUE	5.97	Intrawell	NDD	X

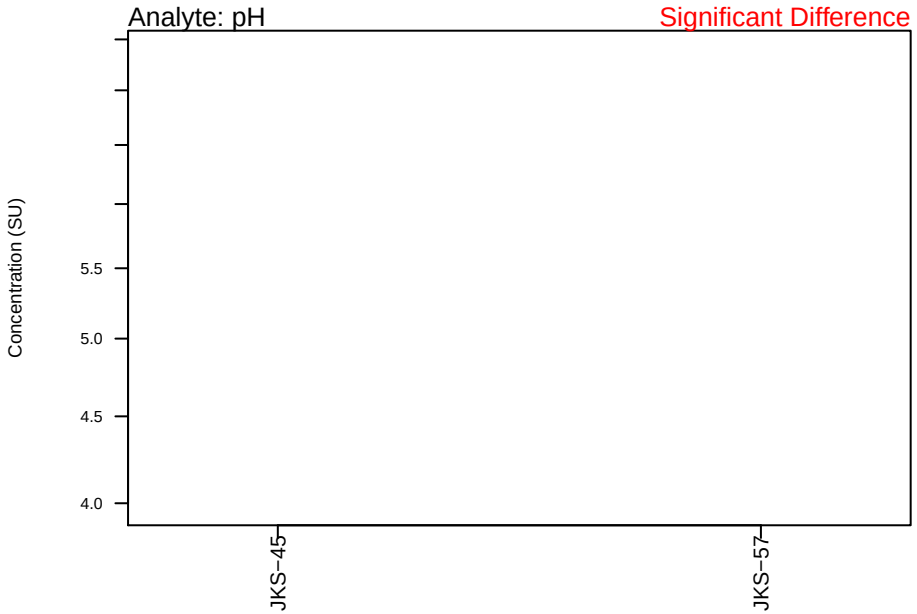
Analyte	UPL Type

Analyte

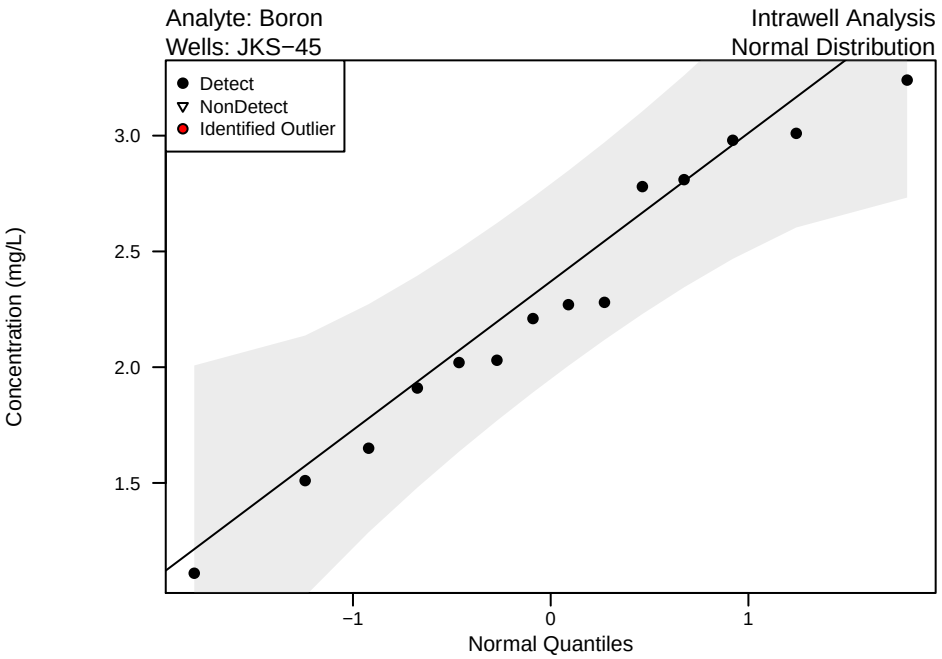
Appendix B − Figure 1
Unit: Fly Ash Landfill
Boxplots of Upgradient Wells



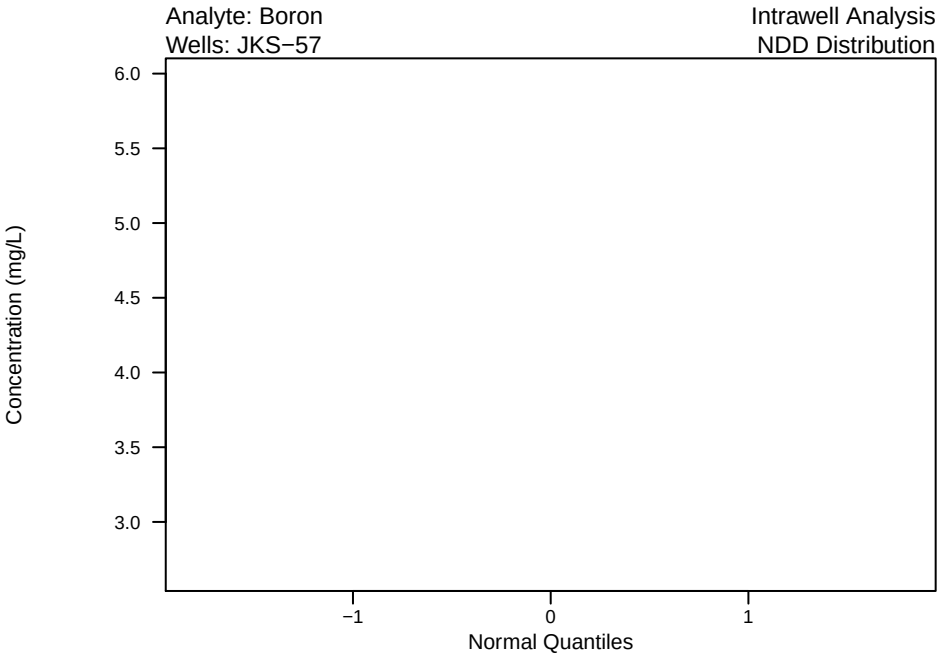
Appendix B − Figure 1
Unit: Fly Ash Landfill
Boxplots of Upgradient Wells



Appendix B − Figure 2
Unit: Fly Ash Landfill
QQ Plots of Upgradient Wells



Intentionally left blank,
not Lognormal/NDD distribution.

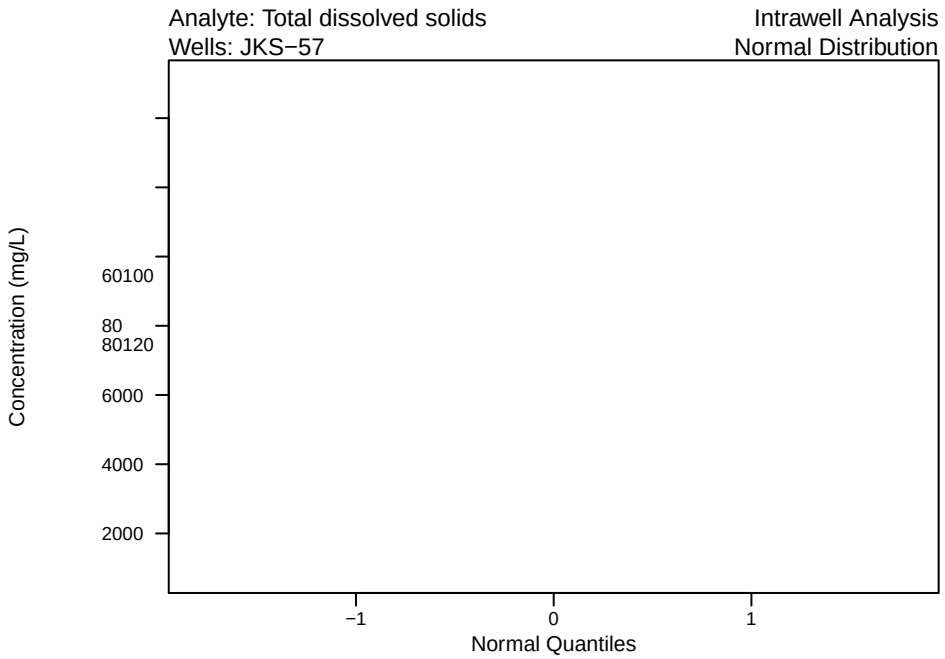


Appendix B − Figure 2

Appendix B − Figure 2
Unit: Fly Ash Landfill
QQ Plots of Upgradient Wells

Appendix B − Figure 2
Unit: Fly Ash Landfill
QQ Plots of Upgradient Wells

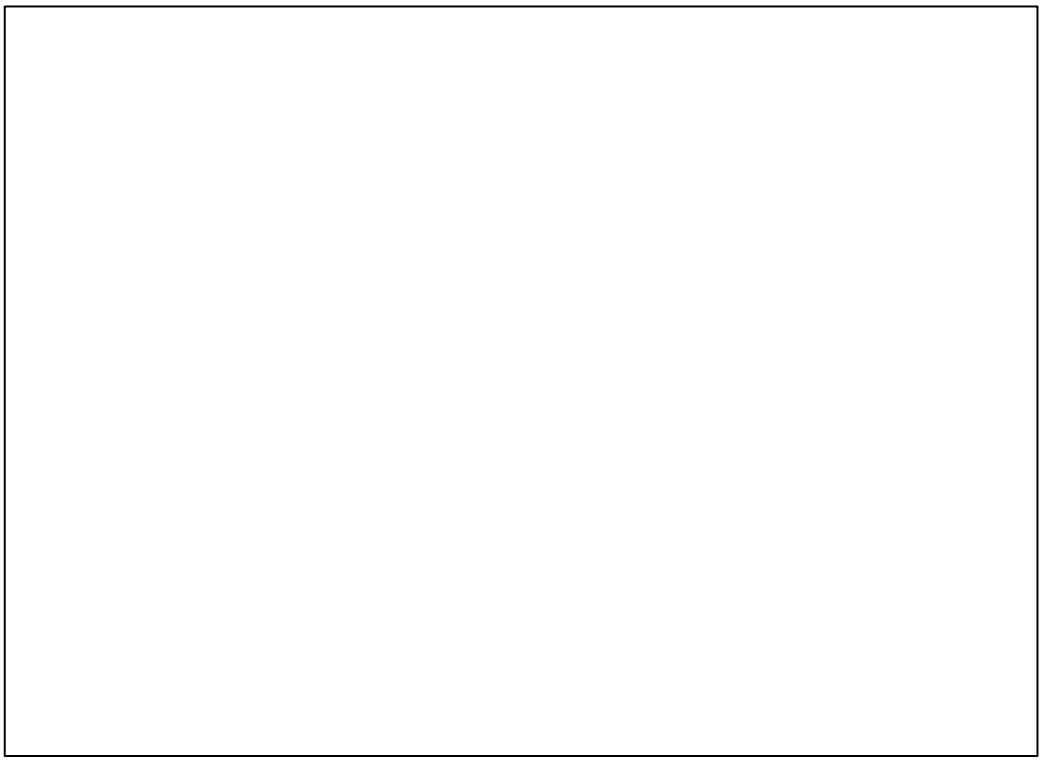
Appendix B − Figure 2
Unit: Fly Ash Landfill
QQ Plots of Upgradient Wells



Appendix B − Figure 3
Unit: Fly Ash Landfill
Timeseries of Upgradient Wells

Appendix B − Figure 3
Unit: Fly Ash Landfill
Timeseries of Upgradient Wells

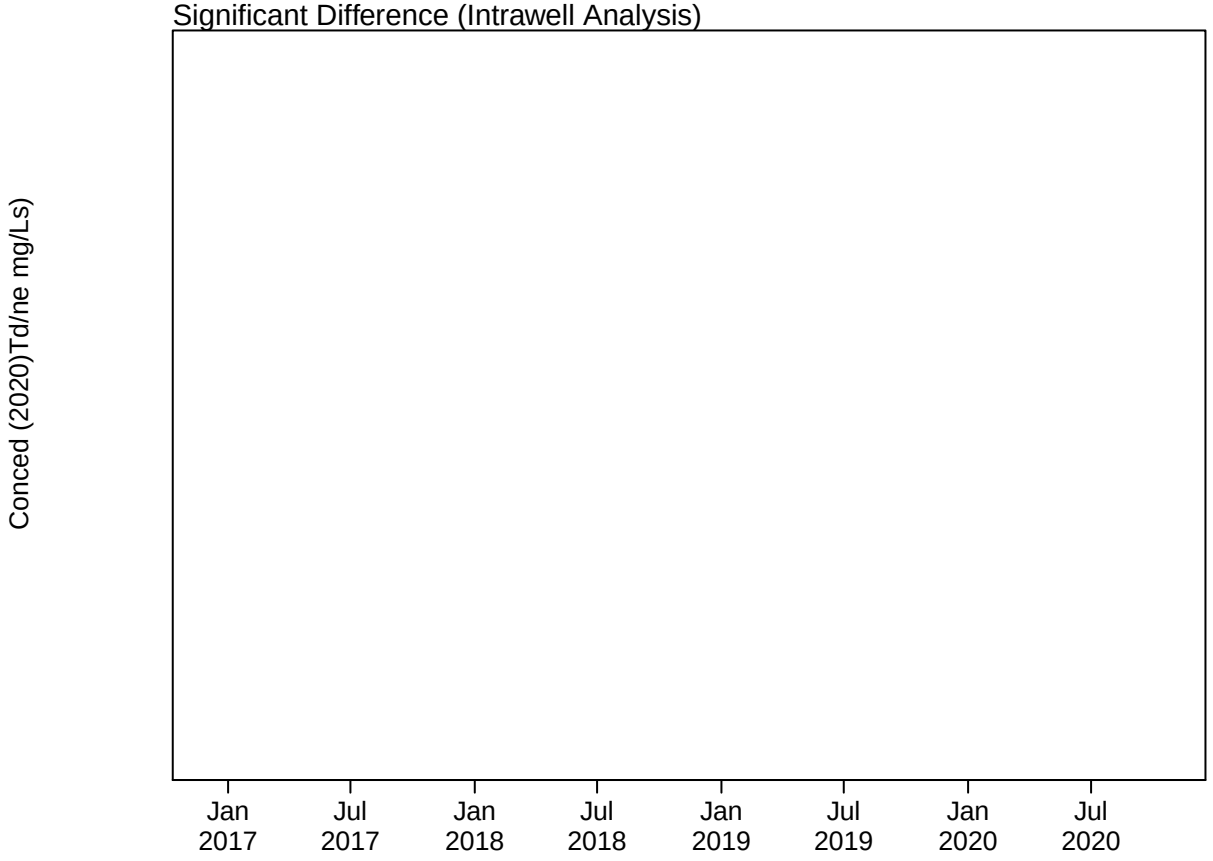
Chemical: Chloride



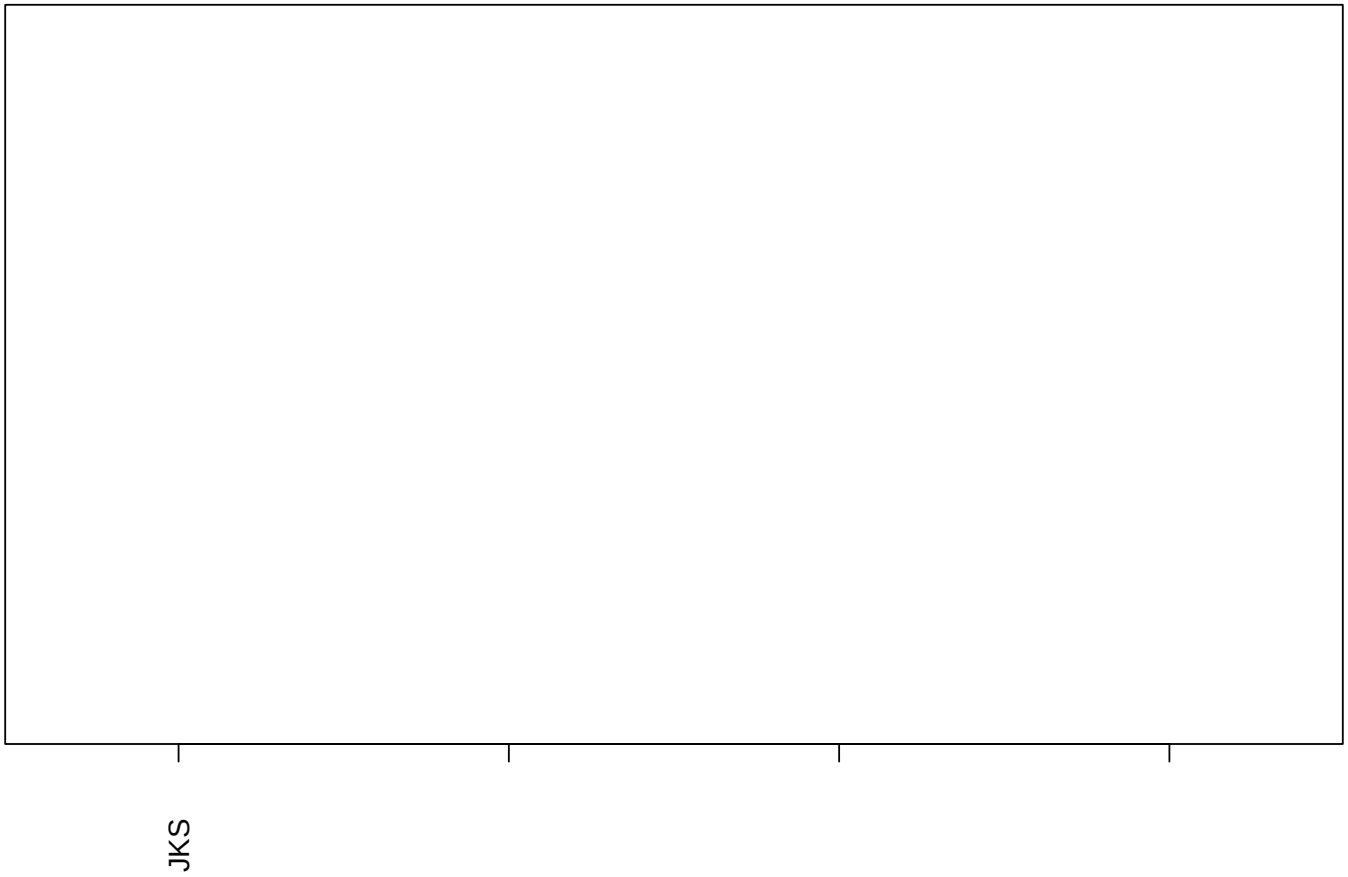
Appendix B − Figure 3
Unit: Fly Ash Landfill
Timeseries of Upgradient Wells

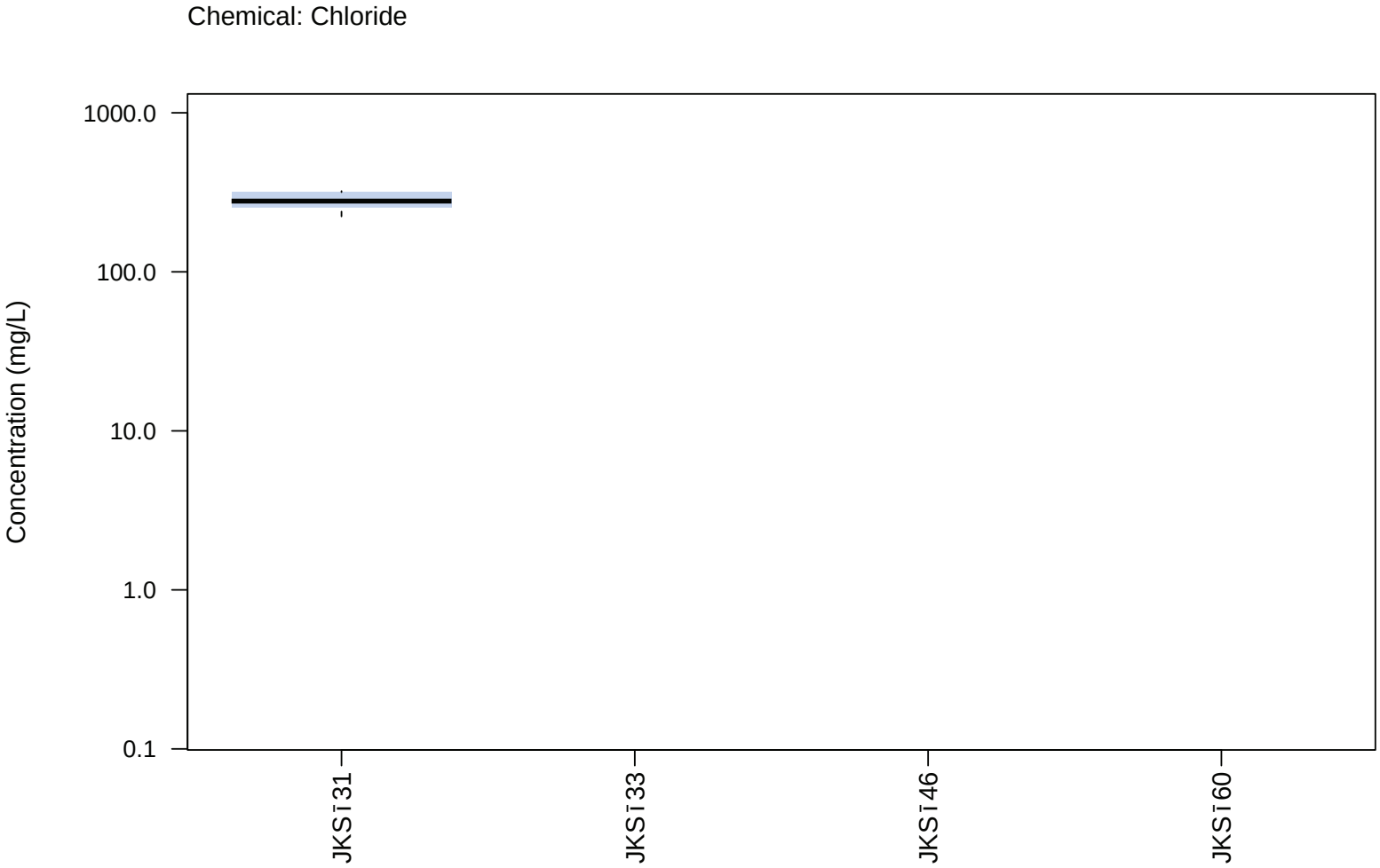
Appendix B − Figure 3
Unit: Fly Ash Landfill
Timeseries of Upgradient Wells

Chemical: Total dissolved solids
Significant Difference (Intrawell Analysis)



Chemical: Boron




Chemical: Chloride
Concentration (mg/L)
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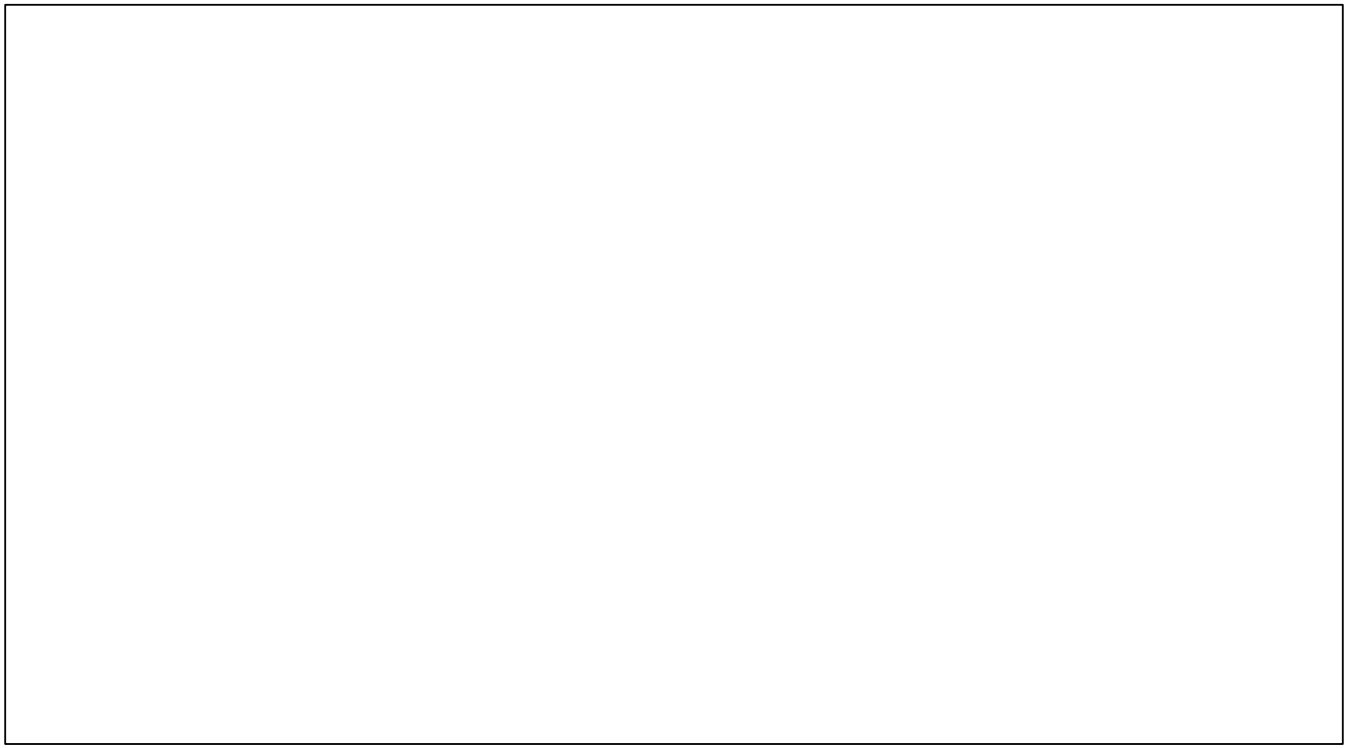
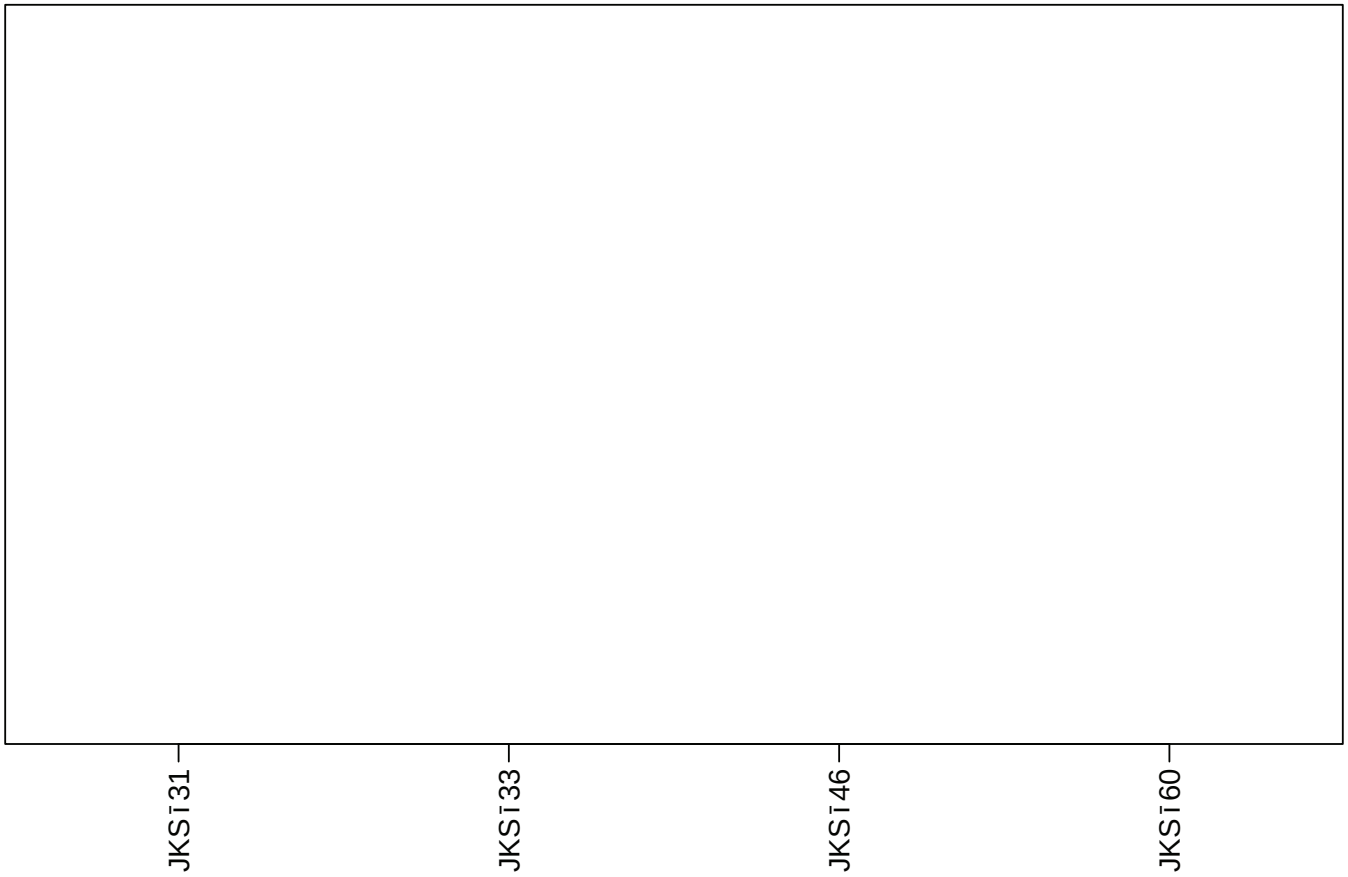
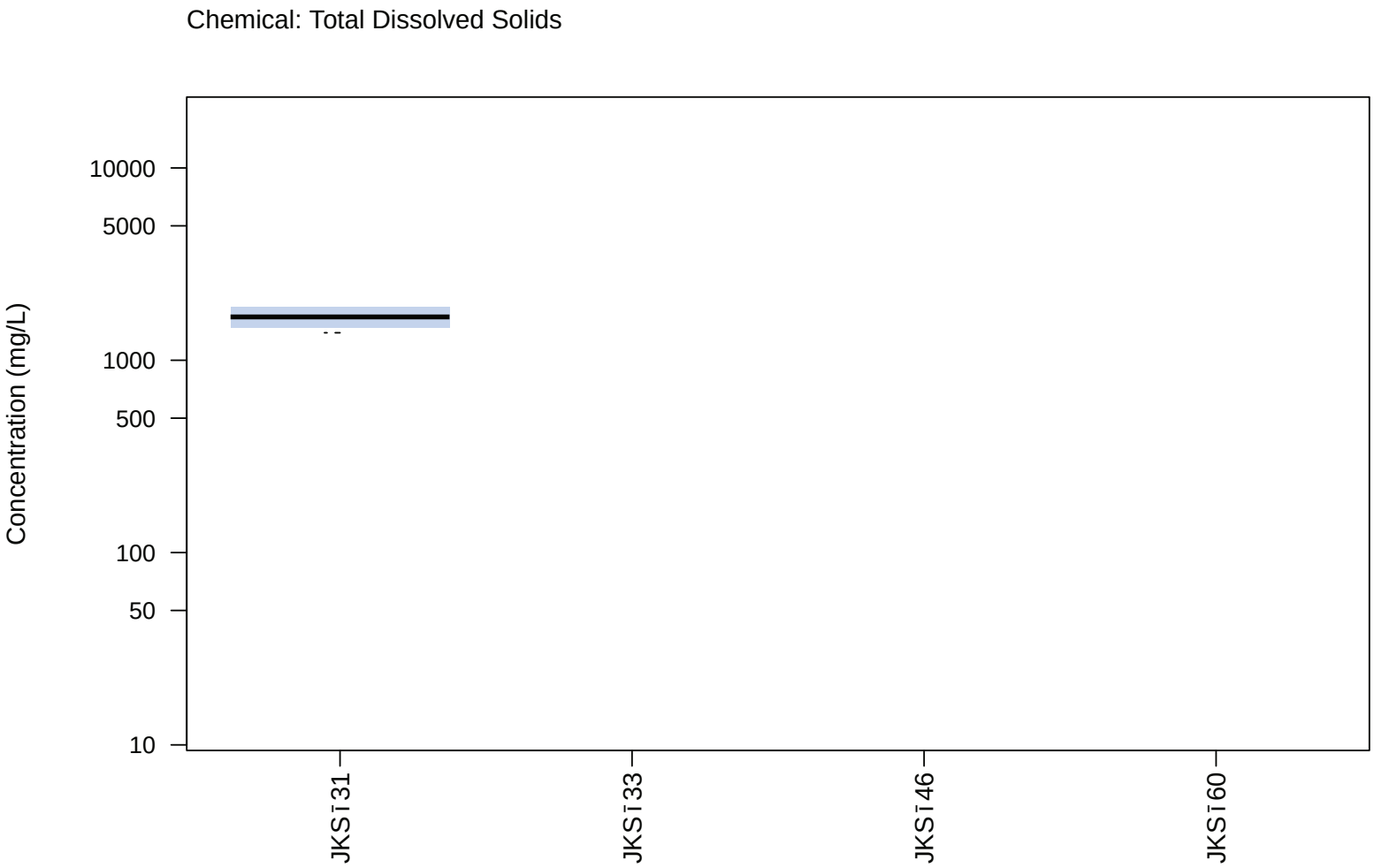
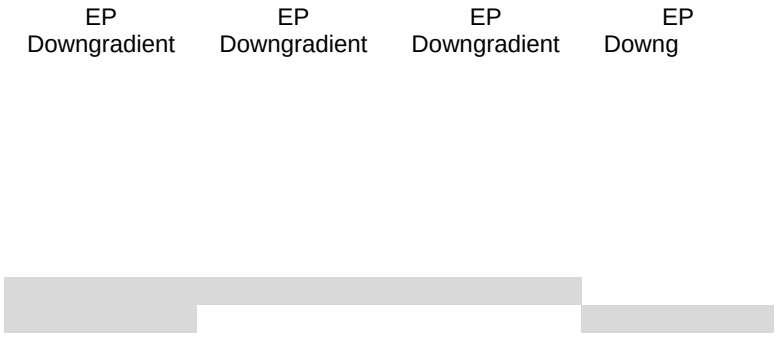
100.0
10.0
1.0
0.1
JKSī31
JKSī33
JKSī46
JKSī60



Chemical: Sulfate




Chemical: Total Dissolved Solids
Concentration (mg/L)
10000
5000
1000
500
100
50
10
JKSī31
JKSī33
JKSī46
JKSī60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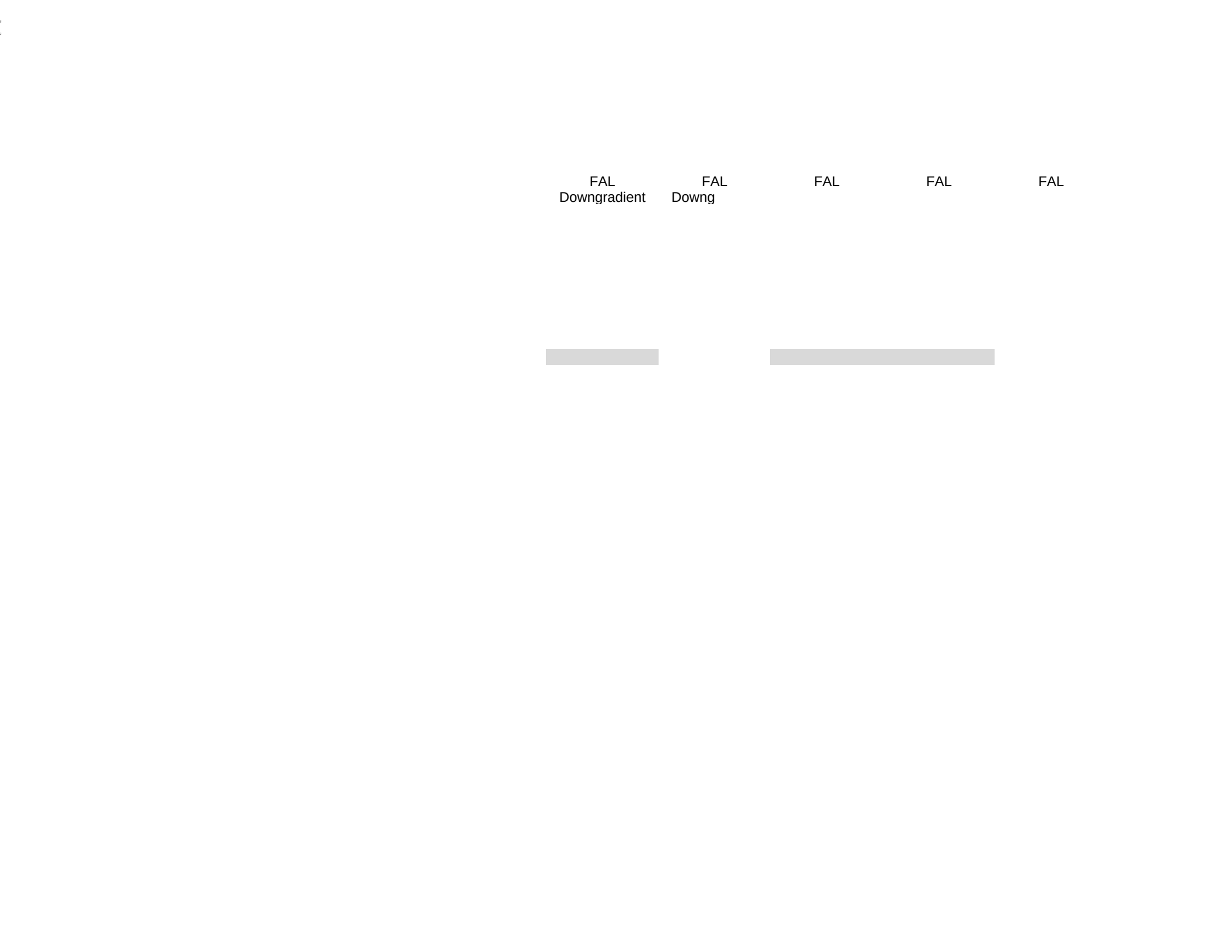
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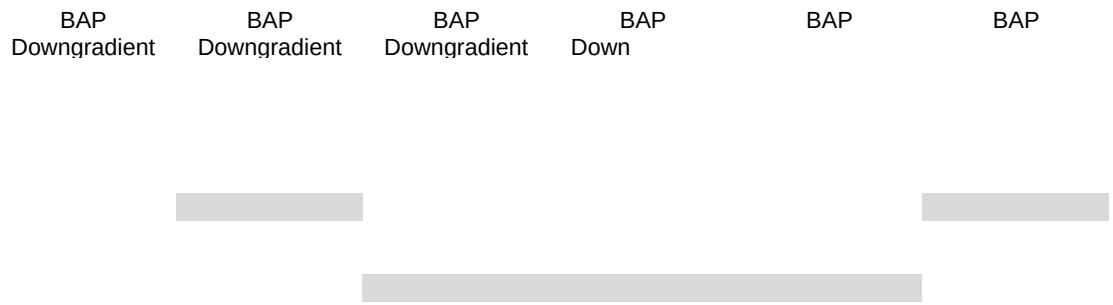
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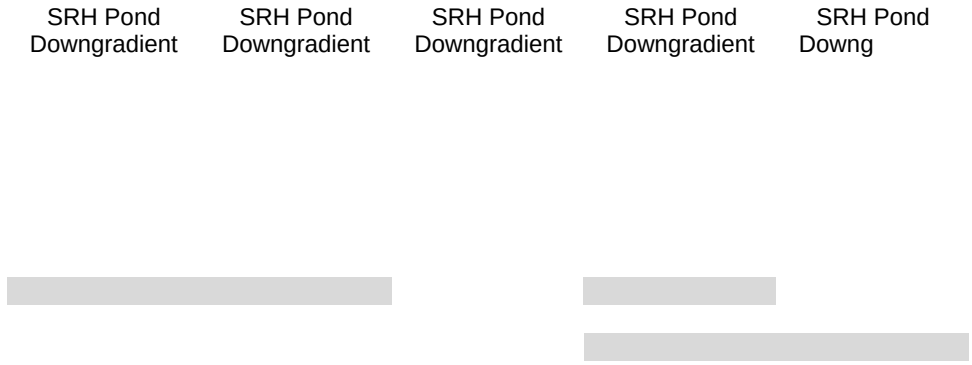

SRH Pond Downgradient
SRH Pond Downgradient
SRH Pond Downgradient
SRH Pond Downgradient
SRH Pond Downg

Regulatory Requirement Cross-Reference

Regulatory Citation	Requirement (paraphrased)	Where Addressed

The remaining sections of this R

4.4. CONCLUSIONS

The downgradient samples collected during the October

Tables

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

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

	12/7/16	2/22/17	3/28/17	5/3/17	6/20/17	7/25/17	8/29/17	10/10/17	57	8	15	1	or St	7d ts	8679 (n	Un (t	1	atit	7	7d d/17

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

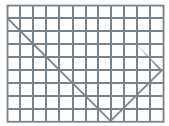
TABLE 3
Groundwater Analytical Results Summary
CPS Energy - Calaveras Power Station

TABLE 3
Groundwater Analytical Results Summary

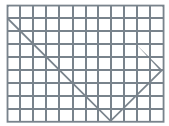
TABLE 3

Figures

DESIGN:	DRAWN:	CHKD.:
DATE:	SCALE:	REVISION:



DESIGN:	DRAWN:	CHKD.:
DATE:	SCALE:	REVISION:



Laboratory Data Packages

Appendix A

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

APPENDIX B - TABLE 1
Kruskal-Wallis Test Comparisons of Upgradient Wells
Calaveras Power Station
SRH Pond

Analyte	N	Num Detects	Percent Detect	DF	KW Statistic	p-value	Conclusion	UPL Type
Boron	28	28	100.00%	1	20.3	<0.001	Significant Difference	Intrawell
Calcium	28	28	100.00%	1	19.5	<0.001	Significant Difference	Intrawell
Chloride	28	28	100.00%	1	0.256	0.613	No Significant Difference	Interwell
Fluoride	28	26	92.86%	1	19.9	<0.001	Significant Difference	Intrawell
pH	28	28	100.00%	1	12.7	<0.001	Significant Difference	Intrawell
Sulfate	28	28	100.00%	1	19.9	<0.001	Significant Difference	Intrawell
Total dissolved solids	28	28	100.00%	1	9.64	0.00191	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.

Well

Analyte	UPL Type	Well	N	Num Detects	Percent Detect	p-value	tau	Conclusion
Boron	Intrawell	JKS-49	14	14	100%	<0.001	-0.685	Decreasing Trend
Boron	Intrawell	JKS-51	14	14	100%	0.511	0.133	Stable, No Trend
Calcium	Intrawell	JKS-49	14	14	100%	0.584	-0.11	Stable, No Trend
Calcium	Intrawell	JKS-51	14	14	100%	0.747	0.0769	Stable, No Trend
Chloride	Interwell	JKS-51	28	28	100%	0.00137	0.43	Increasing Trend
Fluoride	Intrawell	JKS-49	14	14	100%	0.233	0.253	Stable, No Trend
Fluoride	Intrawell	JKS-51	14	12	86%	0.826	-0.0442	Stable, No Trend
pH	Intrawell	JKS-49	14	14	100%	0.782	0.0569	Stable, No Trend
pH	Intrawell	JKS-51	14	14	100%	0.518	-0.143	Stable, No Trend
Sulfate	Intrawell	JKS-49	14	14	100%	0.913	-0.0221	Stable, No Trend
Sulfate	Intrawell	JKS-51	14	14	100%	0.1	0.331	Stable, No Trend
Total dissolved solids	Intrawell	JKS-49	14	14	100%	0.546	0.122	Stable, No Trend
Total dissolved solids	Intrawell	JKS-51	14	14	100%	0.441	0.156	Stable, No Trend

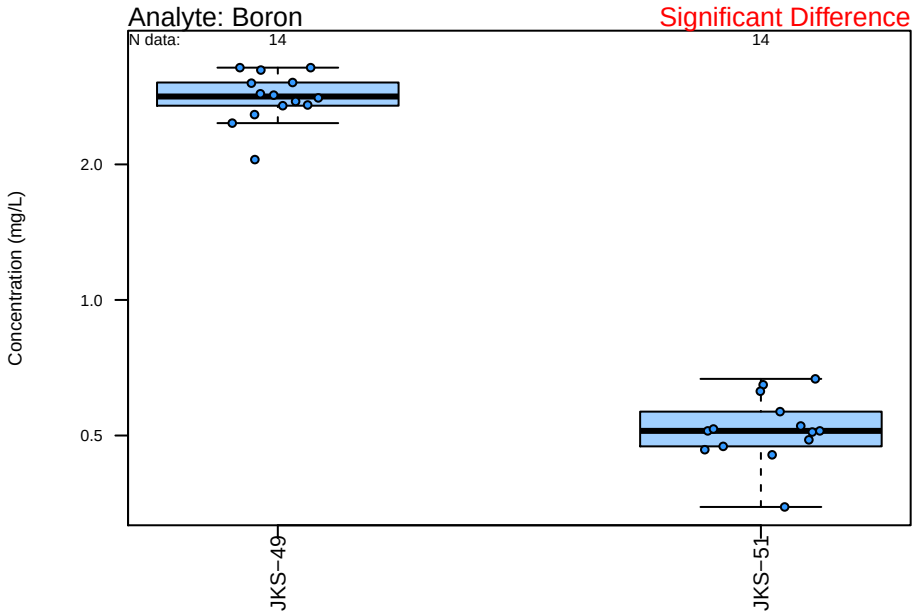
NOTES:

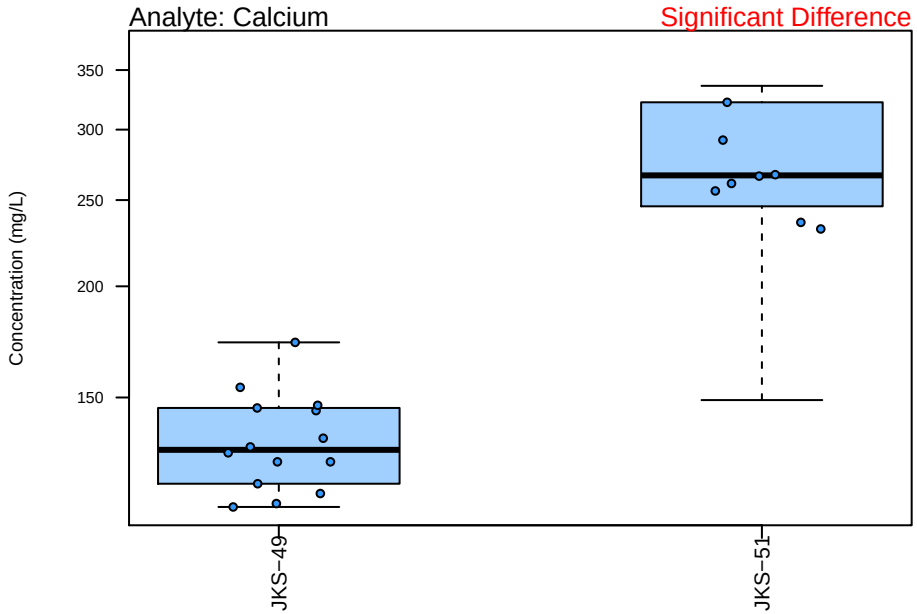
Non-detects were substituted with a value of zero for trend calculation

Analyte	UPL Type	Trend	Well	N

Analyte	Well	LPL	UPL	Units

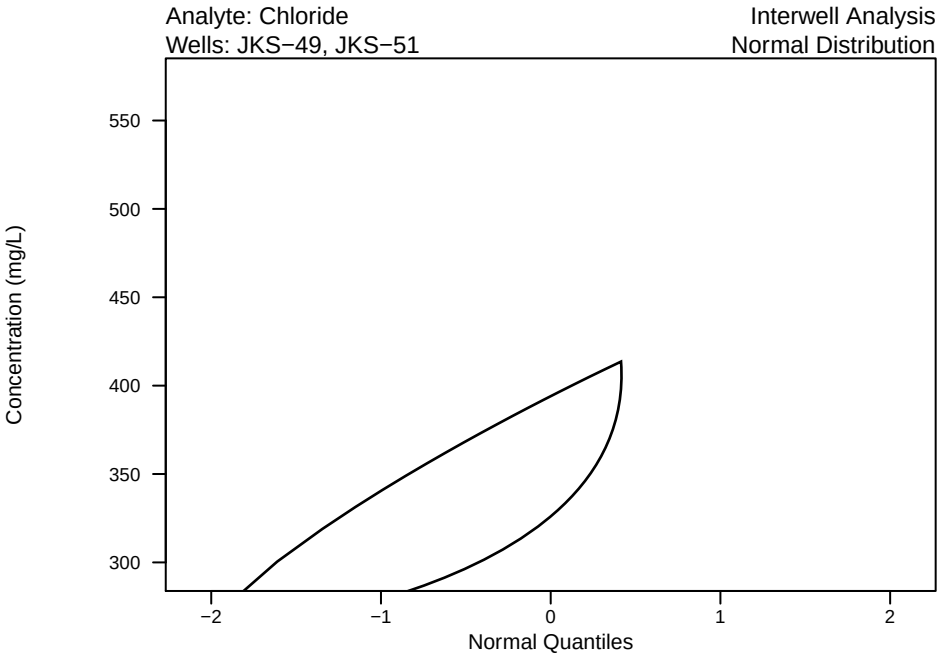
Appendix B − Figure 1
Unit: SRH Pond
Boxplots of Upgradient Wells



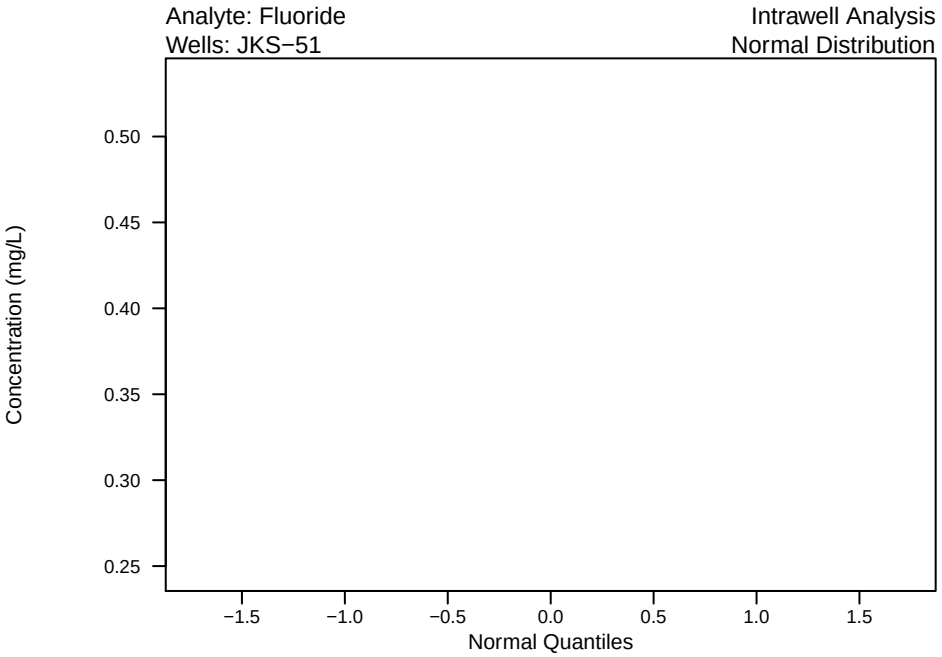


Appendix B − Figure 1
Unit: SRH Pond

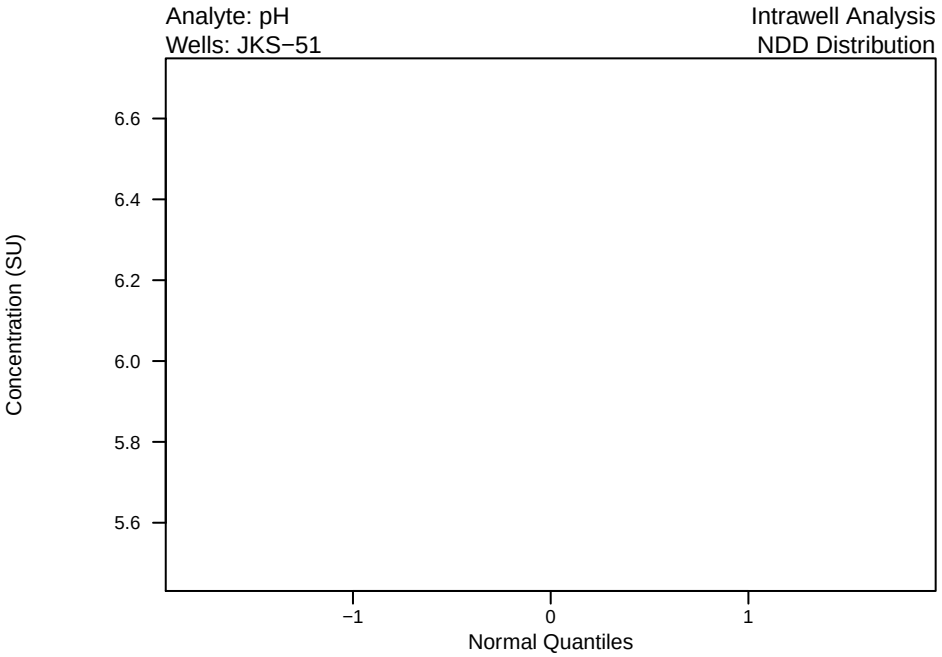
Appendix B − Figure 2
Unit: SRH Pond
QQ Plots of Upgradient Wells



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

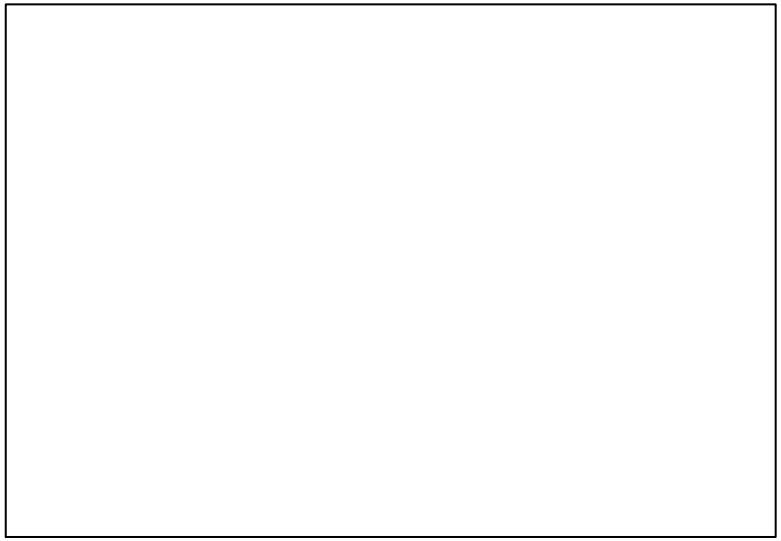


Appendix B − Figure 2
Unit: SRH Pond
QQ Plots of Upgradient Wells



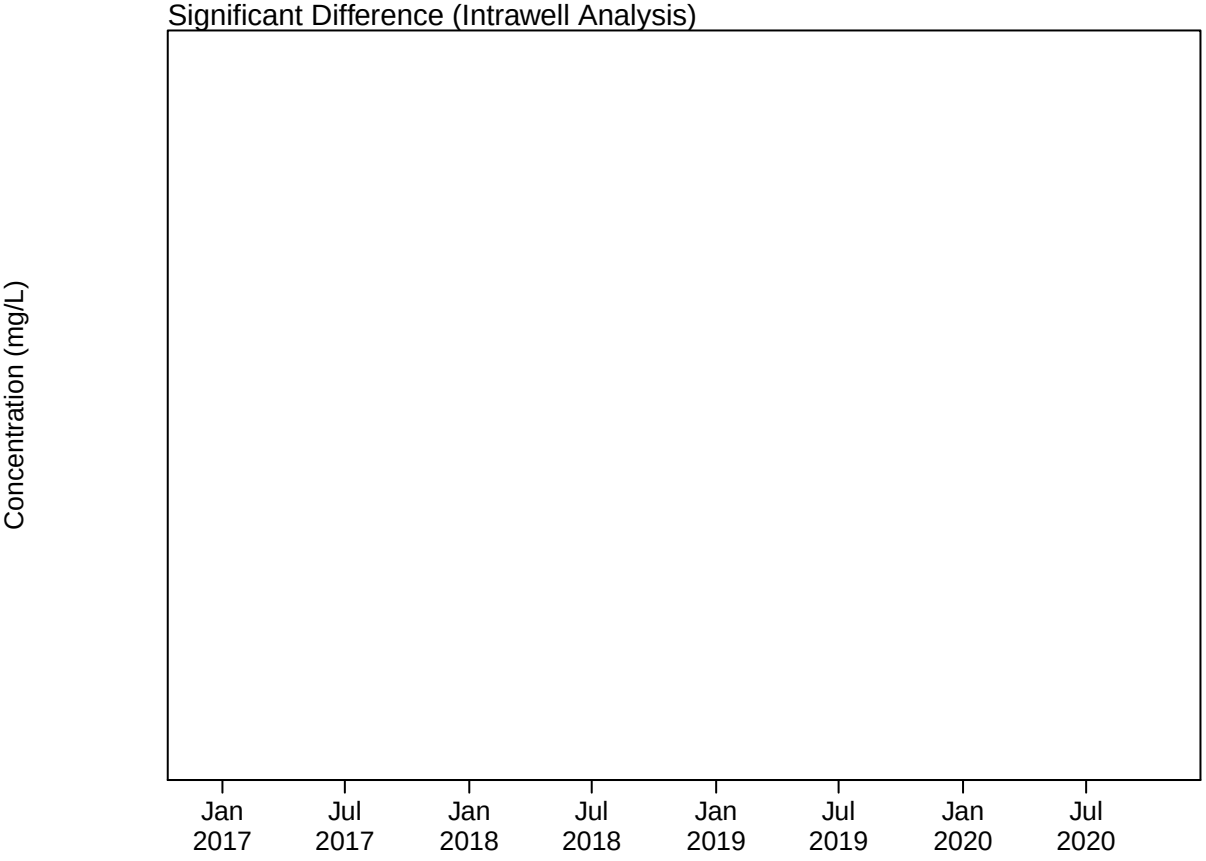
Appendix B − Figure 2

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

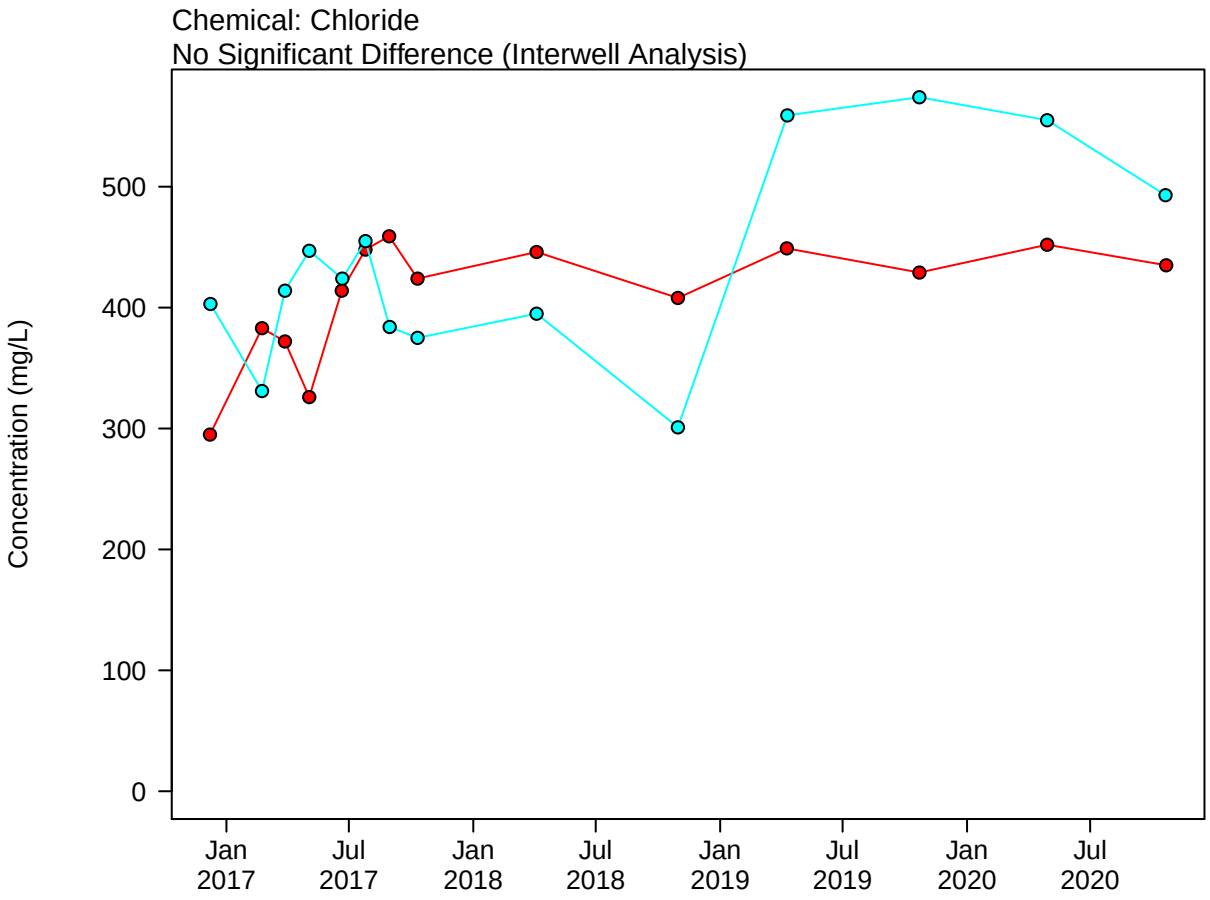


Appendix B − Figure 3
Unit: SRH Pond
Timeseries of Upgradient Wells

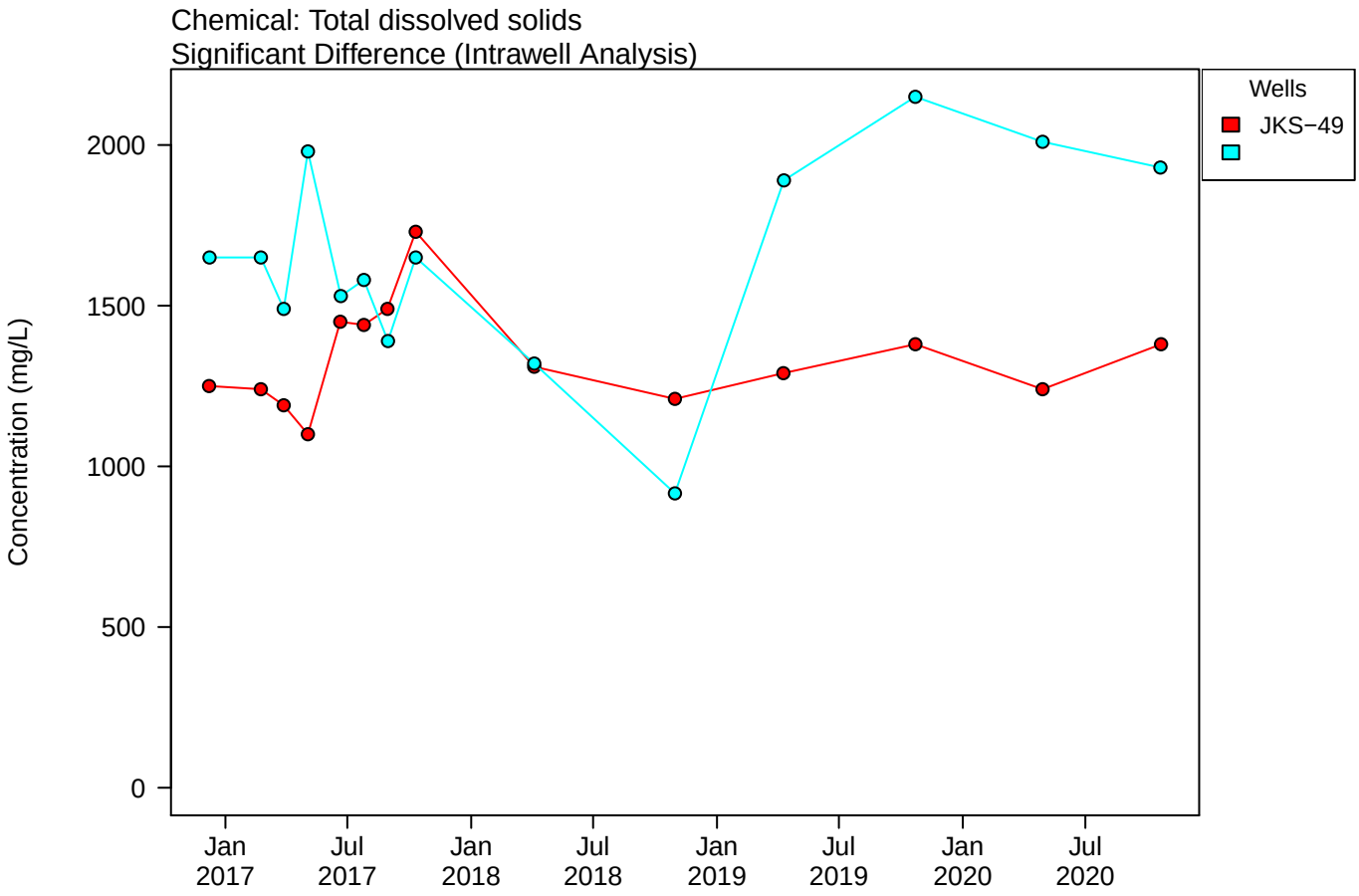
Chemical: Boron
Significant Difference (Intrawell Analysis)

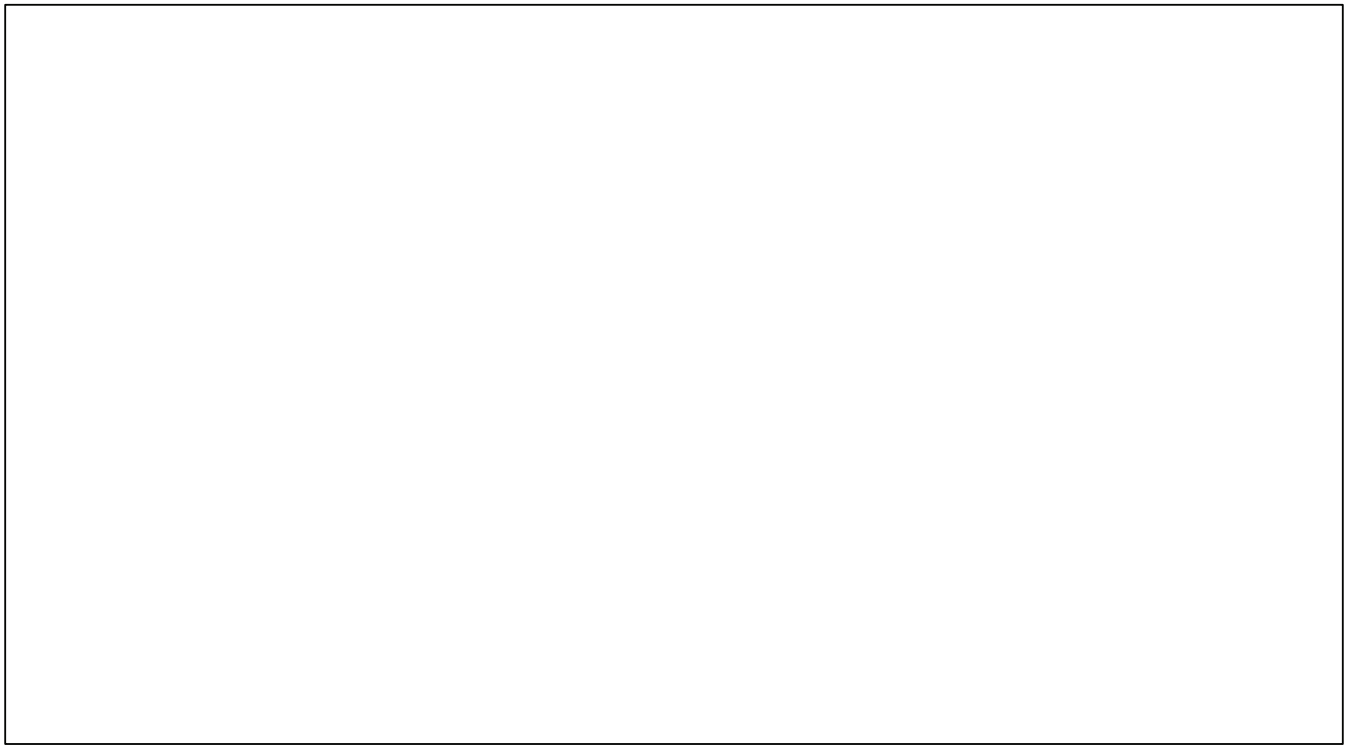


Appendix B − Figure 3
Unit: SRH Pond
Timeseries of Upgradient Wells

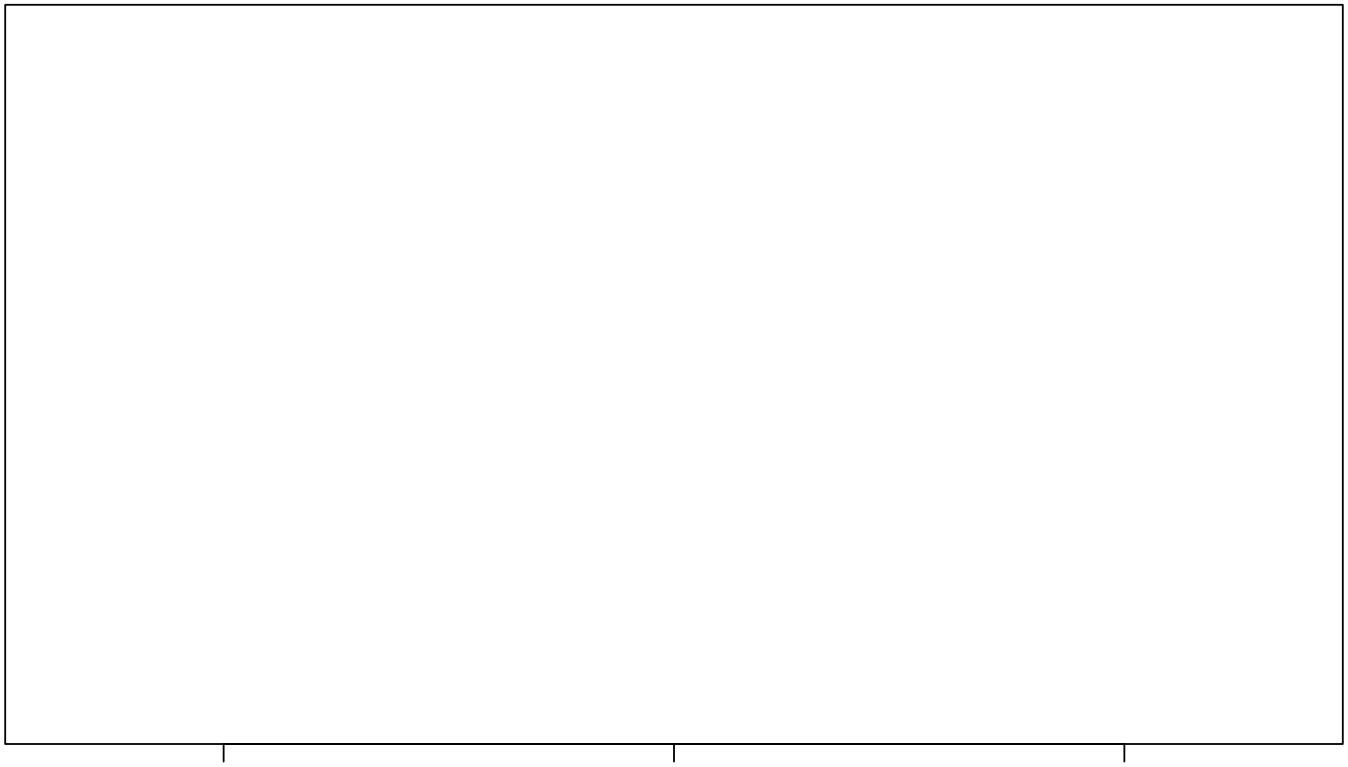


Appendix B − Figure 3
Unit: SRH Pond
Timeseries of Upgradient Wells

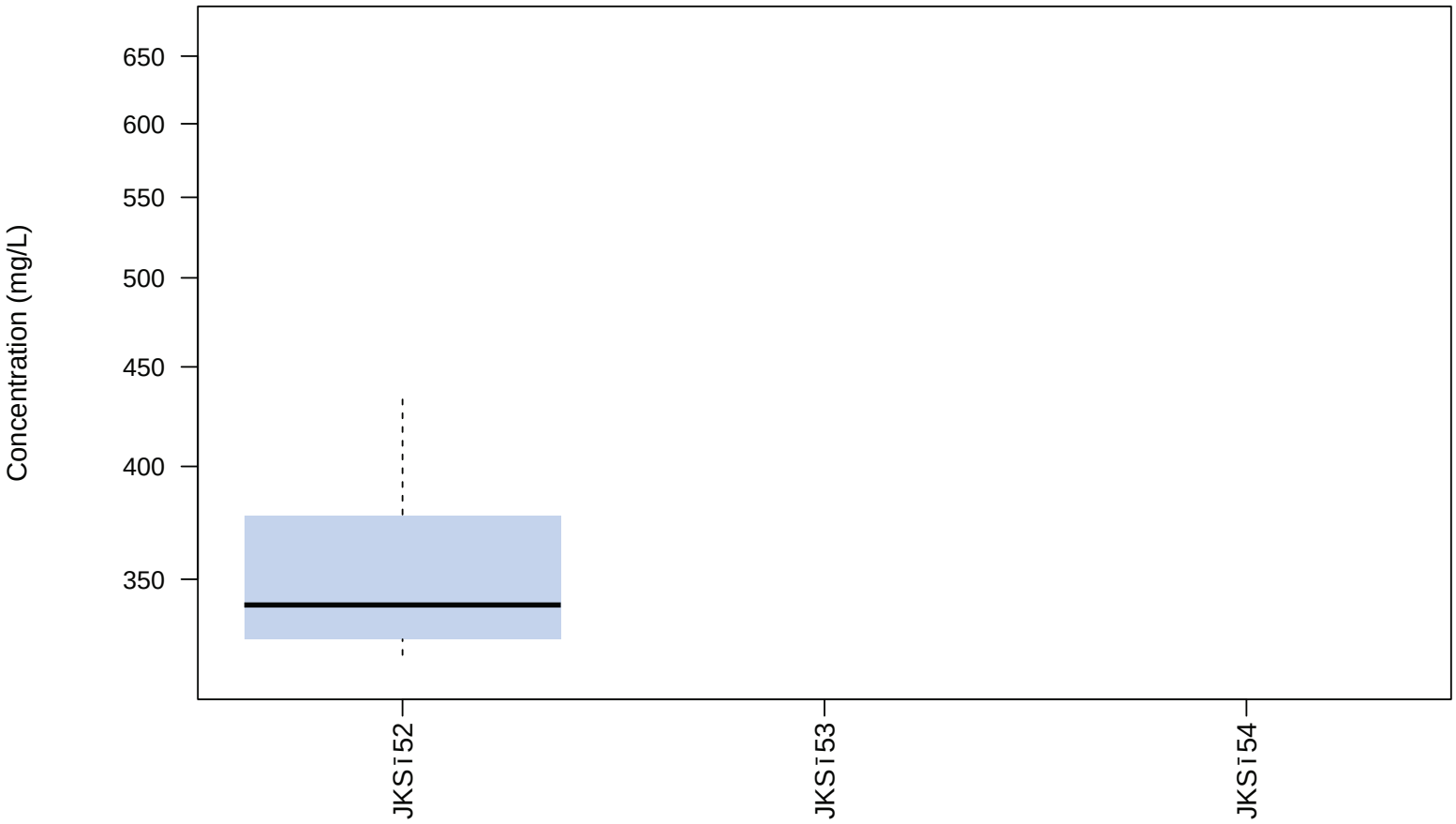


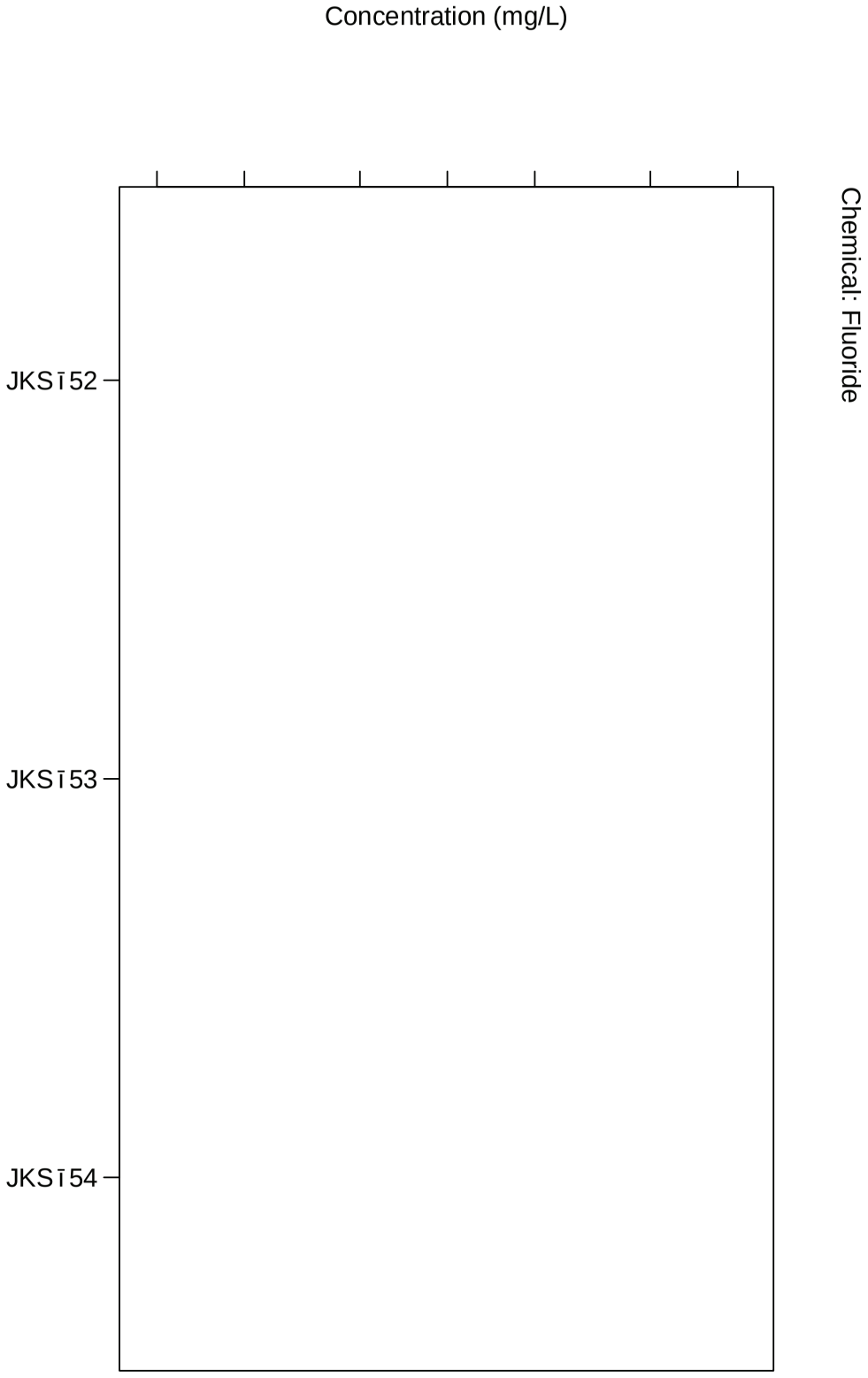


Chemical: Calcium

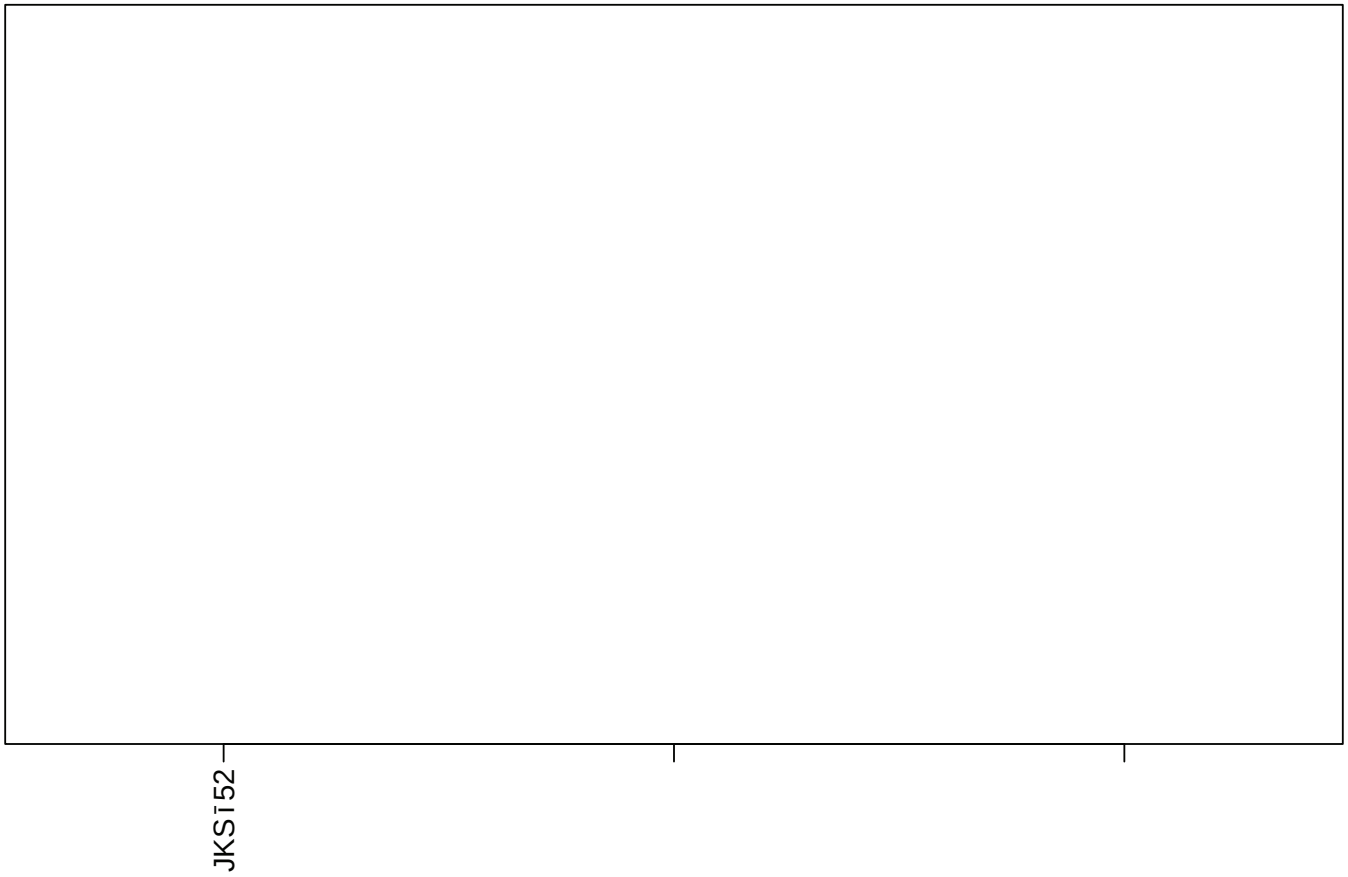


Chemical: Chloride

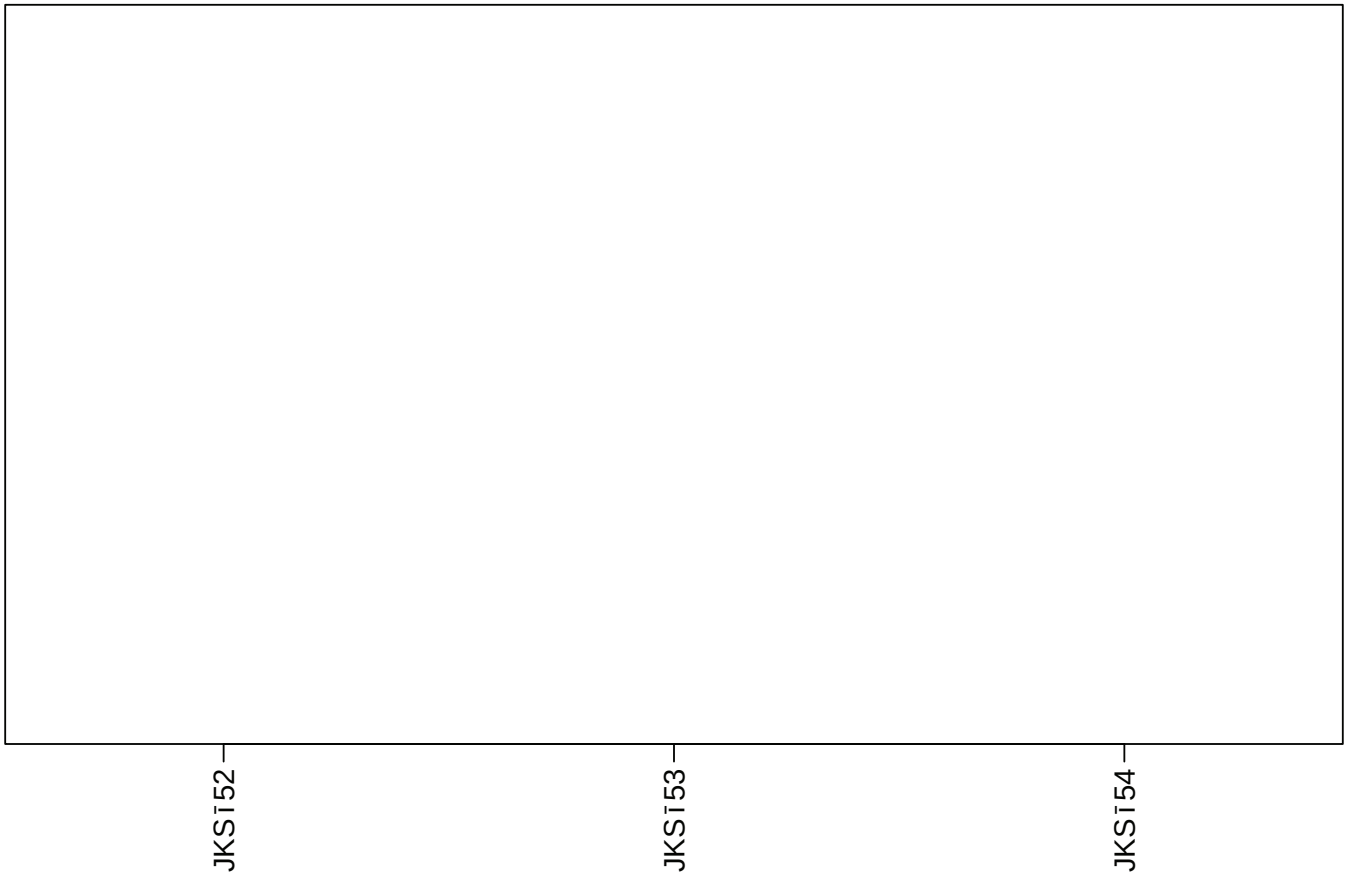



Concentration (mg/L)
JKSī52
JKSī53
JKSī54
Chemical: Fluoride

Chemical: pH



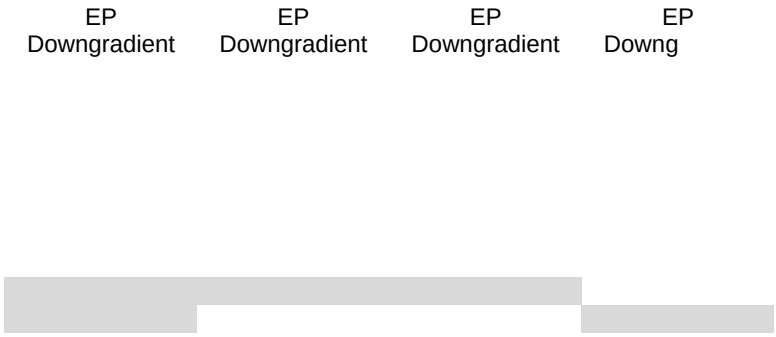
Chemical: Sulfate



Chemical: Total Dissolved Solids

April 2020 Groundwater Sampling Event – Calaveras Power Station CCR Units

Appendix C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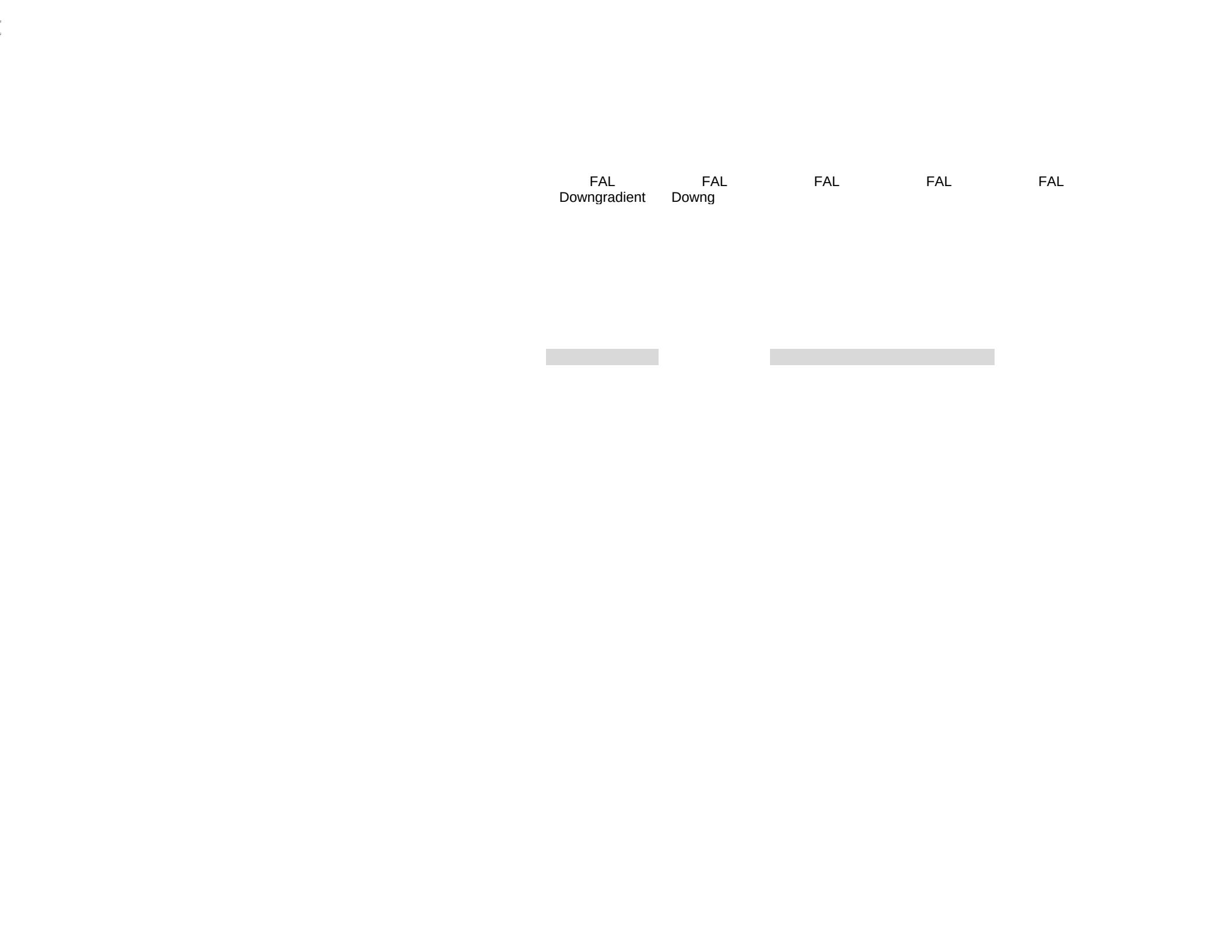
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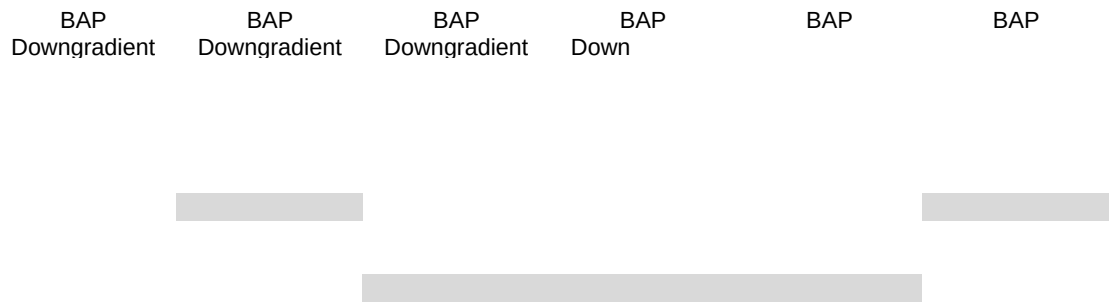
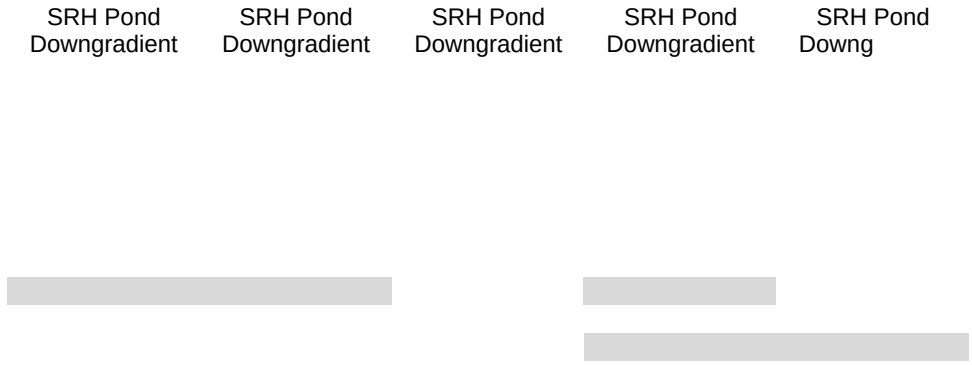

BAP Downgradient
BAP Downgradient
BAP Downgradient
BAP Down
BAP
BAP


SRH Pond Downgradient
SRH Pond Downgradient
SRH Pond Downgradient
SRH Pond Downgradient
SRH Pond Downg

Groundwater Monitoring System

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2.

confining / semi-confining unit to document the Atterberg limits and grain size distribution. Samples were containerized, labeled, and transported to the HTS, Inc. Consultants (HTS) laboratory in Houston, Texas. A summary of the geotechnical testing results is provided in **Table 1**. HTS laboratory test results are provided in **Appendix B**.

4.2.3 Surveying

To better define the water levels and the groundwater flow direction in the

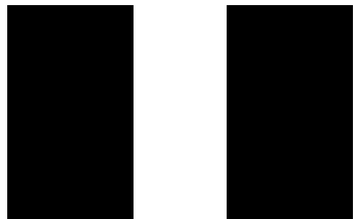
5.1.1 Northern CCR Units

The stratigraphic sequence is generally characterized by approximately 8 feet to 32 feet of unconsolidated material (sands, silts, and low to medium plasticity clays), underlain by a clayey / silty to well-sorted sand (groundwater-bearing unit) approximately 5 to over 25 feet thick, underlain by grey to brown, high plasticity clay (lower confining unit). The ground water bearing unit is at its greatest observed thickness near the so

Visual classifications of the geologic materials described above are consistent with results from the soil materials testing analysis conducted by HTS for samples collected at JKS-48, JKS-53, and JKS-54. The laboratory USCS results classify the groundwater-bearing unit from a silty clayey sand (SC-SM) at JKS-54 to a clayey sand (SC) at JKS-48 and JKS-53. Hydraulic conductivities from cohesive samples collected from the lower confining unit were reported on the order of 10

Evaporation Pond Monitor Well Network

JKS-47	*Background Monitoring*	*Collect sample and measure water elevation*	
JKS-63168.12	*676.08*	*Tm*	*(JKS-63168.12* *Continued* *676.08* *Tm* *(JKS-63168.12* *676.08*



0337367	JKS-45	2016-04-04
	2016-04-04	2016-04-04

0337367	JKS-45	2016-04-04
Groundwater Investigation	CPS Energy	
Calaveras Power Station - San Antonio	62.00 '	8.25 "
13667132.78' 2186615.40'	528.31 '	

47.19 2016-05-31

Strata Core Services, LLC Joseph Ray

Hollow-Stb A geC

JKS-45

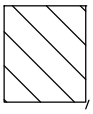
0337367	JKS-45		2016-04-04
Groundwater Investigation	CPS Energy		
Calaveras Power Station - San Antonio	62.00 '		8.25 "
N. Coord. 13667132.78'	E. Coord. 2186615.40'	528.31 '	Ft. MSL

Sch. 40!

Sch. 40!

47.19 2016-05-31

Strata Core Services, LLC	Joseph Ray
Hollow-Stem Auger	Nick Houtchens



Cohesive sample (Shelby tube) collected from 60'-62' bgs.

Boring terminated at 62' bgs.

0337367	JKS-46	2016-04-05
Groundwater Investigation	CPS Energy	
Calaveras Power Station - San Antonio	30.00 '	8.25 "
13667810.11' 2187972.31'	495.75 '	

19.38 2016-05-31

Strata Core Serv] l

0337367	JKS-47	2016-04-05
Groundwater Investigation	CPS Energy	
Calaveras Power Station - San Antonio	48.00 '	8.25 "
13665709.79' 2186503.87'	510.28 '	

31.37 2016-05-31

Strata Core Services, LLC Joseph Ray

Hollow-Stbb

Joseph Ray

JKS-47

0337367	JKS-47		2016-04-05
Groundwater Investigation	CPS Energy		
Calaveras Power Station - San Antonio	48.00 '		8.25 "
N. Coord. 13665709.79' E. Coord. 2186503.87'		510.28 '	Ft. MSL

31.37	2016-05-31

Strata Core Services, LLC	Joseph Ray
Hollow-Stem Auger	Nick Houtchens

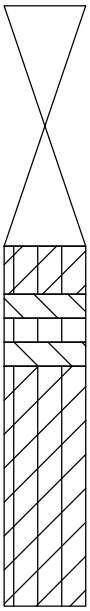
JKS-48

0337367	JKS-48		2016-04-06
Groundwater Investigation		CPS Energy	
Calaveras Power Station - San Antonio		30.00 '	8.25 "

N. Coord. 13659658.78' E. Coord. 2186490.78' 493.71 ' Ft MSL

11.28 2016-05-31

Strata Core Services, LLC	Joseph Ray
Hollow-Stem Auger	Nick Houtchens



0-5	NO RECOVERY: Previously excavated by hydrovac truck.
	CLAYEY SILT: Orangish brown; damp; medium dense to dense; slight to low plasticity. At 5.5' bgs: Brown band (2" thick). At 5.75' bgs: Color change to brown; damp to dry; minor clay content; fractures along planar surfaces.
5-6	SILTY CLAY: Orangish brown heavily mottled with grey and orange; damp; stiff; medium plasticity; occasional grey and orange silt stringers.
6-6.5	
6.5-7	SILT: Brownish tan with grey and orange; damp; medium dense; slight plasticity; trace clay.
7-7.5	SILTY CLAY: Orangish brown heavily mottled with grey and orange; damp; stiff; medium plasticity; occasional grey and orange silt stringers.

0337367	JKS-49	2016-04-06
Groundwater Investigation	CPS Energy	

JKS-50

0337367	JKS-50		2016-04-06
Groundwater Investigation	CPS Energy		
Calaveras Power Station - San Antonio	14.00 '		8.25 "
N. Coord. 13660122.87' E. Coord. 2186836.72'		494.87 '	Ft. MSL

11.76 2016-05-31

Strata Core Services, LLC	Joseph Ray
Hollow-Stem Auger	Nick Houtchens

0-5

0366643	JKS-50R	2016-10-07

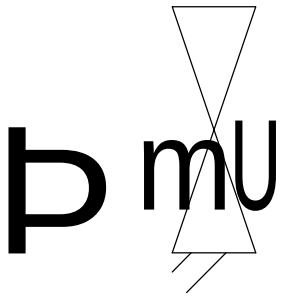
Ground Water Inves S

JKS-54

0366643	JKS-54		2016-09-02
Ground Water Investigation - Phase II	CPS Energy		
Calaveras Power Station - San Antonio	27.50 '		8.25 "
N. Coord. 13659753.34'	E. Coord. 2185641.96'	492.69 '	Ft. MSL

10.79

Strata Core Services, LLC	Ryan Spaust
Hollow-Stem Auger	Andrew Henry



0-5 NO RECOVERY: Previously excavated by hydrovac truck.

0366643

0366643	JKS-56	2016-09-06
Ground Water Investigation - Phase II	CPS Energy	
Calaveras Power Station - San Antonio		

JKS-56

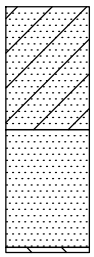
0366643	JKS-56		2016-09-06
Ground Water Investigation - Phase II	CPS Energy		
Calaveras Power Station - San Antonio	25.00 '		8.25 "

N. Coord. 13660382.47' E. Coord. 2186847.61' 493.07 ' Ft. MSL

Sch. 40 PV

11.20

Strata Core Services, LLC	Ryan Spaust
Hollow-Stem Auger	Andrew Henry



	At 20' bgs: Course, angular gravel layer (~1-2" thick)
22.5-24.9	SAND: Brownish gray; fine grained; saturated; trace clay content.
24.9-25	SANDY CLAY: Reddish brown; saturated; very soft. Boring terminated at 25' bgs.

0366643 JKS-57 2016-09-07

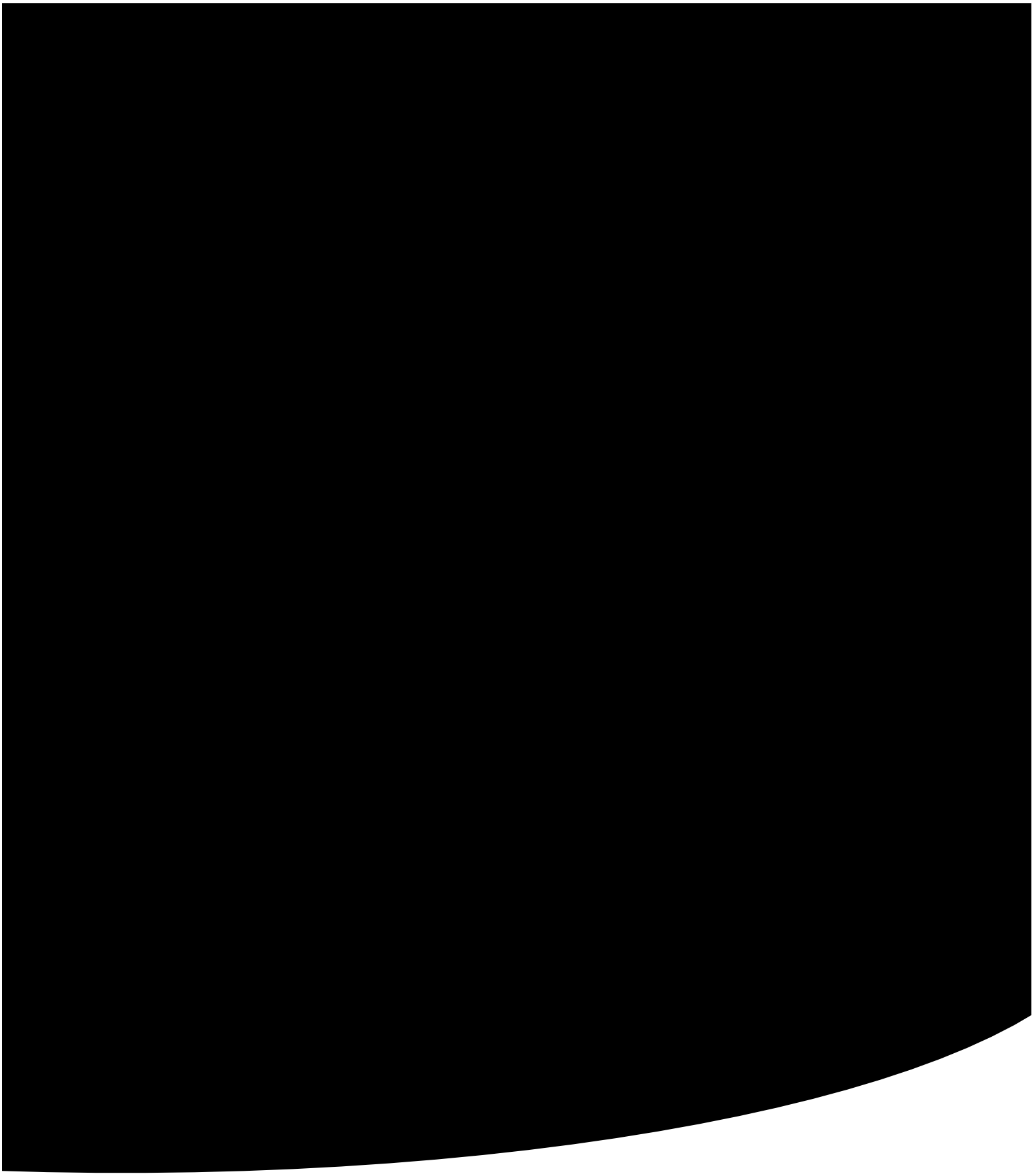
Ground Water Investigation - Phase II

0366643 JKS-61 2016-09-08

Ground Water Investigation - Phase II CPS Energy

Calaveras Power Station - San Antonio

13665721.04' 2187196.65'



JKS-63

0366643	JKS-63		2016-09-08
Ground Water Investigation - Phase II	CPS Energy		
Calaveras Power Station - San Antonio	50.00 '		8.25 "
N. Coord. 13666230.86'	E. Coord. 2186553.38'	523.55 '	Ft. MSL

44.70

Strata Core Services, LLC	Ryan Spaust
Hollow-Stem Auger	Andrew Henry

0-5	NO RECOVERY: Previously excavated by hydrovac truck.

JKS-63

0366643	JKS-63		2016-09-08
Ground Water Investigation - Phase II	CPS Energy		
Calaveras Power Station - San Antonio	50.00 '		8.25 "
N. Coord. 13666230.86' E. Coord. 2186553.38'		523.55 '	Ft. MSL

44.70

Strata Core Services, LLC	Ryan Spaust
Hollow-Stem Auger	Andrew Henry

JKS-63

0366643	JKS-63		2016-09-08
Ground Water Investigation - Phase II	CPS Energy		
Calaveras Power Station - San Antonio	50.00 '		8.25 "

N. Coord. 13666230.86' E. Coord. 2186553.38' 523.55 ' Ft. MSL

44.70

Strata Core Services, LLC	Ryan Spaust
Hollow-Stem Auger	Andrew Henry

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0366643

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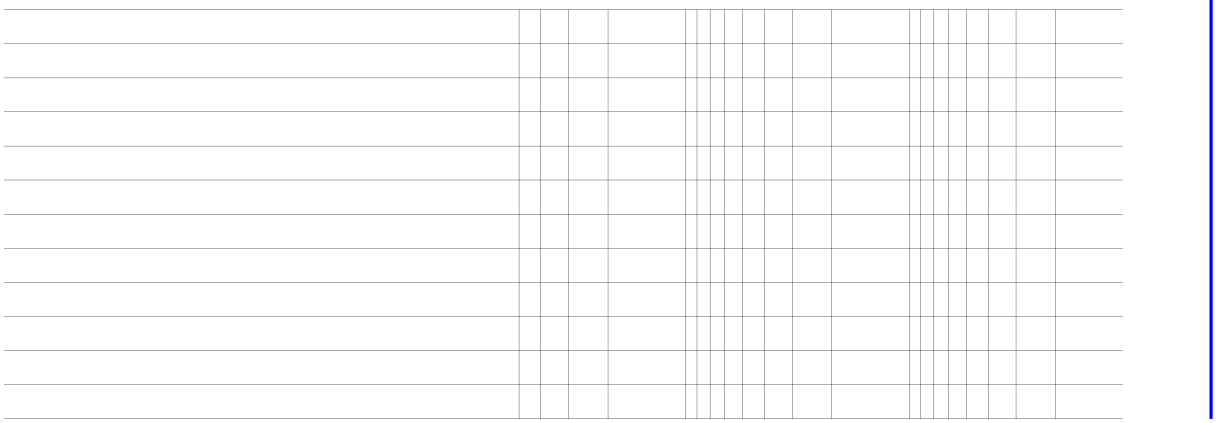

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Calaveras Power Station

Groundwater Sampling and

Texas Registered Engineering Firm F-2393
Texas Board of Professional Geoscientist Firm 50036

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APPENDICES

sampling is done during the active life of the CCR Units and the post-closure period, if applicable.

Assessment Monitoring

4.0 WELL ASSESSMENT PRIOR TO PURGING

5.0 GROUNDWATER SAMPLING PROCEDURES

This section of the SAP provides information about purging and sampling

least 3 of the 5 parameters have stabilized for three successive readings. If the minimum three water quality indicator parameters do not stabilize within 45 minutes of low-flow purging, a groundwater analytical sample will be collected from the well.

See Section 9.0 for equipment decontamination procedures, IDW management, and IDW sampling.

5.2 SAMPLE COLLECTION

Groundwater will be collected from the well and transferred to the appropriate

6.0 SAMPLE PACKING AND SHIPPING

Samples for chemical analyses will be placed into the correct laboratory-supplied sample containers, labeled appropriately, and immediately placed in a cooler with ice. The field sampler will document the appropriate information on the chain-of-custody form (see Section 3.3 for details). Prior to packing coolers and shipping to the laboratory, the outside surfaces of the sample containers will be cleaned if necessary (by wiping carefully

7.0 ANALYTICAL PROCEDURES

Groundwater samples collected under the Detection Monitoring Program will be analyzed for the constituents specified in **Table 2**. Groundwater samples collected under the Assessment Monitoring Program will be analyzed for the constituents specified in **Table 2** and **Table 3**. IDW samples (further described in Section 9.0) will be analyzed for the constituents specified in **Table 6**. Analytical parameter classes, container size and type, preservatives, and holding times (before which the analysis must be performed) are listed in **Table 5** and **Table 7**. A NELAC-accredited laboratory will perform the groundwater analyses.

Groundwater analyses will be performed in accordance with the most recent edition of *E*

8.3 DATA REVIEW AND EVALUATION

9.3 INVESTIGATION-DERIVED WASTE SAMPLE COLLECTION

Following the transfer of purge water and decontamination wash water to a temporary DOT-approved 55-gallon drum(s), a sample will be collected in order

Client:	CPS Energy - Calaveras Power Station
Site Loc.:	San Antonio, Texas
Purpose:	
Proj. ID.:	
Sampler(s):	
Date:	
Weather Conditions:	

Measuring Point:

FORM 2

¿ªORч¿ªTION

MONITOR

Nøx° ŋŋ)Ҝ٧ѧĂ ~

Environmental Resources Management
206 East 9th Street, Suite 1700
Austin, Texas 78701
Eoth

CCR Unit	Well ID	Top of Casing Elevation (feet msl)	Well Diameter (inches)	Approximate Screen Interval (feet btoc)	Required Pump for Sample Collection
	JKS-31	507.45	2.0	57.2 - 67.2	Submersible
	JKS-33	498.71	2.0	20 - 30	Peristaltic
	JKS-45	531.46	2.0	43.2 - 58.2	Submersible
	JKS-46	499.08	2.0	18.3 - 28.3	Peristaltic
	JKS-57	506.91	2.0	15.1 - 30.1	Peristaltic
	JKS-58	504.45	2.0	23.5 - 33.5	*Not Sampled*
	JKS-59	496.45	2.0	14.9 - 29.9	*Not Sampled*
	JKS-60	495.70	2.0	13 - 28	Peristaltic

JKS-3 0 Td (Peristalti08.491) Tj 0.835 0 Td (2.0)Tj9.001 -0.027 Td 413.5 -65151

835 0 Td (2.0)Tj9.001 -0.027 Td (23.R 28.3)45 0 T5 12.36ollection

.835 0 (2.0)Tj9.001 -0.027 Td (23.R 28.3)45 0 T5 12.364llection

TABLE 3

Water Quality Indicator Parameters

TABLE 6

CONSTITUENTS FOR IDW CHARACTERIZATION AND PROFILING

Groundwater Sampling and Analysis Plan
CPS Energy - Calaveras Power Station
San Antonio, Texas

Constituents for IDW Characterization and Profiling
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Lead
Mercury
Nickel
Selenium
Silver

Laboratory Parameters	Lab Method	Parameter Group	Practical Quantitation Limit (PQL) mg/L	Container

Figures

Environmental Resources Management
206 East 9th Street, Suite 1700
Austin, Texas 78701
(512) 459-4700

Environmental Resources Management
206 East 9th

Groundwater Sampling Field Equipment List

Appendix B

Environmental Resources Management
206 East 9th Street, Suite 1700
Austin, Texas 78701
(512) 459-4700

Texas Registered Engineering Firm F-2393
Texas Board of Professional Geoscientist Firm 50036

7.0

1.0 INTRODUCTION

CPS

¢ **Inactive CCR surface impoundment** m

2.0

3.0 CCR UNIT CLOSURE PLAN

The closure concept for this closure plan is to close three surface impoundments (SRH Pond, North BAP, and South BAP) by removal of CCR. The closure procedures will comply with requirements in 40 CFR §257.102(c).

The closure concept for this closure plan is to close one surface impoundment (EP) and the

This section describes a narrative description of closure of the CCR units by either:

- Closure by removal in accordance with 40 CFR §257.102(c); or
- Closure in place in accordance with 40 CFR .4 (R)240 Tw 26.286 0 TdfEMC BT1 / P ≤MC-

6.

3.2.

3.5 CCR VOLUME ESTIMATE

As required in 40 CFR §257

7.0

Event/Activity	Estimated Schedule

Event/Activity	Estimated Schedule[1]
Notification of intent to initiate closure of CCR Unit, per 40 CFR 257.106	**June 21, 2020**
Detailed design	12 months
Permitting[2]	6 months
Contractor bid, selection, and award	8 months
CCR removal[3]	2 months
Demolition, decontamination[4], finish grading, and site restoration	5 months
Prepare and submit closure certification report	3 months
Estimated Completion of Closure	**June 2023**

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Event/Activity	Estimated Schedule[1]
Notification of intent to initiate closure of CCR Unit, per 40 CFR 257.106	**When decision is finalized to initiate closure**
Detailed design	12 months
Permitting[2]	

Event/Activity	Estimated Schedule[1]
Notification of intent to initiate closure of CCR Unit, per 40 CFR 257.106	

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My commission expires on the ___ _____ day of

_____ County, Texas

Surface Impoundments: Dike Construction

For each surface impoundment dike, complete the following information:

Attachment 21 Plat Survey – Metes and Bounds

☐ Change in Legal Name (Verifiable with the Texas Secretary of State)

23. Street Address of the Regulated Entity: *(No PO Boxes)*	12940 US HWY 181 SOUTH							
	City	SanAntonio	State	TX	ZIP	78223	ZIP + 4	
24. County	[redacted]