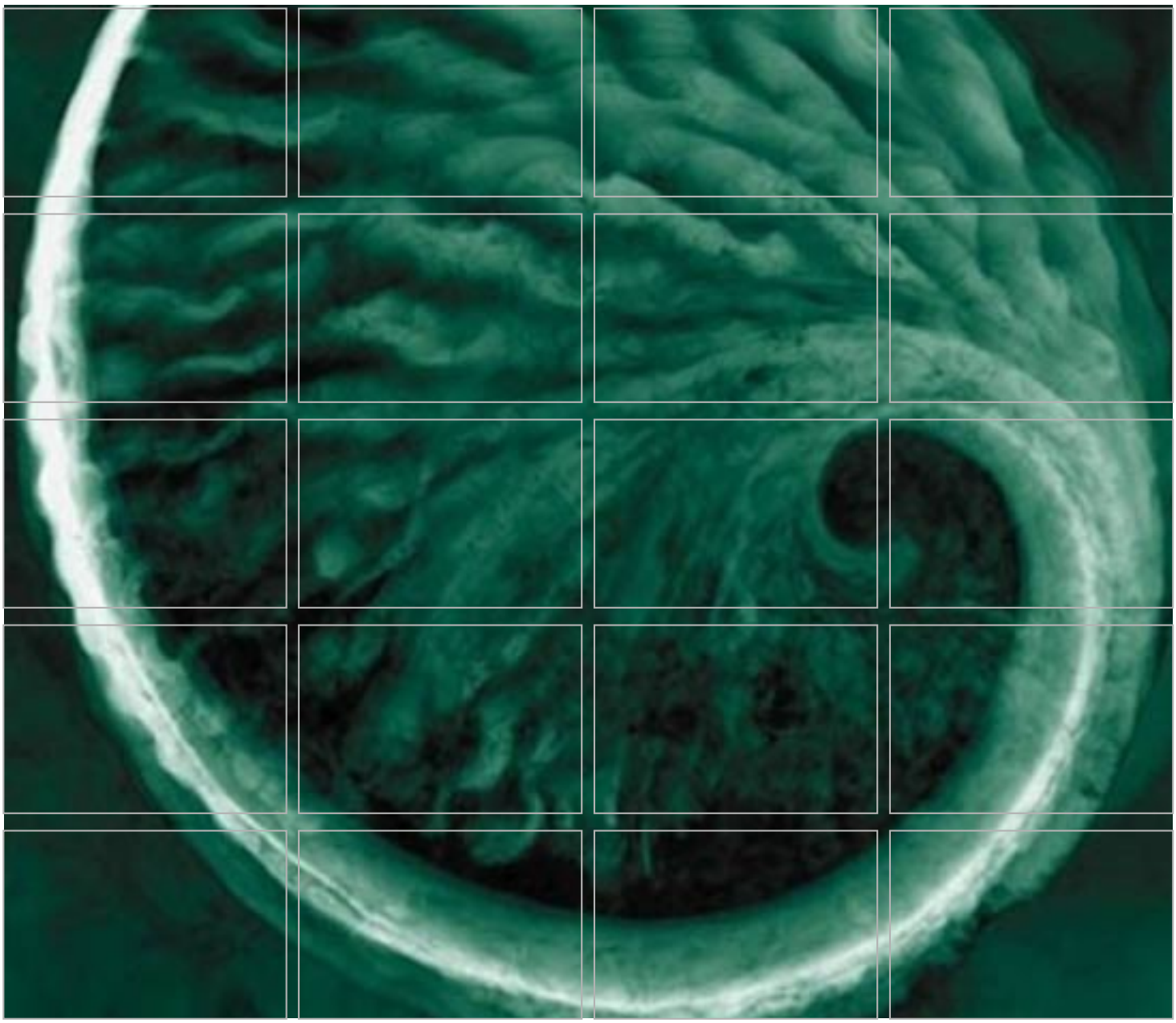

Registration Application for Coal Combustion Residuals (CCR) Waste Management

CPS Energy
Calaveras Power Station
San Antonio, Texas

January 2022

Volume 2 of 2

The business of sustainability

ERM

Attachment 10 Hazard Potential Classification

October 15, 2021

Subject: Hazard Potential Classification Assessment for Existing CCR Surface Impoundments 5-Year Update

Calaveras Power Station
San Antonio, Texas

To File:

The purpose of this memorandum is to document the hazard potential classification of the existing Coal Combustion Residual (CCR) surface impoundments at the CPS Energy Calaveras Power Station and to comply with Title 40, Code of Federal Regulations, Part 257 (40 CFR §257) [a.k.a the Coal Combustion Residual (CCR) Rule].

CPS Energy owns and operates the Calaveras Power Station, which is located in unincorporated Bexar County, Texas, approximately 13 miles southeast of San Antonio. Currently, CPS Energy operates the following two CCR surface impoundments at the Power Station:

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

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

- North Bottom Ash Pond (BAP)
- South BAP

The J.T. Deely Power Plant, located at the Calaveras Power Station, ceased operation at the end of December 2018 and sluiced bottom ash has not been received at the BAPs since that time.

All the surface impoundments are constructed as elevated diked structures. The SRH Pond, located adjacent to the Power Plants, receives CCR and non-CCR flows from various sources within the J.K. Spruce Plant and all flows are co-mingled in the SRH Pond. The SRH Pond shares a common embankment with the North and South BAPs. The EP, located approximately a mile north of the Power Plants, receives non-CCR flows (industrial wastestreams) that are trucked to the EP from the J.K. Spruce Plant and from other CPS Energy power generation facilities. While these flows are not considered CCR, the EP was originally constructed as a fly ash landfill in 1990, and then converted to a fly ash impoundment in 1996. The North and South BAPs share a common embankment that separates the BAPs and are immediately east and share an embankment with the SRH Pond. The BAPs have been dewatered and are currently undergoing closure.

40 CFR §257.73 requires that the owner and or operator of an existing CCR impoundment conduct an initial and periodic hazard potential classification assessment. The initial assessment must be performed prior to October 17, 2016 and performed again every five years thereafter. A hazard potential assessmentsummary for each impoundment is described in the remainder of this document. The assessment summaries are based on reports prepared for the USEPA by CDM Smith in June 2014, field observations, and annual inspection reports prepared in 2015 through 2020.

The SRH Pond has an approximate storage capacity of 28 acre-feet, which results in the embankments not qualifying as a dam according to the US Army Corps of Engineers (USACE) Guidelines for Safety Inspections of Dams (1979) (ERll0-2-106). The recommended Hazard Ranking was determined to be "Significant Hazard" due to possible failure damaging the power plant infrastructure, operations and utilities. As pointed out in the CDM Smith report, "loss of human life is not anticipated".

The North and South BAPs have an approximate storage capacity of 72 and 84 acre-feet respectively, which results in the embankments being classified as "small" dams according to the USACE Guidelines for Safety Inspections of Dams. The recommended Hazard Ranking was determined to be "Significant Hazard" due to possible failure damaging the power plant infrastructure, operations and utilities. As pointed out in the CDM Smith report, "loss of human life is not anticipated". Since the BAPs have been dewatered; however, that classification is no longer applicable.

The EP Pond has an approximate storage capacity of 99 acre-feet, which results in the embankments being classified as a "small" dam according to the USACE Guidelines for Safety Inspections of Dams. The recommended Hazard Ranking was determined to be "Low Hazard" due to low economic and/or environmental losses. The EP is located approximately one mile north of the Power Plants, therefore damage to the power plant infrastructure, operations and utilities is not anticipated. As pointed out in the CDM Smith report, "loss of human life is not anticipated".

Based on the review of CDM Smith reports, field observations, and annual inspection reports prepared in 2015 through 2020, CPS Energy designates the SRH Pond as a "Significant Hazard" and the EP as a "Low Hazard" with respect to their hazard potential classifications. Since the BAPs have been dewatered, and are not being operated as a surface impoundment/dam, a hazard potential classification is not applicable.

Michael M. Malone, P.E.
Sr. Manager, Environmental Management

Attachment 11 Emergency Action Plan

Prepared For:

CPS Energy

Emergency Action Plan

Bottom Ash Ponds and SRH Pond
Calaveras Power Station
San Antonio, Texas

Revised May 2017

Jeffery E. Bauguss, P.E.
Partner-in-Charge

Chris Cunningham, P.E.
Certifying Engineer

Wally Zverina
Project Manager

Environmental Resources Management
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024
www.erm.com

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1.0 INTRODUCTION

This Emergency Action Plan (EAP) has been prepared in accordance with the regulatory requirements of the federal rule for the Disposal of Coal Combustion Residuals (CCR) from Electric Utilities, in particular the requirements of 40 CFR §257.73(a)(3), and has been certified by a Professional Engineer (Appendix A). This EAP establishes the notification procedures for implementing emergency actions to be taken prior to and/or following a failure (if one were to occur) of the Bottom Ash Ponds (BAPs) and/or the Sludge Recycle Holding (SRH) Pond at the Calaveras Power Station located in San Antonio, Texas.

The EAP will address the following elements in accordance with 40 CFR §257.73(a)(3)(i):

1. Define the events or circumstances involving the CCR unit that represent a safety emergency, along with a description of the procedures that will be followed to detect a safety emergency in a timely manner;

2. Define responsible persons, their respective responsibilities, and notification procedures in the event of a safety emergency involving the CCR unit;

3. Provide contact information of emergency responders;

4. Include a map that delineates the downstream area that would be affected in the event of a CCR unit failure and a physical description of the CCR unit; and

5. Include provisions for an annual face-to-face meeting or exercise between representatives of the owner or operator of the CCR unit and the local emergency responders.

This EAP will be evaluated, at a minimum, every 5 years to verify that the information is accurate and updated. As necessary, this EAP must be updated and a revised EAP placed in the facility's operating record as required by 40 CFR §257.105(f)(6). In addition, this document must be uploaded to the established CCR website for this facility per the requirements in 40 CFR §257.107.

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 at the Power Station, specifically:

- North BAP - classified as significant hazard impoundment
- South BAP - classified as significant hazard impoundment
- SRH Pond - classified as significant hazard impoundment

2.1 BOTTOM ASH PONDS

The North and South BAPs contain sluiced CCR from the wet feed process at the J.T. Deely Plant. The BAPs were constructed by CPS Energy in 1977 as part of the original plant construction. The North BAP is approximately 6.1 acres in area, while the South BAP is approximately 6.8 acres. These BAPs are located east of the plants, adjacent to the SRH Pond.

The BAPs began receiving CCR before October 14, 2015 and currently receive CCR. Hence, in accordance with 40 CFR §257.53, the BAPs are classified as active existing CCR impoundments.

The BAPs share a common embankment that separates the ponds. The ponds are reportedly lined with clay, but the thickness and hydraulic conductivity of the clay are unknown. One 24-inch steel pipe in each pond allows water to be returned to the plant for reuse. Additionally, both ponds have two discharge points. The discharge points consist of an outlet structure with a horizontal 12-inch steel discharge pipe at an approximate elevation of 489 feet MSL (bottom drain used to empty the pond), and a vertical 12-inch steel overflow pipe at an approximate of elevation 499 feet MSL (normal operation level pool drain).

The outfall structure is in one corner of each pond (northeast for North BAP and southeast for South BAP) and is partially surrounded by steel sheet piling. The sheet piling and pond berms create an opening for water to reach the discharge pipes. This opening is typically protected by floating booms. Water from these outlets discharge to Calaveras Lake through a TPDES permitted outfall.

It is estimated that approximately 118 acre-feet is the maximum inventory of CCR to be on-site over the active life of the North and South BAPs. This estimate is based on a worst-case assumption of the BAPs being completely full of CCR up to the limits of the freeboard as allowed by the Inflow Flood Control Plan.

2.2 SRH POND

The SRH Pond contains CCR sludge from the air pollution control equipment from the plants. The SRH Pond includes a divider wall that can separate the pond into a north and south section. Each section is approximately 1.5 acres in area and is located east of the plants, adjacent to the BAPs.

The SRH Pond began receiving CCR before October 14, 2015 and is still in service. Hence, in accordance with 40 CFR §257.53, the SRH Pond is classified as an active existing CCR surface impoundment.

The interior slopes of the two sections of the SRH Pond are reportedly constructed with a 30-mil HDPE liner and a six-inch thick concrete slab. The SRH Pond is separated by a concrete divider wall with a sluice gate that allows the north and south sections to be isolated from each other. Water is pumped from the SRH Pond to clarifiers via two 18-inch steel pipes. Both sections have eight-foot-wide concrete overflow chutes that discharge to the South BAP. These overflow chutes are at an approximate elevation of 499.5 feet MSL.

It is estimated that approximately 7 acre-feet is the maximum inventory of CCR to be on-site at one time over the active life of each section of the SRH pond. This estimate is based on a worst-case assumption of the SRH Pond being completely full of CCR up to the limits of the freeboard as allowed by the Inflow Flood Control Plan.

3.0 EMERGENCY PROCEDURES

3.1 MONITORING

Monitoring is a proactive way to identify maintenance issues and serves as an early warning system for detection and prevention of Emergency Levels and Emergency Scenarios which are summarized in Sections 3.4 and 3.5.

Weekly visits to the BAPs and SRH Pond are made by qualified plant personnel. Inspection forms are filled out for each weekly inspection at each unit, and any required corrective actions are noted and scheduled. Corrective actions are inspected on subsequent weekly visits.

An annual visual engineering inspection of the BAPs and SRH Pond are conducted by a Professional Engineer. During this inspection, the Professional Engineer assesses structural stability indicators, indications of potential seepage through the embankment, vegetative conditions, and other items as necessary. If needed, the Professional Engineer also notes corrective actions to be taken.

3.2 DETECTION

Potential emergency levels, which are listed in Section 3.4, may be observed and reported by plant personnel during regular maintenance and/or inspections. Once notified, it is the Operations Shift Supervisor's responsibility to lead the response actions. If the Operations Shift Supervisor is not available to lead the response, then the next highest ranking on-site supervisor shall have that responsibility. Roles and responsibilities are further defined in Section 4.0 and notification procedures are outlined in the Notification Flowcharts provided in Appendix B.

3.3 EVALUATION

The Operations Shift Supervisor should be the first person notified of a potential problem at the BAPs or SRH Pond, and would be the first person on the scene. Upon arrival at the site, the Operations Shift Supervisor will assume responsibility for the condition, evaluate the potential emergency, determine the initial emergency level classification (Level 1, 2, or 3, as described in Section 3.4), and continue to evaluate the condition.

3.4 EMERGENCY LEVEL CLASSIFICATION

If any of the conditions described below in Sections 3.4.1, 3.4.2, or 3.4.3 are developing, appear imminent, or have occurred at either the BAPs or SRH Pond,

plant personnel shall implement the notification procedures immediately. Notification Flowcharts for the various levels are provided in Appendix B.

3.4.1 Level 1: Non-failure Emergency

Level 1 covers a non-failure scenario with no immediate threat to the integrity of the unit, such as the following:

- Water impounding behind either impoundment such that the water level from a precipitation event causes a rise in the level of 2 feet or more within 48 hours;
- Obstructions are present in any of the spillway structures;
- Sinkholes develop downstream with no water present;
- Structural damage to discharge structures;
- Visible and limited surficial slump of soils on face of embankment; depth of two feet or less; and/or
- Significant erosion on downstream face of the impoundment embankments.

3.4.2 Level 2: Potential Failure

Level 2 covers the scenario where a failure may occur, but corrective measures may prevent or mitigate failure, such as the following:

- Water is impounding behind either impoundment such that the water level is within 1 foot of the top of the crest of the impoundment;
- Seepage occurs through the embankment and/or foundation at observed flow rates that appear unusually high or not typical of base flow conditions;
- Unusual crack development in the embankment and/or foundation with minor seepage (wet spots on the surfaces) or controllable flow is observed;
- Water is observed in a sinkhole downstream but there is no visible turbidity in the water; and/or
- A previously unidentified seep or similar discharge is observed at the toe of the embankment with no significant turbidity.

3.4.3 Level 3: Imminent Failure (Emergency)

Level 3 covers the scenario where no time is available to attempt corrective measures and evacuation should be implemented immediately. Level 3 includes the following:

- Water level is at the top of the crest of the impoundment;
- Uncontrolled water flows through cracks in the intake tower, the embankment and/or the foundation, steadily increasing in size and volume;
- Water is observed in a sinkhole downstream where turbidity is noted in the water;
- A significant single or multiple slide/slumps are observed and are continuing to enlarge;
- Whirlpool is observed in the impounded water;
- A large slump or slide develops in the embankment, which threatens to release the impounded water;
- Embankment sections are displaced or separated; and/or
- A turbid or muddy discharge is observed at the toe of the embankment.

3.5 EMERGENCY SCENARIOS

Below are specific emergency scenarios for the BAPs and SRH Pond. Potential failure pathways described below for the BAPs and the SRH Pond are shown on Figures 2 and 3.

3.5.1 Bottom Ash Ponds

The BAPs are contained within elevated earthen and concrete berms. The ponds are entirely within the facility boundary, with no public access or property nearby. The maximum volume of water and CCR estimated to be on-site in any one pond is 118 acre-feet, or 5,140,000 cubic feet. The maximum height of the berms above the surrounding ground is approximately six feet.

A catastrophic failure mode creating the highest potential for damage would be shallow failure of one of the surrounding berms. While extremely unlikely given the calculated factor of safety, this would allow a sudden release of the contents in the direction of the berm failure. Even in the event of such a release, the

limited volume of water in the pond would not be capable of creating an instantaneous release of all water in the pond, but would likely result in a rapid slumping of the failed section of berm. This is anticipated to be slow enough to allow workers on or near the berm to escape to safety without being inundated.

A failure in any direction would result in water/CCR being discharged to a surrounding body of water:

- Release to the west - would be captured in the SRH Pond and a stormwater retention pond. Discharges to the SRH Pond would be equalized within the SRH Pond and the BAPs. Discharges to the retention pond would drain to Calaveras Lake.

- Release to the east - would be captured in Calaveras Lake. Discharges to the lake would be dissipated into the much larger volume of water present in the lake, with no noticeable impact on water elevations.

- Release to the south - would be captured in the adjacent BAP (if failure of the North BAP) or would be captured in the cooling water canal, part of Calaveras Lake (if failure of the South BAP). Discharges to the canal would be dissipated into the much larger volume of water present in the lake, with no noticeable impact on water elevations.

- Release to the north - would be captured in the adjacent BAP (if failure of the South BAP) or would be captured in Calaveras Lake (if failure of the North BAP). Discharges to the lake would be dissipated into the much larger volume of water present in the lake, with no noticeable impact on water elevations.

3.5.2 SRH Pond

The SRH Pond is contained within elevated earthen and concrete berms. The pond is entirely within the facility boundary, with no public access or property nearby. The maximum volume of water and CCR estimated to be on-site in any one pond is seven acre-feet, or 305,000 cubic feet. The maximum height of the berms above the surrounding ground is approximately six feet.

A catastrophic failure mode creating the highest potential for damage would be shallow failure of one of the surrounding berms. While extremely unlikely given the calculated factor of safety, this would allow a sudden release of the contents in the direction of the berm failure. Even in the event of such a release, the limited volume of water in the pond would not be capable of creating an instantaneous release of all water in the pond, but would likely result in a rapid

slumping of the failed section of berm. This is anticipated to be slow enough to allow workers on or near the berm to escape to safety without being inundated.

A failure in any direction would result in water/CCR being discharged to a surrounding body of water:

- Release to the west - presents the highest risk to property damage. All property to the west is privately owned by CPS Energy. The area of the plant to the west is much larger than the area of the SRH Pond and may lead to minor flooding of the plant in the immediate vicinity of the pond. Flooding is expected to be deeper in low-lying areas, but would drain south to Calaveras Lake. Discharges to the lake would be dissipated into the much larger volume of water present in the lake, with no noticeable impact on water elevations.

- Release to the east - would be captured in the BAPs. Discharges to the BAPs would be equalized within the SRH Pond and the BAPs. The BAPs have the capacity to contain the volume of the SRH Pond.

- Release to the south - would be captured in the cooling water canal, part of Calaveras Lake. Discharges to the canal would be dissipated into the much larger volume of water present in the lake, with no noticeable impact on water elevations.

- Release to the north – would be captured in a stormwater retention pond, but overfilling may be possible dependent upon the amount of freeboard in the retention pond at the time. Overtopping of the retention pond may lead to minor flooding of the facility in the immediate vicinity of the pond. Flooding is expected to be limited to low-lying areas, but would drain south to Calaveras Lake. Discharges to the lake would be dissipated into the much larger volume of water present in the lake, with no noticeable impact on water elevations.

4.0 GENERAL RESPONSIBILITIES

4.1 OPERATIONS SHIFT SUPERVISOR

Plant personnel will report unusual observations of the embankments, whether from intentional monitoring or casual observations to the Operations Shift Supervisor. The Operations Shift Supervisor shall coordinate emergency response action in the event of an emergency. The Operations Shift Supervisor shall take responsibility to make appropriate notifications, and to request assistance as specified in the Notification Flowcharts in Appendix B. The Operations Shift Supervisor may delegate responsibility as appropriate. If the Operations Shift Supervisor is not available or able to lead the response, then the next highest ranking on-site supervisor shall have that responsibility.

The Operations Shift Supervisor shall:

1. Assume responsibility for the condition, determine the initial Emergency Level classification (Level 1, 2, or 3), and continue to evaluate the condition;

2. Provide for surveillance of the BAPs and SRH Ponds;

3. Initiate and maintain contact with local emergency responders according to the Notification Flowcharts provided in Appendix B, as appropriate;

4. Document and maintain logs recording all activations of the EAP;

5. Initiate and direct corrective actions in consultation with an engineering/ geotechnical firm and/or Professional Engineers;

6. Supervise and coordinate plant personnel and contractors during the response activities; and

7. Terminate, when appropriate, emergency status at the BAPs or SRH Ponds.

4.2 EAP COORDINATOR

The EAP Coordinator shall:

1. Maintain the most recent version of the EAP on the publicly accessible internet CCR website and retain it for at least 5 years;

2. Maintain the EAP in the facility's operating record;

3. Review and update the EAP as necessary, and at a minimum of every five (5) years;

4. Make appropriate notifications as required;

5. Conduct an annual face-to-face meeting between plant personnel and local emergency responders;

6. Document and maintain logs recording all activations of the EAP;

7. Coordinate a follow-up evaluation of emergency response activities following any emergency at any impoundment; and

8. Serve as the EAP contact person.

5.0 UPDATING THE EAP

The EAP shall be reviewed and updated by the CPS Energy and all affected parties when significant changes to the facility occur, emergency contacts/reporting procedures change or a minimum of once every five (5) years. When updating the EAP, check all contact names and phone numbers for verification. If there are significant changes to the EAP, such as major modifications to the embankments, the EAP should be updated as soon as possible.

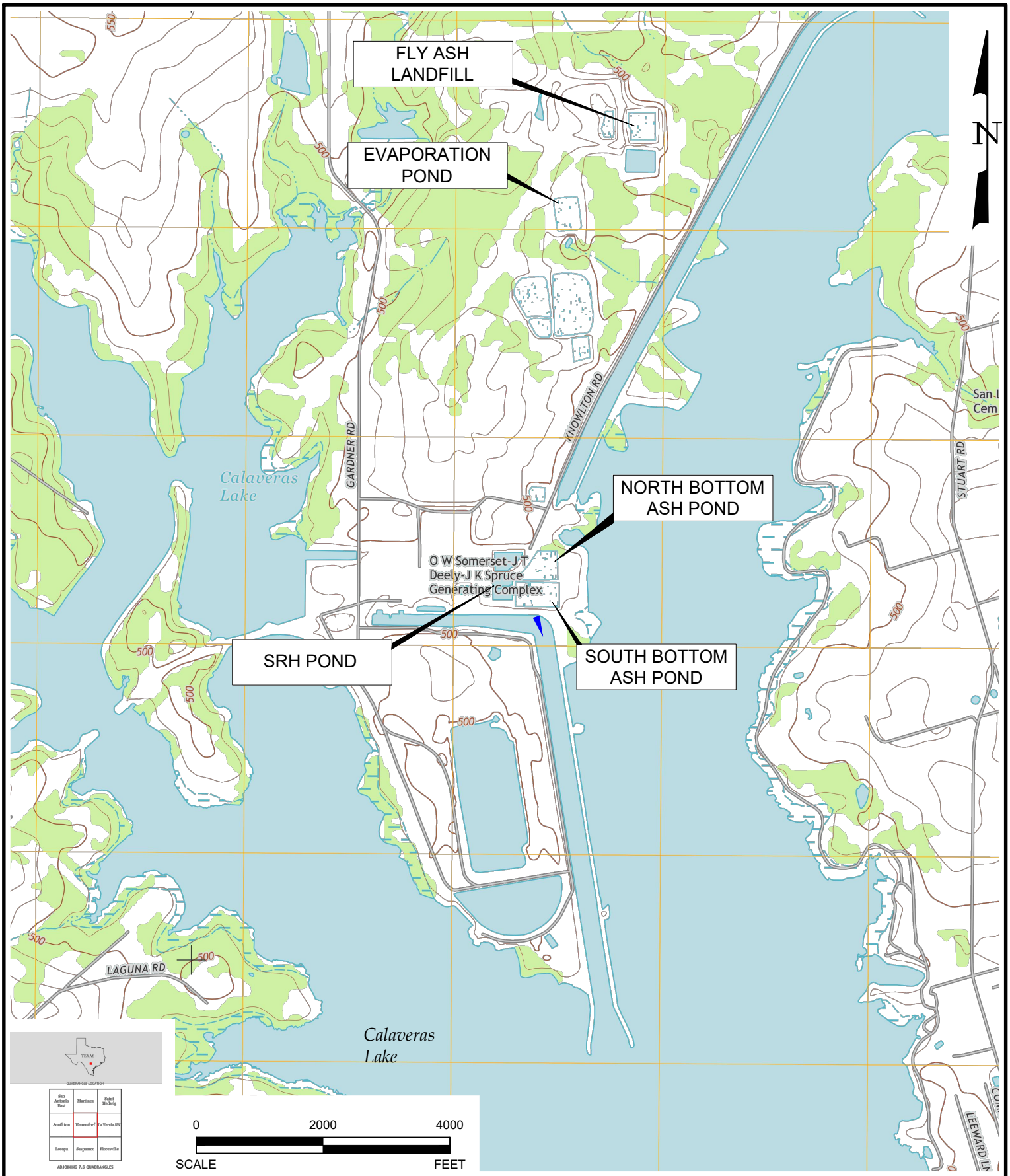
6.0 ANNUAL FACE-TO-FACE MEETING

An annual face-to-face meeting will be held with local emergency responders per 40 CFR §257.73 (a)(3)(i)(E). The meeting will cover:

- General information about the CCR impoundments;
- Roles and responsibilities the emergency responders would have in assisting the facility in an emergency; and
- Potential risks these CCR impoundments pose as well as preventative measures plant personnel are taking to avoid these potential issues.

The meeting will be held regardless of whether one of the emergency levels has occurred. If an incident defined by one of these emergency levels occurs, then the annual meeting date may be moved to discuss the incident soon after it occurs. Documentation of the annual face-to-face meeting shall be maintained in the facility's operating record.

Figures



Environmental Resources Management

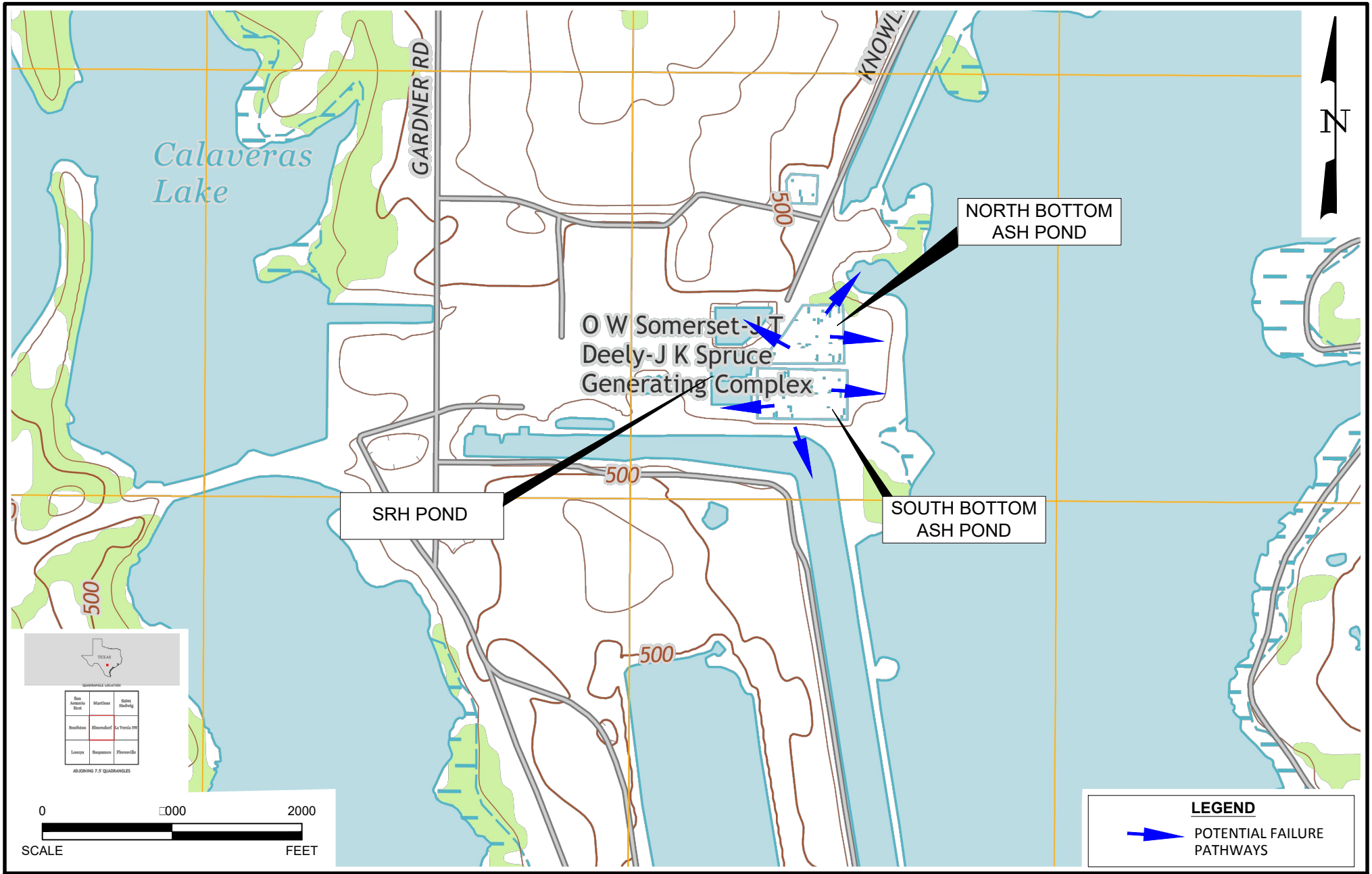
DESIGN: CC	DRAWN: RLM	CHKD.: CC
DATE: 4/20/2017	SCALE: AS SHOWN	REV.:
W.O. NO.:		

FIGURE □
CCR UNIT LOCATIONS
Calaveras Power Station
CPS Energy
San Antonio, Texas

ERM

ERM-Southwest, Inc. TX PE Firm No. 2393

P:\Projects\0352436 CPS Energy Calaveras CCR Engineering.WZ\CAD\0352436A03 FIG1.dwg, 4/20/2017 11:30:16 AM



Environmental Resources Management

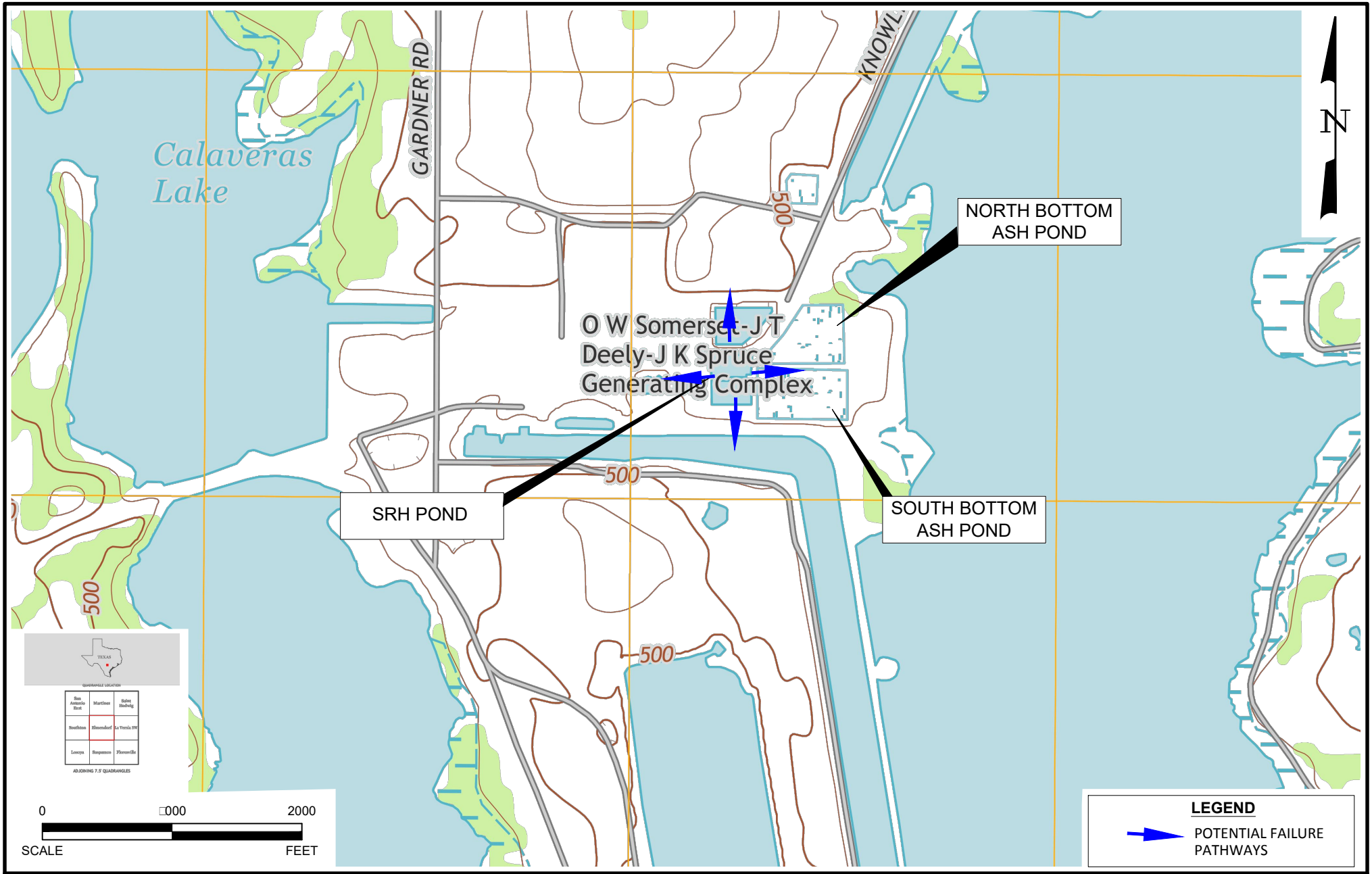
DESIGN: C.C	DRAWN: RLM	CHKD.: C.C
DATE: 4/20/2017	SCALE: AS SHOWN	REV.:
W.O. NO.:		

FIGURE 2
POTENTIAL FAILURE PATHWAYS - BOTTOM ASH PONDS
Calaveras Power Station
CPS Energy
San Antonio, Texas

ERM

ERM-Southwest, Inc. TX PE Firm No. 2393

P:\Projects\0352436 CPS Energy Calaveras CCR Engineering.WZ\CAD\0352436A01 FIG2.dwg, 4/20/2017 11:31:20 AM



Environmental Resources Management

DESIGN: C.C	DRAWN: RLM	CHKD.: C.C
DATE: 4/20/2017	SCALE: AS SHOWN	REV.:
W.O. NO.:		

FIGURE 3
POTENTIAL FAILURE PATHWAYS - SRH POND
Calaveras Power Station
CPS Energy
San Antonio, Texas

ERM

ERM-Southwest, Inc. TX PE Firm No. 2393

P:\Projects\0352436 CPS Energy Calaveras CCR Engineering.WZ\CAD\0352436A01 FIG3.dwg, 4/20/2017 11:27:46 AM

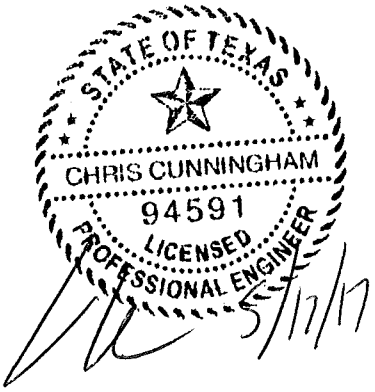
Appendix A
Professional Engineer Certification

PROFESSIONAL ENGINEER CERTIFICATION

I hereby certify that I, or an agent under my review, has prepared this Emergency Action Plan (EAP), and am familiar with the provisions of the final rule to regulate the disposal of coal combustion residuals (CCR). I attest that this EAP has been prepared in accordance with good engineering practices and meets the intent of 40 CFR §257.73. To the best of my knowledge, the information contained in this EAP is true, complete, and accurate.

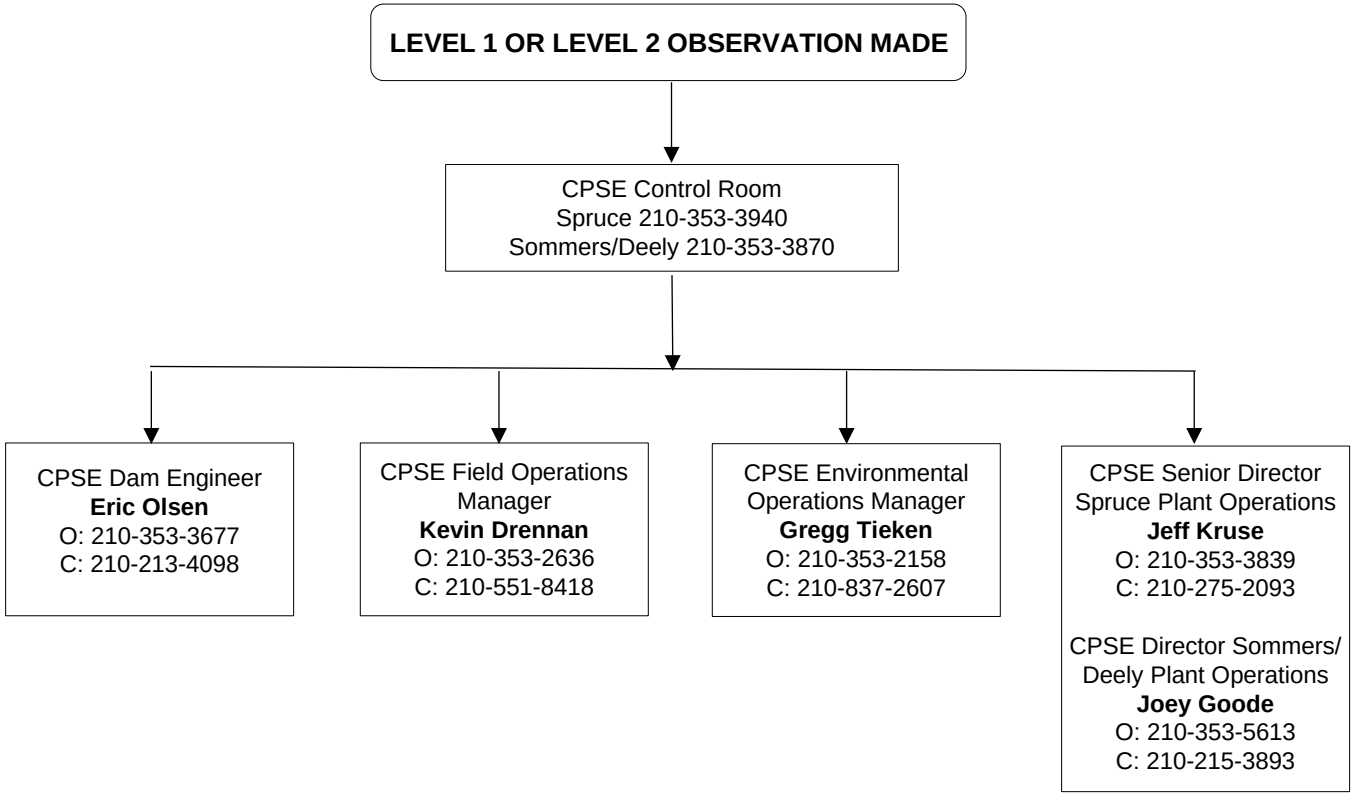
Chris Cunningham, P.E.
State of Texas License

Date: 5/17/17

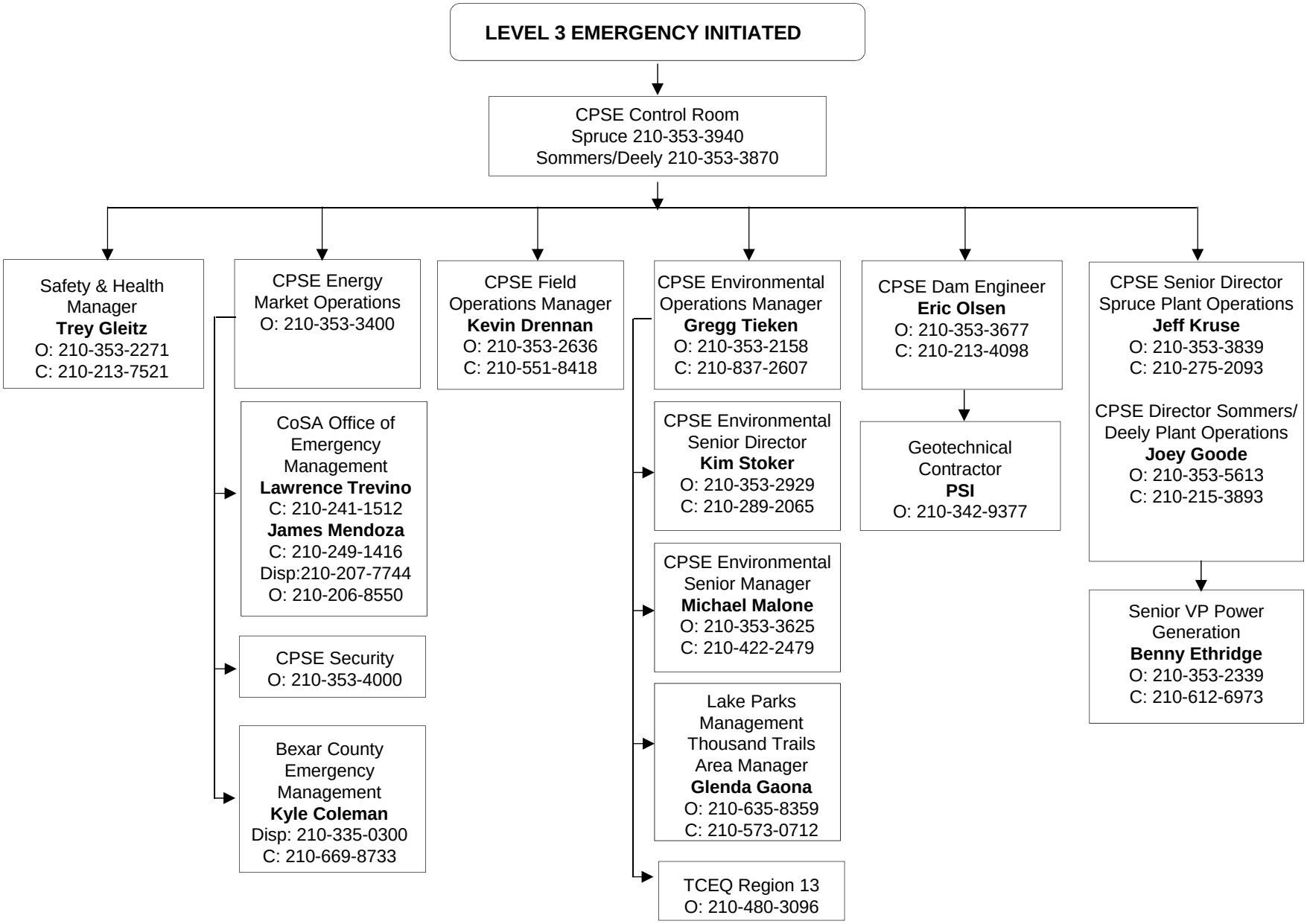


Appendix B
Notification Flowcharts

B-1 NOTIFICATION FLOWCHART



B-2 NOTIFICATION FLOWCHART



Attachment 12 Inflow Design Flood Control System Plan

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

27 October 2021

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

Project No: 0352436

Subject: Inflow Design Flood Control Plan – 5-Year Update
Calaveras Power Station
San Antonio, Texas

Dear Mr. Malone:

Environmental Resources Management Southwest, Inc. (ERM) is pleased to provide this Inflow Design Flood Control System Plan (IDFCSP) for the Calaveras Power Station to assist CPS Energy in complying with Title 40, Code of Federal Regulations, Part 257 (40 CFR §257) [aka. the Coal Combustion Residual (CCR) Rule]. This IDFCSP is the 5-year update required under 40 CFR §257.82 Hydrologic and Hydraulic Capacity Requirements for CCR Surface Impoundments.

CPS Energy owns and operates the Calaveras Power Station, which is located in unincorporated Bexar County, Texas, approximately 13 miles southeast of San Antonio. Currently, CPS Energy operates the following two CCR surface impoundments at the Power Station:

- 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 Plant, located at the Calaveras Power Station, ceased operation at the end of December 2018 and sluiced bottom ash has not been received at the BAPs since that time.

All the surface impoundments are constructed as elevated diked structures. The SRH Pond, located adjacent to the Power Plants, receives CCR and non-CCR flows from various sources within the J.K. Spruce Plant and all flows are co-mingled in the SRH Pond. The SRH Pond shares a common embankment with the North and South BAPs. The EP, located approximately a mile north of the Power Plants, currently receives non-CCR flows (industrial wastestreams) that are trucked to the EP from the J.K. Spruce Plant and from other CPS Energy power

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

generation facilities. While these flows are not considered CCR, the EP was originally constructed as a fly ash landfill in 1990, and then converted to a fly ash impoundment in 1996.

The North and South BAPs share a common embankment that separates the BAPs, and are immediately east and share an embankment with the SRH Pond. The BAPs have been dewatered and are currently undergoing closure.

40 CFR §257.82(a)(3) requires that CCR surface impoundments with a low hazard potential be designed for a 1-percent annual chance of exceedance flood (average return frequency of no less than once in 100 years) and that CCR surface impoundments with a significant hazard potential be designed for the 0.1-percent annual chance of exceedance flood (average return frequency of no less than once in 1,000 years). The EP is classified as a low hazard impoundment and the SRH Pond is classified as a significant hazard impoundment due to possible failure damaging the power plant infrastructure, operations and utilities. The BAPs were classified as significant hazard impoundments due to possible failure damaging the power plant infrastructure, operations and utilities; however, since the BAPs have been dewatered, that classification is not applicable.

Because the surface impoundments are elevated diked structures, the drainage area for the units is limited to the area that receives direct rainfall within the interior footprint of the units. Storm water that falls into a portion of the Power Station; however, is also pumped into the SRH Pond. The 100-year, 24-hour design storm rainfall for the area is approximately 11.4 inches, according to the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 11: Precipitation-Frequency Atlas of the United States and obtained from the Precipitation Frequency Data Server (PFDS). The estimated 1,000-year, 24-hour storm event for the area is approximately 19.3 inches.

The inflow design flood control system for any significant hazard impoundment includes maintaining a minimum 24-inch freeboard during dry weather. This is the standard operating condition for the SRH Pond. In the event of a major rain event, plant personnel will monitor water levels in the SRH Pond. If freeboard is reduced to 20 inches, storm water pumps feeding the SRH Pond from other portions of the Power Station will be shut down. This remaining freeboard will be sufficient to handle excess storm water from the 1,000-year storm rainfall. Note that the design rainfall for the 1,000-year, 24-hour storm is 19.3 inches. The above procedure presumes that a rainfall event is already partially complete by the time the freeboard reaches 19.3 inches (the total rainfall for a 1,000-year, 24-hour event), therefore the 20-inch freeboard threshold for pump shutdown is conservative.

Note 1: The SRH Pond had two concrete overflow spillways that discharged to the South BAP. Since the BAPs are undergoing closure, these spillways have been filled with road base/caliche as of the 2019 annual inspection.

The low hazard EP does not have alternative locations for discharge. It will be required to maintain a minimum 12-inch freeboard during dry weather, sufficient to handle excess storm water from the 100-year storm.

Based on our evaluation of the available information for these operating surface impoundments, this IDFCSP meets the requirements of 40 CFR §257.82(c).

Sincerely,

Environmental Resources Management Southwest, Inc.

Charles Johnson, P.E.

Attachment 13 Compilation of Construction History

Environmental Resources Management

CityCentre Four
840 W. Sam Houston Pkwy N.
Suite 600
Houston, Texas 77024
(281) 600-1000
(281) 600-1001 (Fax)

October 17, 2016

Mr. Michael Malone
CPS Energy
145 Navarro Street, Mail Drop 100406
San Antonio, Texas 78296

Project No. 0352436

Subject: Compilation of Construction History
Calaveras Power Station
San Antonio, Texas

Dear Mr. Malone:

Environmental Resources Management Southwest, Inc. (ERM) is pleased to provide this Compilation of Construction History for the Calaveras Power Station, to assist CPS Energy in complying with Title 40, Code of Federal Regulations, Part 257 (40 CFR §257), Subpart D Coal Combustion Residual (CCR) Rules. Currently, CPS Energy operates six CCR units at the Calaveras Power Station which are subject to the CCR Rule.

40 CFR §257.73(c)(1) requires that the owner or operator of the CCR unit must compile a history of construction, which shall contain, to the extent feasible, the information specified below:

(i) The name and address of the person(s) owning or operating the CCR unit; the name associated with the CCR unit; and the identification number of the CCR unit if one has been assigned by the state.

(ii) The location of the CCR unit identified on the most recent U.S. Geological Survey (USGS) 7.5 minute or 15 minute topographic quadrangle map, or a topographic map of equivalent scale if a USGS map is not available.

(iii) A statement of the purpose for which the CCR unit is being used.

(iv) The name and size in acres of the watershed within which the CCR unit is located.

(v) A description of the physical and engineering properties of the foundation and abutment materials on which the CCR unit is constructed.

(vi) A statement of the type, size, range, and physical and engineering properties of the materials used in constructing each zone or stage of the CCR unit; the method of site preparation and construction of each zone of the CCR unit; and the approximate dates of construction of each successive stage of construction of the CCR unit.

(vii) At a scale that details engineering structures and appurtenances relevant to the design, construction, operation, and maintenance of the CCR unit, detailed dimensional drawings of the CCR unit, including a plan view and cross sections of the length and width of the CCR unit, showing all zones, foundation improvements, drainage provisions, spillways, diversion ditches, outlets, instrument locations, and slope protection, in addition to the normal operating pool surface elevation and the maximum pool surface elevation following peak discharge from the inflow design flood, the expected maximum depth of CCR within the CCR surface impoundment, and any identifiable natural or manmade features that could adversely affect operation of the CCR unit due to malfunction or mis-operation.

(viii) A description of the type, purpose, and location of existing instrumentation.

(ix) Area-capacity curves for the CCR unit.

(x) A description of each spillway and diversion design features and capacities and calculations used in their determination.

(xi) The construction specifications and provisions for surveillance, maintenance, and repair of the CCR unit.

(xii) Any record or knowledge of structural instability of the CCR unit.

The CCR units listed in Table 1 are shared by the J.T. Deely and J.K. Spruce Power Plants, which are co-located at 12940 U.S. Highway 181 South in San Antonio, Texas. Figure 1 depicts the location of the Calaveras Power Station and the applicable CCR units on the most recent U.S. Geological Survey (USGS) 7.5 minute topographic quadrangle map. Locally, the Calaveras Power Station is located within the drainage of Calaveras Lake. Regionally, it is located within the San Antonio River watershed which drains over 4,194 square miles (approximately 2,684,000 acres)[1]

As required by the CCR Rule, all CCR units are inspected annually by a Texas Licensed Professional Engineer and each unit is observed for potential stability or operational issues. There is no reported historical evidence or current structural instabilities of any CCR unit described below.

To the extent feasible, the construction history of these CCR units is provided in the following sections. Pertinent drawings reviewed during the preparation of this compilation are provided in Attachment 1. Dam safety assessment reports for the J.T. Deely and J.K. Spruce Power Plants are provided in Attachments 2 and 3, respectively.

[1] San Antonio River Authority (www.sara-tx.org).

TABLE 1: Calaveras Power Station CCR Unit Descriptions

Unit Name	Unit ID	Purpose of Unit
Sludge Recycle Holding (SRH) Ponds (North and South)	026	Receives flue gas desulphurization scrubber sludge.
North Bottom Ash Pond (North BAP)	005	Receives sluiced bottom ash.
South Bottom Ash Pond (South BAP)	006	Receives sluiced bottom ash.
Evaporation Pond	021	Receives boiler chemical cleaning waste and other authorized liquid wastes.
Fly Ash Landfill	010	Receives fly ash, bottom ash, economizer ash, scrubber sludge from flue gas desulphurization ponds, and flue gas desulphurization gypsum (temporary storage).

SLUDGE RECYCLE HOLDING PONDS

The SRH Ponds contain CCR sludge from the air pollution control equipment from both plants. The SRH Ponds were constructed as a single impoundment with a divider wall that separates the impoundment into the North and South SRH Ponds. A gate present in the divider wall is closed during normal operating procedures, but can be opened. Each pond is approximately 1.5 acres in area and is located east of the plants, adjacent to the BAPs.

The SRH Ponds began receiving CCR before October 14, 2015 and are still in service. Hence, in accordance with 40 CFR §257.53, the SRH Ponds are classified as an active existing CCR surface impoundment.

The interior slopes of the SRH Ponds are reportedly constructed with a 10-oz. Geotextile and a 30-mil High Density Polyethylene (HDPE) geomembrane over prepared subgrade. The North SRH Pond bottom liner consists of a six-inch layer of 4,000 psi concrete over one-foot of compacted sand overlying a 30-mil HDPE geomembrane. The South SRH Pond bottom liner also has a six-inch layer of 4,000 psi concrete. Under the concrete is one-foot of compacted fill overlaying a 10-oz. Geotextile, a 30-mil HDPE geomembrane and another 10-oz. Geotextile. The SRH Ponds are separated by a concrete divider wall with a sluice gate that allows the North SRH Pond and South SRH Pond to be isolated from each other. Water is pumped from the SRH Ponds to clarifiers via two 18-inch steel pipes. Both SRH Ponds have eight-foot-wide concrete overflow chutes that discharge to the South BAP. These overflow chutes are at an approximate elevation of 499.5 feet MSL.

The estimated maximum inventory of CCR to be on-site in the SRH ponds at a given time is approximately 7 acre-feet. This estimate is based on a worst-case assumption of both SRH Ponds being completely full of CCR up to the limits of the freeboard as allowed by the Inflow Flood Control Plan.

There is no instrumentation present in the SRH Ponds.

BOTTOM ASH PONDS

The North and South BAPs contain sluiced CCR from the wet feed process at the J.T. Deely Plant. The BAPs were constructed by CPS Energy in 1977 as part of the original plant construction. The North BAP is approximately 6.1 acres in area, while the South BAP is approximately 6.8 acres. They are located east of the plants, adjacent to the SRH Ponds.

The BAPs began receiving CCR before October 14, 2015 and currently receive CCR. Hence, in accordance with 40 CFR §257.53, the BAPs are classified as active existing CCR surface impoundments.

The BAPs share a common embankment that separates the ponds. The ponds are reportedly lined with clay, but the thickness and hydraulic conductivity of the clay are unknown. One 24-inch steel pipe in each pond allows water to be returned to the plant for reuse. Additionally, both ponds have two discharge points. The discharge points consist of an outlet structure with a horizontal 12-inch steel discharge pipe at an approximate elevation of 489 feet MSL (bottom drain used to empty the pond), and a vertical 12-inch steel overflow pipe at an approximate of elevation 499 feet MSL (normal operation level pool drain).

The outfall structure is in one corner of each pond (northeast for North BAP and southeast for South BAP) and is partially surrounded by steel sheet piling. The sheet piling and pond berms create an opening for water to reach the discharge pipes. This opening is typically protected by floating sorbent booms. Water from these outlets discharge to Calaveras Lake through a TPDES permitted outfall.

It is estimated that approximately 118 acre-feet is the maximum inventory of CCR to be on-site over the active life of the North and South BAPs. This estimate is based on a worst-case assumption of the BAPs being completely full of CCR up to the limits of the freeboard as allowed by the Inflow Flood Control Plan.

There is no instrumentation present in the BAPs.

EVAPORATION POND

The EP is located generally northeast of the plants. The EP side and bottom liner consist of a one-foot layer of cohesive soil overlying a 30-mil Polyvinylchloride geomembrane and an additional one-foot of cohesive soil when constructed as a landfill in 1990. The subgrade consists of two-feet of soil, with all large rock removed, and compacted to 50% density. The EP was converted to a fly ash impoundment in 1996.

The EP is a surface impoundment that was constructed and received CCR before October 14, 2015. In addition, the EP currently receives CCR. Hence, in accordance with 40 CFR §257.53, the EP is classified as an active existing CCR surface impoundment.

The EP receives ash washdown water from washing of the air pollution control system and other miscellaneous CCR washdown sources. That waste contains CCR as defined in 40 CFR §257.52.

There are no inlet or outlet structures to the EP. Liquid from ash washdown, boiler chemical cleanouts, and other authorized liquid wastes is trucked to the pond, where it is allowed to evaporate.

It is estimated that approximately 83 acre-feet is the maximum inventory of CCR to be on-site over the active life of the EP. This estimate is based on a worst-case assumption of the EP being completely full of CCR up to the limits of the freeboard as allowed by the Inflow Flood Control Plan.

There is no instrumentation present in the EP.

FLY ASH LANDFILL

The Fly Ash Landfill (FAL) is a Class 2 landfill constructed by CPS Energy in 1992 to increase the on-site disposal storage capacity of CCR wastes, prior to construction of the J.K. Spruce Plant. The FAL is located generally northeast of the plants.

The FAL was constructed and received CCR before October 14, 2015. In addition, the FAL currently receives CCR wastes consisting of bottom ash, fly ash, scrubber solids, coal dust, gypsum, fly ash dust bags, and ion exchange resin waste generated by plant operations. Those wastes contain CCR as defined in 40 CFR §257.52. Hence, in accordance with 40 CFR §257.53, the FAL is classified as an active existing CCR landfill.

The FAL has an approximate total area of 23 acres. According to as-built drawings provided by CPS Energy, the bottom of the landfill is lined with a 30-mil High Density Polyethylene (HDPE) with a geotextile cushion and sand drainage layer. In 2010, repairs were made to portions of the liner on the north and west side embankments to prevent deterioration of the slopes. A geocomposite drainage net covered by two feet of coarse CCR provides the drainage layer over the liner on the interior embankments of the landfill.

It is estimated that approximately 550 acre-feet is the maximum inventory of CCR to be on-site over the active life of the FAL. This estimate is based on a worst-case assumption of the FAL being completely full of CCR up to the limits of the freeboard as allowed by the Run-on/Run-off Control Plan.

There is no instrumentation present in the FAL.

Based on our evaluation of the available information for the CCR units at the Calaveras Power Station, to the extent feasible, this Compilation of Construction History meets the requirements of 40 CFR §257.73(c)(1).

Sincerely,

Environmental Resources Management

Walter Zverina

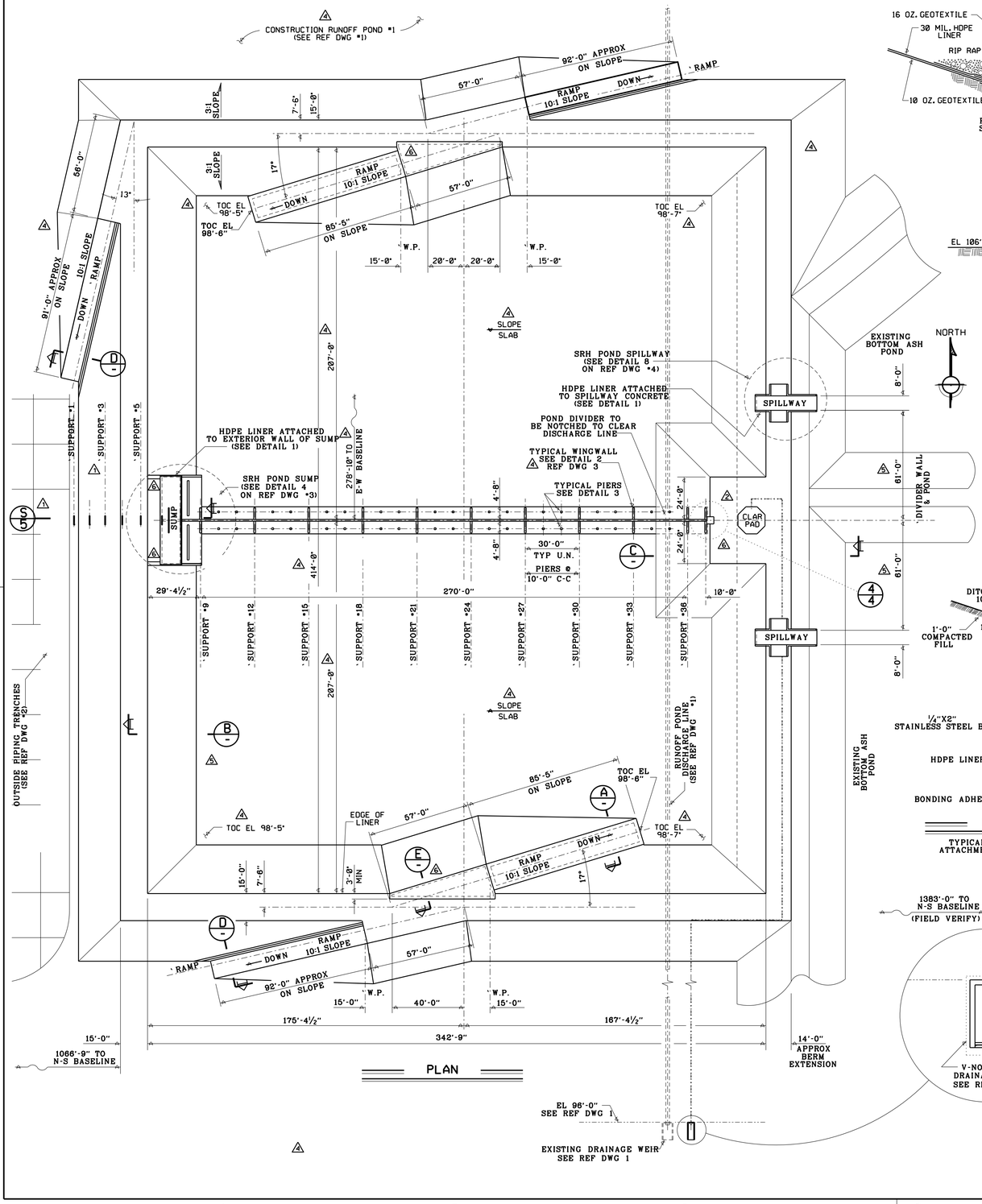
Walter Zverina
Project Manager

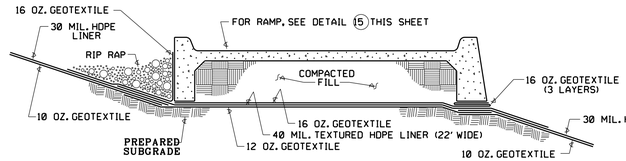
Drawings Reviewed During Preparation

Attachment 1

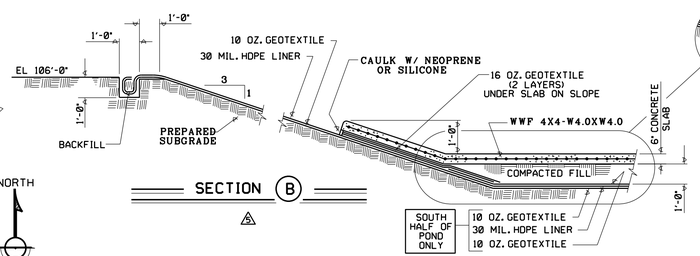
October 2016
CPS Energy

Environmental Resources Management
CityCentre Four
840 W. Sam Houston Pkwy. N. – Suite 600
Houston, Texas 77024
(281) 600-1000

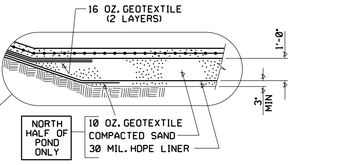


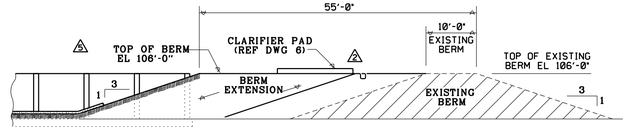


SECTION (A)

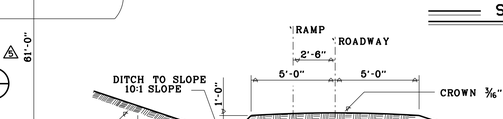


SECTION (B)





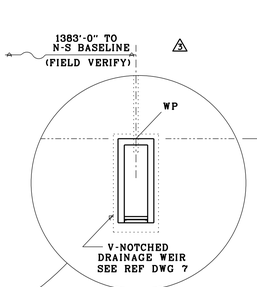
SECTION (C)

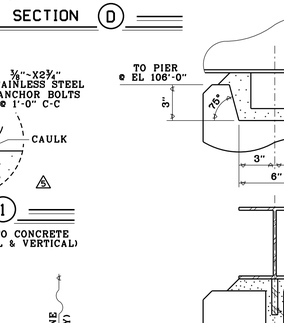


SECTION (D)

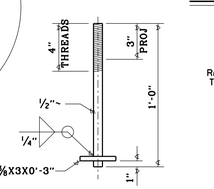
DETAIL (1)

TYPICAL HDPE LINER TO CONCRETE ATTACHMENT (HORIZONTAL & VERTICAL)

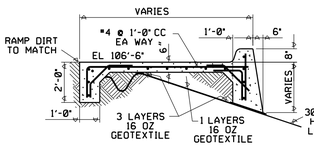




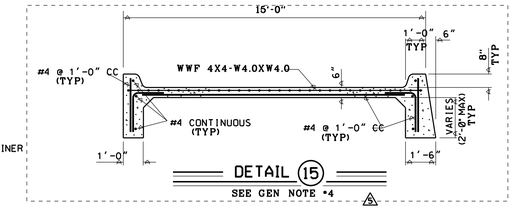
KEYWAY DETAIL



AB-1

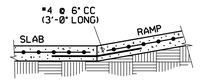


SECTION (E)



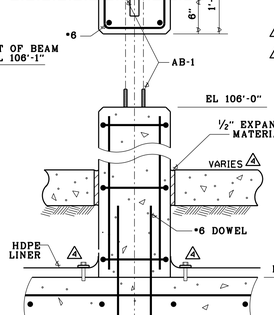
DETAIL (15)

SEE GEN NOTE *4



DETAIL (16)

RAMP TIE TO SLAB



DETAIL (3)

TYP PIER

GENERAL NOTES

1. 6" BOTTOM MAT & CONCRETE RAMPS TO HAVE CONSTRUCTION JOINTS ON 30' CENTERS TO BE LOCATED BY CONTRACTOR.
2. CONCRETE TO BE 4000 PSI (CLASS 1S)
3. REINFORCING BAR TO BE GRADE 60.
4. RAMPS TO BE CONSTRUCTED WITH CONCRETE ON INSIDE OF POND ONLY. RAMPS ON EXTERIOR OF POND SHALL BE 10'-0" WIDE COMPACTED FILL.

REFERENCE DRAWINGS

1. CONSTRUCTION RUNOFF PONDS D-CL05-155-S001
2. OUTSIDE PIPING TRENCHES D-CL05-111-S011 SH 1
3. SRH POND SUMP - SECT & DET D-CL05-464-S002
4. SRH POND SPILLWAY - SECT & DET D-CL05-464-S003
5. SRH POND - PIPE SUPPORTS & WALKWAY D-CL05-464-S004
6. SRH POND CLARIFIER FOUNDATION D-CL05-464-S006
7. V-NOTCHED DRAINAGE WEIR D-CL05-111-S023

AS CONSTRUCTED

NO	REVISIONS	DATE	BY	CHK	DSNR	APPR
6	EXTENDED RAMPS @ PLAN & ADD'D SECT "E" AS PER FM 92-730. ADD'D WING WALLS @ SRH POND SUMP & REV'D EAST END OF PIPE RACK AS PER FM 92-724.	1020/92				
5	REV'D SECTIONS A, B, & C AND DETAIL 1 ADDED DETAILS 15 & 16 (FM 92-438)	0715/92	RMJ	RDR	JAK	DM
	REV'D SPILLWAY DIMENSIONS (FM 92-368)					
4	REV'D PLAN, SECT B, & DET 3 AS NOTED, MOVED DET 2, SECTS E & F TO REF DWG 3.	0116/92	DD	RDR	JAK	DM
3	ADDED V-NOTCHED DRAINAGE WEIR ADDED REF DWG 7 & MOVED SECT E	1107/91	RMJ	RDR	JAK	DM
2	REM'D HOLD ON CLARIFIER PAD @ PLAN, ADD'D REF DWG 6 & REV'D SECT C AS NOTED	09-24-91	DD	RDR	JAK	DM
1	CUT SECTION S ON WEST BERM	06-11-91	TDC	DLR	JAK	DM
0	ISSUED FOR CONSTRUCTION					

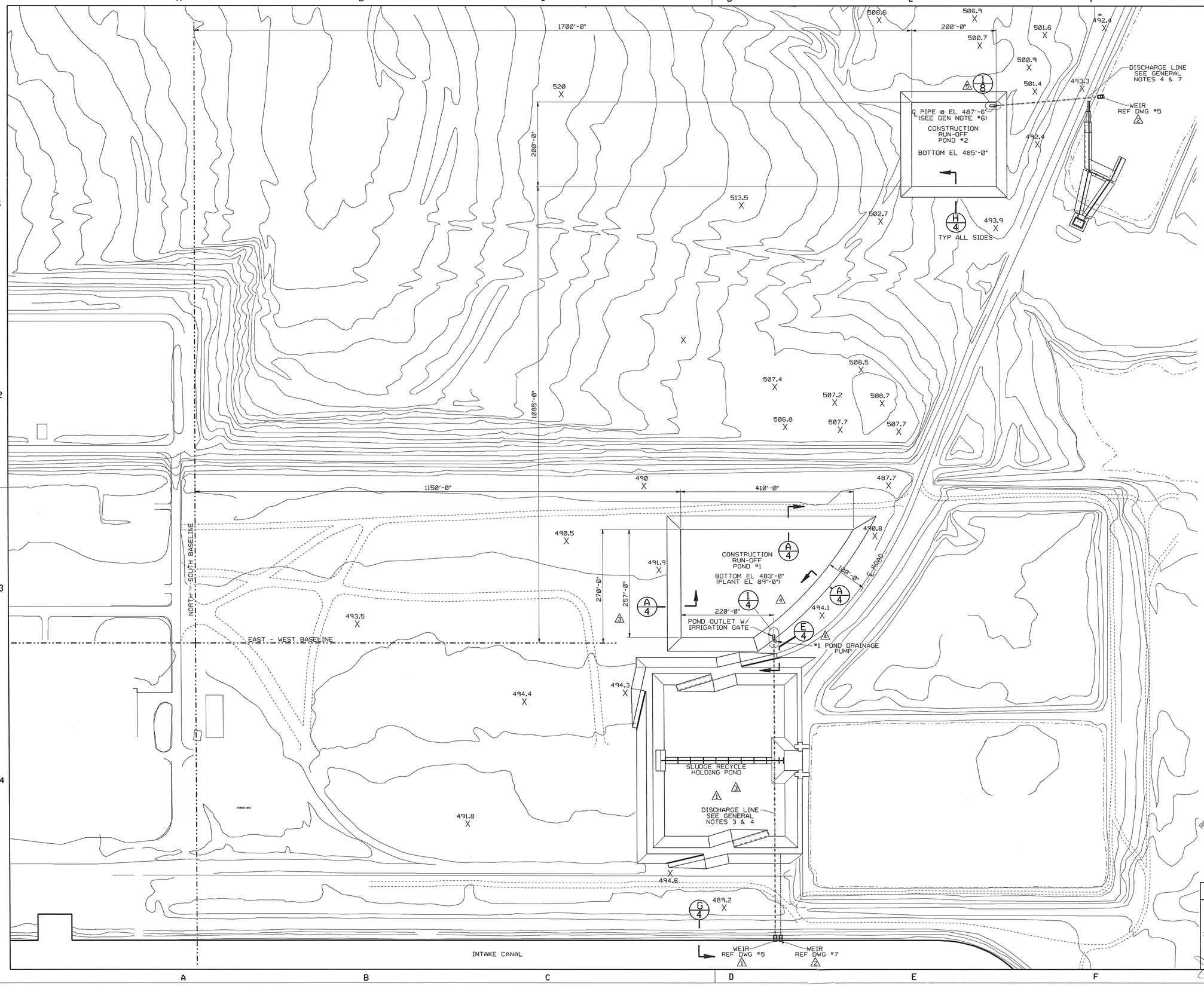
CITY PUBLIC SERVICE
J. K. SPRUCE UNIT 1

UTILITY ENGINEERING CORPORATION
COMBUSTION ENGINEERING, INC. — H.B.ZACHRY COMPANY

SLUDGE HANDLING SYSTEM
SLUDGE RECYCLE HOLDING POND

DWN	CHKD	CHKD	CONTROLS	ELECTRICAL	MECHANICAL	STRUCTURAL
T. CAIN	J. KEAHEY	R. RICHERSON				
APPR						
D. MITCHELL						

CADD DRAWING NO. D-CL05-464-S001 SHEET 6 REV



GENERAL NOTES

1. AREAS TO THE NORTH AND EAST SIDES OF THE CONSTRUCTION RUN-OFF POND #1 SHALL BE SLOPED TO DRAIN FREELY INTO THE POND. RIDGES OR RISES WHICH IMPEDE SURFACE WATER FLOW SHALL BE BLADED SMOOTH.
2. FOR DITCHES DRAINING INTO THE CONSTRUCTION RUN-OFF POND, SEE UEC DWG D-CL05-006-S007.
3. DISCHARGE LINE TO BE SCHEDULE 40 BELL & SPIGOT PVC PIPE, 24" DIAMETER.
4. DISCHARGE PIPE SHALL BE SET ON A CONSTANT SLOPE BETWEEN INTAKE AT THE POND AND DISCHARGE AT THE CANAL.
5. FOR MORE COMPLETE & ACCURATE DETAIL OF CONTOURS & CONTOUR ELEVATION POINTS SEE UEC DWG D-CL05-006-S001.
6. IRRIGATION GATE SHALL BE IDENTICAL TO POND #1 IRRIGATION GATE.
7. DISCHARGE LINE TO BE 24" GALVANIZED 16 GUAGE CORRUGATED METAL PIPE. COUPLERS TO BE SUPPLIED BY CORRUGATED PIPE SUPPLIER.

REFERENCE DRAWINGS

1. SITE PREPARATION - CONTOURS D-CL05-006-S001
2. SITE PREPARATION - EXISTING GRADES D-CL05-006-S004
3. SITE PREPARATION - CONSTRUCTION GRADES D-CL05-006-S007
4. CONSTRUCTION RUN-OFF PONDS - SECT & DET D-CL05-155-S002
5. V NOTCH WEIR - PLAN D-CL05-155-S003
6. SLUDGE RECYCLE HOLDING POND D-CL05-464-S001
7. PLANT DRAINAGE - V NOTCH WEIR D-CL05-111-S023
8. CONSTRUCTION RUN-OFF PONDS - SECT & DET D-CL05-155-S006

AS CONSTRUCTED

NO	REVISIONS	DATE	BY	CHK	DSNR	APPR
5	ADDED HEADWALL @ POND #2 PER FM #91-1346	030293	RWD	DLR	JAK	DM
4	ADDED POND #1 IRRIGATION GATE AND DRAINAGE PUMP	013192	RMJ	DLR	JAK	DM
3	REVISED RUN-OFF POND #1 REVISED SLUDGE RECYCLE HOLDING POND	012192	RMJ	RDR	JAK	DM
2	ADDED WEIR @ RUNOFF POND #2, ADDED DISCHARGE STRUCTURE & REF DWG #7 ADDED GENERAL NOTE #6 & #7	112391	RWD	DLR	JAK	DM
1	ADDED WEIR AT INTAKE CANAL RUN-OFF POND #1, ADDED SLUDGE RECYCLE HOLDING POND, ADDED REF DWG #5 & #6	092591	RWD	RDR	JAK	DM, ETB
	ISSUED FOR CONSTRUCTION	040788	CLJ	DLF	BLR	DM

RECEIVED
APR 04 1994
POWER ENGINEERING

CITY PUBLIC SERVICE
J. K. SPRUCE UNIT 1

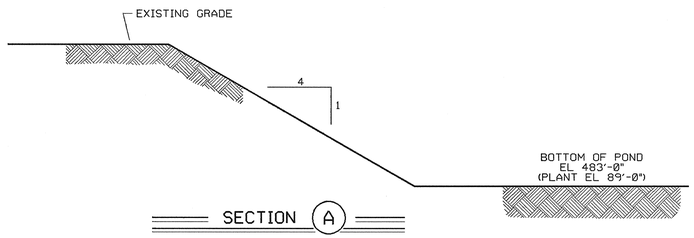
UTILITY ENGINEERING CORPORATION
COMBUSTION ENGINEERING, INC. H.B.ZACHRY COMPANY

CONSTRUCTION RUN-OFF PONDS
PLAN VIEW

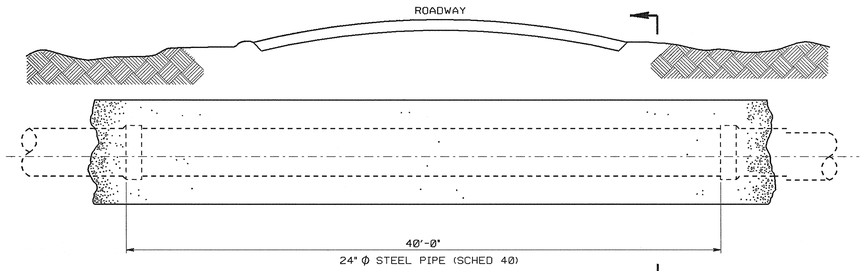
STATE OF TEXAS
JOHN ANDREW KEAHEY
65018
REGISTERED PROFESSIONAL ENGINEER

DRAWN	DESIGNED	CHECKED	CONTROLS	ELECTRICAL	MECHANICAL	STRUCTURAL
R SCOTT 2-15-88	R REICHE 3-16-88	D RODEN		N/A		
APPD D MITCHELL 3-22-88	CADD DRAWING NO. D-CL05-155-S001					SHEET REV 5

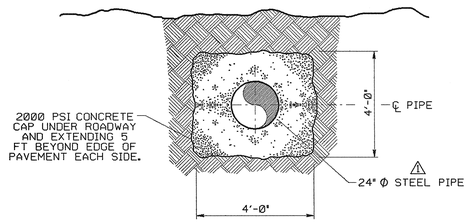
MAR - 4 1993



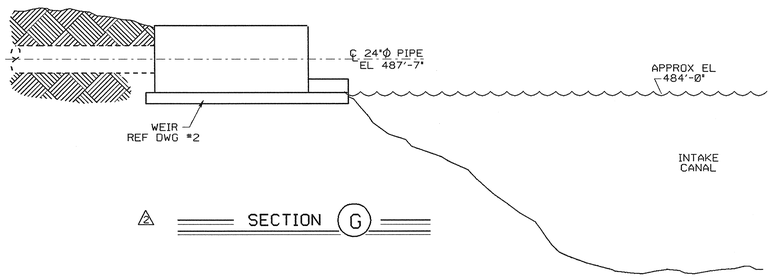
SECTION (A)



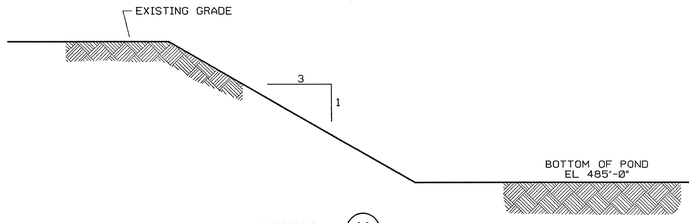
SECTION (E)



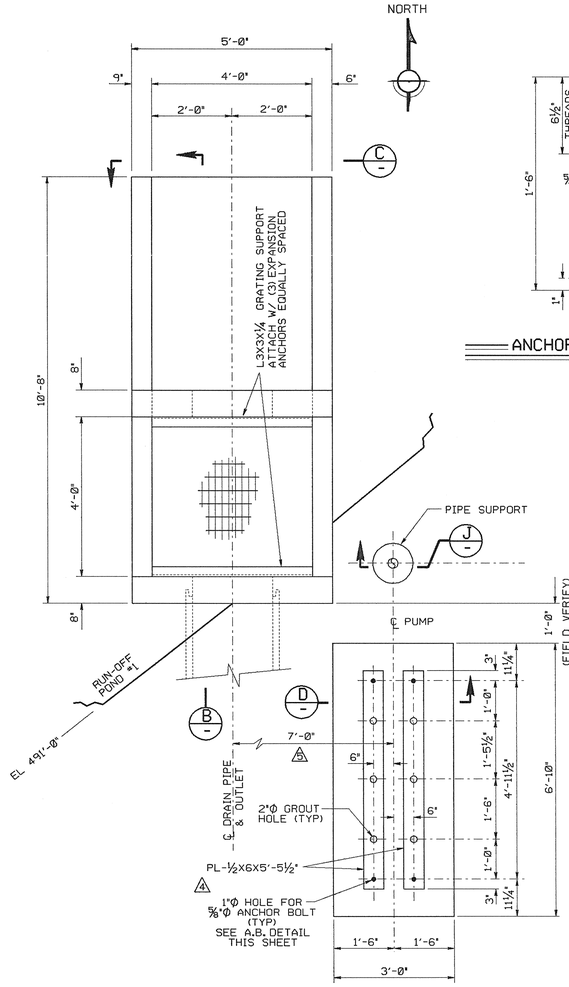
SECTION (F)



2 SECTION (G)

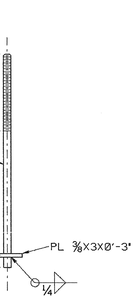


SECTION (H)

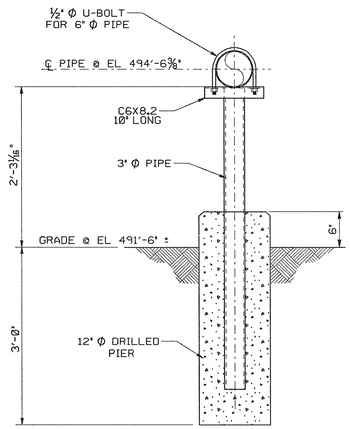


3 DETAIL (1)

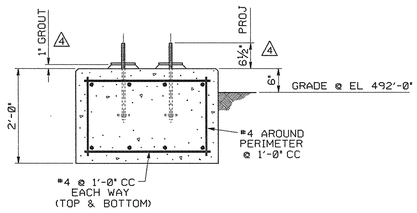
RUN-OFF POND #1 OUTLET W/ DRAINAGE PUMP PAD



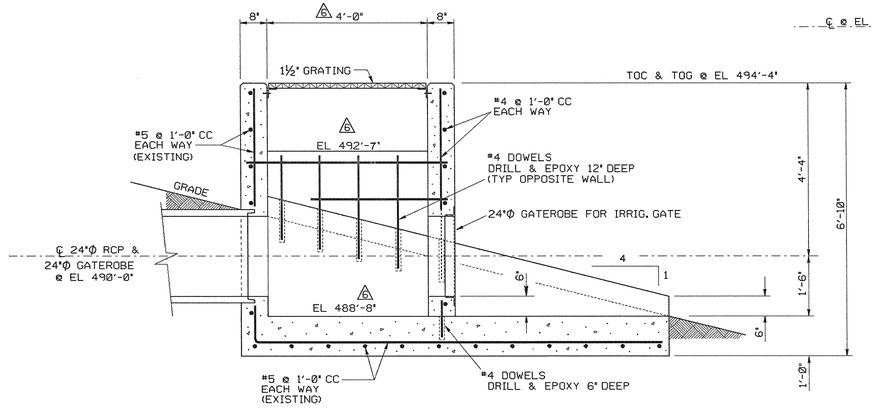
3 ANCHOR BOLT DETAIL



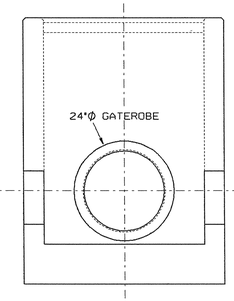
3 SECTION (J)



3 SECTION (D)



3 SECTION (B)



SECTION (C)

3

GENERAL NOTES

1. ALL CONCRETE TO BE 4000 PSI
2. ALL REINFORCING BAR TO BE GRADE 60
3. ALL EXPOSED CONCRETE EDGES SHALL HAVE A ¾" CHAMFER

REFERENCE DRAWINGS

1. PLAN VIEW - CONSTRUCTION RUN-OFF PONDS D-CL05-155-S001
2. WEIR - PLAN D-CL05-155-S003

AS CONSTRUCTED

NO	REVISIONS	DATE	BY	CHK	DSGN APPR
6	REV SECTION "B" PER FM #91-1346	030215	RWD	DCR	DM
5	MOVED PUMP PAD PER FM #92-754	120192	RWD	RDR	BLR DM
4	REV DETAIL 1, SECTION D & ANCHOR BOLT DETAIL AS PER FM 92-129	052292	RWD	RDR	JAK DM
3	REMOVED OLD SECTIONS B, C, D & ADDED NEW ONES; ADDED DETAIL 2 AND ANCHOR BOLT DTL; ADDED GENERAL NOTES 1 THRU 3 (FM 91-1346 AND FM 92-850)	012392	RMJ	DLR	JAK DM
2	REVISED SECTION "G", ADDED REF DWG #2	092591	RWD	RDR	JAK DM
1	REV SEC F & ADD SAMP PORT SEC G	062388	GIL	DLR	BLR DM
0	ISSUED FOR CONSTRUCTION	052988	JKB	DLR	BLR DM

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CITY PUBLIC SERVICE
JK SPRUCE UNIT 1

UTILITY ENGINEERING CORPORATION
COMBUSTION ENGINEERING, INC. H.B.ZACHRY COMPANY

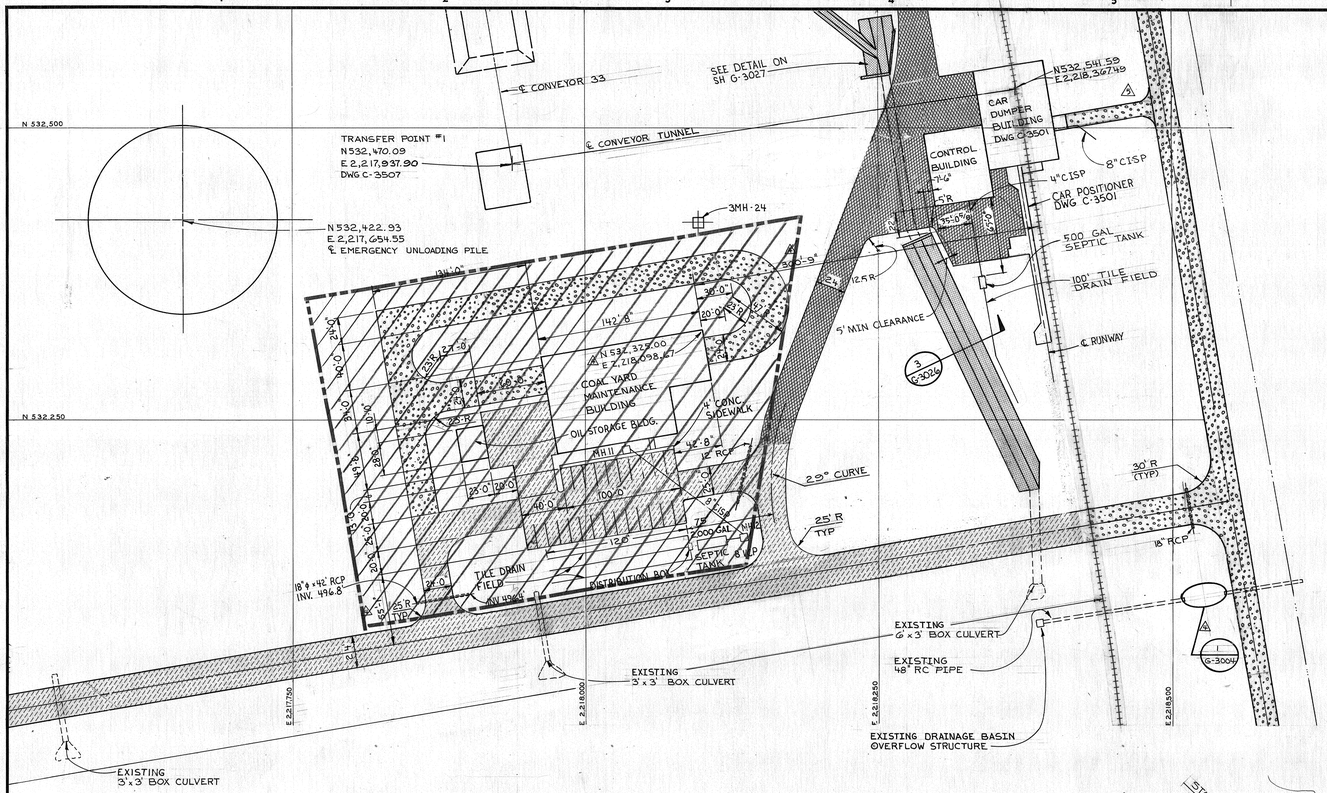
CONSTRUCTION RUN-OFF PONDS
SECTIONS & DETAILS

DRAWN 2-19-88	DESIGNED 03-08-88	CHECKED	CONTROLS	ELECTRICAL	MECHANICAL	SUBSTATION
R SCOTT	R RIDLEY	D RIDEN		N/A		20
DRAFT 03-22-88	CADD DRAWING NO.					SHEET NO. REV
MITCHELL	D-CL05-155-S002					6

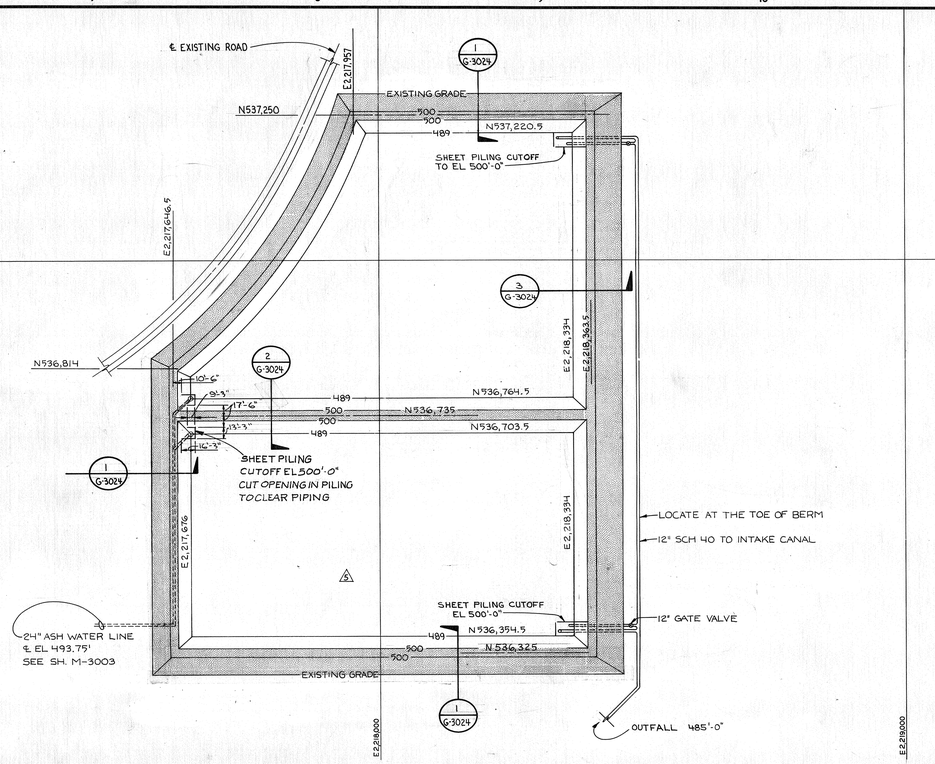
STATE OF TEXAS
BARRY RIDLEY
60808
REGISTERED PROFESSIONAL ENGINEER

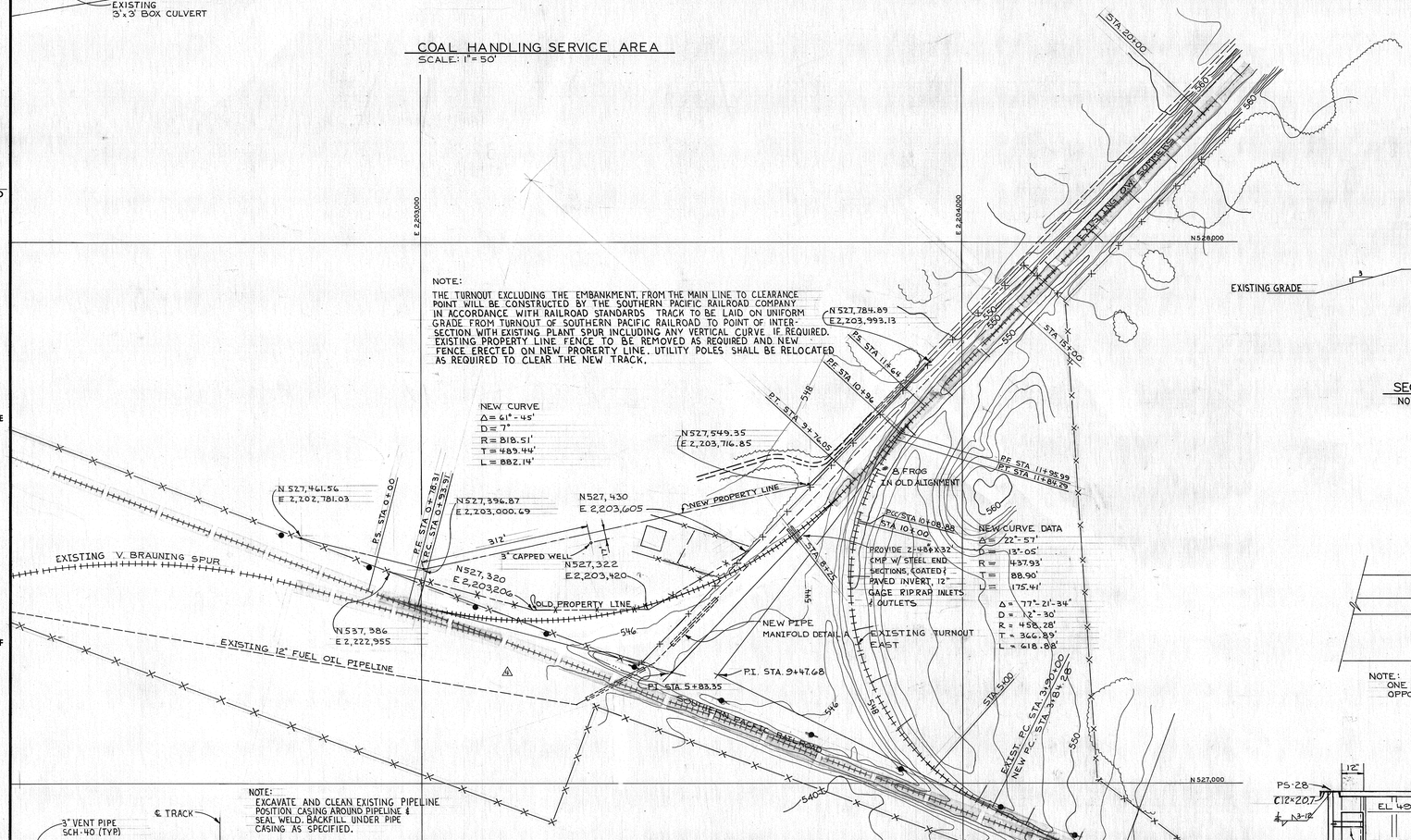
MAR - 4 1993

COAL HANDLING SERVICE AREA
SCALE: 1" = 50'

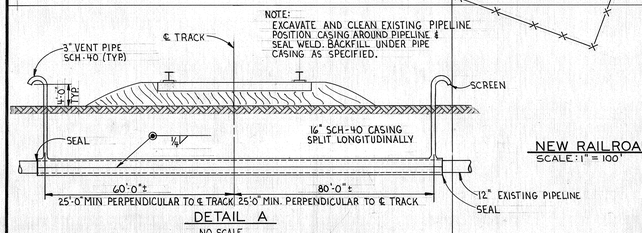


ASH DISPOSAL BASINS
SCALE: 1" = 100'





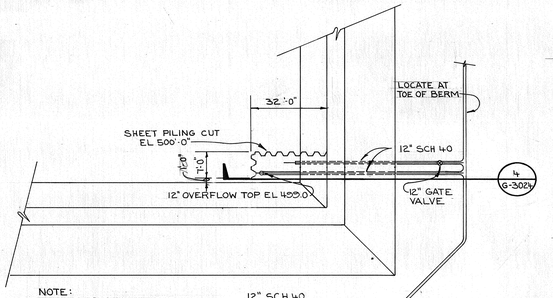
NEW RAILROAD TURNOUT WEST
SCALE: 1" = 100'



DETAIL A
NO SCALE

SECTION 1
NO SCALE

SECTION 2
NO SCALE

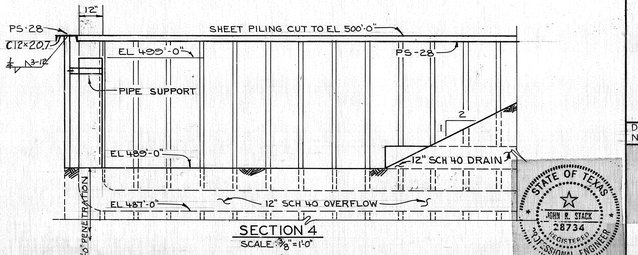


PLAN
NO SCALE

SECTION 3
NO SCALE

LEGEND

- EARTH
- ASPHALT PAVING
- CRUSHED ROCK SURFACING
- EXISTING RAILROAD
- NEW RAILROAD
- FENCE
- PROPERTY LINE
- NEW CONCRETE
- BITUMINOUS SURFACE TREATMENT
- SEEDING Δ5



SECTION 4
SCALE: 3/8" = 1'-0"

GENERAL NOTES

ALL DETAILS ON THIS DRAWING APPLY TO CONTRACT D-4.

REFERENCE DRAWINGS

DWG. NO.	
G-3002	GENERAL PLOT PLAN
G-3004	GENERAL SITE ARRANGEMENTS AREA II
G-3011	UNDERGROUND UTILITIES, ROADS, GRADING, & LANDSCAPING AREA E
G-3303	STRUCTURAL CONCRETE YARD INLETS, MANHOLES AND MISCELLANEOUS DETAILS

NO.	DATE	REVISIONS AND RECORD OF ISSUE	BY	CK	APP
3	12-2-74	REVISED COAL HANDLING SERVICE AREA	HLK		
2	9-30-74	APPROVED FOR CONST, CONTRACT D-4A	HLK		
1	8/9/74	ISSUED FOR GEN CONST ADDENDUM 2 - CONTRACT D-4A	HLK		
0	6-28-74	ISSUED FOR GEN. CONST. BIDS - CONTRACT D-4A	BVR		
S	1-30-76	REVISED PER DCN 22, 58, AND 65	VBD	HES	RS
T	4-11-75	UPDATED DWG TO REFLECT DCN13. DCN17 & REVISED AS CIRCLED	VBD	HES	RS
G	12-1-78	CONFORMED TO CONSTRUCTION RECORDS	TAB	TAB	

SCALE: 100' 50' 0 100' 200' 1"=100'; 50' 25' 0 50' 100' 1"=50'

DEPT HEAD C.L.M.
DES ENGR J.R.S.
CHECKED H.L.K.
DRAWN C.R.

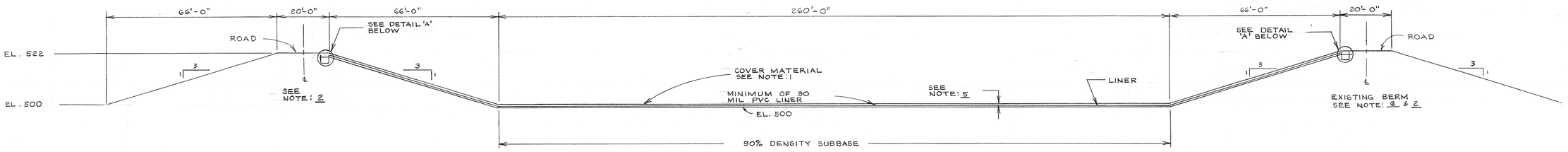
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF TEXAS
SIGNED John R. Stack
DATE 9/30/74 REG. NO. 28734

STATE OF TEXAS · JOHN R. STACK · 28734 · REGISTERED PROFESSIONAL ENGINEER

BLACK & VEATCH CONSULTING ENGINEERS
PROJECT 6314

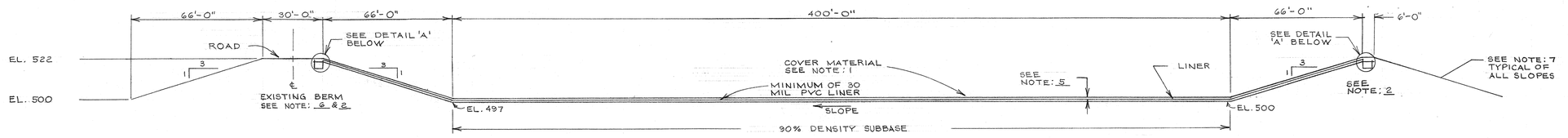
CITY PUBLIC SERVICE BOARD
J. T. DEELY PLANT — UNIT 1
GENERAL
RAILROAD TURNOUT COAL HANDLING SERVICE AREA AND ASH DISPOSAL AREA

B&V DWG NO. G-3024



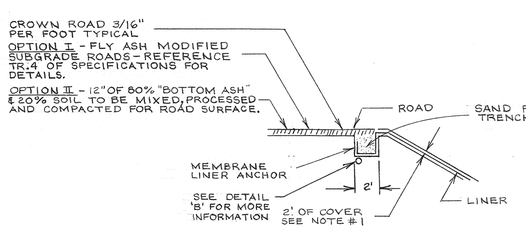
SECTION 'B-B'
— LOOKING NORTH —
SCALE: 1"=20'-0"

REFERENCE DRAWINGS
1. D-CL05-289-5002
2. D/S-1547

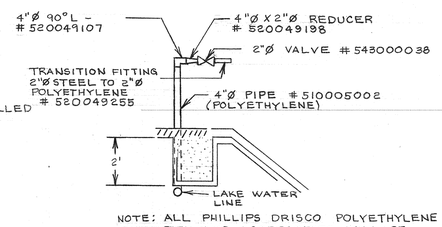


SECTION 'A-A'
— LOOKING EAST —
SCALE: 1"=30'-0"

NOTE:
1) COVER MATERIAL SHALL BE COHESIVE SOILS FREE OF ALL ROCKS, ROOTS AND OTHER FOREIGN MATERIALS. THE COVER MATERIALS SHALL BE PLACED OVER THE LINER AS RECOMMENDED BY THE MANUFACTURER AND APPROVED BY CPS FIELD REPRESENTIVE.
2) SUBGRADE COMPACTED TO 90% DENSITY
3) ROCKS THAT ARE LESS THAN 6"X12" ARE ACCEPTABLE IN ALL BUT THE TOP TWO FEET OF THE BERM.
4) CONTRACTOR WILL BE REQUIRED TO WATER ALL EXTERNAL SLOPES FOR A PERIOD OF TWO MONTHS (DAILY) TO AID IN THE ESTABLISHMENT OF GRASS
5) REQUIREMENTS FOR SOIL COVER MATERIAL
   a) PVC - 1FT. OF THE TYPE OF SOIL STATED IN NOTE #1
   b) HDPE - 4 IN. OF THE TYPE OF SOIL STATED IN NOTE #1
6) MOST OF THIS BERM IS EXISTING. THE CONTRACTOR WILL BE REQUIRED TO COMPLETE THE INSIDE SLOPES AND TO BRING THE EXISTING ROAD UP TO ELEVATION 522.
7) MIRAMAT "2400" OR TENSAR "NS3000" EROSION CONTROL AND REVEGETATION MAT SHALL BE INSTALLED ON EXTERNAL SLOPES, PER MANUFACTURE RECOMMENDATION. EROSION CONTROL MAT IS TO BE SUPPLIED AND INSTALLED BY CONTRACTOR. MAT IS TO BE COVER WITH A MINIMUM OF 1" OF TOP SOIL. ALL EXTERNAL SLOPES SHALL THEN BE SEEDED, FERTILIZED AND MULCHED BY CONTRACTOR PER SPECIFICATIONS.



DETAIL 'A'
(TYP.)



NOTE: ALL PHILLIPS DRISCO POLYETHYLENE PIPE AND ACCESSORIES WILL BE FURNISHED FROM CPS STOCK AND INSTALLED THE CONTRACTOR.

DETAIL 'B'
(TYP.)

No.	DATE	REVISION	BY	CK'D	APP
1	7-25-90	BID ISSUE	F.T.	DTS	DTS

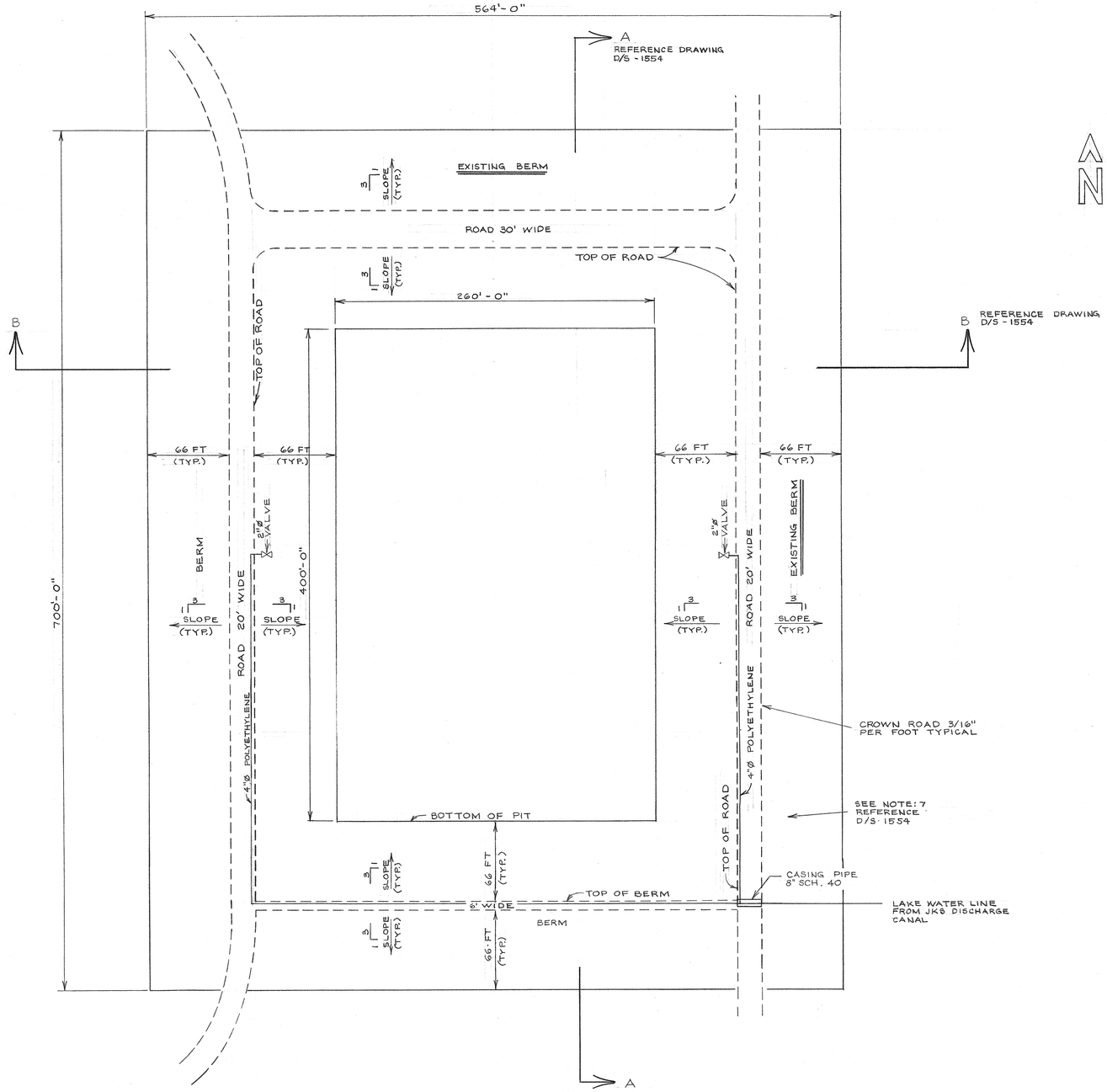
J.T. DEELY/J.K. SPRUCE
ASH DISPOSAL PIT # 4
ELEVATION VIEWS

CITY PUBLIC SERVICE
SAN ANTONIO, TEXAS

DRAWN: FRANK TOBAR	DATE: 7/16/90
CHECKED: DTS	SCALE: SHOWN
APPROVED: DTS	SHEET 1 OF 1

SYSTEM	I.D.	DRAWING NUMBER	CODE
		D/S - 1554	

3D1000



REFERENCE DRAWINGS
1. D-CL05-283-5002
2 D/S 1554

No.	DATE	REVISION	BY	CK'D	APP
1	7-25-90	BID ISSUE	F.T.	DES	DTS

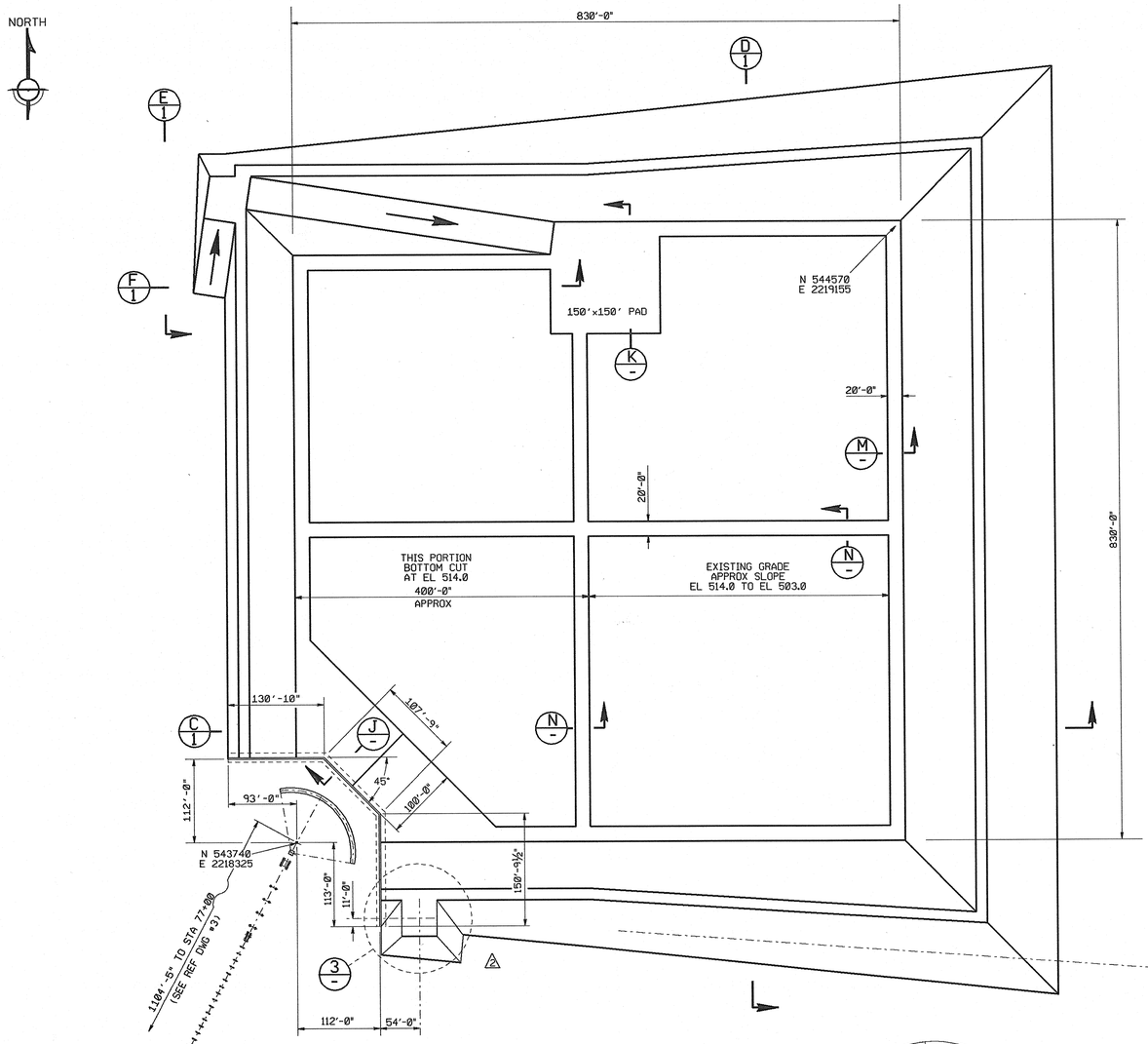
J.T. DEELY/J.K. SPRUCE
ASH DISPOSAL PIT # 4
PLAN VIEW

CITY PUBLIC SERVICE
SAN ANTONIO, TEXAS

DRAWN: FRANK TOBAR	DATE: 7/16/90
CHECKED: DTS	SCALE: 1" = 50'-0"
APPROVED: DTS	SHEET 1 OF 1

SYSTEM	I.D.	DRAWING NUMBER	CODE
		D/S - 1547	

391000



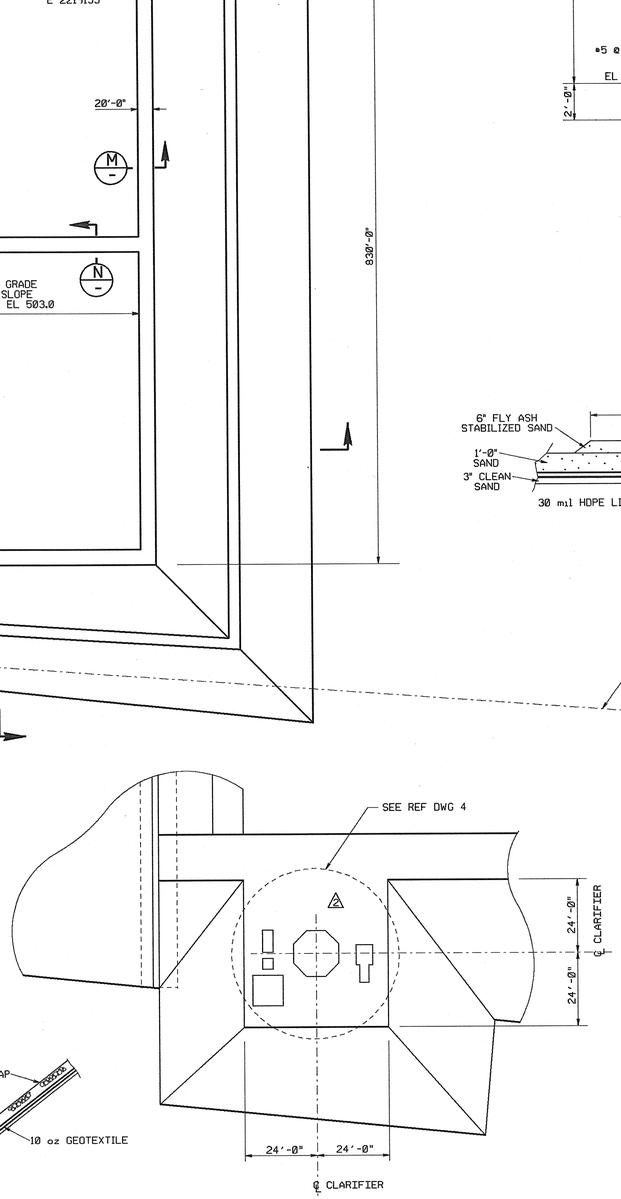
PLAN

DETAIL (4)

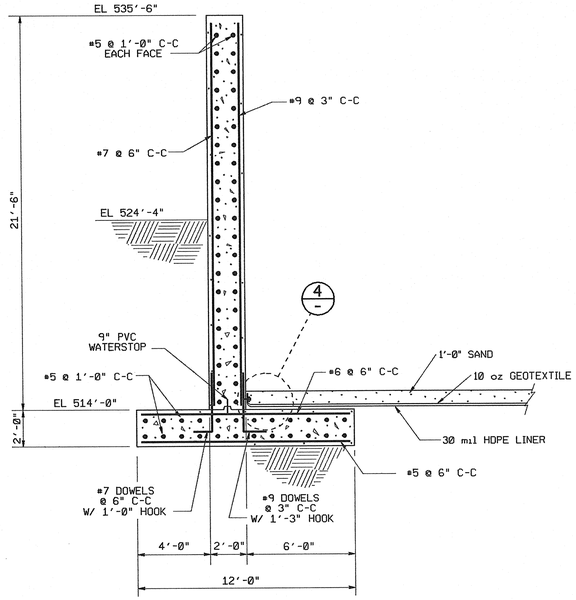
TYPICAL LINER TO CONCRETE ATTACHMENT

SECTION (K)

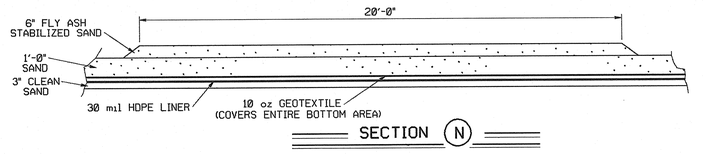
SECTION (M)



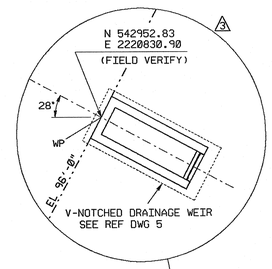
DETAIL (3)

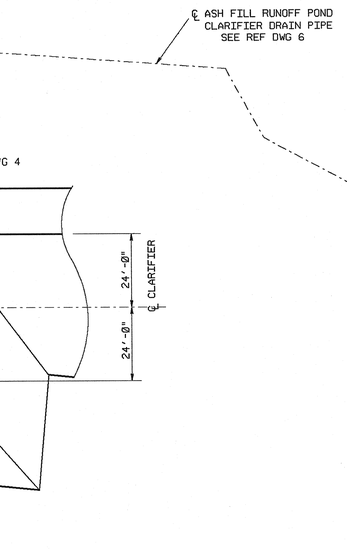


SECTION (J)



SECTION (N)





SCALE IN FEET

0 50 100 200 300

GENERAL NOTES

1. ALL FILL SHALL BE CONTROLLED AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.
2. CUT DISPOSAL FROM WITHIN THE DISPOSAL AREA MAY BE USED AS EMBANKMENT.
3. CUT DISPOSAL FROM THE POWER PLANT SITE MAY BE USED AS EMBANKMENT FILL.
4. ALL REBAR SHALL HAVE 3" MIN CLEAR COVER.

REFERENCE DRAWINGS

1. 5 YR DISPOSAL AREA SECTIONS & DETAILS D-CL05-289-S002
2. SITE PREP SLUDGE CONVEYOR LINE D-CL05-288-S004
3. ⚠1 MOVABLE TWR T-4 & RADIAL STACKER FNDS D-CL05-288-S019
4. ⚠2 MISCELLANEOUS FND - PLANS, SET'S & DET'S D-CL05-289-S005
5. ⚠3 V-NOTCHED DRAINAGE WEIR D-CL05-111-S023
6. ⚠3 LANDFILL RUNOFF POND AREA LAYOUT D-CL05-289-M100
7. ⚠3 SLUDGE CONVEYOR LINE D-CL05-288-S002

AS CONSTRUCTED

NO	REVISIONS	DATE	BY	CHK	DSNR	APPR
4	ADDED ROADS & REVISED LINER PER FM #12-442 REV 1 & FM #12-711	122992	RWP	DDB	JAK	DM
3	ADDED V-NOTCHED DRAINAGE WEIR	110691	RMJ	RDR	JAK	DM
2	SHOWN CLARIFIER PAD & PLAN & REV'D DETAIL 3. ADDED REF DWG 4.	102291	DO	RDR	JAK	DM
1	ADDED RETAINING WALL & RELOCATED CLARIFIER TO TOP OF BERM ADDED REF DWG #3	061991	JKB	DLR	JAK	DM
0	ISSUED FOR CONSTRUCTION					

CITY PUBLIC SERVICE
J. K. SPRUCE UNIT 1

UTILITY ENGINEERING CORPORATION
COMBUSTION ENGINEERING, INC. — H.B.ZACHRY COMPANY

SITE PREPARATION
5 YR SCRUBBER SLUDGE DISPOSAL AREA

STATE OF TEXAS — BARRY L. RICHEY — 60858 — REGISTERED PROFESSIONAL ENGINEER

DWN	ES2588	DSGND	#48088	CHKD	CONTROLS	ELECTRICAL	MECHANICAL	STRUCTURAL
D DELEON	B RIDAES	D RODEN						

DATE	CADD DRAWING NO.	SHEET	REV
4-12-88	D-CL05-289-S001		4

W MITCHELL

RECEIVED
APR 04 1994

JAN 06 1993

dm-son
29-DEC-1992 15:08
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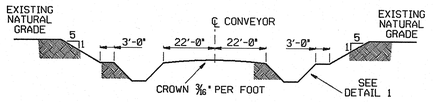
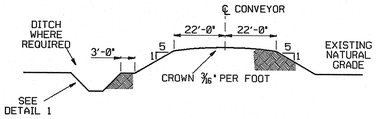


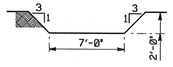
SECTION (A)

TYPICAL CROSS-SECTION CUT AREA

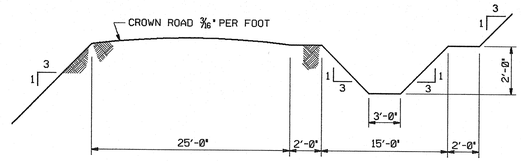


SECTION (B)

TYPICAL CROSS-SECTION FILL AREA



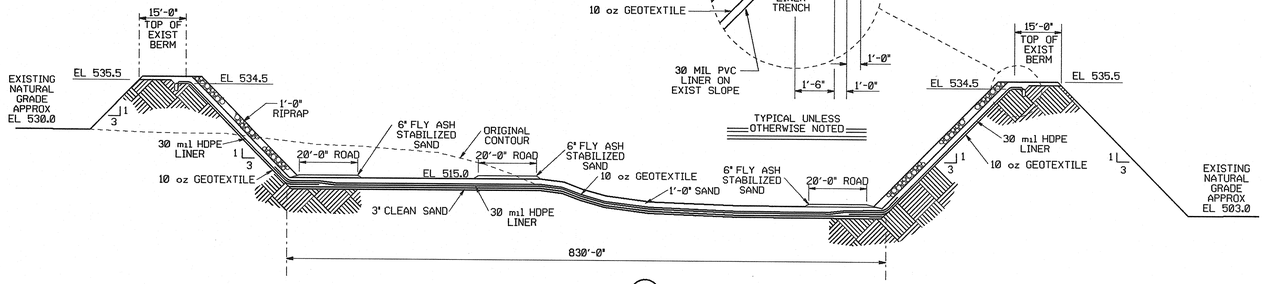
⚠ DETAIL (1)

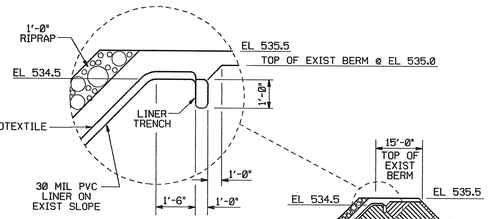


DETAIL (2)

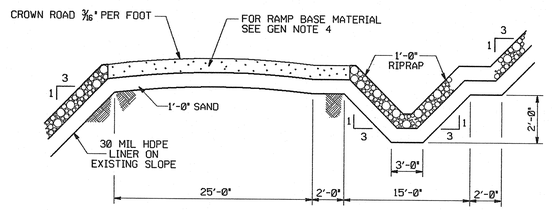
GENERAL NOTES

1. ALL FILL SHALL BE CONTROLLED AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.
2. CUT DISPOSAL FROM WITHIN THE DISPOSAL AREA MAY BE USED AS EMBANKMENT FILL.
3. CUT DISPOSAL FROM THE POWER PLANT SITE MAY BE USED AS EMBANKMENT FILL.
4. ROAD BASE ON INSIDE RAMP TO BE GRADE 1, TYPE A MATERIAL PLACED IN (2) 6" LIFTS. BINDER TO BE CLASS C FLYASH (APPROX 12% TOTAL QUANTITY.)





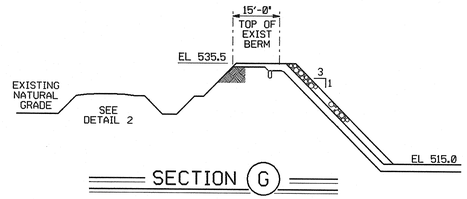
⚠ SECTION (C)



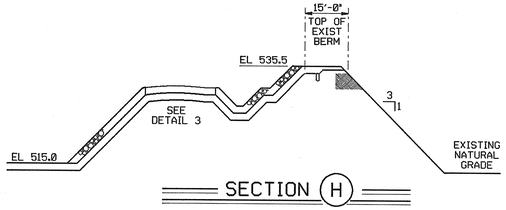
⚠ DETAIL (3)

REFERENCE DRAWINGS

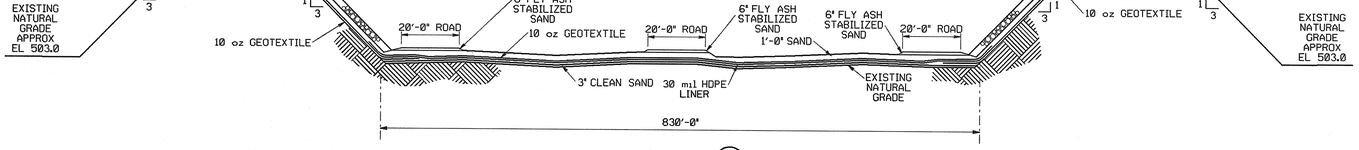
1. SITE PREP SLUDGE CONVEYOR LINE D-CL05-288-S001
2. SITE PREP SLUDGE CONVEYOR LINE D-CL05-288-S002
3. 5 YEAR SLUDGE DISPOSAL AREA D-CL05-289-S001



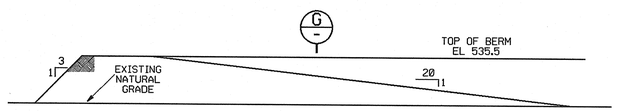
SECTION (G)



SECTION (H)

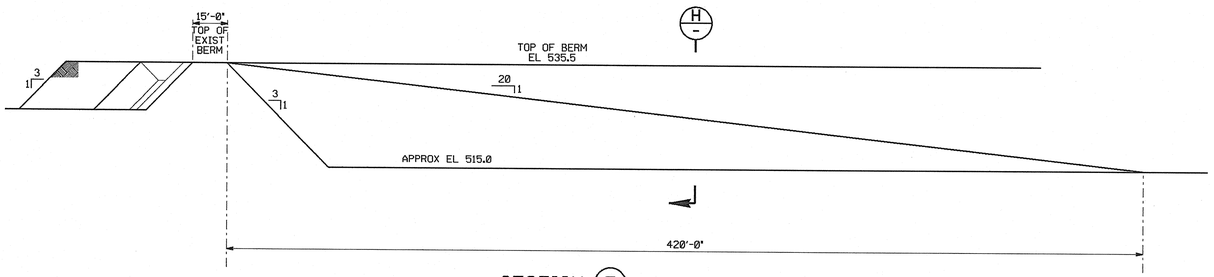


⚠ SECTION (D)



SECTION (E)

HAUL RAMP OUTSIDE DISPOSAL AREA



SECTION (F)

HAUL RAMP INSIDE DISPOSAL AREA

AS CONSTRUCTED

NO	REVISIONS	DATE	BY	CHK	DSNR	APPR
2	REVISED SECTIONS & DETAILS PER FM #92-442 REV 1 & FM #92-711	122992	AW	RDB	BLB	DM
1	ADDED PVC POND LINER & RIPRAP	061991	TLC	DLR	JAK	DM
0	ISSUED FOR CONSTRUCTION	101289	LK	DLR	BLR	DM

CITY PUBLIC SERVICE
J. K. SPRUCE UNIT 1

UTILITY ENGINEERING CORPORATION
COMBUSTION ENGINEERING, INC. H.B.ZACHRY COMPANY

5 YR SCRUBBER SLUDGE DISPOSAL AREA
SECTIONS AND DETAILS

DWN	DATE	DESIGNED	CHKD	CONTROLS	ELECTRICAL	MECHANICAL	STRUCTURAL
DELEON	02-25-88	RICHEE	RODDEN				
DES		CADD DRAWING NO.					SHEET REV
R. MITCHELL	4-12-88	D-CL05-289-S002					2

BARRY L. RICHEE 60808 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS

RECEIVED APR 04 1994 POWER Engineering

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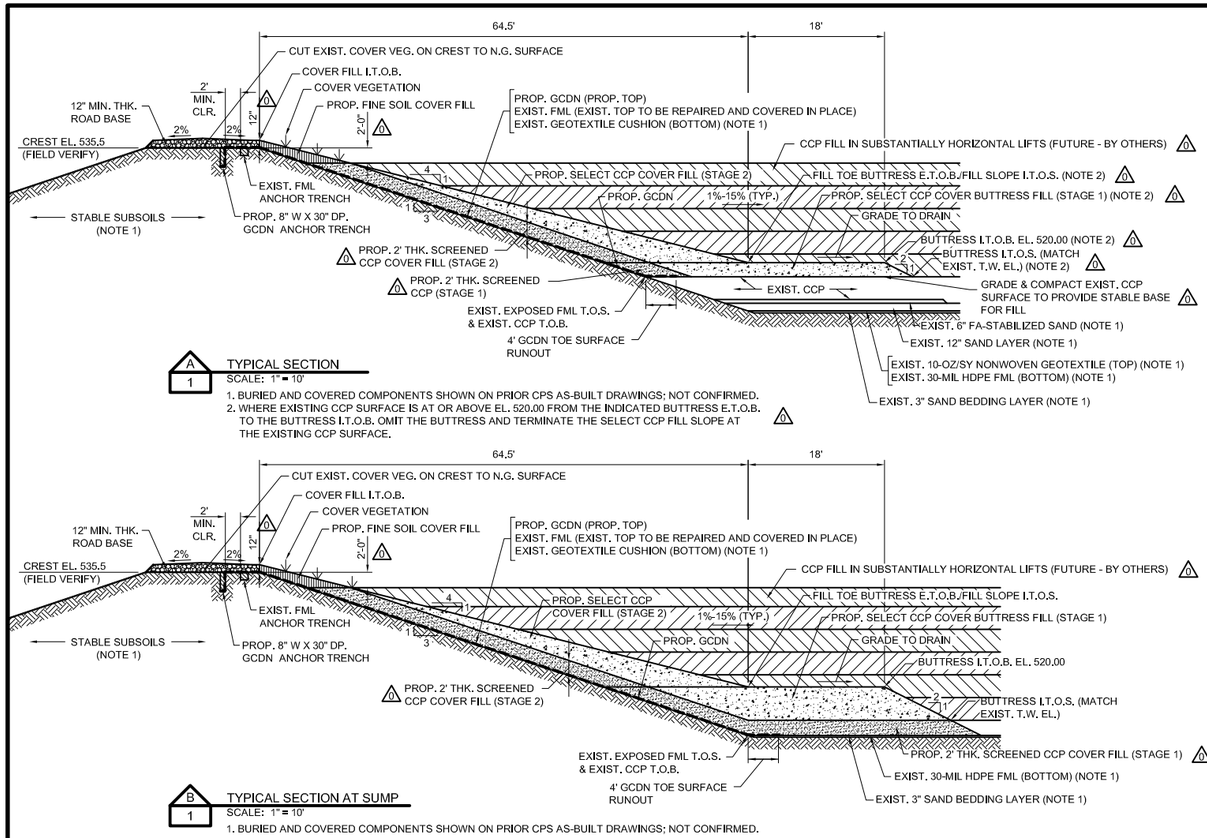
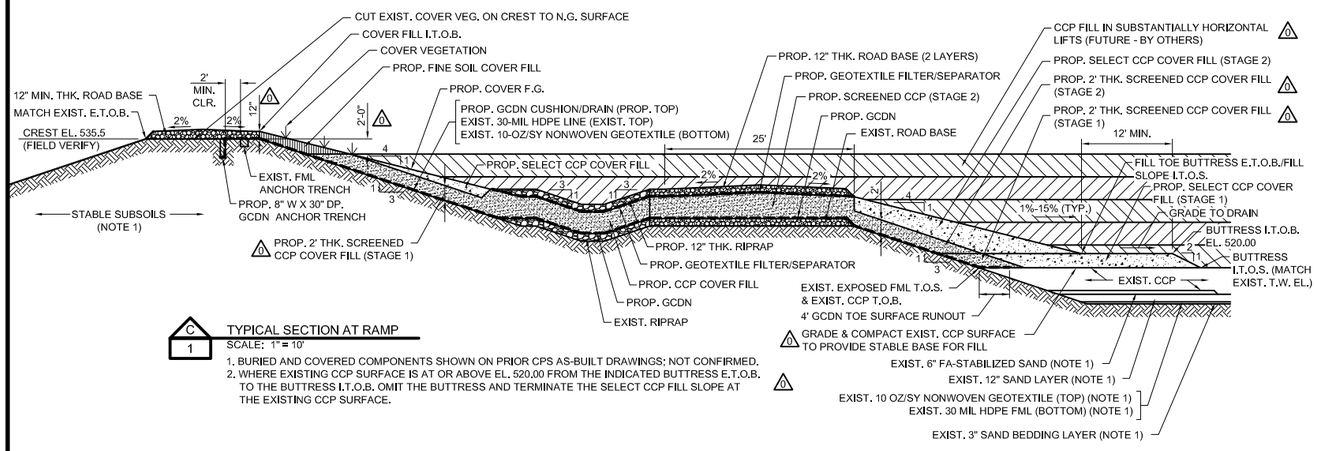


A/1 TYPICAL SECTION
SCALE: 1" = 10'

1. BURIED AND COVERED COMPONENTS SHOWN ON PRIOR CPS AS-BUILT DRAWINGS; NOT CONFIRMED.
2. WHERE EXISTING CCP SURFACE IS AT OR ABOVE EL. 520.00 FROM THE INDICATED BUTTRESS E.T.O.B. TO THE BUTTRESS I.T.O.B. OMIT THE BUTTRESS AND TERMINATE THE SELECT CCP FILL SLOPE AT THE EXISTING CCP SURFACE.

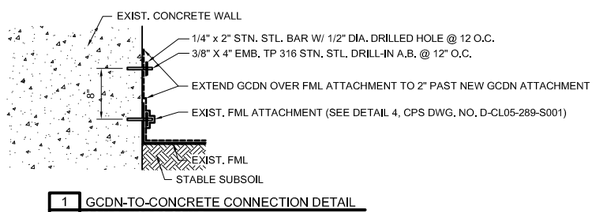
B/1 TYPICAL SECTION AT SUMP
SCALE: 1" = 10'

1. BURIED AND COVERED COMPONENTS SHOWN ON PRIOR CPS AS-BUILT DRAWINGS; NOT CONFIRMED.



C/1 TYPICAL SECTION AT RAMP
SCALE: 1" = 10'

1. BURIED AND COVERED COMPONENTS SHOWN ON PRIOR CPS AS-BUILT DRAWINGS; NOT CONFIRMED.
2. WHERE EXISTING CCP SURFACE IS AT OR ABOVE EL. 520.00 FROM THE INDICATED BUTTRESS E.T.O.B. TO THE BUTTRESS I.T.O.B. OMIT THE BUTTRESS AND TERMINATE THE SELECT CCP FILL SLOPE AT THE EXISTING CCP SURFACE.



1/1 GCDN-TO-CONCRETE CONNECTION DETAIL
SCALE: NOT TO SCALE

GENERAL CONSTRUCTION NOTES

1. SCOPE: THE WORK IS FOR REPAIR OF THE EXPOSED LINER IN 5-YEAR LANDFILL. THE WORK INCLUDES LINER WORK AND EARTHWORK AS DESCRIBED ON THIS SHEET.

2. WORK BY CPS ENERGY : CPS ENERGY WILL PROVIDE CCP PRODUCTS PRODUCED BY THE SOMMERS/DEELY/SPRUCE POWER PLANTS AT STOCKPILES CHOSEN BY CPS ENERGY IN THE 5-YEAR LANDFILL. THE CCP WILL BE PROVIDED AS-PRODUCED. CPS WILL NOT SCREEN THE CCP.

3. WORK BY OTHER CPS ENERGY CONTRACTORS : CPS ENERGY WILL MANAGE THE LINER WORK AND THE EARTHWORK NEEDED TO IMPLEMENT THE 5-YEAR LINER IMPROVEMENTS.

4. REFERENCE DRAWINGS : "SITE PREPARATION, 5-YEAR SCRUBBER SLUDGE DISPOSAL AREA", CPS ENERGY DWG. NO. D-CL05-289-S001, REV. 4., 12/29/1992; AND "5-YEAR SCRUBBER SLUDGE DISPOSAL AREA, SECTIONS AND DETAILS", CPS ENERGY DWG. NO. D-CL05-289-S002, REV. 2, 12/29/1992. FIELD VERIFY LINES AND GRADES SHOWN PRIOR TO CONSTRUCTION.

5. SUBMITTALS: SUBMIT A WORK PLAN WITH PRODUCT TECHNICAL DATA AND A DETAILED PROGRESS SCHEDULE FOR REVIEW AND APPROVAL BY THE CPS ENERGY PROJECT MANAGER. UPDATE AND REVIEW THE SCHEDULE WEEKLY WITH THE CPS ENERGY PROJECT MANAGER.

6. AS-BUILT DRAWINGS : UPDATE A COPY OF THE DRAWINGS SHOWING THE LINES AND GRADES OF WORK CONSTRUCTED. SUBMIT A LEGIBLE COPY OF ANNOTATED DRAWINGS SHOWING MATERIALS USED AND PLACEMENT LINES AND GRADES.

7. ACCESS: COMPLY WITH CPS ENERGY REQUIREMENTS FOR PERSONNEL, EQUIPMENT, AND MATERIALS ACCESS. ACCESS THE JOB SITE ONLY VIA ACCESS ROUTES APPROVED IN ADVANCE BY THE CPS ENERGY PROJECT MANAGER.

8. PROTECT EXISTING FACILITIES : LOCATE AND PROTECT EXISTING FACILITIES NOT DESIGNATED TO BE MODIFIED OR REMOVED. REPAIR OR REPLACE FACILITIES DAMAGED WITH NEW LIKE QUALITY FACILITIES AS REQUIRED BY CPS ENERGY AT NO ADDITIONAL CONTRACT COST.

9. EXISTING LINES AND GRADES : FIELD VERIFY LINES AND GRADES OF THE EXISTING CCP, EARTHWORK, LINER AND STRUCTURES PRESENT AT THE 5-YEAR LANDFILL PRIOR TO CONSTRUCTION. NOTIFY THE CPS ENERGY PROJECT MANAGER OF VARIANCES AND OBTAIN APPROVAL OF ANY CHANGES NECESSARY PRIOR TO CONSTRUCTION.

10. PROPOSED LINES AND GRADES : CONSTRUCT THE WORK TO THE LINES AND SLOPES SHOWN ON THE DRAWINGS.

11. ACCEPTANCE OF THE WORK : ACHIEVE ALL CQA ACCEPTANCE CRITERIA AS DETERMINED BY THE CPS PROJECT MANAGER.

LINER CONSTRUCTION NOTES

1. GENERAL REQUIREMENTS : SEE GENERAL CONSTRUCTION NOTES, THIS SHEET.

2. LINER WORK SCOPE : REPAIR OF THE EXISTING FLEXIBLE MEMBRANE LINER (FML) AND CONSTRUCTION OF GEOCOMPOSITE DRAINAGE NET (GCDN).

3. PRODUCTS: PROVIDE NEW PRODUCTS ACCEPTABLE TO CPS ENERGY IN ORIGINAL PACKAGING DELIVERED DIRECTLY FROM THE PRODUCT MANUFACTURER.

4. TRANSPORT: SHIP PRODUCTS DIRECT FROM THE PRODUCT MANUFACTURER TO THE JOB SITE VIA PRE-PAID FREIGHT, INCLUDING DEMURRAGE ADEQUATE TO UNLOAD THE PRODUCT AT THE SITE, AT NO ADDITIONAL CONTRACT COST.

5. PRODUCT HANDLING AND STORAGE : UNLOAD PRODUCTS SHIPPED TO THE JOB SITE ON RECEIPT USING EQUIPMENT AND TECHNIQUES IN ACCORDANCE WITH THE PRODUCT MANUFACTURER'S PRINTED INSTRUCTIONS APPROVED BY CPS ENERGY. STORE GCDN ABOVE FLOWING AND PONDED WATER. MAINTAIN WATERPROOF MEMBRANE COVER ON GCDN PRIOR TO DEPLOYMENT.

6. WORK BY OTHER CPS ENERGY CONTRACTORS : CPS ENERGY WILL MANAGE THE RELATED EARTHWORK CONTACT NEEDED TO IMPLEMENT THE 5-YEAR LINER IMPROVEMENTS; SEE EARTHWORK CONSTRUCTION NOTES, THIS SHEET.

7. COORDINATION OF THE LINER WORK : COORDINATE AND STAGE ACCESS, EQUIPMENT, MATERIALS, PERSONNEL, PLACEMENT OF TEMPORARY FACILITIES AND CONTROLS, AND COMPLETION OF LINER WORK IN ADVANCE WITH THE CPS ENERGY PROJECT MANAGER. ACCOMPLISH THE LINER WORK WITHOUT NEED FOR UNPLANNED DELAY OR STANDBY OF ANY OF THE RELATED EARTHWORK DUE TO THE PROGRESS OR STAGING OF THE LINER WORK.

8. EARTHWORK MATERIAL AND CONSTRUCTION : SEE EARTHWORK CONSTRUCTION NOTES, THIS SHEET.

9. REPAIR EXPOSED FML : LOCATE, REPAIR, AND TEST EACH CUTS, HOLES, AND OTHER DEFECTS THROUGH THE EXPOSED FML THAT COULD ALLOW LEAKAGE THROUGH THE FML.

10. GCDN PRODUCT AND CONSTRUCTION : PROVIDE AND CONSTRUCT GCDN ACCORDANCE WITH SECTION 31 05 19.17, GEOSYNTHETIC DRAINAGE NET.

11. DIKE CREST PREPARATION : CUT EXISTING COVER VEGETATION TO THE SURFACE ON THE CREST OF THE PERIMETER DIKE WITHIN 24 HOURS PRIOR TO DEPLOYING THE GCDN AT THAT LOCATION. PREVENT ABRASION, CUTTING, OR OTHER DAMAGE TO THE EXISTING FML WHEN CUTTING THE CREST COVER VEGETATION.

12. GCDN DEPLOYMENT : DEPLOY GCDN FROM THE EXTERIOR SIDE OF THE DIKE CREST SURFACE RUNOUT, OVER EXPOSED FML, AND ONTO THE CCP AT THE TOE OF THE EXPOSED FML COVERING THE SIDE SLOPE IN A SINGLE PANEL WITH NO END LAPS OR SEAMS.

13. GCDN TEMPORARY BALLAST : PROVIDE TEMPORARY BALLAST THAT WILL NOT DAMAGE THE GCDN OR THE UNDERLYING FML AS NEEDED TO PREVENT MOVEMENT OR DISPLACEMENT OF THE GCDN PRIOR TO AND DURING PLACEMENT OF CCP COVER FILL.

14. GCDN CONNECTION TO CONCRETE STRUCTURES : WHERE GCDN IS LOCATED ADJACENT TO EXISTING CONCRETE WALLS, SECURE THE GCDN TO THE WALL ALONG A LINE OUTSIDE THE EXISTING FML BATTEN STRIP IN ACCORDANCE WITH GCDN-CONCRETE CONNECTION DETAIL, THIS SHEET.

15. GCDN INTERIM COVER : WHERE THE WORK IS STAGED TO PRODUCE EXPOSURE OF THE GCDN FOR A PERIOD EXCEEDING 30 DAYS, COVER THE EXPOSED GCDN WITH REEF INDUSTRIES "GRIFFOLYN TX-1200" REINFORCED GEOCOMPOSITE MEMBRANE WITH SUITABLE TEMPORARY ANCHOR AND BALLAST TO PREVENT UV EXPOSURE OF THE GCGN. REPLACE GCDN IF DAMAGED AND, IF UNDAMAGED, AT 30-MONTH INTERVALS UNTIL THE GCGN IS COVERED WITH CCP COVER FILL AS SHOWN ON THE DRAWINGS.

16. REMOVAL OF INTERIM COVER : WHEN DAMAGE OR SUBSEQUENT STAGING REQUIRES REMOVAL OF GCDN, DO SO WITHOUT DAMAGING OR DISPLACING FML, GCDN, OR CCP COVER FILL. COVER THE EXPOSED GCGN WITH CCP COVER FILL WITHIN 7 DAYS THEREAFTER.

EARTHWORK CONSTRUCTION NOTES

1. GENERAL REQUIREMENTS : SEE GENERAL CONSTRUCTION NOTES, THIS SHEET.

2. SCREENED CCP MATERIAL : ECONOMIZER ASH, GYPSUM OR "MACS ASH" WITH 100% PASSING A 4-INCH BAR SCREEN AND GREATER THAN 80% PASSING A 3/4-INCH SIEVE. SCREEN CCP OUTSIDE THE LIMITS OF THE COVER FILL PRIOR TO PLACEMENT.

3. SELECT CCP MATERIAL : ECONOMIZER ASH, GYPSUM OR "MACS ASH", EXCLUDING MASSES LARGER THAN 12 INCHES IN ANY DIMENSION. CRUSH OR EXCLUDE OVERSIZE MATERIAL OUTSIDE LIMITS OF THE PROPOSED COVER FILL PRIOR TO PLACEMENT.

4. TOPSOIL MATERIAL : NATURAL SOIL, NRCS "LOAM", "CLAY LOAM", "SANDY LOAM", "SANDY CLAY LOAM", "SILTY CLAY LOAM", OR "SILTY LOAM" WITH 100% PASSING THE 3/4-INCH U.S. STANDARD SIEVE AND ORGANIC CONTENT OF 1% TO 2% DRY WEIGHT FROM A SOURCE APPROVED BY THE CPS PROJECT MANAGER.

5. GEOTEXTILE FILTER/SEPARATOR : CONTINUOUS 16-OZ/SY POLYESTER OR POLYPROPYLENE NONWOVEN GEOTEXTILE, WITH 24-INCH SIDE AND END LAPS.

6. RIP RAP MATERIAL : CRUSHED LIMESTONE OR DURABLE NATIVE QUARRY STONE WITH ANGULAR OR SUBANGULAR SHAPE PASSING AN 8-INCH BAR SCREEN AND RETAINED ON A 4-INCH BAR SCREEN.

7. ROAD BASE MATERIAL : FLEXIBLE ROAD BASE IN ACCORDANCE WITH TXDOT STD. SPEC. 247, TYPE A, GRADE 1, 3/4-INCH MAXIMUM PARTICLE SIZE, OR ALTERNATE MATERIAL APPROVED BY THE CPS ENERGY PROJECT MANAGER.

8. LINER MATERIAL PROTECTION : PROTECT LINER FML, GCDN, FILTER/SEPARATOR, AND OTHER LINER COMPONENTS THROUGHOUT CONSTRUCTION. OPERATE POWER EQUIPMENT AND RELATED BLADES, TRACK LUGS, AND TOOLS OVER SOIL OR CCP COVER OVER A THICKNESS OF STABLE LINER MATERIALS THAT IS AT LEAST 12 INCHES THICK, UNLESS OTHERWISE NOTED, AND IS NOT SUBSTANTIALLY DISPLACED BY THE EQUIPMENT. DO NOT DAMAGE OR DISPLACE THE UNDERLYING LINER DURING PLACEMENT OR COMPACTION OF EARTHWORK.

9. DUST CONTROL : APPLY WATER TO CCP AS NECESSARY TO CONTROL DUST.

10. CCP FILL SURFACE PREPARATION : IN AREAS OUTSIDE THE EXPOSED FML, GRADE THE SURFACE OF THE EXPOSED CCP ADEQUATE TO ALLOW PLACEMENT OF CCP COVER FILL WITHOUT DISPLACEMENT OF EXISTING CCP (I.E. CEMENTED MASSES, EXCESSIVELY STEEP PILES, ETC) AND WITHOUT PRODUCING SIGNIFICANT SOFT SPOTS OR VOIDS IN THE CCP PLACED.

11. GCDN ANCHOR TRENCH EXCAVATION: EXCAVATE GCDN ANCHOR TRENCH IN STAGES AS NEEDED FOR GCDN CONSTRUCTION. PLACE EXCAVATION SPOIL AT A LOCATION NOT COVERED BY THE GCDN AND SUITABLE FOR ACCESS TO THE WORK.

12. GCDN ANCHOR TRENCH BACKFILL : BACKFILL THE GCDN ANCHOR TRENCH IN STAGES AS NEEDED TO ANCHOR THE GCDN. USE ANCHOR TRENCH EXCAVATION SPOIL OR SUITABLE SELECT SOIL FILL, EXCLUDING PARTICLES LARGER THAN 3/4-INCH SCREEN SIZE TO BACKFILL THE GCDN ANCHOR TRENCH. PLACE AND COMPACT THE BACKFILL IN 6-INCH NOMINAL MAXIMUM THICKNESS COMPACTED LIFTS. COMPACT EACH LIFT WITH SUITABLE MANUAL COMPACTION TOOLS. PREVENT DAMAGE TO THE GCDN DURING PLACEMENT OF BACKFILL.

13. STAGED COVER PLACEMENT : PLACED SCREENED CCP, SELECT CCP, TOPSOIL, RIP RAP, AND ROAD BASE IN STAGES OVER THE DEPLOYED GCDN, GEOTEXTILE, AND SUBGRADE TO THE LINES AND GRADES SHOWN ON THE DRAWINGS. COMPLETE PLACEMENT OF STAGE 1 CCP COVER FILL PRIOR TO INITIATING PLACEMENT OF STAGE 2 CCP COVER FILL.

14. PLACEMENT OF SCREENED CCP : PLACE SCREENED CCP IN A SINGLE LIFT.

15. PLACEMENT OF SELECT CCP : PLACE SELECT CCP IN A SINGLE LIFT TO THE EXTENT PRACTICAL, BUT IN LIFTS NOT THICKER THAN 3 FEET.

16. PLACEMENT OF TOPSOIL : PLACE TOPSOIL IN A SINGLE LIFT.

17. COMPACTION OF CCP AND TOPSOIL : COMPACT EACH LIFT OF CCP BY TRAVELING OVER THE SURFACE OF THE CCP ONLY ENOUGH TO PRODUCE A STABLE SURFACE THAT IS NOT SUBSTANTIALLY DISPLACED OR DOES NOT SETTLE WHEN WALKED ON.

18. COVER FILL SLOPE TRANSITIONS : WHERE COVER FILL GRADES TRANSITION TO LOWER LEVELS OR AT ENDS OF FILL SECTION, GRADE THE CCP SURFACE AT A SURFACE SLOPE NOT EXCEEDING 4H:1V.

19. PLACEMENT AND COMPACTION OF ROAD BASE : PLACE AND COMPACT ROAD BASE IN A SINGLE 12-INCH NOMINAL THICKNESS LIFT. GRADE AND COMPACT ROAD BASE TO PRODUCE A DURABLE SURFACE THAT IS NOT DISPLACED OR YIELD UNDER LOAD IMPOSED BY HAUL VEHICLES OR SPREADING EQUIPMENT.

20. PLACEMENT OF RIP RAP : PLACE RIP RAP IN A SINGLE LAYER THAT DOES NOT DISPLACE OR DAMAGE THE UNDERLYING GEOTEXTILE FILTER SEPARATOR OR LINER.

21. COVER VEGETATION : SEED SURFACE OF TOPSOIL AND SOIL SURFACES DISTURBED BY EARTHWORK CONSTRUCTION WITH NATIVE OR ADAPTED PERENNIAL SHORTGRASS COVER VEGETATION AND ESTABLISH A CONTINUOUS AND VIGOROUS STAND OF EROSION-RESISTANT COVER VEGETATION.

0	ISSUED FOR CONSTRUCTION	8/17/2010	EDM
REV	DESCRIPTION	DATE	APP'D.

Environmental Resources Management

TYPICAL SECTIONS AND DETAILS
5-YEAR LANDFILL LINER REPAIR
Sommers/Deely Spruce Power Plants
CPS Energy
San Antonio, Texas

ERM

DESIGN: EDM	DRAWN: CAK	CHKD.: EDM	SHEET NO.
DATE: 8/17/2010	SCALE: AS SHOWN	REV.:	1 of 1
W.O.NO.: H:\DWG\H10\0113818_sectlon.dwg , 8/17/2010 5:09:29 PM			

Dam Safety Assessment Report – J.T. Deely Power Plant

Attachment 2

October 2016
CPS Energy

Available on the Publicly Accessible Website

https://www.cpsenergy.com/content/corporate/en/about-us/environment/coal-combustion-residuals.html

Environmental Resources Management
CityCentre Four
840 W. Sam Houston Pkwy. N. – Suite 600
Houston, Texas 77024
(281) 600-1000

Dam Safety Assessment Report – J.K. Spruce Power Plant

Attachment 3

October 2016
CPS Energy

Available on the Publicly Accessible Website

https://www.cpsenergy.com/content/corporate/en/about-us/environment/coal-combustion-residuals.html

Environmental Resources Management
CityCentre Four
840 W. Sam Houston Pkwy. N. – Suite 600
Houston, Texas 77024
(281) 600-1000

Attachment 14 Structural Stability and Safety Factor Assessment

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

27 October 2021

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

Project No: 0352436

Subject: Structural Stability and Safety Factor Assessments – 5-Year Update
Calaveras Power Station
San Antonio, Texas

Dear Mr. Malone:

Environmental Resources Management Southwest, Inc. (ERM) is pleased to provide this review of structural stability and safety factor assessments performed at the Calaveras Power Station to assist CPS Energy in complying with Title 40, Code of Federal Regulations, Part 257 (40 CFR §257) [aka. the Coal Combustion Residual (CCR) Rule]. This review of the structural stability and safety factor assessments is the 5-year update required under 40 CFR §257.73 Structural Integrity Criteria for Existing CCR Surface Impoundments.

CPS Energy owns and operates the Calaveras Power Station, which is located in unincorporated Bexar County, Texas, approximately 13 miles southeast of San Antonio. Currently, CPS Energy operates the following two CCR surface impoundments at the Power Station:

- 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 Plant, located at the Calaveras Power Station, ceased operation at the end of December 2018 and sluiced bottom ash has not been received at the BAPs since that time.

All the surface impoundments are constructed as elevated diked structures. The SRH Pond, located adjacent to the Power Plants, receives CCR and non-CCR flows from various sources within the J.K. Spruce Plant and all flows are co-mingled in the SRH Pond. The SRH Pond shares a common embankment with the North and South BAPs. The EP, located approximately a mile north of the Power Plants, currently receives non-CCR flows (industrial wastestreams) that are trucked to the EP from the J.K. Spruce Plant and from other CPS Energy power

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

generation facilities. While these flows are not considered CCR, the EP was originally constructed as a fly ash landfill in 1990, and then converted to a fly ash impoundment in 1996. The North and South BAPs share a common embankment that separates the BAPs, and are immediately east and share an embankment with the SRH Pond. The BAPs have been dewatered and are currently undergoing closure.

40 CFR §257.73(d) requires that facilities conduct initial and periodic structural stability assessments for CCR surface impoundments to document whether the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering practices for the maximum volume of CCR and CCR wastewater which can be impounded therein. Table 1 provides a summary of the requirements within the regulation, and the relevant information for each surface impoundment.

40 CFR §257.73(e) requires that facilities conduct initial and periodic safety factor assessments for CCR surface impoundments to document whether the calculated factors of safety for each CCR unit achieves the minimum factors of safety required by the CCR Rule. Factors of safety were initially calculated by Raba Kistner Consultants, Inc. (RKCI) in May 2014. These assessments were provided in a report entitled "*Geotechnical Engineering Study for Ash Pond Berms – Spruce/Deely Generation Units, San Antonio, Texas.*" ERM reviewed the information in these reports to evaluate whether factors of safety met the limits set forth in 40 CFR §257.73(e). All but one embankment evaluated by RKCI met the safety factor limits. The single non-complying safety factor was for the exterior slope of the northwestern berm on the North BAP, identified as cross-section or Embankment G. The steady-state safety factor for Embankment G was calculated at 1.2, and 1.4 on a reanalysis using a deeper failure surface. The minimum required safety factor for steady-state conditions is 1.5.

The RKCI report indicated that slopes used in the calculation for Embankment G were based on design drawings and field observations, not actual surveys. CPS Energy therefore engaged the services of a land surveyor (Pape-Dawson Engineers, Inc.) to collect measurements in two locations along Embankment G. The results of this survey, and the original RKCI soil data, were provided to HTS, Inc. Consultants (HTS), a geotechnical consulting firm in Houston, Texas. HTS recalculated the steady-state factor of safety utilizing the actual survey data. The calculated safety factors for both slopes were greater than 4. The letter report from HTS is included in Attachment 1.

From the date of the initial review of the structural stability and safety factor assessments, no changes have been made to the construction or operation of the CCR surface impoundments with the exception of the BAPs being dewatered. ERM reviewed the weekly inspection records performed by CPS Energy from 2015 through 2020 and annual inspection reports prepared by ERM from 2015 through 2020 and findings of those inspections included only minor rutting, minor erosion, and woody plant growth on exterior embankments. These maintenance items are routinely addressed by CPS Energy and are not expected to affect the stability or operation of the operating CCR surface impoundments.

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 and the structural stability and safety factor assessments meet the requirements of 40 CFR §257.73(d) and (e).

Sincerely,

Environmental Resources Management Southwest, Inc.

Charles Johnson, P.E.

TABLE 1

TABLE 1
Summary of Structural Stability Requirements
Structural Stability and Safety Factor Assessments
CPS Energy, Calaveras Power Station
San Antonio, Texas, 10/27/2021

Regulatory Citation	Requirement	Sludge Recycle Holding Pond	Bottom Ash Ponds	Evaporation Pond
(d)(1)(i)	Stable foundations and abutments.	Based on calculated factors of safety, foundations and abutments are stable.	Based on calculated factors of safety, foundations and abutments are stable.	Based on calculated factors of safety, foundations and abutments are stable.
(d)(1)(ii)	Adequate slope protection to protect against surface erosion, wave action, and adverse effects of sudden drawdown.	Slopes are vegetated with a continuous, maintained grass cover and inspected regularly for evidence of erosion.	Slopes are vegetated with a continuous, maintained grass cover and inspected regularly for evidence of erosion.	Slopes are vegetated with a continuous, maintained grass cover and inspected regularly for evidence of erosion.
(d)(1)(iii)	Dikes mechanically compacted to a density sufficient to withstand the range of loading conditions in the CCR unit.	Based on geotechnical analysis and current slope conditions, it is likely that the dikes were mechanically compacted to a density sufficient to withstand the range of loading conditions in the CCR unit. Construction records documenting this are not available.	Based on geotechnical analysis and current slope conditions, it is likely that the dikes were mechanically compacted to a density sufficient to withstand the range of loading conditions in the CCR unit. Construction records documenting this are not available.	Based on geotechnical analysis and current slope conditions, it is likely that the dikes were mechanically compacted to a density sufficient to withstand the range of loading conditions in the CCR unit. Construction records documenting this are not available.
(d)(1)(iv) *	Vegetated slopes of dikes and surrounding areas not to exceed a height of six inches above the slope of the dike.	Grass on slopes is regularly mowed to maintain height below six inches.	Grass on slopes is regularly mowed to maintain height below six inches.	Grass on slopes is regularly mowed to maintain height below six inches.
(d)(1)(v)(A)	All spillways must be either: (1) Of non-erodible construction and designed to carry sustained flows; or (2) Earth- or grass-lined and designed to carry short-term, infrequent flows at nonerosive velocities where sustained flows are not expected.	Not applicable - Two concrete-lined overflow spillways have been filled with road base/caliche as of the 2019 annual inspection of this CCR unit.	Not applicable - Historically the BAPs discharged via steel piping for regular and overflow discharges; however, the BAPs have been dewatered and are currently undergoing closure.	Not applicable - There are no spillways for this CCR unit.
(d)(1)(v)(B)	Spillways must adequately manage flow during and following the peak discharge from the required design storm flow.	Inflow during a storm is provided by direct precipitation and water that falls into a portion of the Power Station. Sufficient headboard is maintained to capture design storm flow without requiring discharge.	Not applicable - Historically the inflow during a storm was limited to direct precipitation and sufficient headboard was maintained to capture design storm flow without requiring discharge; however, the BAPs have been dewatered and are currently undergoing closure.	Inflow during a storm is limited to direct precipitation. Sufficient headboard is maintained to capture design storm flow without requiring discharge.
(d)(1)(vi)	Hydraulic structures underlying the base of the CCR unit or passing through the dike of the CCR unit must maintain structural integrity.	Not applicable - There are no hydraulic structures underlying this CCR unit.	Not applicable - Historically the steel pipes acting as outfalls were regularly inspected to verify no erosion or damage; however, the BAPs have been dewatered and are currently undergoing closure.	Not applicable - There are no hydraulic structures underlying this CCR unit.
(d)(1)(vii)	Maintain structural stability during low pool of the adjacent water body or sudden drawdown of the adjacent water body.	Toe of embankments are at or above pool elevation of Calaveras Lake, which is maintained artificially. Therefore, no rapid drawdown or low pool conditions are likely.	Toe of embankments are at or above pool elevation of Calaveras Lake, which is maintained artificially. Therefore, no rapid drawdown or low pool conditions are likely.	Toe of embankments are at or above pool elevation of Calaveras Lake, which is maintained artificially. Therefore, no rapid drawdown or low pool conditions are likely.

* Remanded with vacatur (USCA Case #15-1219, Document #1619358).

ATTACHMENT 1 HTS REPORT

HTS, Inc. Consultants
416 Pickering Street, Houston, TX 77091
www.htshouston.com

Phone 713-692-8373
Fax 713-692-8502
Toll Free 1-800-692-TEST

Excellence in Engineering, Consulting, Testing and Inspection

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
Steady State 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 Raba Kistner Consultants (RKC). HTS was requested to perform steady state slope stability analyses on 2 sections that were modified due to low factors of safety (below 1.5) against a slope stability failure.

Slope stability analyses were performed using the soil parameters provided on page 11 of RKC report and the subsoil profile defined by Geotechnical Boring No. 7 which is located near section G as presented in RKC report, Figures A-1 and C-1b. The 2 section configurations used in our slope stability analyses are presented in Appendix A.

Slope stability analyses were performed in order to determine the factors of safety of the side slopes of the section configurations against a slope stability failure. The long term (steady state) shear strengths of the cohesive soils are based on the shear strength parameters from consolidated undrained triaxial tests performed and presented on the table on page 11 of RKC report. The cohesion and angle of friction for sands were assumed to be zero and 28°, respectively, for a conservative approach. The water gradient was also considered to be close to the ground surface for a conservative analysis. The results of these analyses are shown below and in Appendix B.

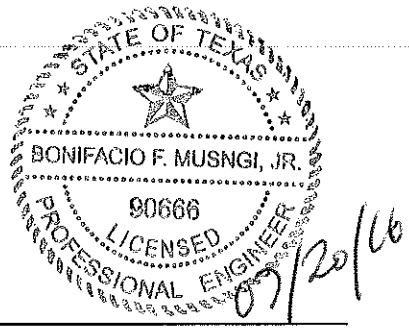
SECTION	FACTOR OF SAFETY (LONG TERM CONDITION)
Section Along CSA	4.06
Section Along CSB	4.08

The results of the stability analyses using the shear strength parameters as discussed above suggest that the slopes of the section configurations provided by ERM will be stable in the long term condition.

Should you have any questions or require additional information pertaining to this letter, please do not hesitate to contact us at your convenience.

Sincerely,

HTS, Inc. Consultants



Bonifacio F. Musngi Jr., P.E.
Senior Engineer

HTS, Inc. Consultants
F-3478

Attachments: **Appendix A – Slope Section Configurations**
Appendix B – Slope Stability Analyses Results

BFM/ba/cg

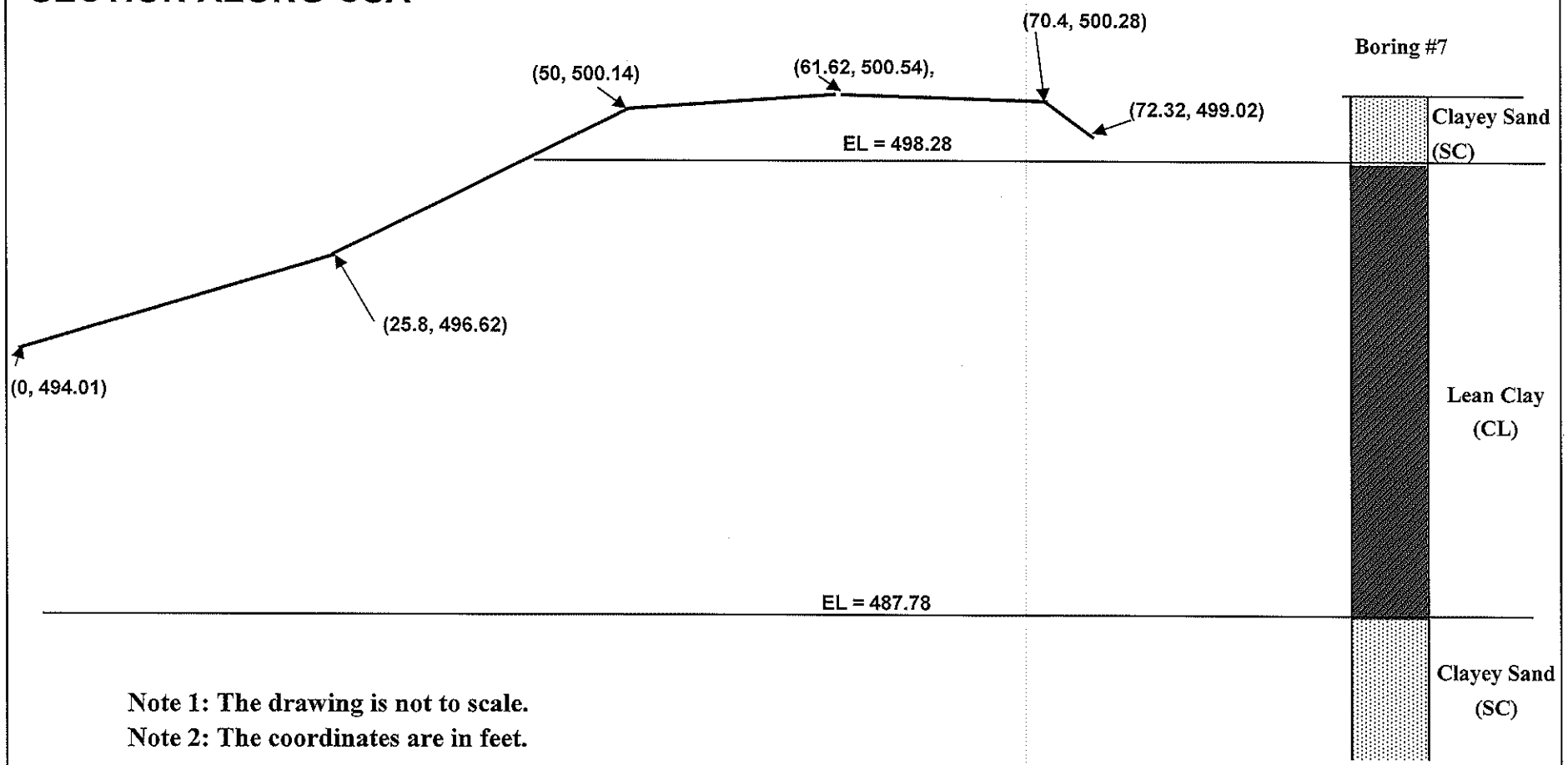
h:word/2016/300-349/16-303

HTS, INC. Consultants

APPENDIX A

HTS, INC. Consultants

SECTION ALONG CSA

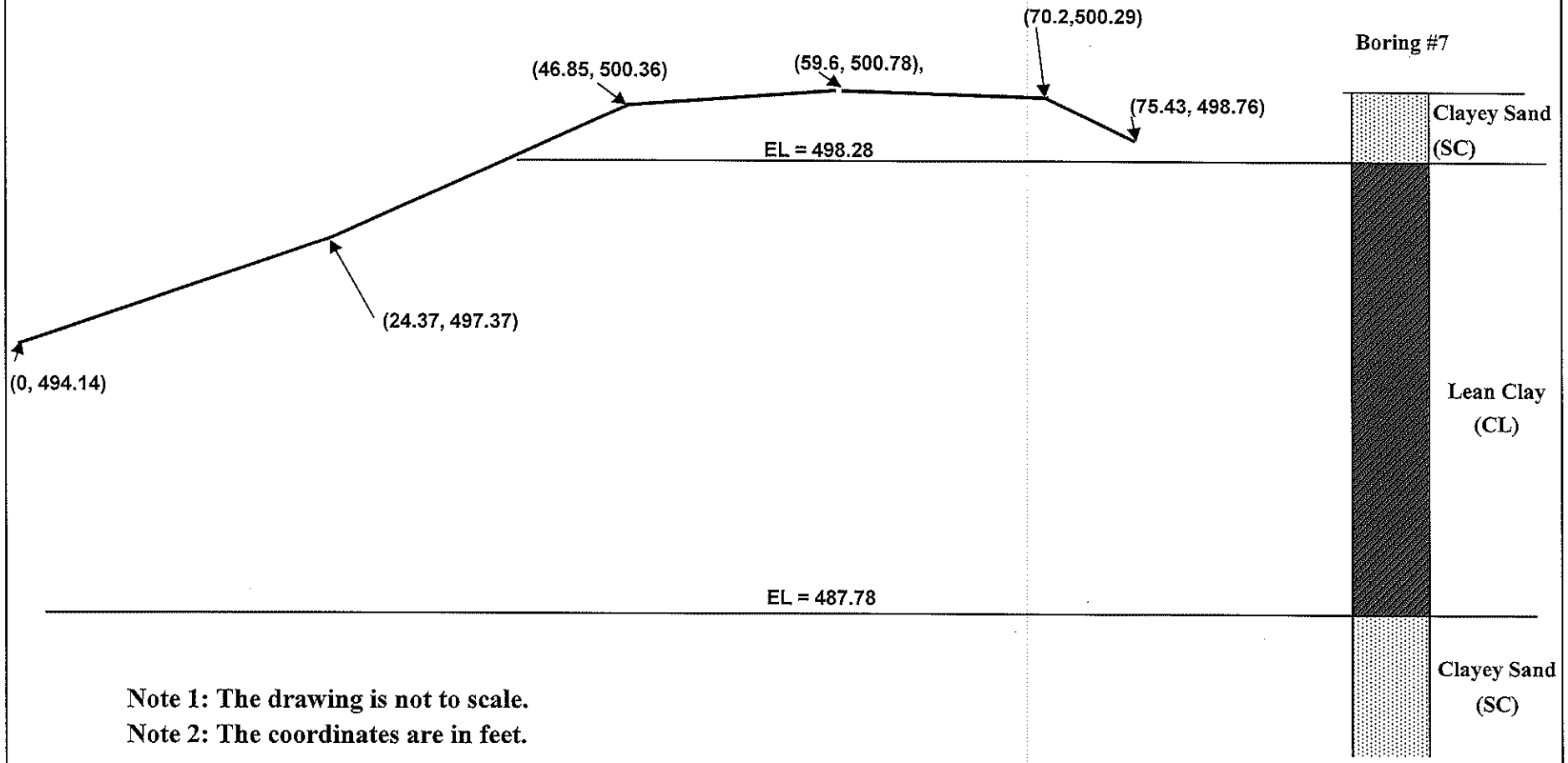


Note 1: The drawing is not to scale.
Note 2: The coordinates are in feet.

HTS, INC. Consultants

Typical Section Configuration for Slope Stability Analyses - Section Along CSA		
Steady State Slope Stability Analysis Ash Pond Berms - Spruce/Deely Generation Units San Antonio, Texas		
Date: 7/18/16	HTS Proj No.: 16-S-303	Plate 1

SECTION ALONG CSB



Note 1: The drawing is not to scale.
Note 2: The coordinates are in feet.

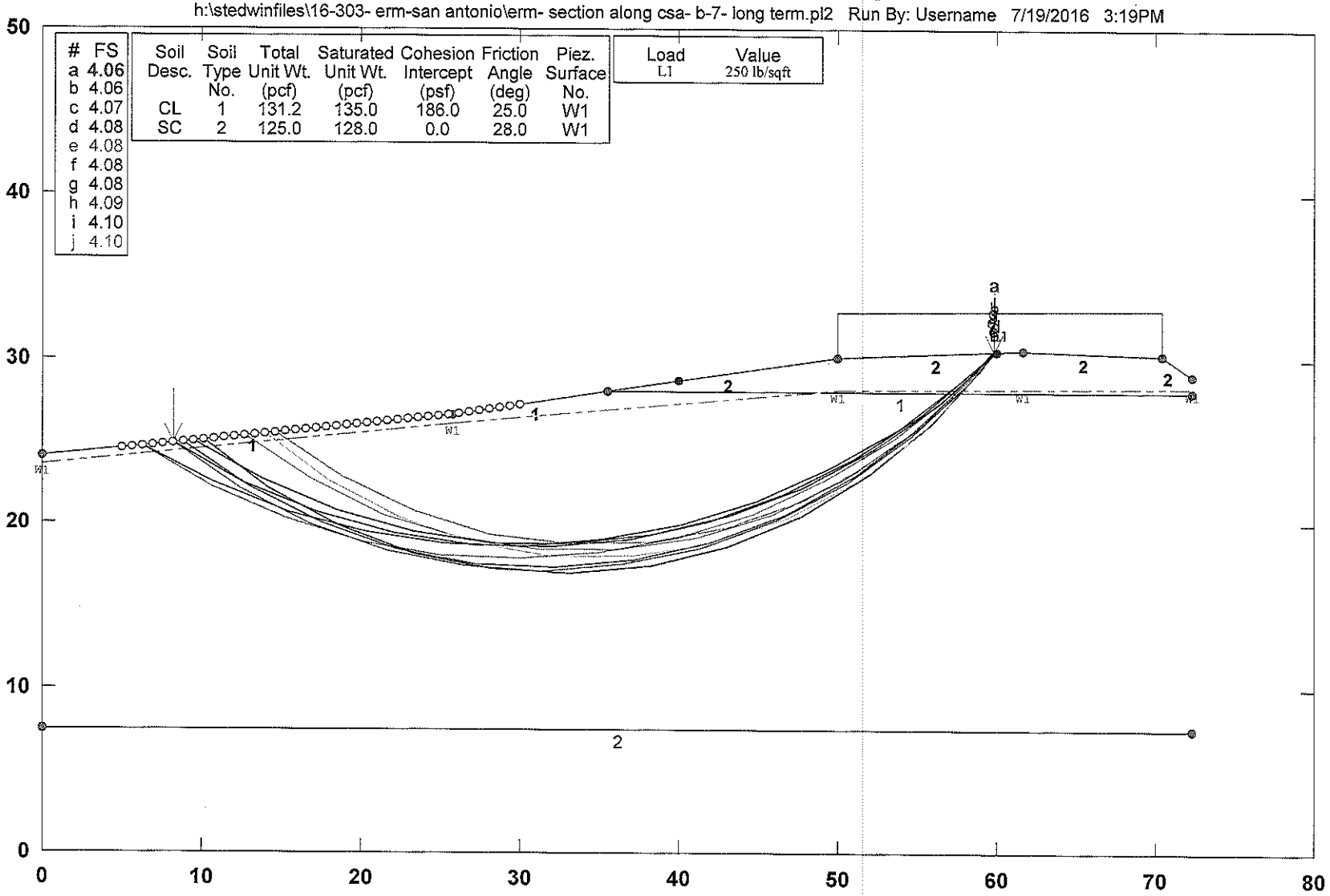
HTS, INC. Consultants

Typical Section Configuration for Slope Stability Analyses - Section Along CSB		
Steady State Slope Stability Analysis Ash Pond Berms - Spruce/Deely Generation Units San Antonio, Texas		
Date: 7/18/16	HTS Proj No.: 16-S-303	Plate 2

APPENDIX B

Ash Pond Berms - Spruce/Deely, B-7 Long Term, CSA

h:\stedwinfiles\16-303- erm-san antonio\erm- section along csa- b-7- long term.pl2 Run By: Username 7/19/2016 3:19PM



#	FS
a	4.06
b	4.06
c	4.07
d	4.08
e	4.08
f	4.08
g	4.08
h	4.09
i	4.10
j	4.10

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
CL	1	131.2	135.0	186.0	25.0	W1
SC	2	125.0	128.0	0.0	28.0	W1

Load	Value
L1	250 lb/sqft

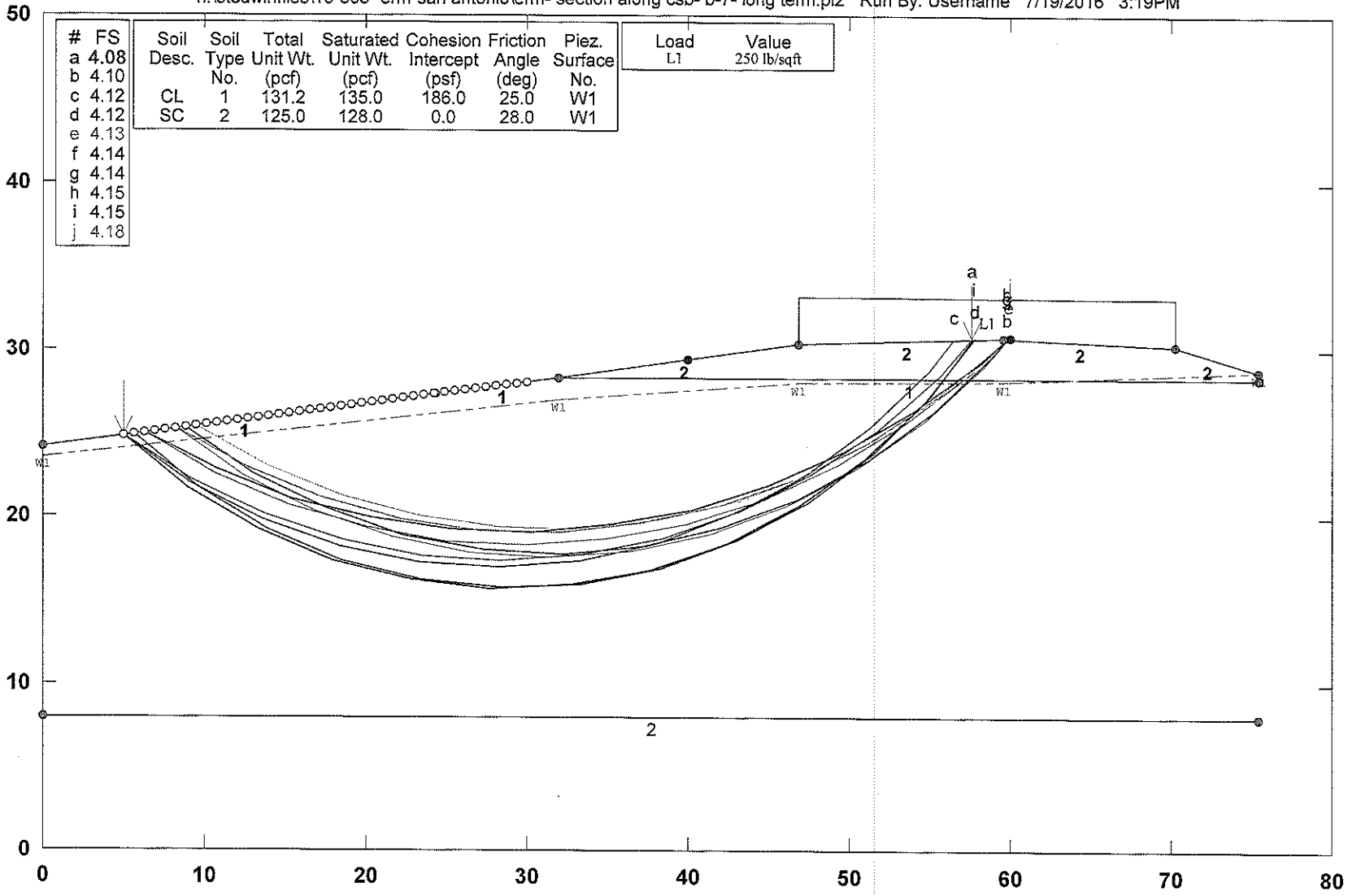
STABL6H FSmin=4.06

Safety Factors Are Calculated By The Modified Bishop Method

HTS, INC. Consultants

Ash Pond Berms - Spruce/Deely, B-7 Long Term, CSB

h:\stedwinfiles\16-303- erm-san antonio\erm- section along csb- b-7- long term.pl2 Run By: Username 7/19/2016 3:19PM



STABL6H FSmin=4.08

Safety Factors Are Calculated By The Modified Bishop Method

HTS, INC. Consultants

Attachment 15 Written Demonstrations

Environmental Resources Management

CityCentre Four
840 West Sam Houston Pkwy N.
Suite 600
Houston, Texas 77024
(281) 600-1000
(281) 600-1001 (Fax)

April 4, 2018

Mr. Michael Malone
CPS Energy
145 Navarro Street
San Antonio, Texas 78205

Project No. 0337367

Subject: Written Demonstration – Responses to Potential Statistically Significant Increases
Calaveras Power Station
San Antonio, Texas

Dear Mr. Malone:

Executive Summary

Title 40, Code of Federal Regulations, Part 257 (40 CFR §257) (a.k.a. the Coal Combustion Residual (CCR) Rule) was published in the Federal Register in April 2015 and became effective in October 2015. The CCR Rule allows for continued beneficial use of all CCR. CPS Energy operates active surface impoundments and a landfill primarily for temporary storage and historically for disposal of fly ash and bottom ash.

One of the many requirements of the CCR Rule was for CPS Energy to determine if there are impacts to groundwater from any of the surface impoundments and landfill at the Calaveras Power Station that contain CCR, and post the determination to its website by January 31, 2018. As required by the CCR Rule, eight rounds of groundwater sampling were completed by October 17, 2017. The evaluation of the groundwater sample results indicated a potential statistically significant increase (SSI) for a limited number of constituents from the Evaporation Pond (EP), Fly Ash Landfill (FAL), and Bottom Ash Ponds (BAPs). Groundwater sample results from the Sludge Recycling Holding (SRH) Pond did not indicate a potential SSI.

Based on the evidence provided in this Written Demonstration, 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 will continue with a detection monitoring program.

Introduction

CPS Energy owns and operates the Calaveras Power Station that consists of two power plants (J.T Deely and J.K. Spruce) that are subject to regulation under the CCR Rule. Currently, CPS Energy operates four CCR units at the Power Station: Evaporation Pond (EP), Fly Ash Landfill (FAL), Bottom Ash Ponds (BAPs), and the Sludge Recycle Holding (SRH) Pond. For the purpose of this Written Demonstration, the EP and FAL are collectively referred to as "Northern CCR Units". An *Annual Groundwater Monitoring and Corrective Action Report* was submitted for each of these CCR units. The *Annual Groundwater Monitoring and Corrective Action Reports* indicated that a potential statistically significant increase (SSI) over background levels was determined for one or more Appendix III constituents from monitoring wells associated with the EP, FAL, and BAPs. A potential SSI over background levels was not determined from monitoring wells associated with 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 a 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. If a successful demonstration is not completed within the 90-day period, the owner or operator must initiate an assessment monitoring program.

Groundwater Quality – General Comments

Several groundwater monitoring wells were installed in the northern portion of the property prior to the construction of the Northern CCR Units (EP was initially constructed as a landfill in 1990 and later converted to the surface impoundment in 1996 and the FAL was constructed in 1992). For the purpose of this Written Demonstration, the groundwater monitoring wells installed before the CCR units were constructed are termed "pre-existing monitoring wells". Groundwater monitoring results from the pre-existing monitoring wells were evaluated to compare background water quality and spatial and temporal variability as it relates to potential SSIs. In general, between 1988 and 1992, there was considerable variability in the concentrations in the wells. For example, TDS concentrations ranged from less than 500 mg/L to 9,000 mg/L and pH values ranged between 3.0 and 7.0 standard units (SU) with no apparent pattern in location, screened interval, or sample timing. Spatial variability was also observed at monitoring wells located upgradient from the Northern CCR Units, both before and after these CCR units were constructed. Note that several of the pre-existing

monitoring wells are being used in the current groundwater monitoring system/monitoring well network.

Evaporation Pond (EP)

The downgradient monitoring well results from the October 2017 sampling event were used for comparison to historical data. Upper Prediction Limits (UPLs) and Lower Prediction Limits (LPLs) were calculated in the *Annual Groundwater Monitoring and Corrective Action Report* for the purpose of determining a potential SSI over background levels. Downgradient monitoring well results determined to be a potential SSI (i.e., greater than the UPLs or less than the LPLs) are shown in Table 1. A potential SSI was not determined in any other monitoring well associated with the EP.

TABLE 1. EP Downgradient Results Exceedances

Analyte	Well	LPL	UPL	Sample Date	Value	Unit
Fluoride	JKS-36	--	0.465	2017-10-11	1.32	mg/L
pH	JKS-36	5.68	6.75	2017-10-11	3.24	SU

All initial exceedances of the UPL and LPL were confirmed with re-testing of JKS-36 in January 2018 per the 1-of-2 re-testing scheme.

As shown in Figure 1, fluoride concentrations in JKS-36 from 1988 to 1992 fluctuated between approximately 0.6 and 1.5 mg/L, with no apparent pattern or significant increasing or decreasing trend. The concentrations of fluoride detected in JKS-36 during the initial CCR monitoring period were within this range and appear to be naturally occurring. There is no apparent correlation to screened depth, lithology, or proximity to the unit, and the concentrations reflect natural variability of this constituent.

As shown in Figure 1, data collected in JKS-36 from 1988 to 1992 indicate what should be considered stable background conditions prior to the unit being in long term use, with pH values fluctuating between approximately 3.2 and 4.6 SU. The pH values measured in JKS-36 during the initial CCR monitoring period were within this range and appear to be naturally occurring. In addition, as shown on Figure 2, three other monitoring wells in the northern portion of the property (JKS-31, JKS-40, and JKS-43) have similarly low pH values. There is no apparent correlation to screened depth, lithology, or proximity to the unit, and the values reflect natural variability of this constituent. Furthermore, pH values measured in water within the EP in January 2018 ranged between 8.86 and 9.24 SU, so the expectation would be that a release from the EP would also be alkaline.

Fly Ash Landfill (FAL)

The downgradient monitoring well results from the October 2017 sampling event were used for comparison to historical data. UPLs and LPLs were calculated in the *Annual Groundwater Monitoring and Corrective Action Report* for the purpose of determining a potential SSI over background levels. Downgradient monitoring well results determined to be a potential SSI (i.e., greater than the UPLs or less than the LPLs) are shown in Table 2. A potential SSI was not determined in any other monitoring well associated with the FAL.

TABLE 2. FAL Downgradient Results Exceedances

Analyte	Well	LPL	UPL	Sample Date	Value	Unit
Calcium	JKS-33	--	450	2017-10-10	531	mg/L
Chloride	JKS-33	--	314	2017-10-10	666	mg/L
Chloride	JKS-60	--	314	2017-10-10	352	mg/L
pH	JKS-31	4.02	6.73	2017-10-10	3.98	SU
pH	JKS-46	4.02	6.73	2017-10-10	3.20	SU

All initial exceedances of the UPL and LPL were confirmed with re-testing of JKS-31, JKS-33, JKS-46, and JKS-60 in January 2018 per the 1-of-2 re-testing scheme.

The apparent elevated concentrations of calcium and chloride measured in JKS-33 and JKS-60 are consistent with historical results of monitoring wells in the vicinity of the FAL before the unit was constructed and appear to be naturally occurring. As shown in Figure 3, calcium concentrations in JKS-33 have fluctuated between approximately 300 and 1,400 mg/L since monitoring began in 1988, with no significant change in concentrations since construction of the FAL. As also shown in Figure 3, chloride concentrations in JKS-33 have decreased from approximately 1,600 to less than 800 mg/L since monitoring began in 1988.

As shown in Figure 2, data collected in JKS-31 from 1988 to 1992 indicate stable background conditions, with pH values fluctuating between approximately 2.8 and 5.0 SU. The pH values measured in JKS-31 and JKS-46 during the initial CCR monitoring period were within this range and appear to be naturally occurring. As mentioned above, and as also shown in Figure 2, three other monitoring wells in the northern portion of the property (JKS-36, JKS-40, and JKS-43) have similarly low pH values. There is no apparent correlation to screened depth, lithology, or proximity to the unit, and the values reflect natural variability of this constituent.

Note: The FAL is primarily used for storage of fly ash prior to offsite beneficial use.

Bottom Ash Ponds (BAPs)

The downgradient monitoring well results from the October 2017 sampling event were used for comparison to historical data. UPLs and LPLs were calculated in the *Annual Groundwater Monitoring and Corrective Action Report* for the purpose of determining a potential SSI over background levels. Downgradient monitoring well results determined to be a potential SSI (i.e., greater than the UPLs or less than the LPLs) are shown in Table 3. A potential SSI was not determined in any other monitoring well associated with the BAPs.

TABLE 3. BAPs Downgradient Results Exceedances

Analyte	Well	LPL	UPL	Sample Date	Value	Unit
Fluoride	JKS-48	--	0.857	2017-10-10	1.22	mg/L
Fluoride	JKS-55	--	0.857	2017-10-10	0.864	mg/L
Boron	JKS-50R	--	3.52	2017-10-10	4.54	mg/L

All initial exceedances of the UPL were confirmed with re-testing of JKS-48, JKS-50R, and JKS-55 in January 2018 per the 1-of-2 re-testing scheme.

As shown on Figure 4, historical results from monitoring wells located upgradient of the Northern CCR Units, before and after the CCR units were constructed, indicate fluoride concentrations fluctuating between approximately 0.2 and 4.2 mg/L. The apparent elevated concentrations of fluoride detected in JKS-48 and JKS-55 during the initial CCR monitoring period are within the range of concentrations historically detected in these other monitoring wells, and appear to be naturally occurring.

Boron concentrations detected in the monitoring wells located near the BAPs range from approximately 0.6 and 4.7 mg/L. While the highest boron concentration detected exceeds the UPL for the BAPs, background monitoring wells for the BAPs and other monitoring wells located in the northern portion of the property have boron concentrations within the same order of magnitude. These boron concentrations in the monitoring wells located in the northern portion of the property reflect the natural variability in groundwater quality before the CCR units were constructed.

For comparison, a study of groundwater contamination from coal power plants across the southeast United States documented a 1 to 2 order of magnitude increase in boron concentrations between background and affected monitoring wells (Harkness et al., 2016). The detections in the wells in the study had boron concentrations of 1 to 6 mg/L, compared to background levels ranging from non-detect to 0.04 mg/L. Another study of affected groundwater from a CCR site in Indiana (Buszka et al., 2007) documented a 2 to 3 order of magnitude increase in boron concentrations between background and affected monitoring wells.

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, grab samples of effluent water from the BAPs had reported boron concentrations of 1.03 mg/L and 1.16 mg/L. Because boron is concentrated in coal ash compared to the original coal (Openshaw, 1992), and because boron is one of the more easily leached constituents in coal ash (Izquierdo and Querol, 2012), a low concentration of boron in the effluent indicates that the leachable boron concentration in the bottom ash is relatively low. In February 2018, a grab sample of the bottom ash that is being sent to the BAPs had a boron concentration of 122 mg/kg, and the toxicity characteristic leaching procedure (TCLP) analysis on this same sample had a boron concentration of 1.1 mg/L. The concentration of boron in the effluent and the leachable concentration of boron in the bottom ash are less than the concentration in JKS-50R.

Summary

EP – The concentrations of constituents associated with potential SSIs (fluoride and pH) appear to be naturally occurring and reflect natural variation in groundwater quality in the vicinity of the CCR unit.

FAL – The concentrations of constituents associated with potential SSIs (calcium, chloride, and pH) appear to be naturally occurring and reflect natural variation in groundwater quality in the vicinity of the CCR unit.

BAPs – The concentrations of constituents associated with potential SSIs (fluoride and boron) appear to be naturally occurring and reflect natural variation in groundwater quality in the vicinity of the CCR unit. In addition, if the boron concentration was associated with a release, other elevated Appendix III constituents would be expected and the expectation would be that the detected boron concentration would be lower based on the effluent water and bottom ash analyses.

Conclusions

Based on the evidence provided in this Written Demonstration, 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 will continue with a detection monitoring program.

References

Buszka, P. M., J. Fitzpatrick, L. R. Watson, and R. T. Kay. 2007. Evaluation of Ground-Water and Boron Sources by Use of Boron Stable-Isotope Ratios, Tritium, and Selected Water-Chemistry Constituents near Beverly Shores, Northwestern Indiana, 2004. U.S. Geological Survey Scientific Investigations Report Series 2007-5166.

Harkness, J. S., B. Sulkin, and A. Vengosh. 2016. Evidence for Coal Ash Ponds Leaking in the Southeastern United States. Environmental Science and Technology, v. 50 no. 12, p 6583-6592.

Izquierdo, M. and X. Querol. 2012. Leaching behaviour of elements from coal combustion fly ash: An overview. International Journal of Coal Geology. v. 94., p. 54-66.

Milligan, J. D. and R. J. Ruane. 1980. Effects of Coal-ash Leachate on Ground Water Quality. USEPA Interagency Energy/Environment R&D Program Report, EPA-600/7-80-066.

Openshaw, S. C. 1992. Utilization of Coal Fly Ash. MS Thesis. University of Florida.

Certification

Certification from a qualified professional engineer verifying the accuracy of the information provided in this Written Demonstration is provided in Attachment 1.

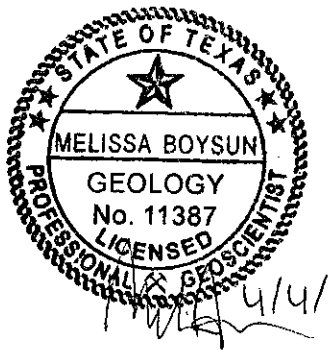
We appreciate the opportunity to work with you on this project. Please contact me if you should have any questions.

Sincerely,

Environmental Resources Management

Melissa Boysun, P.G.

Texas Professional Geoscientist No. 11387



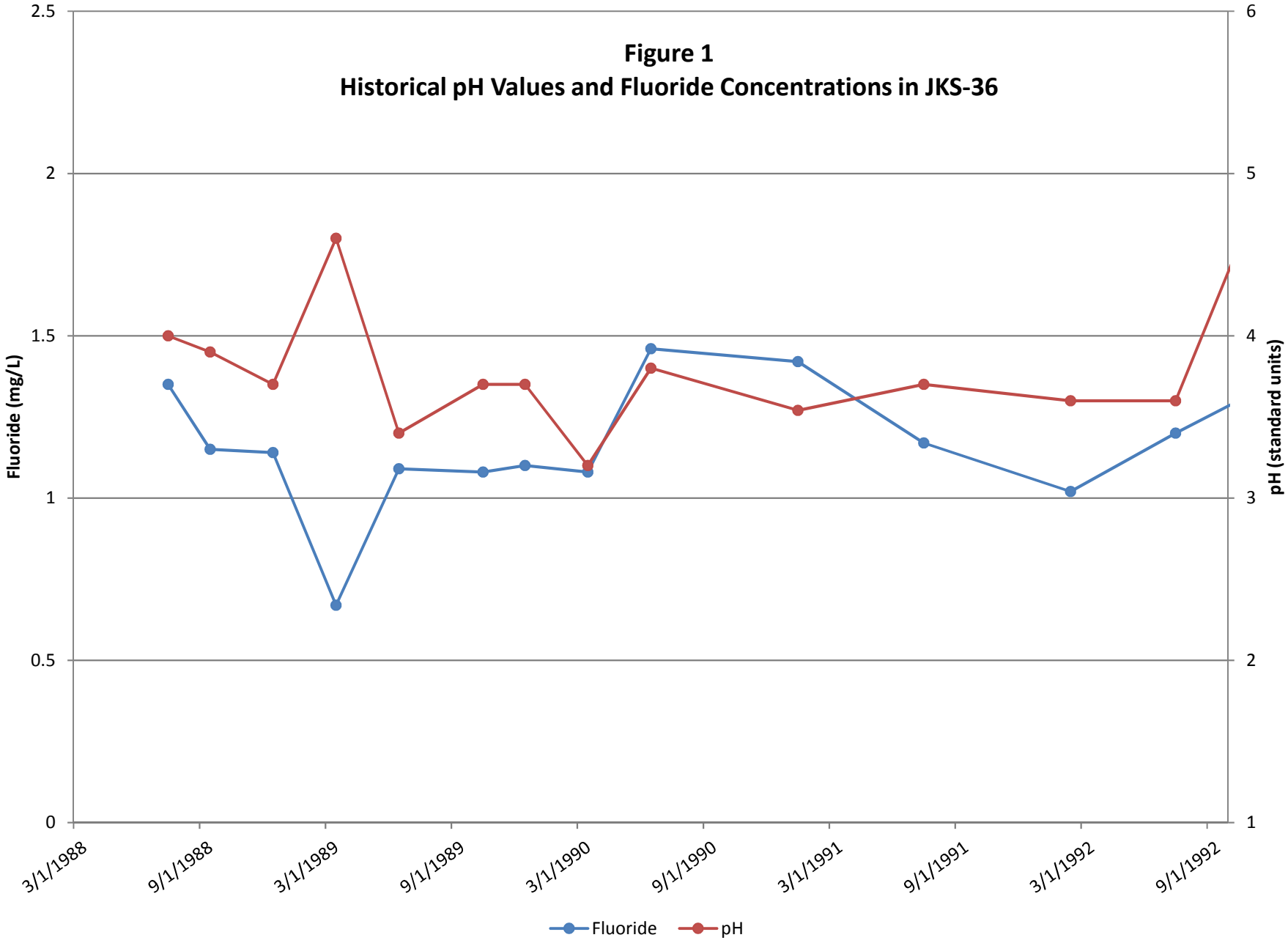
4/4/18

Figures

April 2018
Project No. 0337367
CPS Energy

Environmental Resources Management
CityCentre Four
840 West Sam Houston Pkwy N. Suite 600
Houston, Texas 77024
(281) 600-1000

Figure 1
Historical pH Values and Fluoride Concentrations in JKS-36



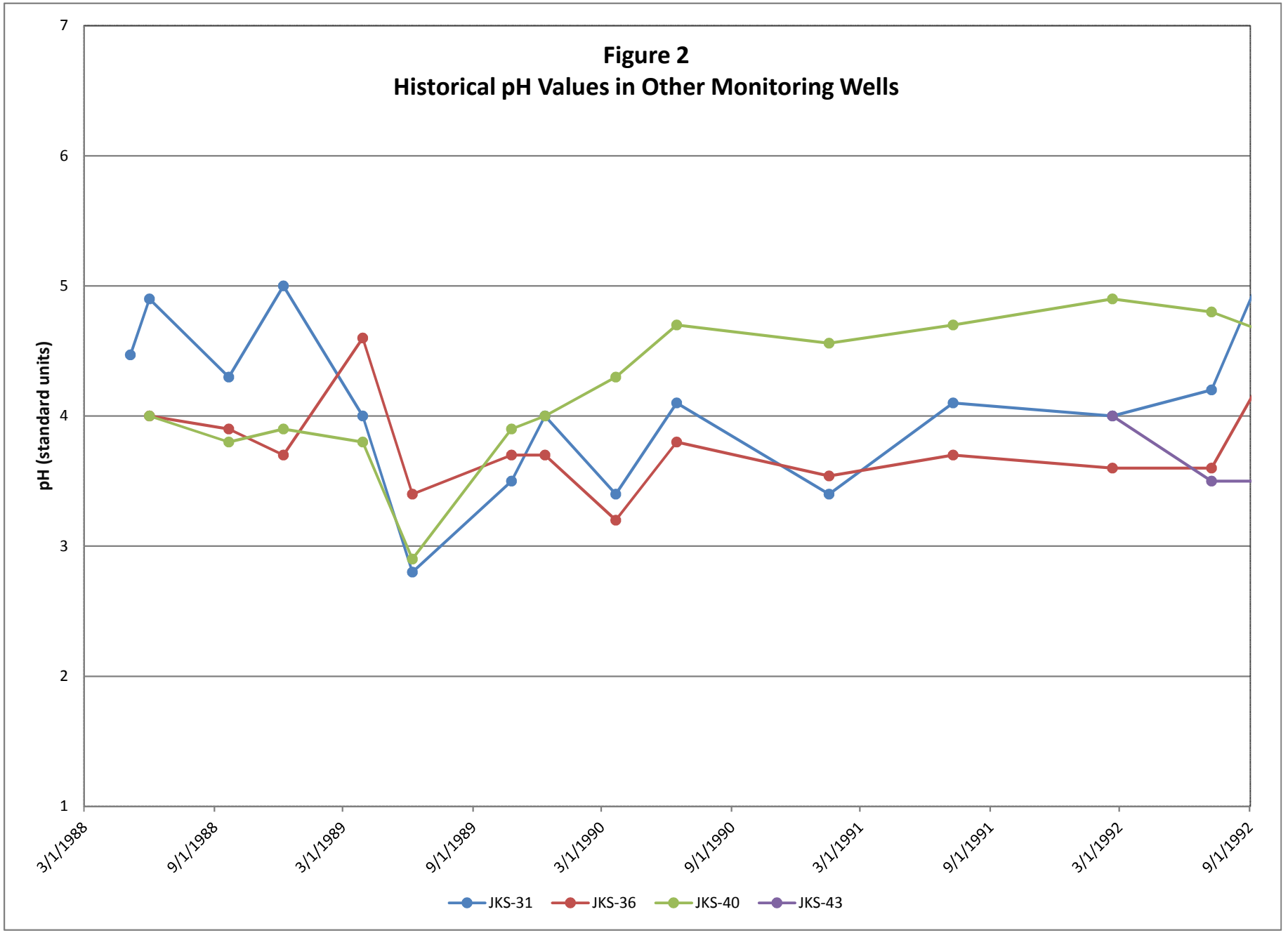


Figure 2
Historical pH Values in Other Monitoring Wells
pH (standard units)
7
6
5
4
3
2
1
3/1/1988
9/1/1988
3/1/1989
9/1/1989
3/1/1990
9/1/1990
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JKS-31
JKS-36
JKS-40
JKS-43

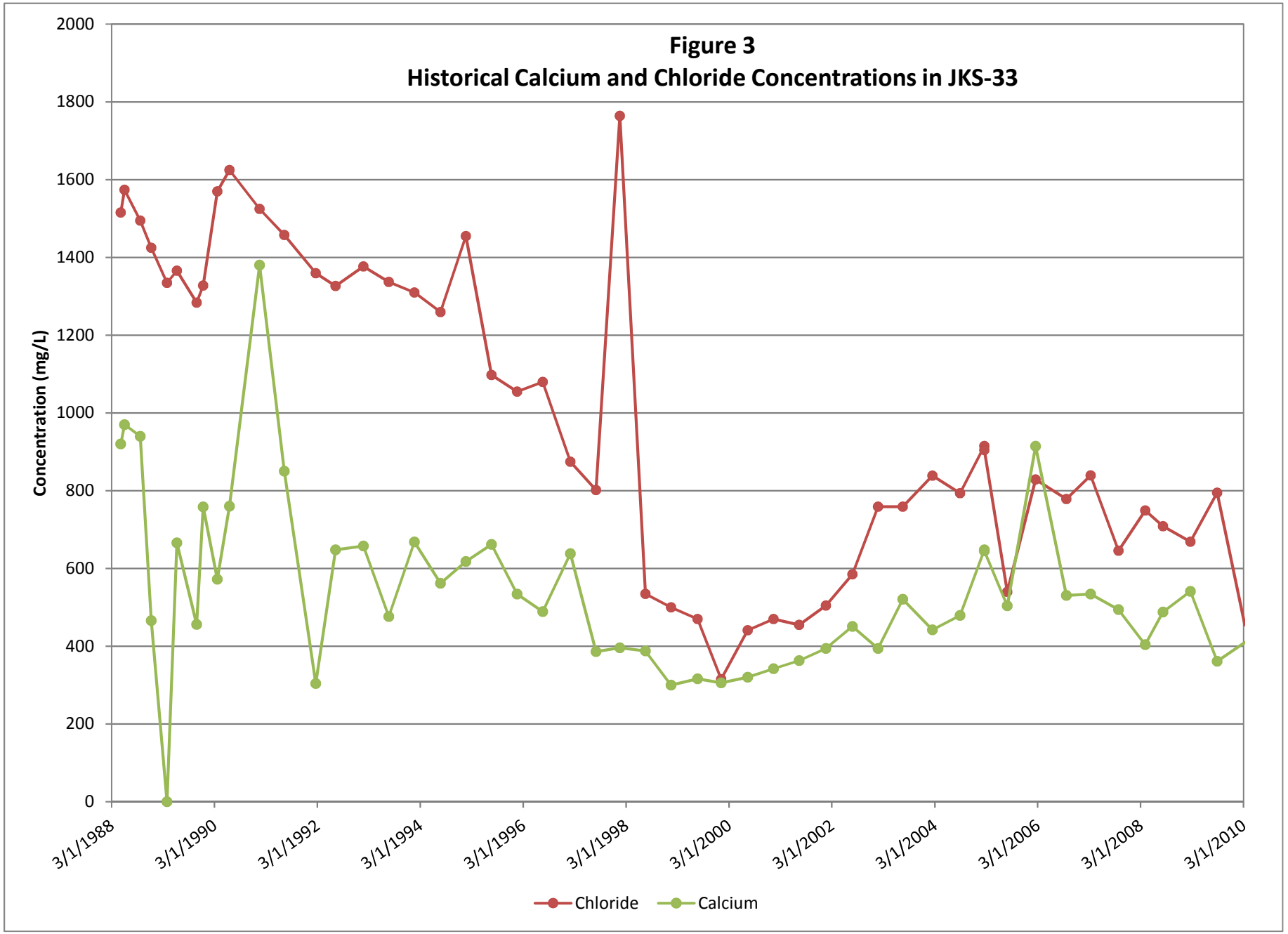


Figure 3
Historical Calcium and Chloride Concentrations in JKS-33
Concentration (mg/L)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
3/1/1988
3/1/1990
3/1/1992
3/1/1994
3/1/1996
3/1/1998
3/1/2000
3/1/2002
3/1/2004
3/1/2006
3/1/2008
3/1/2010
Chloride
Calcium

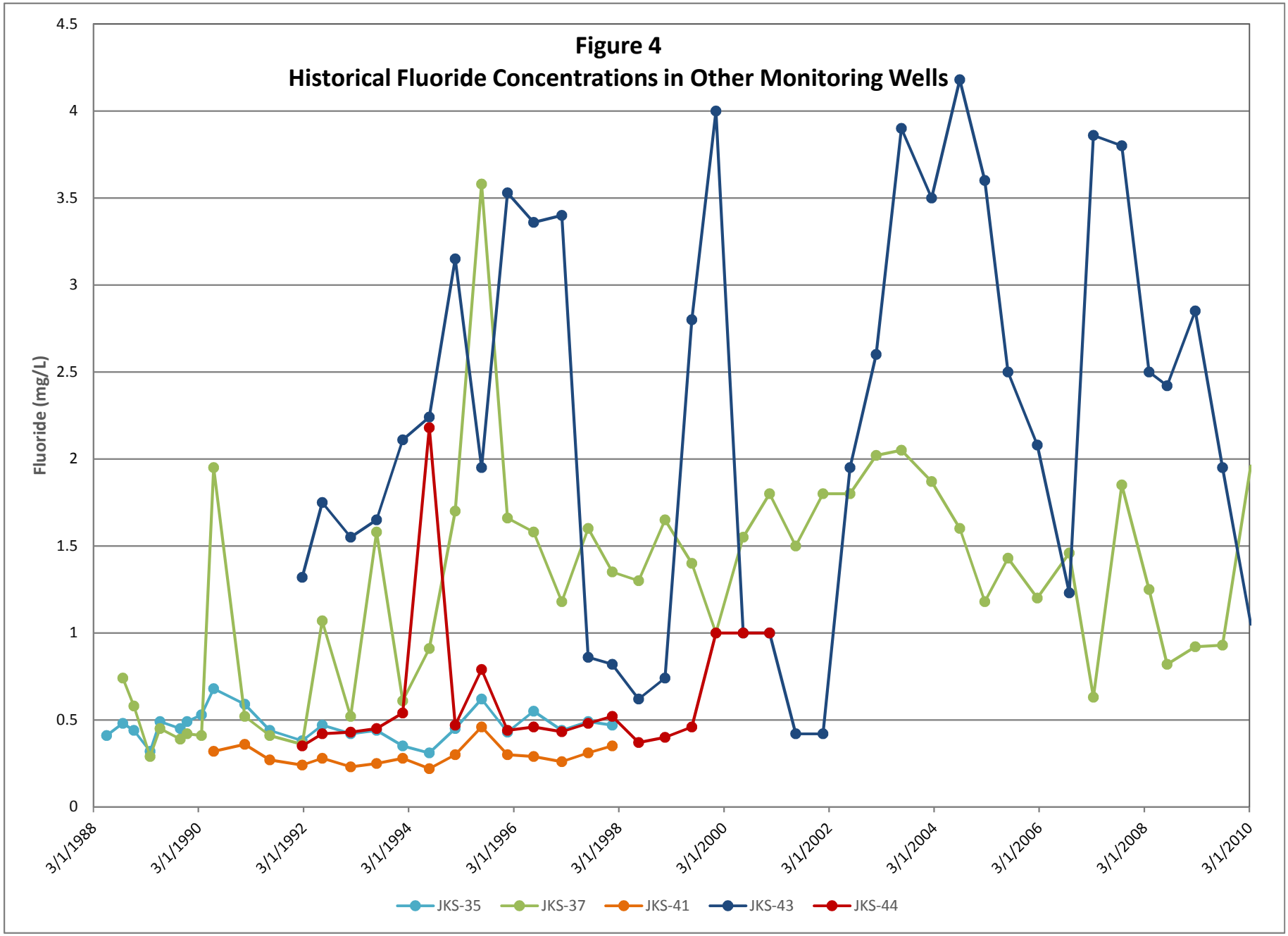


Figure 4
Historical Fluoride Concentrations in Other Monitoring Wells
Fluoride (mg/L)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
3/1/1988
3/1/1990
3/1/1992
3/1/1994
3/1/1996
3/1/1998
3/1/2000
3/1/2002
3/1/2004
3/1/2006
3/1/2008
3/1/2010
JKS-35
JKS-37
JKS-41
JKS-43
JKS-44

Certification

Attachment 1

April 2018
Project No. 0337367
CPS Energy

Environmental Resources Management
CityCentre Four
840 West Sam Houston Pkwy N. Suite 600
Houston, Texas 77024
(281) 600-1000

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 §257.94(e)(2).

Jeffery L. Bauguss, P.E.

Texas Licensed Professional Engineer No. 86195

4/4/18

ERM

CityCentre Four
840 West Sam Houston Parkway
North, Suite 600
Houston, Texas 77024-3920

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

www.erm.com

27 February 2019

Mr. Michael Malone
CPS Energy
145 Navarro Street
San Antonio, Texas 78205

Reference: Project No. 0337367

Dear Mr. Malone:

Subject: *Written Demonstration* – Responses to Potential Statistically Significant Increases
Calaveras Power Station
San Antonio, Texas

Executive Summary

Title 40, Code of Federal Regulations, Part 257 (40 CFR §257) (a.k.a. the Coal Combustion Residual (CCR) Rule) was published in the Federal Register in April 2015 and became effective in October 2015. The CCR Rule allows for continued beneficial use of all CCR. CPS Energy operates active surface impoundments and a landfill primarily for temporary storage and historically for disposal of fly ash and bottom ash.

One of the many requirements of the CCR Rule was for CPS Energy to determine if there are impacts to groundwater from any of the surface impoundments and landfill at the Calaveras Power Station that contain CCR, and post the evaluation to its website on an annual basis. The evaluation of the October 2018 groundwater sample results indicated a potential statistically significant increase (SSI) for a limited number of constituents from the Evaporation Pond (EP), Fly Ash Landfill (FAL), and Bottom Ash Ponds (BAPs). Groundwater sample results from the Sludge Recycling Holding (SRH) Pond did not indicate a potential SSI.

Based on the evidence provided in this *Written Demonstration,* 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 will continue with a detection monitoring program.

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

Introduction

CPS Energy owns and operates the Calaveras Power Station that consists of two power plants (J.T Deely and J.K. Spruce) that are subject to regulation under the CCR Rule. Currently, CPS Energy operates four CCR units at the Power Station: Evaporation Pond (EP), Fly Ash Landfill (FAL), Bottom Ash Ponds (BAPs), and the Sludge Recycle Holding (SRH) Pond. An *Annual Groundwater Monitoring and Corrective Action Report* (Report) was submitted for each of these CCR units. Upper Prediction Limits (UPLs) and Lower Prediction Limits (LPLs) were calculated in each Report for the purpose of determining a potential statistically significant increase (SSI) over background levels. The Reports indicated that a potential SSI over background levels was determined for one or more Appendix III constituents from monitoring wells associated with the EP, FAL, and BAPs. A potential SSI over background levels was not determined from monitoring wells associated with 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 a 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. If a successful demonstration is not completed within the 90-day period, the owner or operator must initiate an assessment monitoring program.

General Comments and Terms

- Several groundwater monitoring wells were installed in the northern portion of the property prior to the construction of the EP and FAL (collectively termed Northern CCR Units). The EP was initially constructed as a landfill in 1990 and later converted to the surface impoundment in 1996 and the FAL was constructed in 1992.

- 'historical data' refers to analytical data collected from 1988 through 1992 from monitoring wells that were in existence before the EP and FAL were operated. These monitoring wells are located over one mile north of the BAPs, and although the BAPs were constructed in 1977, the historical data collected from these wells and the current data collected from upgradient wells of the Northern CCR Units is useful in evaluating BAP data.

- 'background monitoring period' refers to the period from December 2016 to October 2017 when eight independent samples were collected from each background and downgradient well within the CCR monitoring well network.

Evaporation Pond (EP)

Downgradient monitoring well results determined to be a potential SSI (i.e., greater than the UPLs or less than the LPLs) for the EP are discussed below.

Boron (JKS-61)

Boron concentrations detected in EP monitoring wells were not previously identified as potential SSIs necessitating discussion in the April 2018 *Written Demonstration*. The boron concentrations detected in JKS-61 during the October 2018 monitoring event (3.25 mg/L) and the February 2019 resampling event (3.12 mg/L and 2.87 mg/L for the duplicate sample) are within the range of boron concentrations (between 2.67 to 3.48 mg/L) detected in upgradient monitoring well JKS-57 and are in the same order of magnitude (up to 2.27 mg/L) detected in upgradient monitoring well JKS-45 for the other Northern CCR Unit during the background monitoring period. The boron concentrations in these upgradient monitoring wells reflect the natural variability in groundwater quality.

Fluoride (JKS-36, JKS-61 and JKS-62)

Fluoride concentrations detected in JKS-36 were previously discussed in the April 2018 *Written Demonstration* and no SSI was determined for fluoride in this well based on the same lines of evidence provided below. The fluoride concentrations detected in JKS-36, JKS-61, and JKS-62 during the October 2018 monitoring event (1.47 mg/L, 0.43 mg/L and 0.309 mg/L, respectively) are within the range of fluoride concentrations detected in these wells during the background monitoring period. The historical data from JKS-36 indicate naturally occurring fluoride concentrations up to 1.5 mg/L. In addition, historical data from JKS-43 located in the vicinity of the EP indicate naturally occurring fluoride concentrations up to 1.75 mg/L.

pH (JKS-36)

pH values detected in JKS-36 were previously discussed in the April 2018 *Written Demonstration* and no SSI was determined for pH in this well based on the same lines of evidence provided below. The pH value in JKS-36 during the October 2018 monitoring event (3.61 SU) was within the range of pH values from the background monitoring period (between 3.24 and 6.98 SU). In addition, the historical data from JKS-36 indicate naturally occurring pH values ranging between 3.2 and 4.6 SU.

Fly Ash Landfill (FAL)

Downgradient monitoring well results determined to be a potential SSI (i.e., greater than the UPLs or less than the LPLs) for the FAL are discussed below.

Chloride (JKS-33)

Chloride concentrations detected in JKS-33 were previously discussed in the April 2018 *Written Demonstration* and no SSI was determined for chloride in this well based on the same line of evidence provided below. The chloride concentration detected in JKS-33 during the October 2018 monitoring event (758 mg/L) is lower than the chloride concentrations historically detected in this well. Chloride concentrations in JKS-33 have decreased from approximately 1,600 mg/L to less than 800 mg/L since monitoring began in 1988.

pH (JKS-31 and JKS-46)

pH values detected in JKS-31 and JKS-46 were previously discussed in the April 2018 *Written Demonstration* and no SSI was determined for pH in these wells based on the same lines of evidence provided below. The pH value detected in JKS-31 during the October 2018 monitoring event (3.07 SU) is below the range of pH values detected in this well during the background monitoring period (between 3.84 and 6.34 SU); however, historical data from JKS-31 indicate naturally occurring pH values ranging between 2.8 and 5.0 SU. The pH value detected in JKS-46 during the October 2018 monitoring event (3.00 SU) is within the range of pH values detected in this well during the background monitoring period (between 2.1 and 3.6 SU). In addition, historical data from JKS-36, JKS-40, and JKS-43 located in the vicinity of the Northern CCR Units indicate naturally occurring pH values ranging between 2.9 and 4.9 SU.

Note: The FAL is primarily used for storage of fly ash prior to offsite beneficial use.

Bottom Ash Ponds (BAPs)

Downgradient monitoring well results determined to be a potential SSI (i.e., greater than the UPLs or less than the LPLs) for the BAPs are discussed below.

Boron (JKS-50R and JKS-56)

Boron concentrations detected in JKS-50R were previously discussed in the April 2018 *Written Demonstration* and no SSI was determined for boron in this well based on the same lines of evidence provided below. The boron concentrations detected in JKS-50R and JKS-56 during the October 2018 monitoring event (5.17 mg/L and 3.95 mg/L, respectively) are in the same order of magnitude detected in upgradient monitoring wells JKS-57 and JKS-45 (up to 3.48 mg/L and 2.27 mg/L, respectively) for the Northern CCR Units during the background monitoring period. The boron concentrations in these upgradient monitoring wells reflect the natural variability in groundwater quality.

For comparison, a study of groundwater contamination from coal power plants across the southeast United States documented a 1 to 2 order of magnitude increase in boron concentrations between background and affected monitoring wells (Harkness et al., 2016). The detections in the wells in the study had boron concentrations of 1 to 6 mg/L, compared to background levels ranging from non-detect to 0.04 mg/L. Another study of affected groundwater from a CCR site in Indiana (Buszka et al., 2007) documented a 2 to 3 order of magnitude increase in boron concentrations between background and affected monitoring wells.

In addition, the statistical analysis shows that no other Appendix III constituents were identified as potential SSIs in JKS-50R or JKS-56. If the elevated boron concentrations were 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, grab samples of effluent water from the BAPs had reported boron concentrations of 1.03 mg/L and 1.16 mg/L. Because boron is concentrated in coal ash compared to the original coal (Openshaw, 1992), and because boron is one of the more easily leached constituents in coal ash (Izquierdo and Querol, 2012), a low concentration of boron in the effluent indicates that the leachable boron concentration in the bottom ash is relatively low. In February 2018, a grab sample of the bottom ash being sent

to the BAPs had a boron concentration of 122 mg/kg, and the toxicity characteristic leaching procedure (TCLP) analysis on this same sample had a boron concentration of 1.1 mg/L. The concentration of boron in the effluent and the leachable concentration of boron in the bottom ash are less than the concentrations in JKS-50R or JKS-56.

Fluoride (JKS-48)

Fluoride concentrations detected in JKS-48 were previously discussed in the April 2018 *Written Demonstration* and no SSI was determined for fluoride in this well based on the same lines of evidence provided below. The fluoride concentration detected in JKS-48 during the October 2018 monitoring event (1.31 mg/L) is within the range of fluoride concentrations detected in this well during the background monitoring period (between less than 0.2 and 1.62 mg/L). In addition, historical data from JKS-43 located in the vicinity of the Northern CCR Units indicates naturally occurring fluoride concentrations up to 1.75 mg/L.

Summary

EP – The concentrations of constituents associated with potential SSIs (boron, fluoride and pH) appear to be naturally occurring and reflect natural variability in groundwater quality.

FAL – The concentrations of constituents associated with potential SSIs (chloride and pH) appear to be naturally occurring and reflect natural variability in groundwater quality.

BAPs – The concentrations of constituents associated with potential SSIs (boron and fluoride) appear to be naturally occurring and reflect natural variability in groundwater quality. In addition, if the boron concentrations were associated with a release, other elevated Appendix III constituents would be expected and the expectation would be that the detected boron concentrations would be lower based on the effluent water and bottom ash analyses.

Conclusions

Based on the evidence provided in this *Written Demonstration*, 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 will continue with a detection monitoring program.

References

Buszka, P. M., J. Fitzpatrick, L. R. Watson, and R. T. Kay. 2007. Evaluation of Ground-Water and Boron Sources by Use of Boron Stable-Isotope Ratios, Tritium, and Selected Water-Chemistry Constituents near Beverly Shores, Northwestern Indiana, 2004. U.S. Geological Survey Scientific Investigations Report Series 2007-5166.

Harkness, J. S., B. Sulkin, and A. Vengosh. 2016. Evidence for Coal Ash Ponds Leaking in the Southeastern United States. Environmental Science and Technology, v. 50 no. 12, p 6583-6592.

Izquierdo, M. and X. Querol. 2012. Leaching behaviour of elements from coal combustion fly ash: An overview. International Journal of Coal Geology. v. 94. p. 54-66.

Milligan, J. D. and R. J. Ruane. 1980. Effects of Coal-ash Leachate on Ground Water Quality. USEPA Interagency Energy/Environment R&D Program Report, EPA-600/7-80-066.

Openshaw, S. C. 1992. Utilization of Coal Fly Ash. MS Thesis. University of Florida.

Certification

Certification from a qualified professional engineer verifying the accuracy of the information provided in this *Written Demonstration* is provided in Attachment 1.

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

Yours sincerely,

Walter Zverina
Senior Project Manager

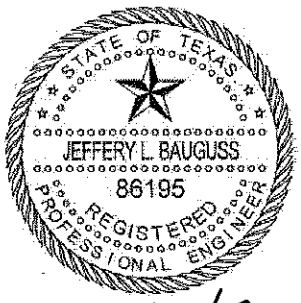
ATTACHMENT 1 CERTIFICATION

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 §257.94(e)(2).



2/27/19

Jeffery L. Bauguss, P.E.
Texas Licensed Professional Engineer No. 86195

ERM

CityCentre Four
840 West Sam Houston Parkway
North, Suite 600
Houston, Texas 77024-3920

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

www.erm.com

27 April 2020

Mr. Michael Malone
CPS Energy
145 Navarro Street
San Antonio, Texas 78205

Reference: Project No. 0503422

Dear Mr. Malone:

Subject: Written Demonstration – Responses to Potential Statistically Significant Increases
Calaveras Power Station
San Antonio, Texas

Executive Summary

Title 40, Code of Federal Regulations, Part 257 (40 CFR §257) (a.k.a. the Coal Combustion Residual (CCR) Rule) was published in the Federal Register in April 2015 and became effective in October 2015. The CCR Rule allows for continued beneficial use of all CCR. CPS Energy operates active surface impoundments and a landfill primarily for temporary storage and historically for disposal of fly ash and bottom ash.

One of the many requirements of the CCR Rule was for CPS Energy to determine if there are impacts to groundwater from any of the surface impoundments and landfill at the Calaveras Power Station that contain CCR, and post the evaluation to its website on an annual basis. The evaluation of the October 2019 groundwater sample results indicated a potential statistically significant increase (SSI) for a limited number of constituents from the Evaporation Pond (EP), Fly Ash Landfill (FAL), and Bottom Ash Ponds (BAPs). Groundwater sample results from the Sludge Recycle Holding (SRH) Pond did not indicate a potential SSI.

Based on the evidence provided in this Written Demonstration, 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 will continue with a detection monitoring program.

Introduction

CPS Energy owns and operates the Calaveras Power Station that consists of two power plants (J.T Deely and J.K. Spruce) that are subject to regulation under the CCR Rule. Currently, CPS Energy operates three CCR units at the Power Station: Evaporation Pond (EP), Fly Ash Landfill (FAL), and the Sludge Recycle Holding (SRH) Pond. Although the J.T. Deely Power Plant ceased operation at the end of December 2018 and sluiced bottom ash is no longer being received at the Bottom Ash Ponds (BAPs), the BAPs will continue to be monitored until the units have undergone closure. An Annual Groundwater Monitoring and Corrective Action Report (Report) was completed for each of these CCR units. Upper Prediction Limits (UPLs) and Lower Prediction Limits (LPLs) were calculated in each Report for the purpose of determining a potential statistically significant increase (SSI) over background levels. The Reports indicated that a potential SSI over background levels was determined for one or more Appendix III constituents from monitoring wells

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associated with the EP, FAL, and BAPs. A potential SSI over background levels was not determined from monitoring wells associated with 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 a 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. If a successful demonstration is not completed within the 90-day period, the owner or operator must initiate an assessment monitoring program.

General Comments and Terms

- Several groundwater monitoring wells were installed in the northern portion of the property prior to the construction of the EP and FAL (collectively termed Northern CCR Units). The EP was initially constructed as a landfill in 1990 and later converted to the surface impoundment in 1996 and the FAL was constructed in 1992.
- 'historical data' refers to analytical data collected from 1988 through 1992 from monitoring wells that were in existence before the EP and FAL were operated. These monitoring wells are located over one mile north of the BAPs, and although the BAPs were constructed in 1977, the historical data collected from these wells and the current data collected from upgradient wells of the Northern CCR Units is useful in evaluating BAP data.
- 'background monitoring period' refers to the period from December 2016 to October 2017 when eight independent samples were collected from each background and downgradient well within the CCR monitoring well network.

Evaporation Pond (EP)

Downgradient monitoring well results determined to be a potential SSI (i.e., greater than the UPLs or less than the LPLs) for the EP are presented in the following table and are discussed below.

Analyte	Well	LPL	UPL	Sample Date	Value	Unit
Boron	JKS-61	--	1.88	2019-10-22	2.90	mg/L
Fluoride	JKS-36	--	0.382	2019-10-22	1.41	mg/L
Fluoride	JKS-61	--	0.382	2019-10-22	0.48	mg/L
pH	JKS-36	4.58	6.47	2019-10-22	3.66	SU

Boron (JKS-61)

Boron concentrations detected in JKS-61 were previously discussed in the February 2019 *Written Demonstration* and no SSI was determined for boron in this well based on the line of evidence provided below. The boron concentrations detected in JKS-61 during the October 2019 monitoring event (2.90 mg/L) and the February 2020 resampling event (2.30 mg/L) are less than or within the range of boron concentrations (between 2.67 to 3.48 mg/L) detected in upgradient monitoring well

JKS-57 and are in the same order of magnitude (up to 2.27 mg/L) detected in upgradient monitoring well JKS-45 for the other Northern CCR Unit during the background monitoring period. The boron concentrations in these upgradient monitoring wells reflect the natural variability in groundwater quality.

Fluoride (JKS-36 and JKS-61)

Fluoride concentrations detected in JKS-36 and JKS-61 were previously discussed in the April 2018 and February 2019 *Written Demonstrations* and no SSI were determined for fluoride in these wells based on the lines of evidence provided below. The fluoride concentrations detected in JKS-36 and JKS-61 during the October 2019 monitoring event (1.41 mg/L and 0.48 mg/L, respectively) are within the range of fluoride concentrations (between <0.036 mg/L and 1.53 mg/L and between <0.036 mg/L and 0.64 mg/L, respectively) detected in these monitoring wells during the background monitoring period. The historical data from JKS-36 indicate naturally occurring fluoride concentrations up to 1.5 mg/L. In addition, historical data from JKS-43 located in the vicinity of the EP indicate naturally occurring fluoride concentrations up to 1.75 mg/L.

pH (JKS-36)

pH values detected in JKS-36 were previously discussed in the April 2018 and February 2019 *Written Demonstrations* and no SSI was determined for pH in this well based on the lines of evidence provided below. The pH value in JKS-36 during the October 2019 monitoring event (3.66 SU) is within the range of pH values (between 3.24 and 6.98 SU) detected during the background monitoring period. In addition, the historical data from JKS-36 indicate naturally occurring pH values ranging between 3.2 and 4.6 SU.

Fly Ash Landfill (FAL)

Downgradient monitoring well results determined to be a potential SSI (i.e., greater than the UPLs or less than the LPLs) for the FAL are presented in the following table and are discussed below.

Analyte	Well	LPL	UPL	Sample Date	Value	Unit
pH	JKS-31	3.98	6.73	2019-10-22	2.62	SU
pH	JKS-46	3.98	6.73	2019-10-23	2.62	SU

pH (JKS-31 and JKS-46)

pH values detected in JKS-31 and JKS-46 were previously discussed in the April 2018 and February 2019 Written Demonstrations and no SSI was determined for pH in these wells based on the same lines of evidence provided below. The pH value detected in JKS-31 during the October 2019 monitoring event (2.62 SU) is below the range of pH values detected in this well during the background monitoring period (between 3.84 and 6.34 SU); however, the pH value detected in the February 2020 resampling event (4.11 SU) is not a SSI and historical data from JKS-31 indicate naturally occurring pH values ranging between 2.8 and 5.0 SU. The pH values detected in JKS-46 during the October 2019 monitoring event (2.62 SU) and the February 2020 resampling event (3.60 SU) are within the range of pH values detected in this well during the background monitoring period (between 2.1 and 3.6 SU). In addition, historical data from JKS-36, JKS-40, and JKS-43 located in the vicinity of the Northern CCR Units indicate naturally occurring pH values ranging between 2.9 and 4.9 SU.

Note: The FAL is primarily used for storage of fly ash prior to offsite beneficial use and does not store liquid CCR or non-CCR wastestreams.

Bottom Ash Ponds (BAPs)

Downgradient monitoring well results determined to be a potential SSI (i.e., greater than the UPLs or less than the LPLs) for the BAPs are presented in the following table and are discussed below.

Analyte	Well	LPL	UPL	Sample Date	Value	Unit
Boron	JKS-50R	--	2.4	2019-10-22	6.93	mg/L
Boron	JKS-56	--	2.4	2019-10-22	4.47	mg/L
Fluoride	JKS-48	--	0.847	2019-10-22	1.25	mg/L

Boron (JKS-50R and JKS-56)

Boron concentrations detected in JKS-50R and JKS-56 were previously discussed in the February 2019 Written Demonstration and no SSI was determined for boron in these wells based on the lines of evidence provided below. The boron concentrations detected in JKS-50R and JKS-56 during the October 2019 monitoring event (6.93 mg/L and 4.47 mg/L, respectively) and the February 2020 resampling event (6.36 mg/L and 4.04 mg/L, respectively) are in the same order of magnitude detected in upgradient monitoring wells JKS-57 and JKS-45 (up to 3.48 mg/L and 2.27 mg/L, respectively) for the Northern CCR Units during the background monitoring period. The boron concentrations in these upgradient monitoring wells reflect the natural variability in groundwater quality.

For comparison, a study of groundwater contamination from coal power plants across the southeast United States documented a 1 to 2 order of magnitude increase in boron concentrations between background and affected monitoring wells (Harkness et al., 2016). The detections in the wells in the study had boron concentrations of 1 to 6 mg/L, compared to background levels ranging from non-detect to 0.04 mg/L. Another study of affected groundwater from a CCR site in Indiana (Buszka et al., 2007) documented a 2 to 3 order of magnitude increase in boron concentrations between background and affected monitoring wells.

In addition, the statistical analysis shows that no other Appendix III constituents were identified as potential SSIs in JKS-50R or JKS-56. If the elevated boron concentrations were associated with a release, other elevated Appendix III constituent concentrations would also be expected in these wells (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, grab samples of effluent water from the BAPs had reported boron concentrations of 1.03 mg/L and 1.16 mg/L. Because boron is concentrated in coal ash compared to the original coal (Openshaw, 1992), and because boron is one of the more easily leached constituents in coal ash (Izquierdo and Querol, 2012), a low concentration of boron in the effluent indicates that the leachable boron concentration in the bottom ash is relatively low. In February 2018, a grab sample of the bottom ash being sent to the BAPs had a boron concentration of 122 mg/kg, and the toxicity characteristic leaching procedure (TCLP) analysis on this same sample had a boron concentration of 1.1 mg/L. The

concentration of boron in the effluent and the leachable concentration of boron in the bottom ash are less than the concentrations in JKS-50R or JKS-56.

Fluoride (JKS-48)

Fluoride concentrations detected in JKS-48 were previously discussed in the February 2019 Written Demonstration and no SSI was determined for fluoride in this well based on the lines of evidence provided below. The fluoride concentration detected in JKS-48 during the October 2019 monitoring event (1.25 mg/L) is within the range of fluoride concentrations (between <0.2 and 1.62 mg/L) detected in this well during the background monitoring period. In addition, historical data from JKS-43 located in the vicinity of the Northern CCR Units indicates naturally occurring fluoride concentrations up to 1.75 mg/L.

Summary

EP – The concentrations of constituents associated with potential SSIs (boron, fluoride and pH) appear to be naturally occurring and reflect natural variability in groundwater quality.

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Yours sincerely,

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Walter Zverina
Project Manager

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WRITTEN DEMONSTRATION CERTIFICATION

Calaveras Power Station
San Antonio, Texas
CPS Energy

CERTIFICATION

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Jeffery L. Bauguss, P.E.
Texas Licensed Professional Engineer No. 86195

4/27/2020

ERM

CityCentre Four
840 West Sam Houston Parkway
North, Suite 600
Houston, Texas 77024-3920

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

www.erm.com

18 June 2021

Mr. Michael Malone
CPS Energy
145 Navarro Street
San Antonio, Texas 78205

Reference: Project No. 0503422

Dear Mr. Malone:

Subject: *Written Demonstration* – Responses to Potential Statistically Significant Increases
Calaveras Power Station
San Antonio, Texas

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CPS Energy owns and operates the Calaveras Power Station that consists of two power plants (J.T Deely and J.K. Spruce) that are subject to regulation under the CCR Rule. Currently, CPS Energy operates three CCR units at the Power Station: Evaporation Pond (EP), Fly Ash Landfill (FAL), and the Sludge Recycle Holding (SRH) Pond. Although the J.T. Deely Power Plant ceased operation at the end of December 2018 and sluiced bottom ash is no longer being received at the Bottom Ash Ponds (BAPs), the BAPs will continue to be monitored until the units have undergone closure. An *Annual Groundwater Monitoring and Corrective Action Report* (Report) was completed for each of these CCR units. Upper Prediction Limits (UPLs) and Lower Prediction Limits (LPLs) were calculated in each Report for the purpose of determining a potential statistically significant

increase (SSI) over background levels. The Reports indicated that a potential SSI over background levels was determined for one or more Appendix III constituents from monitoring wells associated with the EP, FAL, and BAPs. A potential SSI over background levels was not determined from monitoring wells associated with 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 a 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. If a successful demonstration is not completed within the 90-day period, the owner or operator must initiate an assessment monitoring program.

General Comments and Terms

- Several groundwater monitoring wells were installed in the northern portion of the property prior to the construction of the EP and FAL (collectively termed Northern CCR Units). The EP was initially constructed as a landfill in 1990 and later converted to the surface impoundment in 1996 and the FAL was constructed in 1992.
- 'Historical data' refers to analytical data collected from 1988 through 1992 from monitoring wells that were in existence before the EP and FAL were operated. These monitoring wells are located over one mile north of the BAPs, and although the BAPs were constructed in 1977, the historical data collected from these wells and the current data collected from upgradient wells of the Northern CCR Units is useful in evaluating BAP data.
- 'Background monitoring period' refers to the period from December 2016 to October 2017 when eight independent samples were collected from each background and downgradient well within the CCR monitoring well network.

Evaporation Pond (EP)

Downgradient monitoring well results determined to be a potential SSI (i.e., greater than the UPLs or less than the LPLs) for the EP are presented in the following table and are discussed below.

Analyte	Well	LPL	UPL	Sample Date	Value	Unit
Fluoride	JKS-36	--	0.382	2020-10-21	1.07	mg/L
pH	JKS-36	4.58	6.21	2020-10-21	3.98	SU
pH	JKS-61	4.58	6.21	2020-10-21	6.57	SU
pH	JKS-62	4.58	6.21	2020-11-17	6.55	SU

Fluoride (JKS-36)

Fluoride concentrations detected in JKS-36 were previously discussed in the April 2018, February 2019, and April 2020 *Written Demonstrations* and no SSI was determined for fluoride in this well based on the lines of evidence provided below. The fluoride concentration detected in JKS-36

during the October 2020 monitoring event (1.07 mg/L) is within the range of fluoride concentrations (between <0.036 mg/L and 1.53 mg/L) detected in this monitoring well during the background monitoring period. The historical data from JKS-36 indicate naturally occurring fluoride concentrations up to 1.5 mg/L. In addition, historical data from JKS-43 located in the vicinity of the EP indicate naturally occurring fluoride concentrations up to 1.75 mg/L.

pH (JKS-36, JKS-61, and JKS-62)

pH values detected in JKS-36 were previously discussed in the April 2018, February 2019, and April 2020 *Written Demonstrations* and no SSI was determined for pH in this well based on the lines of evidence provided below. The pH value in JKS-36 during the October 2020 monitoring event (3.98 SU) is within the range of pH values (between 3.24 and 6.98 SU) detected during the background monitoring period. In addition, the historical data from JKS-36 indicate naturally occurring pH values ranging between 3.2 and 4.6 SU.

pH values detected in JKS-61 and JKS-62 were not previously identified as potential SSIs necessitating discussion. The pH value in JKS-61 during the October 2020 monitoring event (6.57 SU) is within the range of pH values (between 6.48 and 7.40 SU) detected during the background monitoring period. The pH value in JKS-62 during the October 2020 monitoring event (6.55 SU) is below the range of pH values (between 6.63 and 7.51 SU) detected during the background monitoring period. These pH values; however, are essentially neutral (between 6.0 to 8.0 SU) indicative of naturally occurring pH values.

Fly Ash Landfill (FAL)

Downgradient monitoring well results determined to be a potential SSI (i.e., greater than the UPLs or less than the LPLs) for the FAL are presented in the following table and are discussed below.

Analyte	Well	LPL	UPL	Sample Date	Value	Unit
pH	JKS-31	3.98	6.73	2020-10-20	3.68	SU
pH	JKS-46	3.98	6.73	2020-10-20	3.01	SU

pH (JKS-31 and JKS-46)

pH values detected in JKS-31 and JKS-46 were previously discussed in the April 2018, February 2019, and April 2020 *Written Demonstrations* and no SSI was determined for pH in these wells based on the same lines of evidence provided below. The pH value detected in JKS-31 during the October 2020 monitoring event (3.68 SU) is below the range of pH values (between 3.84 and 6.34 SU) detected in this well during the background monitoring period; however, historical data from JKS-31 indicate naturally occurring pH values ranging between 2.8 and 5.0 SU. The pH values detected in JKS-46 during the October 2020 monitoring event (3.01 SU) is within the range of pH values (between 2.1 and 3.6 SU) detected in this well during the background monitoring period. In addition, historical data from JKS-36, JKS-40, and JKS-43 located in the vicinity of the Northern CCR Units indicate naturally occurring pH values ranging between 2.9 and 4.9 SU.

Note: The FAL is primarily used for storage of fly ash prior to offsite beneficial use and does not store liquid CCR or non-CCR wastestreams.

Bottom Ash Ponds (BAPs)

Downgradient monitoring well results determined to be a potential SSI (i.e., greater than the UPLs or less than the LPLs) for the BAPs are presented in the following table and are discussed below.

Analyte	Well	LPL	UPL	Sample Date	Value	Unit
Boron	JKS-50R	--	2.65	2020-10-21	6.79	mg/L
Boron	JKS-56	--	2.65	2020-10-21	4.00	mg/L
Fluoride	JKS-48	--	0.908	2020-10-21	1.05	mg/L

Boron (JKS-50R and JKS-56)

Boron concentrations detected in JKS-50R and JKS-56 were previously discussed in the February 2019 and April 2020 *Written Demonstrations* and no SSI was determined for boron in these wells based on the lines of evidence provided below. The boron concentrations detected in JKS-50R and JKS-56 during the October 2020 monitoring event (6.79 mg/L and 4.00 mg/L, respectively) and the February 2021 resampling event of JKS-50R (5.62 mg/L) are in the same order of magnitude detected in upgradient monitoring wells JKS-57 and JKS-45 (up to 3.48 mg/L and 2.27 mg/L, respectively) for the Northern CCR Units during the background monitoring period. The boron concentrations in these upgradient monitoring wells reflect the natural variability in groundwater quality.

For comparison, a study of groundwater contamination from coal power plants across the southeast United States documented a 1 to 2 order of magnitude increase in boron concentrations between background and affected monitoring wells (Harkness et al., 2016). The detections in the wells in the study had boron concentrations of 1 to 6 mg/L, compared to background levels ranging from non-detect to 0.04 mg/L. Another study of affected groundwater from a CCR site in Indiana (Buszka et al., 2007) documented a 2 to 3 order of magnitude increase in boron concentrations between background and affected monitoring wells.

In addition, the statistical analysis shows that no other Appendix III constituents were identified as potential SSIs in JKS-50R or JKS-56. If the elevated boron concentrations were associated with a release, other elevated Appendix III constituent concentrations would also be expected in these wells (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, grab samples of effluent water from the BAPs had reported boron concentrations of 1.03 mg/L and 1.16 mg/L. Because boron is concentrated in coal ash compared to the original coal (Openshaw, 1992), and because boron is one of the more easily leached constituents in coal ash (Izquierdo and Querol, 2012), a low concentration of boron in the effluent indicates that the leachable boron concentration in the bottom ash is relatively low. In February 2018, a grab sample of the bottom ash being sent to the BAPs had a boron concentration of 122 mg/kg, and the toxicity characteristic leaching procedure (TCLP) analysis on this same sample had a boron concentration of 1.1 mg/L. The concentration of boron in the effluent and the leachable concentration of boron in the bottom ash are less than the concentrations in JKS-50R or JKS-56.

Fluoride (JKS-48)

Fluoride concentrations detected in JKS-48 were previously discussed in the February 2019 and April 2020 *Written Demonstrations* and no SSI was determined for fluoride in this well based on the lines of evidence provided below. The fluoride concentration detected in JKS-48 during the October 2020 monitoring event (1.05 mg/L) is within the range of fluoride concentrations (between <0.096 and 1.62 mg/L) detected in this well during the background monitoring period. In addition, historical data from JKS-43 located in the vicinity of the Northern CCR Units indicates naturally occurring fluoride concentrations up to 1.75 mg/L.

Summary

EP – The concentrations of constituents associated with potential SSIs (fluoride and pH) appear to be naturally occurring and reflect natural variability in groundwater quality.

FAL – The concentrations of constituents associated with potential SSIs (pH) appear to be naturally occurring and reflect natural variability in groundwater quality.

BAPs – The concentrations of constituents associated with potential SSIs (boron and fluoride) appear to be naturally occurring and reflect natural variability in groundwater quality. In addition, if the boron concentrations were associated with a release, other elevated Appendix III constituents would be expected and the expectation would be that the detected boron concentrations would be lower based on the effluent water and bottom ash analyses.

Conclusions

Based on the evidence provided in this *Written Demonstration*, 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.

References

Buszka, P. M., J. Fitzpatrick, L. R. Watson, and R. T. Kay. 2007. Evaluation of Ground-Water and Boron Sources by Use of Boron Stable-Isotope Ratios, Tritium, and Selected Water-Chemistry Constituents near Beverly Shores, Northwestern Indiana, 2004. U.S. Geological Survey Scientific Investigations Report Series 2007-5166.

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Milligan, J. D. and R. J. Ruane. 1980. Effects of Coal-ash Leachate on Ground Water Quality. USEPA Interagency Energy/Environment R&D Program Report, EPA-600/7-80-066.

Openshaw, S. C. 1992. Utilization of Coal Fly Ash. MS Thesis. University of Florida.

Certification

Certification from a qualified professional engineer verifying the accuracy of the information provided in this *Written Demonstration* is provided in Attachment 1.

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

Yours sincerely,

Environmental Resources Management Southwest, Inc.

Walter Zverina
Project Manager

ATTACHMENT 1 CERTIFICATION

WRITTEN DEMONSTRATION CERTIFICATION

Calaveras Power Station
San Antonio, Texas
CPS Energy

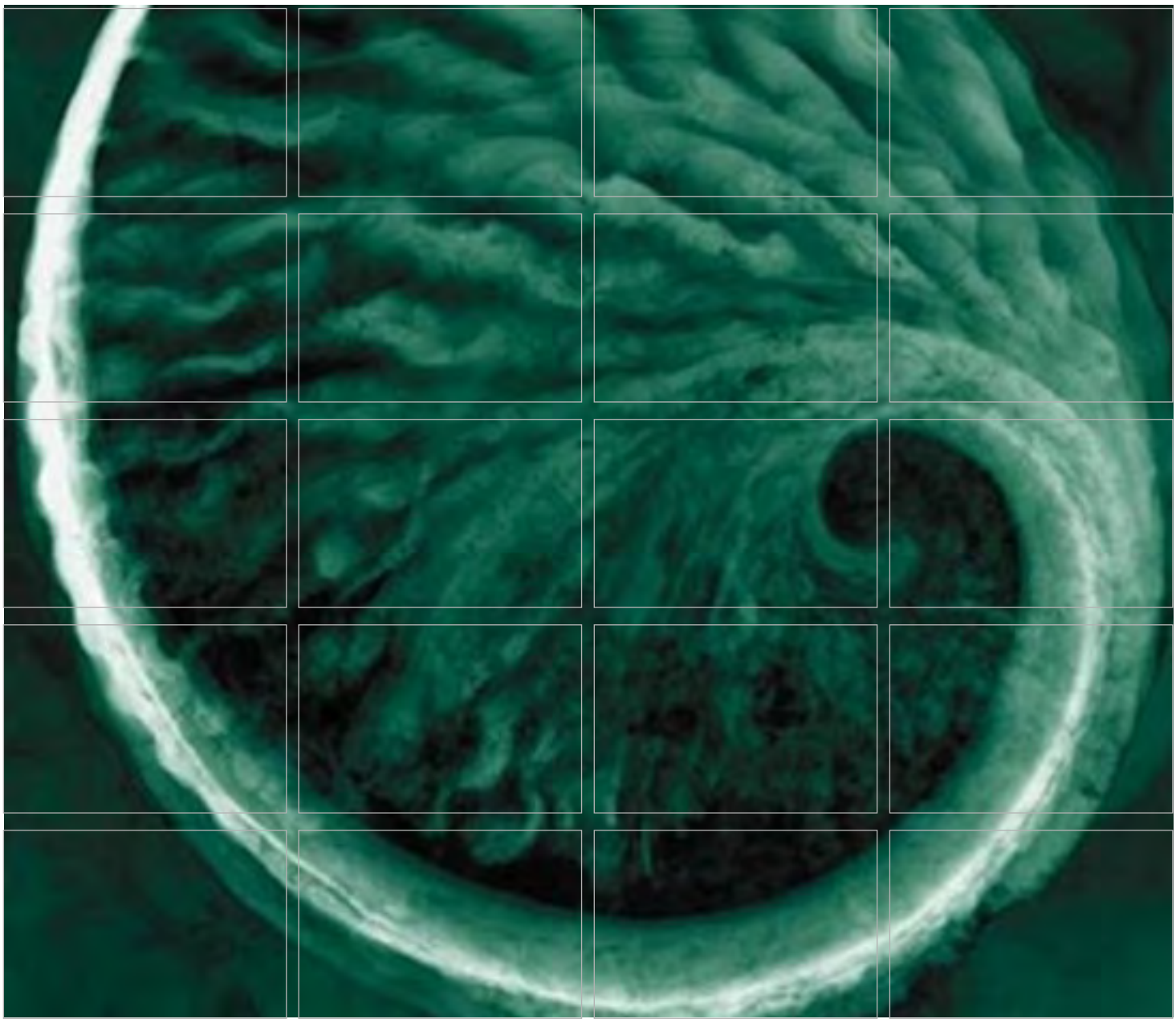
CERTIFICATION

I hereby verify the accuracy of the information provided in this *Written Demonstration* in accordance with the requirements of 40 CFR §257.94(e)(2).

6/18/21

Jeffery L. Bauguss, P.E.
Texas Licensed Professional Engineer No. 86195

Attachment 16 Annual Groundwater Monitoring and Corrective Action Reports



Annual Groundwater Monitoring and Corrective Action Report

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

January 2021

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Calaveras Power Station – Bottom Ash Ponds

Annual Groundwater Monitoring and Corrective Action Report

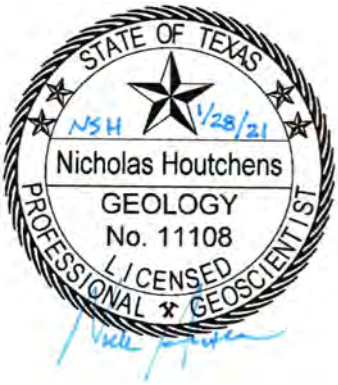
January 2021

Project No. 0503422
San Antonio, Texas

Jeffery L. Bauguss, P.E.
Partner-in-Charge

Walter Zverina
Project Manager

Karen Fletcher
Senior Scientist



Nicholas Houtchens, P.G.
Senior Geologist

Environmental Resources Management
206 East 9th Street, Suite 1700
Austin, TX 78701
T: 512-459-4700

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

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1. CURRENT STATUS SUMMARY

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

- At the start of the 2020 annual reporting period, the BAPs were operating under the detection monitoring program, as defined in §257.94;
- At the end of the 2020 annual reporting period, the BAPs were 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 BAPs;
- A remedy was not required or selected pursuant to §257.97 during the 2020 annual reporting period; and
- No remedial activities were initiated or are ongoing pursuant to §257.98 during the 2020 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) (a.k.a. the CCR Rule). The Power Station is located in unincorporated Bexar County, Texas, approximately 13 miles southeast of San Antonio. Currently, CPS Energy operates three CCR units at the Power Station: Evaporation Pond, Fly Ash Landfill, and the Sludge Recycle Holding (SRH) Pond. Although the J.T. Deely Power Plant ceased operation at the end of December 2018 and sluiced bottom ash is no longer being received at the BAPs, the BAPs will continue to be monitored until the units have undergone closure. This *Annual Groundwater Monitoring and Corrective Action Report* (Report) only addresses the BAPs.

This Report was produced by Environmental Resource Management (ERM), on behalf of CPS Energy, and summarizes the groundwater monitoring activities for the BAPs and provides a statistical summary of the findings for samples collected during the 2020 semi-annual monitoring events. Consistent with the requirements of the CCR Rule, this Report will be posted to the facility's operating records and notification will be made to the State of Texas. Additionally, this Report will be placed on the CPS Energy publically accessible internet site. Unless otherwise mentioned, the analyses in this Report follow the *Groundwater Sampling and Analysis Program* (SAP) (ERM, 2017) posted on the internet site. 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, Figure 2
§257.90(e)(4)	Narrative discussion of any transition between monitoring programs	Section 5

The BAPs are located east of the Power Station generating units and are adjacent to and immediately east of the SRH Pond. The BAPs consists of two separate, but adjacent, ponds (oriented north and south) containing sluiced bottom ash material. The BAPs were constructed in 1977 as part of the original plant construction. 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.

The groundwater monitoring well network consists of two upgradient monitor wells (JKS-49 and JKS-51) and five downgradient monitor wells (JKS-48, JKS-50R, JKS-52, JKS-55, and JKS-56). All monitoring wells are screened within the uppermost groundwater bearing unit (GWBU) in the vicinity of the North and South BAPs. The uppermost GWBU varies in thickness from approximately 9.5 to 21.5 feet thick and is comprised of clayey/silty sand to moderately-sorted sand. The uppermost GWBU is located below semi-confining units (i.e., clay, sandy clay, or silty clay), and above a sandstone bedrock unit.

The monitoring well locations are shown in Figure 1. No problems were encountered in the data collection or in well performance, and no action was required to resolve any issues. No new monitoring wells were installed or decommissioned after the certification of the well network.

Although the J.T. Deely Power Plant ceased operation at the end of December 2018 and sluiced bottom ash is no longer being received at the BAPs, the BAPs will continue to be monitored until the units have undergone closure.

3.1. GROUNDWATER FLOW RATE AND DIRECTION

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 and the potentiometric surfaces for the April and October 2020 monitoring events are shown on Figure 2A and Figure 2B, respectively. As measured during the April 2020 monitoring event, groundwater in the vicinity of the BAPs appears to flow toward Calaveras Lake and the adjacent channel (south and southeast). The horizontal gradient is less than 0.001 feet/foot.

Groundwater elevations measured during the October 2020 monitoring event appear to display radial flow from Calaveras Lake and adjacent channel towards the BAPs (from the east and south), which is a change in groundwater flow direction not previously observed at the BAPs, including April 2020. Similar to observations made during the October 2019 sampling event, JKS-49 was the lowest recorded potentiometric surface elevation. The horizontal gradient is approximately 0.002 feet/foot. Groundwater monitoring networks that exhibit a substantially flat gradient are more likely to experience differences in groundwater flow direction. With proximity to Calaveras Lake, the slightest lake level fluctuations may influence groundwater flow direction. The potentiometric surface elevations will continue to be monitored and a water level study will be initiated in 2021.

3.2. SAMPLING SUMMARY

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

The BAPs monitoring wells were sampled by CPS Energy using low flow sampling techniques during the monitoring events. No data gaps were identified during the 2020 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, located in San Antonio, Texas for analysis. 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. A summary of the data qualifiers are 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 the SAP, a prediction limit approach [40 CFR §257.93(f)] was used to identify potential impacts to groundwater. Tables and figures generated as part of the statistical analysis are provided in Appendix B. The steps outlined in the decision framework in the SAP include:

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

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 C.

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 test shows that:

- One Appendix III analyte [chloride] will follow interwell analysis, with no significant differences present in upgradient data; and
- The remaining six Appendix III analytes [boron, calcium, fluoride, pH, sulfate, and total dissolved solids (TDS)] will follow intrawell analysis, with significant differences present in upgradient data.

Interwell analytes will use a pooled upgradient dataset for subsequent report sections. Conversely, intrawell analytes will have each individual upgradient dataset used for subsequent report sections.

4.2. ESTABLISHMENT OF UPGRADIENT DATASET

When evaluating the concentrations of analytes in groundwater, USEPA Unified 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 BAPs (Appendix B, Table 2). The descriptive statistics highlight a number of relevant characteristics about the upgradient datasets including:

- There are a total of 13 well-analyte combinations for the upgradient dataset;
- 13 well-analyte combinations have detection rates greater than or equal to 50 percent;
- 12 well-analyte combinations have 100 percent detects;

- 11 well-analyte combinations follow a normal distribution (using Shapiro-Wilks Normality Test); and
- Two well-analyte combinations have no discernible distribution.

4.2.2. Outlier Determination

Both statistical and visual outlier tests were performed on the upgradient datasets. Data points identified as both a statistical and visual outlier (Appendix B, Table 3 and Appendix B, Figure 2) were reviewed before they were excluded from the dataset. A total of four potential outliers were initially flagged in the upgradient datasets. However, these values were consistent with seasonal fluctuations and concentrations detected in other upgradient wells or in historical groundwater sampling results. No analytical or sampling issues were identified during data review; therefore, the four values were considered valid and were retained for upper prediction limit (UPL) calculations.

4.2.3. Check for Temporal Stability

A trend test was performed for all values in the upgradient wells that had 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 following summarizes the results of the trend analysis:

- There are a total of 13 well-analyte combinations in the upgradient dataset; and
- 13 well-analyte combinations meet the data requirements of the trend test of which:
    - One well-analyte combination had an increasing trend;
    - One well-analyte combination had a decreasing trend; and
    - 11 well-analyte combinations had no trend (i.e., concentrations were stable over time).

4.3. CALCULATION OF PREDICTION LIMITS

A multi-part assessment of the monitoring wells was performed to determine what type of UPL to calculate as a compliance point. A decision framework was applied for each upgradient well based on inter/intrawell analysis, data availability, and presence of temporal trends.

A total of two well-analyte combinations were found to have either increasing or decreasing trends. For these well-analyte combinations, a bootstrapped UPL calculated around a Theil Sen trend was used to derive a more accurate UPL. The remaining 11 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 October 2020 sampling results in the downgradient wells. A final lower prediction limit (LPL) was also selected for pH. For the one analyte following interwell analysis, the upgradient dataset was pooled prior to UPL calculations, resulting in a single UPL value per analyte. For the six analytes following intrawell analysis, an 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 UPL and LPL Values

Analysis Type	Analyte	LPL	UPL	Unit
Intrawell	Boron	--	2.65	mg/L
Intrawell	Calcium	--	387	mg/L
Interwell	Chloride	--	607	mg/L
Intrawell	Fluoride	--	0.908	mg/L
Intrawell	pH	5.48	7.31	SU
Intrawell	Sulfate	--	462	mg/L
Intrawell	TDS	--	2,380	mg/L

4.4. CONCLUSIONS

The downgradient samples collected during the October 2020 monitoring event were used for compliance comparisons. All downgradient wells were below the UPLs and above the LPLs for pH with the following exceptions shown in the table below. All downgradient wells with initial exceedances were examined for trends to assess the stability of concentrations. A summary of these trend test results are provided in Appendix B, Figure 4.

Downgradient UPL Exceedances

Analyte	Well	LPL	UPL	Sample Date	Value	Unit
Boron	JKS-50R	--	2.65	2020-10-21	6.79	mg/L
Boron	JKS-56	--	2.65	2020-10-21	4.00	mg/L
Fluoride	JKS-48	--	0.908	2020-10-21	1.05	mg/L

Additionally, each downgradient well-analyte pair had a Wilcoxon Rank Sum test comparing if their median is greater than the UPL or less than the LPL for pH. This nonparametric, rank-based test was used as an additional line of evidence for downgradient well compliance. Specific well-analyte pairs are of interest if: (1) there is a recent exceedance of the UPL, but historic concentrations place the median less than the UPL, or (2) there is not a recent exceedance of the UPL, but historic concentrations place the median greater than the UPL. All downgradient wells had medians less than the UPLs and greater than the LPLs for pH with the following exceptions shown in the table below. Full downgradient results are provided in Appendix B, Table 6, with boxplots in Appendix B, Figure 5.

Downgradient Median Exceedances

Analyte	Well
Boron	JKS-50R
Boron	JKS-56

All initial exceedances of the UPL may be confirmed with re-testing of the downgradient wells per the 1-of-2 re-testing scheme. If the initial exceedance is confirmed with re-testing results from the same well, and if the well-analyte combination median is greater than the UPL, the well-analyte combination will be declared a statistically significant increase (SSI) above background. Any wells with re-testing results at or less than the UPL will be considered in

compliance and will not require further action. Any resampling results will be reported in the subsequent *Written Demonstration*.

5. RECOMMENDATIONS

Currently, there are no plans to transition from detection monitoring to assessment monitoring. Consistent with the 1-of-2 re-testing approach described in the Unified Guidance and the SAP, initial exceedances may be re-tested within 90 days. Based on these re-testing results, if an SSI is found, a notification or *Written Demonstration* will be prepared within 90 days. Based on the findings of the *Written Demonstration*, detection monitoring or assessment monitoring will be initiated as appropriate under §257.94 and §257.95.

6. REFERENCES

ERM, 2017. *Groundwater Sampling and Analysis Program.*

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
Bottom Ash Ponds

		JKS-49 Upgradient		JKS-51 Upgradient		JKS-48 Downgradient		JKS-50R Downgradient	
		TOC Elevation	498.63	TOC Elevation	496.92	TOC Elevation	497.19	TOC Elevation	498.48
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	8.81	489.82	10.76	486.16	11.47	485.72	12.50	485.98
2	2/21/17 to 2/23/17	8.56	490.07	10.80	486.12	11.80	485.39	12.70	485.78
3	3/28/17 to 3/30/17	8.90	489.73	10.59	486.33	11.64	485.55	12.32	486.16
4	5/2/17 to 5/4/17	8.85	489.78	10.56	486.36	11.72	485.47	12.49	485.99
5	6/20/17 to 6/21/17	8.75	489.88	10.56	486.36	12.00	485.19	12.81	485.67
6	7/25/17 to 7/26/17	8.46	490.17	10.68	486.24	11.91	485.28	12.78	485.70
7	8/29/17 to 8/30/17	7.21	491.42	10.48	486.44	11.77	485.42	12.53	485.95
8	10/10/17 to 10/11/17	11.17	487.46	10.98	485.94	12.24	484.95	13.44	485.04
9	4/4/18 to 4/5/18	9.00	489.63	10.93	485.99	12.15	485.04	14.03	484.45
10	10/30/18 to 10/31/18	6.88	491.75	10.45	486.47	11.73	485.46	12.08	486.40
11	4/9/19 to 4/10/19	12.52	486.11	11.02	485.90	11.80	485.39	13.10	485.38
12	10/22/19 to 10/23/19	14.84	483.79	12.00	484.92	12.57	484.62	14.10	484.38
13	4/28/20 to 4/29/20	13.58	485.05	11.79	485.13	12.41	484.78	13.66	484.82
14	10/20/20 to 10/21/20	14.42	484.21	12.11	484.81	12.39	484.80	13.98	484.50

		JKS-52 Downgradient		JKS-55 Downgradient		JKS-56 Downgradient	
		TOC Elevation	493.15	TOC Elevation	493.81	TOC Elevation	496.66
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	7.53	485.62	8.15	485.66	11.12	485.54
2	2/21/17 to 2/23/17	7.43	485.72	8.51	485.30	10.90	485.76
3	3/28/17 to 3/30/17	7.33	485.82	8.25	485.56	10.50	486.16
4	5/2/17 to 5/4/17	7.35	485.80	8.40	485.41	10.65	486.01
5	6/20/17 to 6/21/17	7.46	485.69	8.79	485.02	11.00	485.66
6	7/25/17 to 7/26/17	7.50	485.65	8.77	485.04	10.95	485.71
7	8/29/17 to 8/30/17	7.40	485.75	8.59	485.22	10.72	485.94
8	10/10/17 to 10/11/17	7.53	485.62	8.92	484.89	11.61	485.05
9	4/4/18 to 4/5/18	8.48	484.67	8.90	484.91	11.13	485.53
10	10/30/18 to 10/31/18	8.33	484.82	8.25	485.56	10.27	486.39
11	4/9/19 to 4/10/19	7.65	485.50	8.60	485.21	11.30	485.36
12	10/22/19 to 10/23/19	9.40	483.75	9.64	484.17	12.34	484.32
13	4/28/20 to 4/29/20	8.20	484.95	9.19	484.62	11.78	484.88
14	10/20/20 to 10/21/20	8.07	485.08	9.49	484.32	12.10	484.56

NOTES:
btoc = below top of casing
msl = mean sea level

TABLE 2
Groundwater Sampling Summary
CPS Energy - Calaveras Power Station
Bottom Ash Ponds

CCR Unit	Well ID	Well Function	Number of Samples Collected in 2016 - 2020	2016 - 2020 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	10/20/20 to 10/21/20	
Bottom Ash Ponds	JKS-48	Downgradient Monitoring	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection
	JKS-49	Upgradient Monitoring	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection
	JKS-50R	Downgradient Monitoring	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection
	JKS-51	Upgradient Monitoring	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection
	JKS-52	Downgradient Monitoring	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection
	JKS-55	Downgradient Monitoring	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection
	JKS-56	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
Bottom Ash Ponds

		JKS-49 Upgradient													
	Sample Date	12/7/16	2/22/17	3/28/17	5/3/17	6/20/17	7/25/17	8/29/17	10/10/17	4/4/18	10/30/18	4/9/19	10/22/19	4/28/20	10/21/20
	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
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
Appendix III - Detection Monitoring															
Boron	mg/L	3.24	3.28	3.28	3.03 X	3.04 J	2.76	2.85	2.87	2.71	2.70	2.05	2.58	2.47	2.81
Calcium	mg/L	130	146	173	113	127	120	145	147	135	117 D	154 D	127 D	114 J	132
Chloride	mg/L	295 D	383 D	372 D	326	414 D	448 D	459 D	424	446 D	408	449	429	452	435
Fluoride	mg/L	0.715	0.643 JH	0.665 JH	0.809	0.627 JH	0.617 JH	0.525	0.712	0.697	0.719	0.749	0.793	0.894	0.656
Sulfate	mg/L	211 D	232 D	234 D	194	218 D	227	265 D	219 X	237	237	240	205	217	193
pH - Field Collected	SU	7.19	7.12	7.12	7.02	7.06	6.16	7.05	6.89	7.12	7.12	7.31	6.43	7.15	7.14
Total dissolved solids	mg/L	1250	1240	1190	1100	1450	1440	1490	1730	1310	1210	1290	1380	1240	1380
Appendix IV - Assessment Monitoring															
Antimony	mg/L	0.00120 U	0.000240 U	0.000240 U	0.00173 J	0.00120 U	0.000240 U	0.000240 U	0.000240 U	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00123 U	0.000676 J	0.000729 J	0.00123 U	0.00123 U	0.000544 J	0.000538 J	0.000478 J	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.0607	0.0575	0.0503	0.0554	0.0783	0.0721	0.0788	0.0735	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000654 U	0.000131 U	0.000131 U	0.000654 U	0.000654 U	0.000131 U	0.000131 U	0.000131 U	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.000734 U	0.000147 U	0.000147 U	0.000734 U	0.000734 U	0.000147 U	0.000147 U	0.000147 U	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.00262 U	0.000859 J	0.000572 J	0.00262 U	0.00262 U	0.000963 J	0.000997 J	0.00113 J	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.00102 J	0.00109 J	0.00124 J	0.00155 J	0.00133 J	0.00153 J	0.00155 J	0.00146 J	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	0.715	0.643 JH	0.665 JH	0.809	0.627 JH	0.617 JH	0.525	0.712	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.000758 U	0.000152 U	0.000152 U	0.000758 U	0.000758 U	0.000155 J	0.000152 U	0.000152 U	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.000476 U	0.000476 U	0.00238 U	0.0137 J	0.0341	0.0295	0.0427	0.0252	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.0000263 U	0.0000263 U	0.0000263 U	0.0000690 J	0.0000263 U	0.0000490 J	0.0000263 U	0.0000263 U	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.00779 J	0.00846	0.00875	0.0106	0.00908 J	0.00938	0.0107	0.0111	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.00992 J	0.00597	0.00479	0.00521 J	0.00370 J	0.00235	0.00188 J	0.00141 J	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.00166 U	0.000332 U	0.000332 U	0.00166 U	0.00166 U	0.000332 U	0.000332 U	0.000332 U	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	0.198 ± 0.197	0.615 ± 0.272	0.747 ± 0.323	0.195 ± 0.167	0.294 ± 0.192	0.241 ± 0.193	0.159 ± 0.191	0.746 ± 0.274	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	2.1 ± 0.907	-1.37 ± 1.37	0.854 ± 0.724	1.08 ± 1.72	2.23 ± 0.949	0.658 ± 0.636	0.812 ± 0.604	1.43 ± 0.898	NR	NR	NR	NR	NR	NR

NOTES:
mg/L: Milligrams per Liter.
SU: Standard Units.
pCi/L: Picocuries per Liter.
-- : Laboratory did not analyze sample for indicated constituent.
D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
L: Bias in sample result likely to be low.
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
Bottom Ash Ponds

		JKS-51 Upgradient													
	Sample Date	12/8/16	2/22/17	3/28/17	5/3/17	6/21/17	7/25/17	8/29/17	10/10/17	4/4/18	10/30/18	4/9/19	10/22/19	4/28/20	10/20/20
	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
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
Appendix III - Detection Monitoring															
Boron	mg/L	0.512	0.517	0.473	0.565	0.512	0.525	0.453	0.509	0.465	0.347	0.489	0.648	0.627	0.668
Calcium	mg/L	267	292	322	266	261 X	232	236	256	246	149 D	328	336 D	334 J	298
Chloride	mg/L	403 D	331 D	414 D	447	424 D	455 D	384 D	375	395 D	301	559	574 D	555	493
Fluoride	mg/L	0.247	0.341 JH	0.415 JH	0.534	0.354	0.391	0.0960 U	0.407 JH	0.305 J	0.291 J	0.329 J	0.405 J	0.470	0.018 U
Sulfate	mg/L	293 D	330 D	348 D	359	342 D	330 D	314 D	302	354 D	260	428	405 D	439	376
pH - Field Collected	SU	6.59	6.51	6.48	6.56	6.40	5.48	6.38	6.20	6.44	6.70	6.66	5.73	6.43	6.47
Total dissolved solids	mg/L	1650	1650	1490	1980	1530	1580	1390	1650	1320	916	1890	2150	2010	1930
Appendix IV - Assessment Monitoring															
Antimony	mg/L	0.00120 U	0.000240 U	0.000240 U	0.00120 U	0.000953 J	0.000240 U	0.000240 U	0.000240 U	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00123 U	0.000412 J	0.000390 J	0.00123 U	0.000392 J	0.000344 J	0.000395 J	0.000418 J	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.0655	0.0563	0.0517	0.0512	0.0534	0.0520	0.0520	0.0564	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000654 U	0.000131 U	0.000131 U	0.000654 U	0.000212 J	0.000131 U	0.000131 U	0.000131 U	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
Chromium	mg/L	0.00262 U	0.000941 J	0.000525 U	0.00262 U	0.000657 J	0.000874 J	0.00113 J	0.00133 J	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.000350 U	0.0000770 J	0.0000920 J	0.000350 U	0.000124 J	0.0000940 J	0.0000800 J	0.000108 J	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	0.247	0.341 JH	0.415 JH	0.534	0.354	0.391	0.0960 U	0.407 JH	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
Lithium	mg/L	0.000476 U	0.000476 U	0.00238 U	0.0322	0.0874	0.0790	0.0958 JX	0.0718	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	0.000199 J	0.0000263 U	0.0000263 U	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.00128 U	0.000255 U	0.000255 U	0.00128 U	0.000255 U	0.000255 U	0.000255 U	0.000255 U	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.00227 U	0.000454 U	0.000454 U	0.00227 U	0.000454 U	0.000454 U	0.000454 U	0.000454 U	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
Radium-226	pCi/L	1.09 ± 0.376	0.104 ± 0.122	0.618 ± 0.247	0.197 ± 0.145	0.328 ± 0.195	0.0847 ± 0.186	4.83 ± 0.763	0.682 ± 0.309	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	0.312 ± 0.688	1.09 ± 1.37	2.32 ± 1.45	-1.26 ± 1.37	-0.799 ± 0.928	1.57 ± 0.786	0.762 ± 0.706	0.963 ± 0.954	NR	NR	NR	NR	NR	NR

NOTES:
mg/L: Milligrams per Liter.
SU: Standard Units.
pCi/L: Picocuries per Liter.
-- : Laboratory did not analyze sample for indicated constituent.
D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
L: Bias in sample result likely to be low.
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
Bottom Ash Ponds

		JKS-48 Downgradient													
	Sample Date	12/7/16	2/22/17	3/30/17	5/2/17	6/20/17	7/25/17	8/29/17	10/10/17	4/4/18	10/30/18	4/9/19	10/22/19	4/28/20	10/21/20
	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
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
Appendix III - Detection Monitoring															
Boron	mg/L	2.21	2.14	--	2.08	2.13	2.15 X	2.02	2.23	2.03	2.13	2.22	2.27	2.36	2.36
Calcium	mg/L	130	139	125	NR	111	136 X	134	147	143	128 D	166 D	135 D	130 J	142
Chloride	mg/L	395 D	408 D	435 D	427	440 D	465 D	166 D	427	433 D	438	467	446	485	446
Fluoride	mg/L	1.43	1.21 JH	1.62	1.41 JH	1.07	1.62	0.0960 U	1.22	1.35	1.31	1.46	1.25	0.051 JH	1.05
Sulfate	mg/L	239 D	251 D	266 D	259	253 D	244	140 D	257	282 D	266	271	213	206	170
pH - Field Collected	SU	7.06	6.92	6.86	6.99	6.88	5.92	6.90	6.74	6.91	6.92	7.06	6.12	6.89	6.83
Total dissolved solids	mg/L	1400	1270	1440	1490	1540	1380 J	850	1470	1400	1410	1420	1520	1400	1300
Appendix IV - Assessment Monitoring															
Antimony	mg/L	0.00120 U	0.000240 U	--	0.000240 U	0.00120 U	0.00129 J	0.000240 U	0.000240 U	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00123 U	0.000538 J	--	0.000424 J	0.00123 U	0.000452 J	0.000459 J	0.000475 J	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.0717	0.0699	--	0.0659	0.0686	0.0769	0.0725	0.0761	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000654 U	0.000131 U	--	0.000131 U	0.000654 U	0.000233 J	0.000131 U	0.000131 U	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	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.00262 U	0.000608 J	--	0.000525 U	0.00262 U	0.000525 U	0.000863 J	0.00130 J	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.00111 J	0.000844 J	--	0.000920 J	0.000987 J	0.00137 J	0.000917 J	0.00106 J	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	1.43	1.21 JH	1.62	1.41	1.07	1.62	0.0960 U	1.22	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	0.000203 J	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.000476 U	0.000476 U	0.00238 U	NR	0.0536	0.0501	0.0700	0.0551	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.0000263 U	0.0000263 U	0.0000263 U	0.0000310 JX	0.0000263 U	0.0000263 UX	0.0000263 U	0.0000263 U	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.00128 U	0.000422 J	--	0.000263 J	0.00128 U	0.000344 J	0.000255 U	0.000255 U	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.00227 U	0.000454 U	--	0.000454 U	0.00227 U	0.000454 U	0.000454 U	0.000454 U	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	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	0.139 ± 0.250	0.251 ± 0.149	0.0232 ± 0.136	0.357 ± 0.174	0.46 ± 0.235	0.544 ± 0.259	0.562 ± 0.283	0.26 ± 0.241	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	0.847 ± 1.14	0.317 ± 1.15	1.1 ± 0.737	-0.109 ± 1.35	0.284 ± 0.662	0.273 ± 0.867	0.459 ± 0.649	0.772 ± 0.931	NR	NR	NR	NR	NR	NR

NOTES:
mg/L: Milligrams per Liter.
SU: Standard Units.
pCi/L: Picocuries per Liter.
-- : Laboratory did not analyze sample for indicated constituent.
D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
L: Bias in sample result likely to be low.
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
Bottom Ash Ponds

		JKS-50R Downgradient													
	Sample Date	12/7/16	2/22/17	3/28/17	5/3/17	6/20/17	7/25/17	8/29/17	10/10/17	4/4/18	10/30/18	4/9/19	10/22/19	4/28/20	10/21/20
	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
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
Appendix III - Detection Monitoring															
Boron	mg/L	4.70	5.18	5.87	5.92	4.87	4.38	4.18	4.54	3.52	5.17	5.85	6.93	5.52	6.79
Calcium	mg/L	126	134	189	120	125	108	130	132	127	116 D	159 D	135 D	126 J	140
Chloride	mg/L	47.7 X	49.0 J	63.9	81.3	111	123	141 D	100	170	87.9	70.0	60.3	102	69.8
Fluoride	mg/L	0.316	0.331 JH	0.447 JH	0.528	0.387 JH	0.390 JH	0.0960 U	0.427 JH	0.335 J	0.392 J	0.319 J	0.380 J	0.510	0.332
Sulfate	mg/L	137 X	146	156	160	146	148	195 D	144	131	141	168	172	194	171
pH - Field Collected	SU	6.83	6.77	NR	6.80	6.63	5.69	6.62	6.43	6.67	6.61	6.80	5.85	6.65	6.63
Total dissolved solids	mg/L	737	808	789	902	914	856	992	947	883	688	842	899	918	863
Appendix IV - Assessment Monitoring															
Antimony	mg/L	0.00120 U	0.000240 U	0.000240 U	0.00120 U	0.00120 U	0.000240 U	0.000240 U	0.000240 U	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00123 U	0.00111 J	0.000735 J	0.00123 U	0.00123 U	0.000520 J	0.000545 J	0.000596 J	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.133	0.128	0.113	0.117	0.125	0.117	0.123	0.118	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000654 U	0.000147 J	0.000187 J	0.000654 U	0.000654 U	0.000131 U	0.000131 U	0.000174 J	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.000734 U	0.000147 U	0.000147 U	0.000734 U	0.000734 U	0.000147 U	0.000147 U	0.000189 J	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.00262 U	0.00251 J	0.00169 J	0.00262 U	0.00262 U	0.000788 J	0.000759 J	0.00108 J	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.00305 J	0.00345	0.00251	0.00215 J	0.00191 J	0.00216	0.00233	0.00285	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	0.316	0.331 JH	0.447 JH	0.528	0.387 JH	0.390 JH	0.0960 U	0.427 JH	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.000796 J	0.000988 J	0.000627 J	0.000758 U	0.000758 U	0.000178 J	0.000152 U	0.000168 J	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.000476 U	0.000476 U	0.00238 U	0.000476 U	0.00209 J	0.000476 U	0.00621 J	0.000476 U	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
Molybdenum	mg/L	0.00150 J	0.00153 J	0.00125 J	0.00128 U	0.00128 U	0.00102 J	0.00104 J	0.00108 J	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.00227 U	0.000514 J	0.000454 U	0.00227 U	0.00227 U	0.000454 U	0.000454 U	0.000454 U	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.00166 U	0.000332 U	0.000332 U	0.00166 U	0.00166 U	0.000332 U	0.000332 U	0.000332 U	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	0.102 ± 0.173	0.479 ± 0.216	-0.0714 ± 0.168	0.197 ± 0.183 U	0.245 ± 0.204	0.408 ± 0.226	0 ± 0.176	0.815 ± 0.292	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	1.99 ± 1.31	-0.428 ± 1.24	0.665 ± 1.14	0.00273 ± 1.33 U	0.783 ± 0.638	1.08 ± 0.832	0.0172 ± 1.12	1.5 ± 0.842	NR	NR	NR	NR	NR	NR

NOTES:
mg/L: Milligrams per Liter.
SU: Standard Units.
pCi/L: Picocuries per Liter.
-- : Laboratory did not analyze sample for indicated constituent.
D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
L: Bias in sample result likely to be low.
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
Bottom Ash Ponds

		JKS-52 Downgradient													
	Sample Date	12/7/16	2/21/17	3/28/17	5/2/17	6/21/17	7/25/17	8/29/17	10/10/17	4/4/18	10/30/18	4/9/19	10/22/19	4/28/20	10/21/20
	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
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
Appendix III - Detection Monitoring															
Boron	mg/L	1.66	2.11	1.63	1.51	1.33	1.43	1.46	1.71 X	1.95	1.54	1.46 X	1.65	2.05	2.21
Calcium	mg/L	169	181	189	--	145	140	162	168	175	153 D	195 DX	171 D	174 J	199
Chloride	mg/L	331 D	377 D	323 DX	320	326 D	343 D	417 D	355	360 D	326	336	320	433	408
Fluoride	mg/L	0.796	0.665	0.718 JH	0.915 JH	0.705	0.996 JH	0.0960 U	0.740	0.720	0.710	0.831	0.808	0.908	0.659
Sulfate	mg/L	277 D	318 D	299 DX	290	287 D	292 D	171 D	289	278 D	292	268	288 D	315	282
pH - Field Collected	SU	7.01	6.47	6.91	6.94	6.87	5.87	6.81	6.63	6.79	6.76	6.91	6.00	6.83	6.78
Total dissolved solids	mg/L	1290	1380	1100	1250	1280	1250	1250	1220	1240	1210	1170	1270	1470	1430
Appendix IV - Assessment Monitoring															
Antimony	mg/L	0.00120 U	0.000240 U	0.000240 U	0.000240 U	0.000240 U	0.000240 U	0.000240 U	0.000240 U	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00123 U	0.000565 J	0.000398 J	0.000425 J	0.000427 J	0.000392 J	0.000412 J	0.000448 J	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.0646	0.0583	0.0519	0.0483	0.0527	0.0558	0.0565	0.0616	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000654 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U	0.000153 J	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.000734 U	0.000147 U	0.000147 U	0.000147 U	0.000147 U	0.000147 U	0.000147 U	0.000147 U	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.00262 U	0.000525 U	0.000525 U	0.000525 U	0.000841 J	0.000860 J	0.00123 J	0.00108 J	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.00188 J	0.00233	0.00112 J	0.00119 J	0.00211	0.00183 J	0.00159 J	0.00189 J	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	0.796	0.665	0.718 JH	0.915 JH	0.705	0.996 JH	0.0960 U	0.740	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.000758 U	0.000152 U	0.000152 U	0.000152 U	0.000292 J	0.000152 U	0.000152 U	0.000163 J	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.000476 U	0.0471	0.000476 U	--	0.0616	0.0605	0.0827	0.0588	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.0000263 U	0.000234	0.0000263 U	0.0000263 U	0.0000263 U	0.0000810 J	0.0000263 U	0.0000263 UX	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.00128 U	0.00128 J	0.00115 J	0.00102 J	0.000911 J	0.000865 J	0.000843 J	0.000914 J	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.00227 U	0.000454 U	0.000454 U	0.000454 U	0.000454 U	0.000454 U	0.000454 U	0.000454 U	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.00166 U	0.000332 U	0.000332 U	0.000332 U	0.000332 U	0.000332 U	0.000332 U	0.000332 U	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	1.71 ± 0.465	0.608 ± 0.289	0.296 ± 0.169	0 ± 0.150	0.435 ± 0.241	0.449 ± 0.196	0.194 ± 0.194	0.704 ± 0.319	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	2.65 ± 1.12	0.744 ± 0.833	0.0645 ± 0.649	0.53 ± 1.10	0.928 ± 0.784	1.16 ± 0.867	0.716 ± 0.767	1.54 ± 1.22	NR	NR	NR	NR	NR	NR

NOTES:
mg/L: Milligrams per Liter.
SU: Standard Units.
pCi/L: Picocuries per Liter.
-- : Laboratory did not analyze sample for indicated constituent.
D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
L: Bias in sample result likely to be low.
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
Bottom Ash Ponds

		JKS-55 Downgradient													
	Sample Date	12/7/16	2/22/17	3/28/17	5/3/17	6/20/17	7/25/17	8/29/17	10/10/17	4/4/18	10/30/18	4/9/19	10/22/19	4/28/20	10/21/20
	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
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
Appendix III - Detection Monitoring															
Boron	mg/L	0.716	0.716	0.785	0.710	0.787	0.651	0.687	0.759	0.645	0.611	0.740	0.771	0.779	0.815
Calcium	mg/L	143	153	181	133	133	118	136	146	134	119 D	165 D	145 D	137 J	154
Chloride	mg/L	384 DX	50.5	403 D	388	395 D	400 D	168 D	386	387 D	429	438	432	452	431
Fluoride	mg/L	0.857	0.352 JH	0.746 JH	0.891	1.14	1.08 JH	0.0960 U	0.864	0.791	0.820	0.822	0.832	1.01	0.727
Sulfate	mg/L	164 X	147	172	173	164	166	139 D	157	168	155	168	159	177	164
pH - Field Collected	SU	6.85	6.80	6.81	6.82	6.72	5.77	6.72	6.53	6.75	6.70	6.90	5.96	6.81	6.77
Total dissolved solids	mg/L	1430	1380	1290	1310	1500	1270	826	1470	1300	1190	1420	1370	1350	1380
Appendix IV - Assessment Monitoring															
Antimony	mg/L	0.00120 U	0.000240 U	0.000240 U	0.00120 U	0.00120 U	0.000240 U	0.000240 U	0.000240 U	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00123 U	0.000650 J	0.000520 J	0.00123 U	0.00123 U	0.000507 J	0.000582 J	0.000599 J	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.103	0.0876	0.0823	0.0758	0.0828	0.0780	0.0801	0.0816	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000654 U	0.000131 U	0.000134 J	0.000654 U	0.000654 U	0.000131 U	0.000131 U	0.000131 U	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.000734 U	0.000147 U	0.000147 U	0.000734 U	0.000734 U	0.000147 U	0.000147 U	0.000147 U	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.00262 U	0.000625 J	0.000525 U	0.00262 U	0.00262 U	0.000525 U	0.000797 J	0.000903 J	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.00702 J	0.00516	0.00579	0.00750 J	0.00642 J	0.00562	0.00565	0.00565	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	0.857	0.352 JH	0.746 JH	0.891	1.14	1.08 JH	0.0960 U	0.864	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.000758 U	0.000152 U	0.000152 U	0.000758 U	0.000758 U	0.000152 U	0.000152 U	0.000152 U	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.000476 U	0.000476 U	0.00238 U	0.0136 J	0.0425	0.0354	0.0495	0.0338	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.0000263 U	0.0000263 U	0.0000263 UX	0.0000263 U	0.0000263 UX	0.0000263 U	0.0000263 U	0.0000263 U	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.00130 J	0.00123 J	0.00108 J	0.00128 U	0.00128 U	0.000804 J	0.000898 J	0.000837 J	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.00227 U	0.000454 U	0.000454 U	0.00227 U	0.00227 U	0.000454 U	0.000454 U	0.000454 U	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.00166 U	0.000332 U	0.000332 U	0.00166 U	0.00166 U	0.000332 U	0.000332 U	0.000332 U	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	0.694 ± 0.358	0.721 ± 0.320	0.745 ± 0.258	0.576 ± 0.261	0.305 ± 0.190	0.0212 ± 0.171	0.327 ± 0.233	0.588 ± 0.314	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	3.76 ± 1.33	1.87 ± 1.01	-0.0356 ± 1.09	1.01 ± 1.02	0.591 ± 0.843	0.532 ± 0.795	0.234 ± 0.821	1.24 ± 0.848	NR	NR	NR	NR	NR	NR

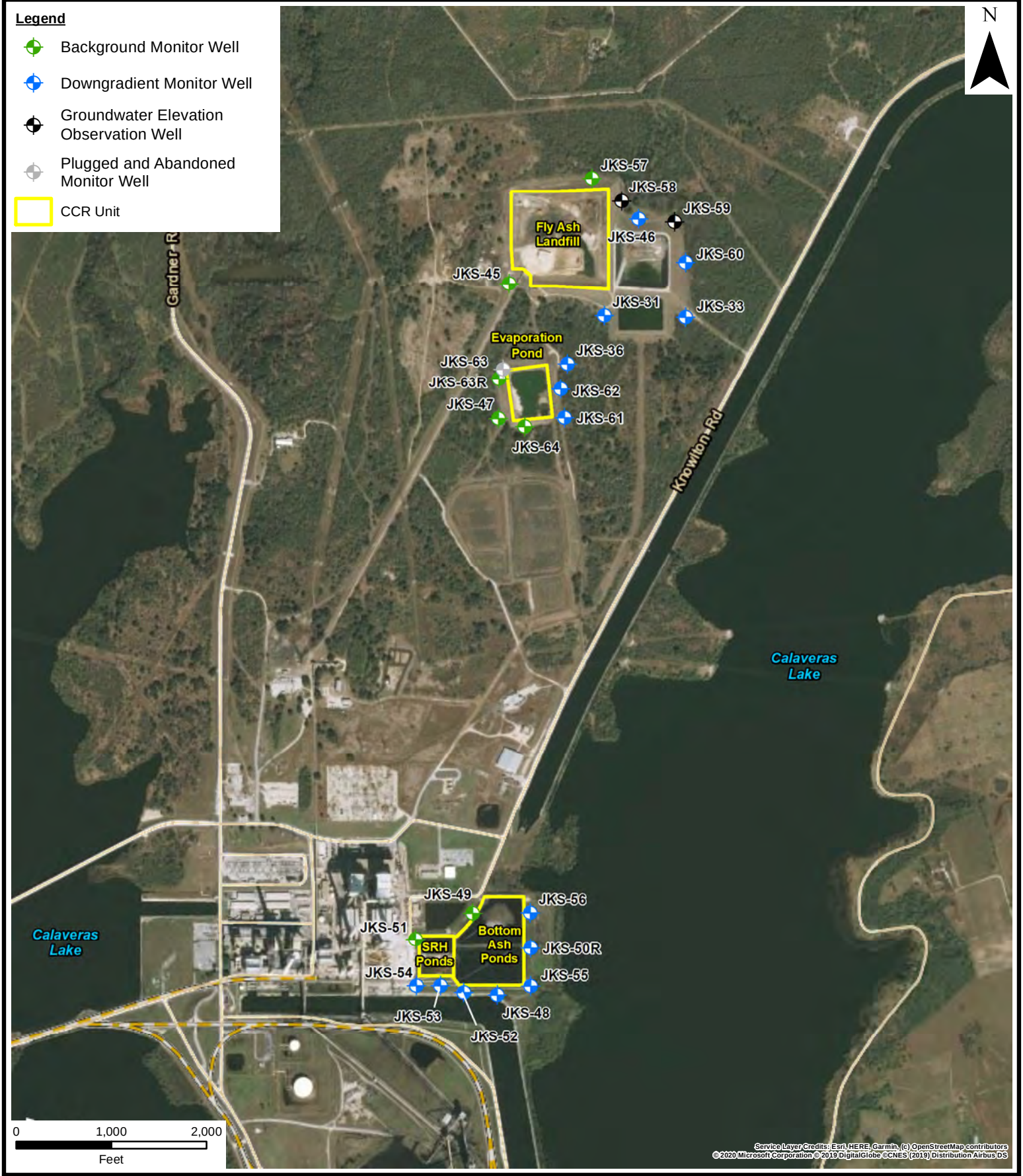
NOTES:
mg/L: Milligrams per Liter.
SU: Standard Units.
pCi/L: Picocuries per Liter.
-- : Laboratory did not analyze sample for indicated constituent.
D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
L: Bias in sample result likely to be low.
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
Bottom Ash Ponds

		JKS-56 Downgradient													
	Sample Date	12/7/16	2/22/17	3/30/17	5/3/17	6/20/17	7/25/17	8/29/17	10/10/17	4/4/18	10/30/18	4/9/19	10/22/19	4/28/20	10/21/20
	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
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
Appendix III - Detection Monitoring															
Boron	mg/L	3.97	4.13	--	4.60	3.98	3.60	3.60 X	3.48	3.95	3.95	3.85	4.47	3.55	4.00
Calcium	mg/L	137	143	127	124	136	116	137	146	126	121 D	150 D	131 D	103 J	120
Chloride	mg/L	131	95.7	96.3	95.6	114	126	146 D	150	121	108 JL	81.0	81.2	101	77.2
Fluoride	mg/L	0.344	0.354 JH	0.333	0.564	0.407 JH	0.401 JH	0.0960 U	0.448 JH	0.37 J	0.428 J	0.372 J	0.452 J	0.552	0.418
Sulfate	mg/L	193	190	188	183	186	194	201 D	200	193	192	193	194	138	140
pH - Field Collected	SU	6.73	6.63	6.56	6.71	6.56	5.63	6.57	6.38	6.64	6.55	6.76	5.84	6.72	6.63
Total dissolved solids	mg/L	1100	969	1020	997	1060	1060	986	1240	992	976	918	968	904	847
Appendix IV - Assessment Monitoring															
Antimony	mg/L	0.00120 U	0.000240 U	--	0.00120 U	0.00120 U	0.000240 U	0.00104 J	0.000240 U	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00527 J	0.00425	--	0.00350 J	0.00435 J	0.00373	0.00517	0.00451	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.126	0.0974	--	0.0890	0.0921	0.0897	0.103	0.0909	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000654 U	0.000131 U	--	0.000654 U	0.000654 U	0.000131 U	0.000136 J	0.000131 U	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.000734 U	0.000147 U	--	0.000734 U	0.000734 U	0.000147 U	0.000147 U	0.000147 U	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.00262 U	0.000654 J	--	0.00276 J	0.00262 U	0.000525 U	0.00498	0.00141 J	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.00560 J	0.00564	--	0.00641 J	0.00687 J	0.00668	0.00771	0.00746	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	0.344	0.354 JH	0.333	0.564	0.407 JH	0.401 JH	0.0960 U	0.448 JH	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.000758 U	0.000152 U	--	0.000758 U	0.000758 U	0.000152 U	0.000211 J	0.000152 U	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.000476 U	0.000476 U	0.000476 U	0.000476 U	0.00156 J	0.000476 U	0.00598 J	0.000476 U	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.0000263 U	0.0000263 U	0.0000263 U	0.0000700 J	0.0000263 UX	0.0000263 U	0.0000263 UX	0.0000263 U	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.00360 J	0.00190 J	--	0.00168 J	0.00152 J	0.00156 J	0.00160 J	0.00155 J	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.00227 U	0.000454 U	--	0.00227 U	0.00227 U	0.000454 U	0.000454 U	0.000454 U	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.00166 U	0.000332 U	--	0.00166 U	0.00166 U	0.000332 U	0.000332 U	0.000332 U	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	1.23 ± 0.430	0.254 ± 0.175	0.372 ± 0.215	0.138 ± 0.166	0.273 ± 0.253	0.177 ± 0.213	0.441 ± 0.225	0.397 ± 0.252	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	0.949 ± 1.38	3.07 ± 1.28	1.09 ± 0.897	1.97 ± 1.35	1.27 ± 0.994	1.16 ± 0.862	1.45 ± 0.895	3.36 ± 1.42	NR	NR	NR	NR	NR	NR

NOTES:
mg/L: Milligrams per Liter.
SU: Standard Units.
pCi/L: Picocuries per Liter.
-- : Laboratory did not analyze sample for indicated constituent.
D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
L: Bias in sample result likely to be low.
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

DESIGN:	WZ	DRAWN:	EFC	CHKD.:	WZ
DATE:	1/17/2020	SCALE:	AS SHOWN	REVISION:	0

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

ERM

Environmental Resources Management

DESIGN:	NH	DRAWN:	LSC	CHKD.:	WZ
DATE:	1/19/2021	SCALE:	AS SHOWN	REVISION:	2

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FIGURE 2A
POTENTIOMETRIC SURFACE MAP - APRIL 2020
Bottom Ash Ponds CCR Unit
CPS Energy - Calaveras Power Station
San Antonio, Texas

ERM

Environmental Resources Management

DESIGN:	NH	DRAWN:	LSC	CHKD.:	WZ
DATE:	1/19/2021	SCALE:	AS SHOWN	REVISION:	1

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FIGURE 2B
POTENTIOMETRIC SURFACE MAP - OCTOBER 2020
Bottom Ash Ponds CCR Unit
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
Bottom Ash Ponds

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.

APPENDIX B - TABLE 2
Descriptive Statistics for Upgradient Wells
Calaveras Power Station
Bottom Ash Ponds

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	173	17.1	0.127299	Normal
Calcium	JKS-51	mg/L	14	14	100.00%			149	266	273	336	51	0.186659149	Normal
Chloride	Pooled	mg/L	28	28	100.00%			295	424	423	574	68.9	0.162758525	Normal
Fluoride	JKS-49	mg/L	14	14	100.00%			0.525	0.704	0.702	0.894	0.0922	0.131442503	Normal
Fluoride	JKS-51	mg/L	14	12	85.71%	0.009	0.048	0.247	0.348	0.325	0.534	0.146	0.448419555	Normal
pH	JKS-49	SU	14	14	100.00%			6.16	7.12	6.99	7.31	0.314	0.044881001	NDD
pH	JKS-51	SU	14	14	100.00%			5.48	6.46	6.36	6.7	0.346	0.054432828	NDD
Sulfate	JKS-49	mg/L	14	14	100.00%			193	223	224	265	19.5	0.087268176	Normal
Sulfate	JKS-51	mg/L	14	14	100.00%			260	345	349	439	50.8	0.145831309	Normal
Total dissolved solids	JKS-49	mg/L	14	14	100.00%			1100	1300	1340	1730	159	0.118945011	Normal
Total dissolved solids	JKS-51	mg/L	14	14	100.00%			916	1650	1650	2150	326	0.197480634	Normal

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)
NDD: Non Discernible Distribution

APPENDIX B - TABLE 3
Potential Outliers in Upgradient Wells
Calaveras Power Station
Bottom Ash Ponds

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
JKS-51	JKS-51004	10/22/2019	Boron	mg/L	TRUE	0.648	Intrawell	Normal		X					
JKS-51	JKS-51-20200428-CCR	4/28/2020	Boron	mg/L	TRUE	0.627	Intrawell	Normal		X			X		
JKS-51	JKS51620699-001	4/10/2019	Chloride	mg/L	TRUE	559	Interwell	Normal		X			X		
JKS-51	JKS-51-20200428-CCR	4/28/2020	Chloride	mg/L	TRUE	555	Interwell	Normal		X			X		
JKS-49	JKS-49-WG-20170725	7/25/2017	pH	SU	TRUE	6.16	Intrawell	NDD	X	X	X	X	X	X	0
JKS-49	JKS-49-WG-20171010	10/10/2017	pH	SU	TRUE	6.89	Intrawell	NDD		X			X		
JKS-49	JKS-49-WG-20191022-02	10/22/2019	pH	SU	TRUE	6.43	Intrawell	NDD	X	X	X	X	X	X	0
JKS-51	JKS-51-WG-20170725	7/25/2017	pH	SU	TRUE	5.48	Intrawell	NDD	X	X	X	X	X	X	0
JKS-51	JKS-51-WG-20171010	10/10/2017	pH	SU	TRUE	6.2	Intrawell	NDD		X			X		
JKS-51	JKS-51-WG-20191022-02	10/22/2019	pH	SU	TRUE	5.73	Intrawell	NDD	X	X	X	X	X	X	0

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
Bottom Ash Ponds

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-51	14	14	100.00%	0.511	0.133	Stable, No Trend
Calcium	Intrawell	JKS-49	14	14	100.00%	0.584	-0.11	Stable, No Trend
Calcium	Intrawell	JKS-51	14	14	100.00%	0.747	0.0769	Stable, No Trend
Chloride	Interwell	JKS-49, JKS-51	28	28	100.00%	0.00137	0.43	Increasing Trend
Fluoride	Intrawell	JKS-49	14	14	100.00%	0.233	0.253	Stable, No Trend
Fluoride	Intrawell	JKS-51	14	12	85.71%	0.826	-0.0442	Stable, No Trend
pH	Intrawell	JKS-49	14	14	100.00%	0.782	0.0569	Stable, No Trend
pH	Intrawell	JKS-51	14	14	100.00%	0.518	-0.143	Stable, No Trend
Sulfate	Intrawell	JKS-49	14	14	100.00%	0.913	-0.0221	Stable, No Trend
Sulfate	Intrawell	JKS-51	14	14	100.00%	0.1	0.331	Stable, No Trend
Total dissolved solids	Intrawell	JKS-49	14	14	100.00%	0.546	0.122	Stable, No Trend
Total dissolved solids	Intrawell	JKS-51	14	14	100.00%	0.441	0.156	Stable, No 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 (a=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
Bottom Ash Ponds

Analyte	UPL Type	Trend	Well	N	Num Detects	Percent Detects	LPL	UPL	Units	ND Adjustment	Transformation	Alpha	Method	Final LPL	Final UPL
Boron	Intrawell	Decreasing Trend	JKS-49	14	14	100.00%		2.65	mg/L	None	No	0.0015	NP Detrended UPL		X
Boron	Intrawell	Stable, No Trend	JKS-51	14	14	100.00%		0.711	mg/L	None	No	0.0015	Param Intra 1 of 2		
Calcium	Intrawell	Stable, No Trend	JKS-49	14	14	100.00%		172	mg/L	None	No	0.0015	Param Intra 1 of 2		
Calcium	Intrawell	Stable, No Trend	JKS-51	14	14	100.00%		387	mg/L	None	No	0.0015	Param Intra 1 of 2		X
Chloride	Interwell	Increasing Trend	JKS-49, JKS-51	28	28	100.00%		607	mg/L	None	No	0.0015	NP Detrended UPL		X
Fluoride	Intrawell	Stable, No Trend	JKS-49	14	14	100.00%		0.908	mg/L	None	No	0.0015	Param Intra 1 of 2		X
Fluoride	Intrawell	Stable, No Trend	JKS-51	14	12	85.71%		0.65	mg/L	None	No	0.0015	Param Intra 1 of 2		
pH	Intrawell	Stable, No Trend	JKS-49	14	14	100.00%	6.16	7.31	SU	None	No	0.0172	NP Intra (normality) 1 of 2		X
pH	Intrawell	Stable, No Trend	JKS-51	14	14	100.00%	5.48	6.7	SU	None	No	0.0172	NP Intra (normality) 1 of 2	X	
Sulfate	Intrawell	Stable, No Trend	JKS-49	14	14	100.00%		267	mg/L	None	No	0.0015	Param Intra 1 of 2		
Sulfate	Intrawell	Stable, No Trend	JKS-51	14	14	100.00%		462	mg/L	None	No	0.0015	Param Intra 1 of 2		X
Total dissolved solids	Intrawell	Stable, No Trend	JKS-49	14	14	100.00%		1690	mg/L	None	No	0.0015	Param Intra 1 of 2		
Total dissolved solids	Intrawell	Stable, No Trend	JKS-51	14	14	100.00%		2380	mg/L	None	No	0.0015	Param Intra 1 of 2		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.

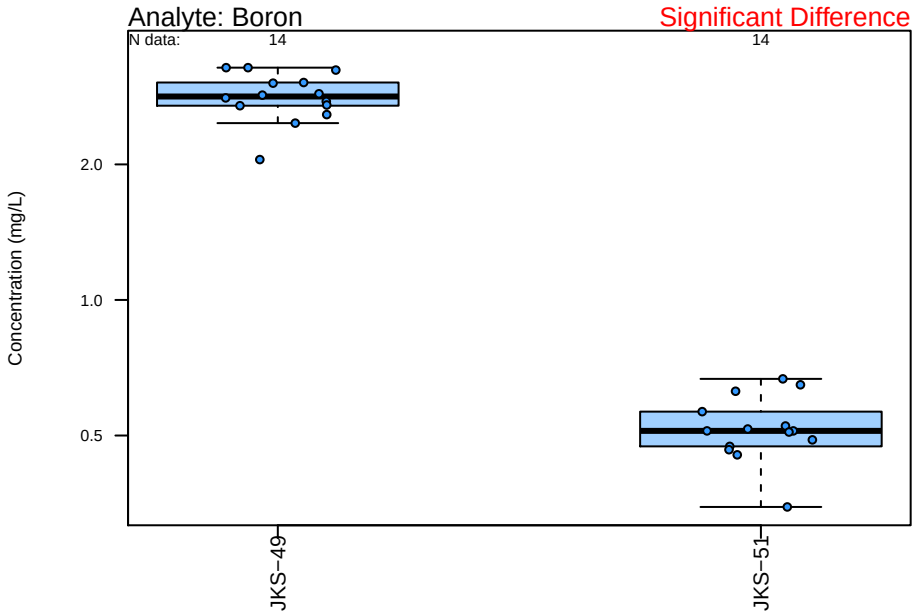
APPENDIX B - TABLE 6
Comparisons of Downgradient Wells to UPLs
Calaveras Power Station
Bottom Ash Ponds

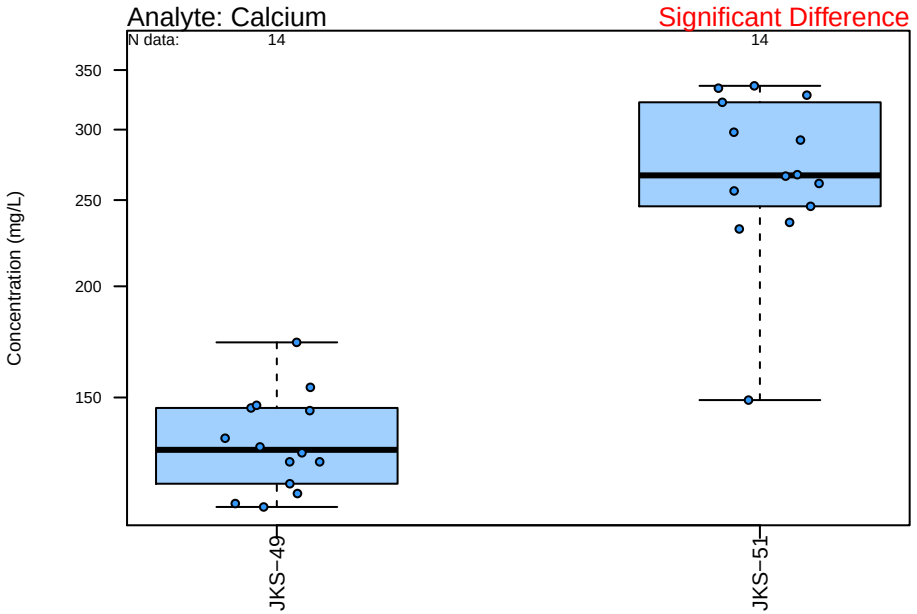
Analyte	Well	LPL	UPL	Units	Recent Date	Observation	Obs > UPL	Notes	Mann Kendall p-value	Mann Kendall tau	WRS p-value	WRS Conclusion	Exceed Median	Overall Conclusion
Boron	JKS-48		2.65	mg/L	10/21/2020	2.36					0.999	NS		No Exceedance
Boron	JKS-50R		2.65	mg/L	10/21/2020	6.79	X	Trend Test: Stable, No Trend	0.388	0.187	<0.001	***	X	Both Exceedance
Boron	JKS-52		2.65	mg/L	10/21/2020	2.21					1	NS		No Exceedance
Boron	JKS-55		2.65	mg/L	10/21/2020	0.815					1	NS		No Exceedance
Boron	JKS-56		2.65	mg/L	10/21/2020	4	X	Trend Test: Stable, No Trend	0.462	-0.156	<0.001	***	X	Both Exceedance
Calcium	JKS-48		387	mg/L	10/21/2020	142					0.999	NS		No Exceedance
Calcium	JKS-50R		387	mg/L	10/21/2020	140					1	NS		No Exceedance
Calcium	JKS-52		387	mg/L	10/21/2020	199					1	NS		No Exceedance
Calcium	JKS-55		387	mg/L	10/21/2020	154					1	NS		No Exceedance
Calcium	JKS-56		387	mg/L	10/21/2020	120					1	NS		No Exceedance
Chloride	JKS-48		607	mg/L	10/21/2020	446					1	NS		No Exceedance
Chloride	JKS-50R		607	mg/L	10/21/2020	69.8					1	NS		No Exceedance
Chloride	JKS-52		607	mg/L	10/21/2020	408					1	NS		No Exceedance
Chloride	JKS-55		607	mg/L	10/21/2020	431					1	NS		No Exceedance
Chloride	JKS-56		607	mg/L	10/21/2020	77.2					1	NS		No Exceedance
Fluoride	JKS-48		0.908	mg/L	10/21/2020	1.05	X	Trend Test: Stable, No Trend	0.188	-0.265	0.0582	NS		UPL Exceedance
Fluoride	JKS-50R		0.908	mg/L	10/21/2020	0.332					1	NS		No Exceedance
Fluoride	JKS-52		0.908	mg/L	10/21/2020	0.659					0.998	NS		No Exceedance
Fluoride	JKS-55		0.908	mg/L	10/21/2020	0.727					0.932	NS		No Exceedance
Fluoride	JKS-56		0.908	mg/L	10/21/2020	0.418					1	NS		No Exceedance
pH	JKS-48	5.48	7.31	SU	10/21/2020	6.83					1	NS		No Exceedance
pH	JKS-50R	5.48	7.31	SU	10/21/2020	6.63					0.999	NS		No Exceedance
pH	JKS-52	5.48	7.31	SU	10/21/2020	6.78					1	NS		No Exceedance
pH	JKS-55	5.48	7.31	SU	10/21/2020	6.77					1	NS		No Exceedance
pH	JKS-56	5.48	7.31	SU	10/21/2020	6.63					1	NS		No Exceedance
Sulfate	JKS-48		462	mg/L	10/21/2020	170					1	NS		No Exceedance
Sulfate	JKS-50R		462	mg/L	10/21/2020	171					1	NS		No Exceedance
Sulfate	JKS-52		462	mg/L	10/21/2020	282					1	NS		No Exceedance
Sulfate	JKS-55		462	mg/L	10/21/2020	164					1	NS		No Exceedance
Sulfate	JKS-56		462	mg/L	10/21/2020	140					1	NS		No Exceedance
Total dissolved solids	JKS-48		2380	mg/L	10/21/2020	1300					1	NS		No Exceedance
Total dissolved solids	JKS-50R		2380	mg/L	10/21/2020	863					1	NS		No Exceedance
Total dissolved solids	JKS-52		2380	mg/L	10/21/2020	1430					1	NS		No Exceedance
Total dissolved solids	JKS-55		2380	mg/L	10/21/2020	1380					1	NS		No Exceedance
Total dissolved solids	JKS-56		2380	mg/L	10/21/2020	847					1	NS		No Exceedance

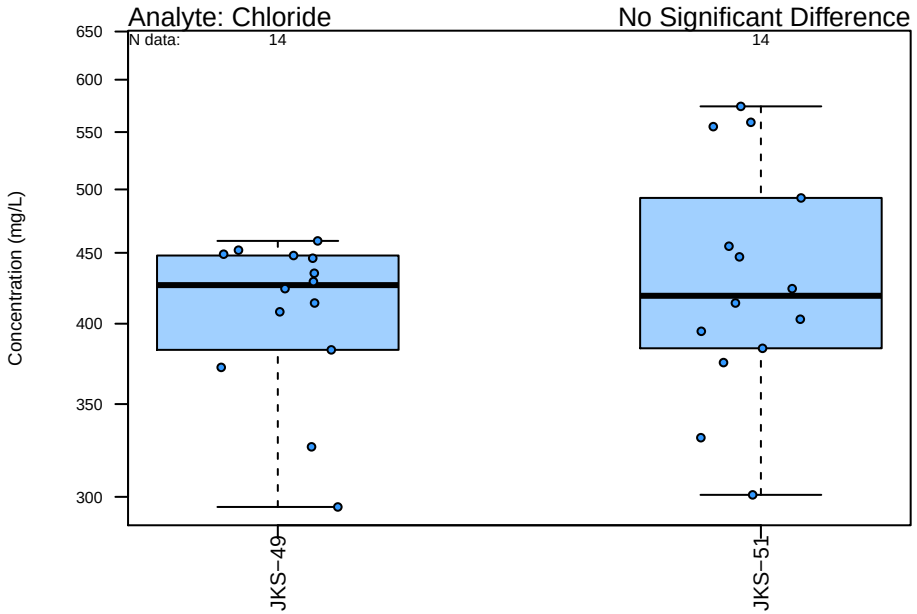
NOTES:

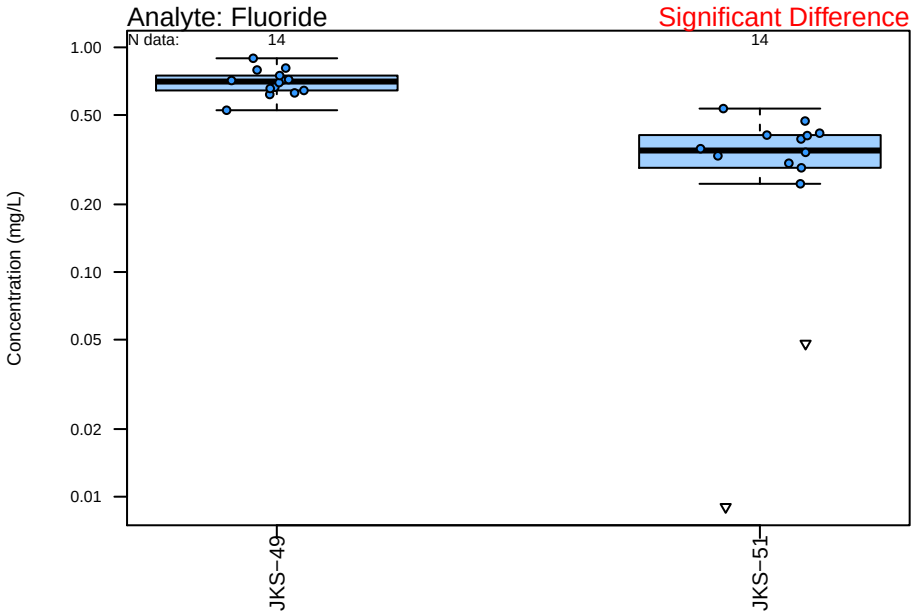
Non-detects were substituted with a value of zero for trend calculations
UPL: Upper Prediction Limit
ND: Not detected
SU: Standard units
tau: Kendall's tau statistic
Obs > UPL: Exceed 'X' indicates that the most recent observed value is higher than the UPL (or out of range of the LPL and UPL in the case of pH.)
Obs > UPL: Exceed 'X0' indicates that the two most recent values are higher than the UPL, but the upgradient well is 100% ND.
Obs > UPL: 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: Bottom Ash Ponds
Boxplots of Upgradient Wells

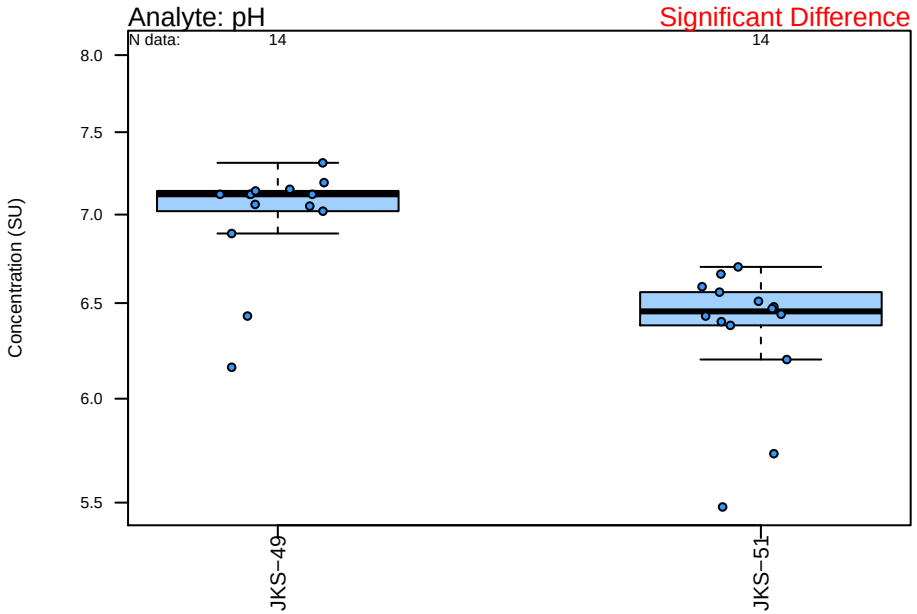


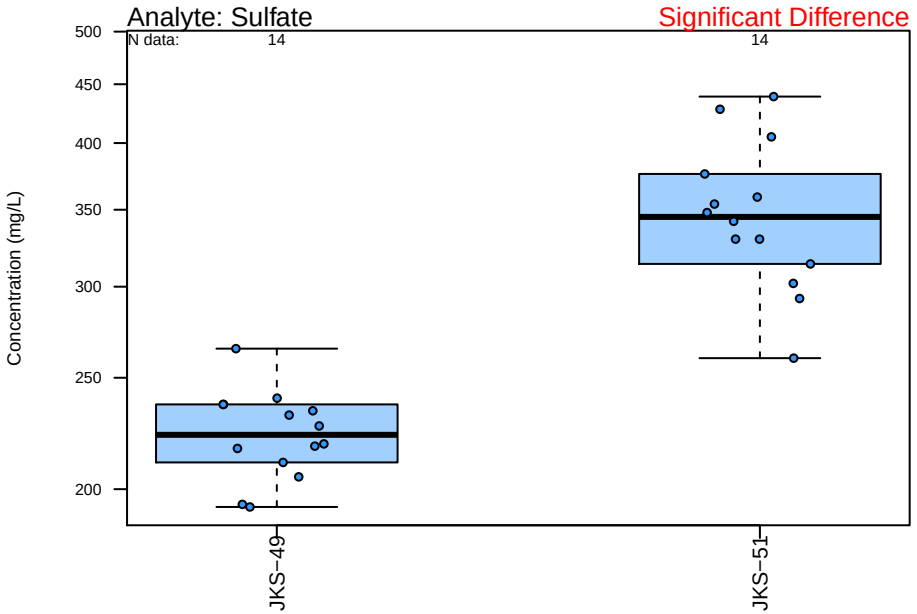


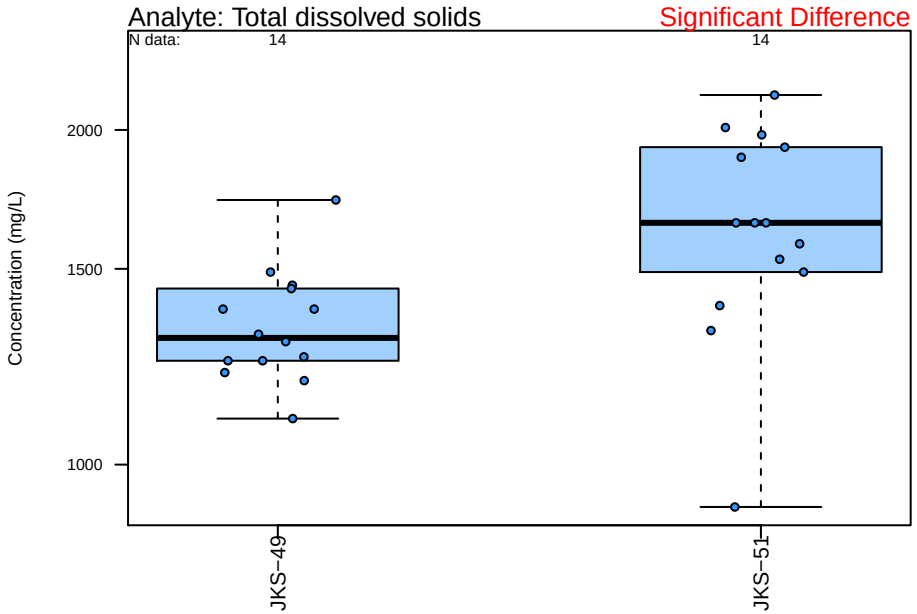




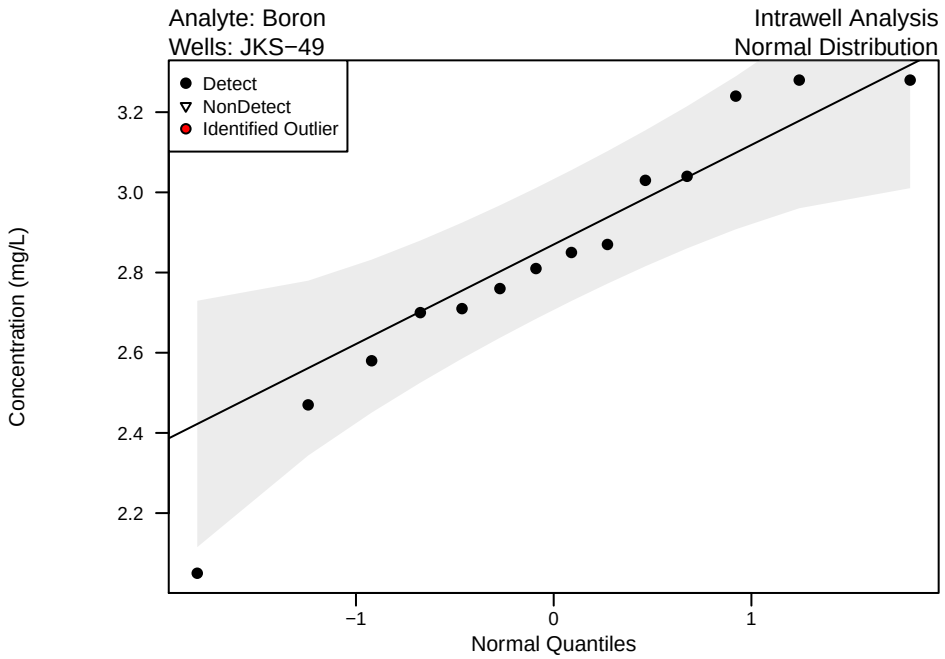
Appendix B − Figure 1
Unit: Bottom Ash Ponds
Boxplots of Upgradient Wells







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



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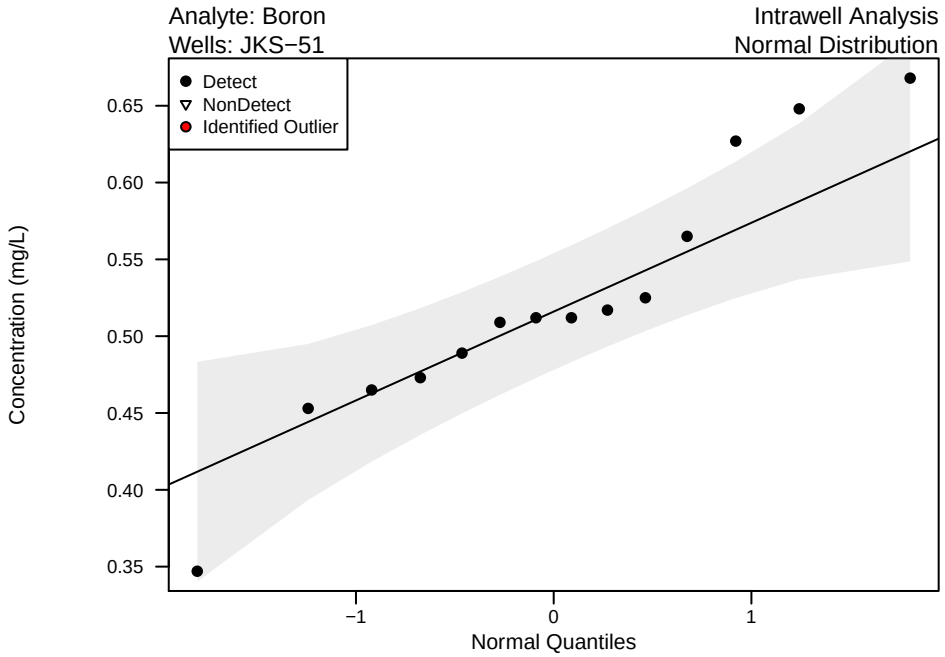

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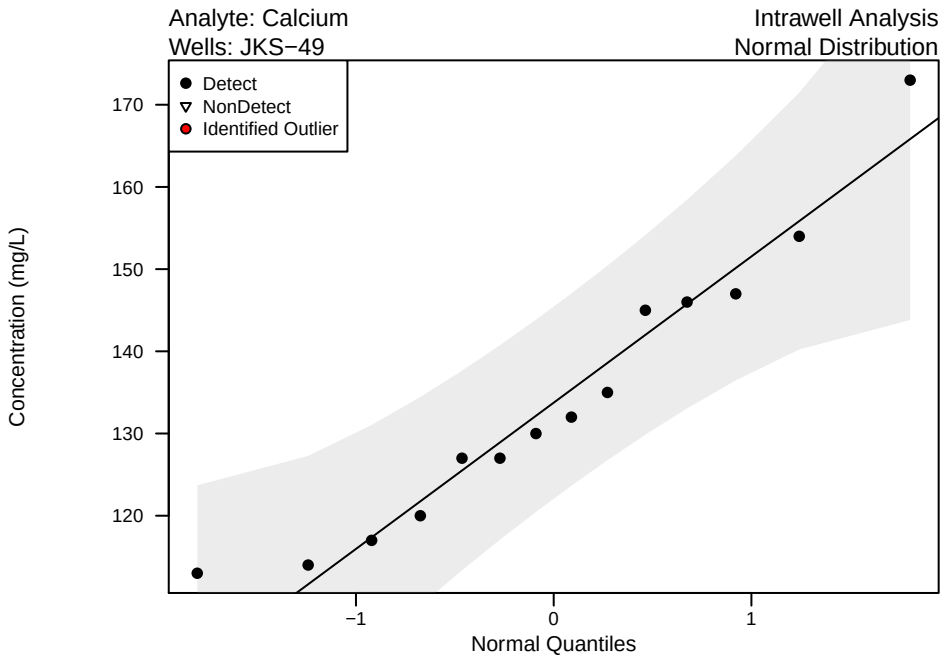
Appendix B − Figure 2
Unit: Bottom Ash Ponds
QQ Plots of Upgradient Wells



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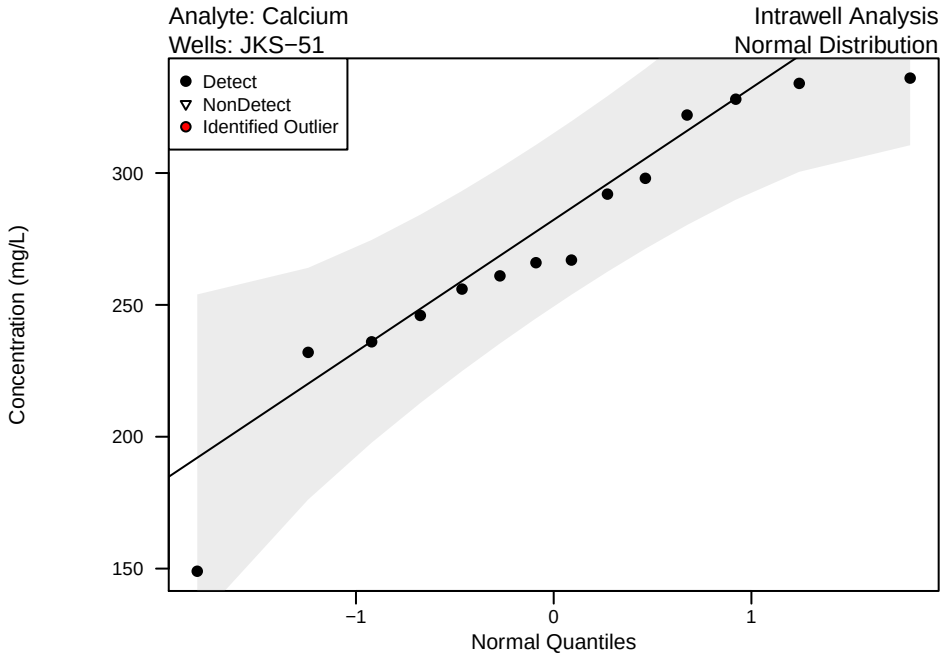

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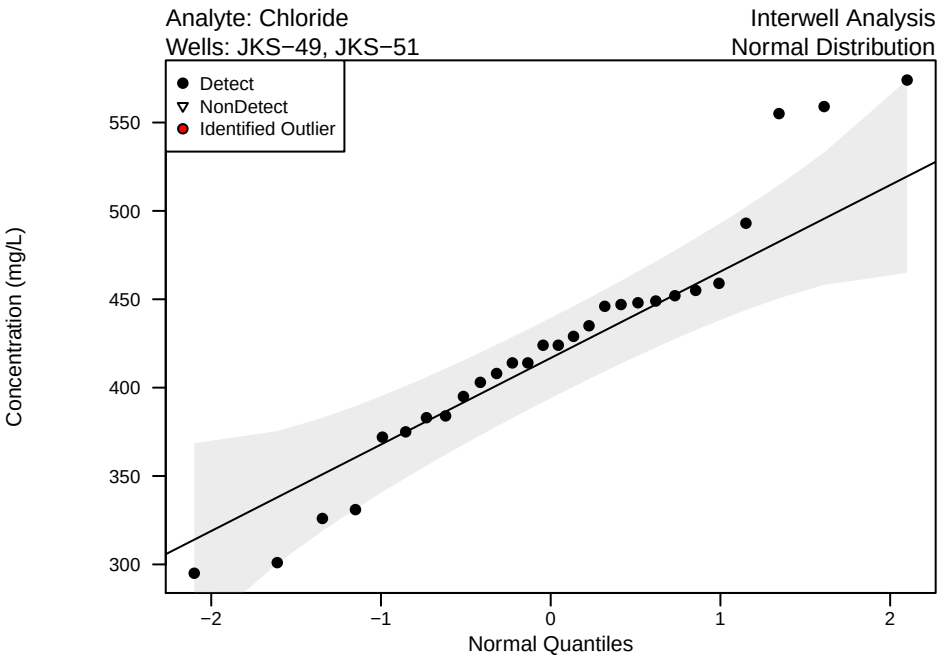
not Lognormal/NDD distribution.

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



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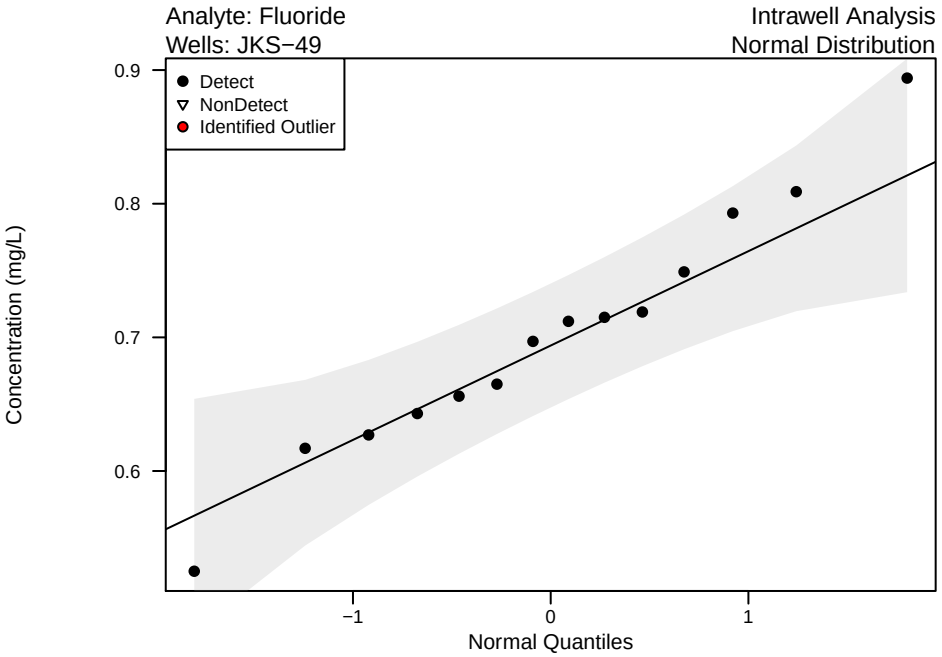

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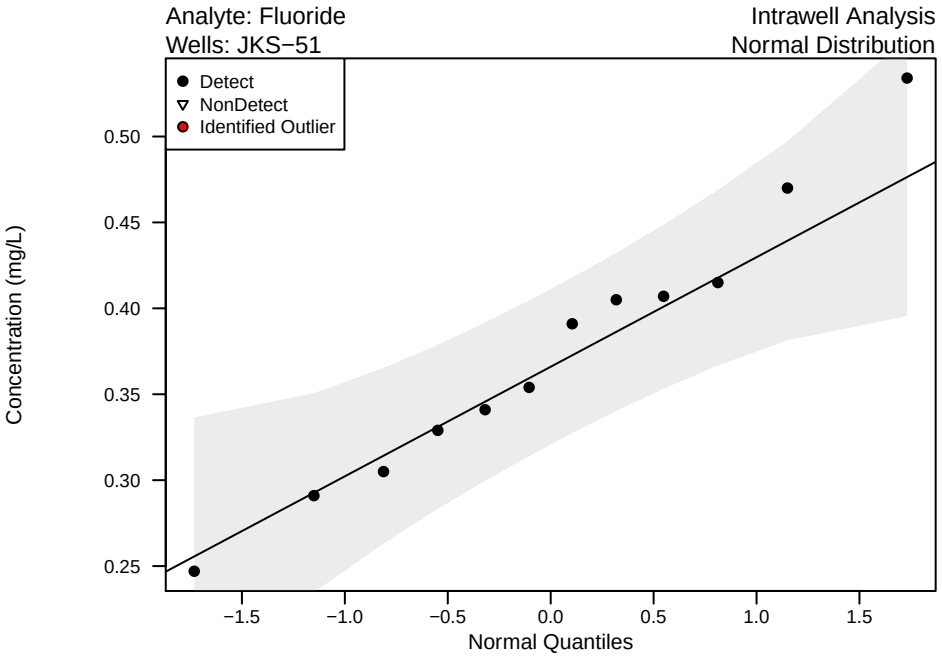
Appendix B − Figure 2
Unit: Bottom Ash Ponds
QQ Plots of Upgradient Wells



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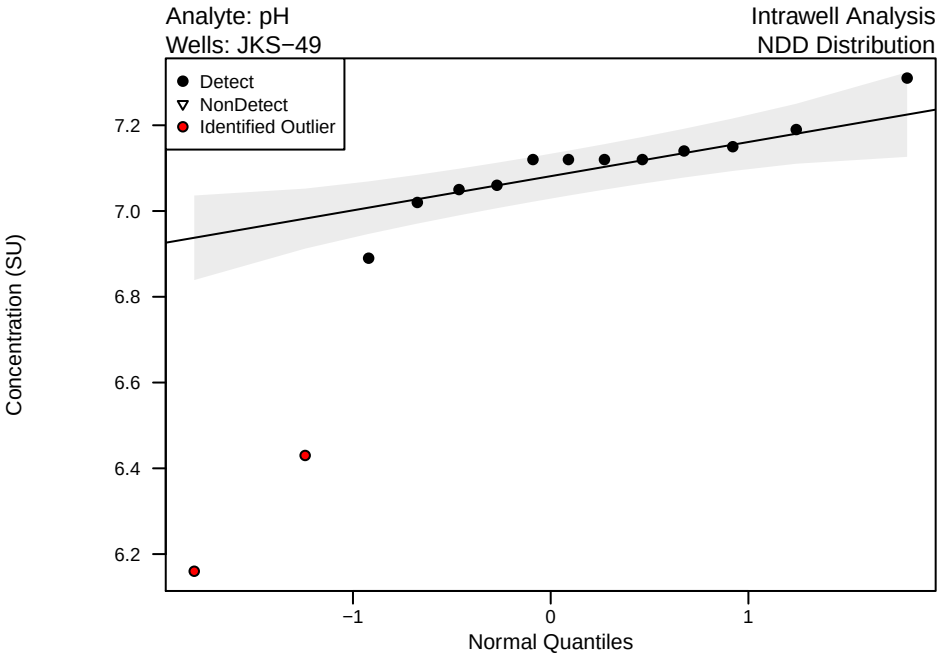
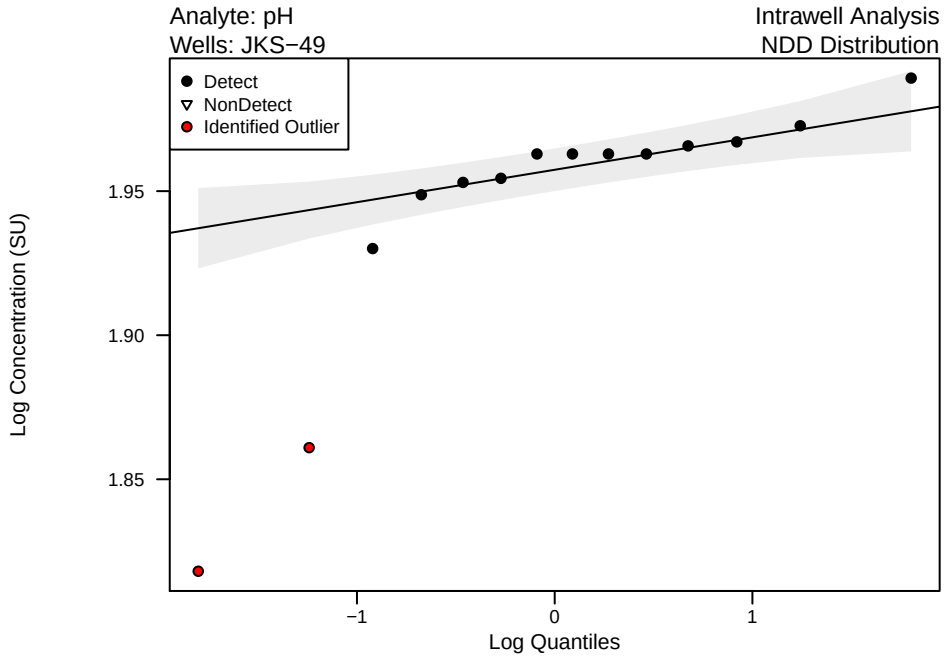
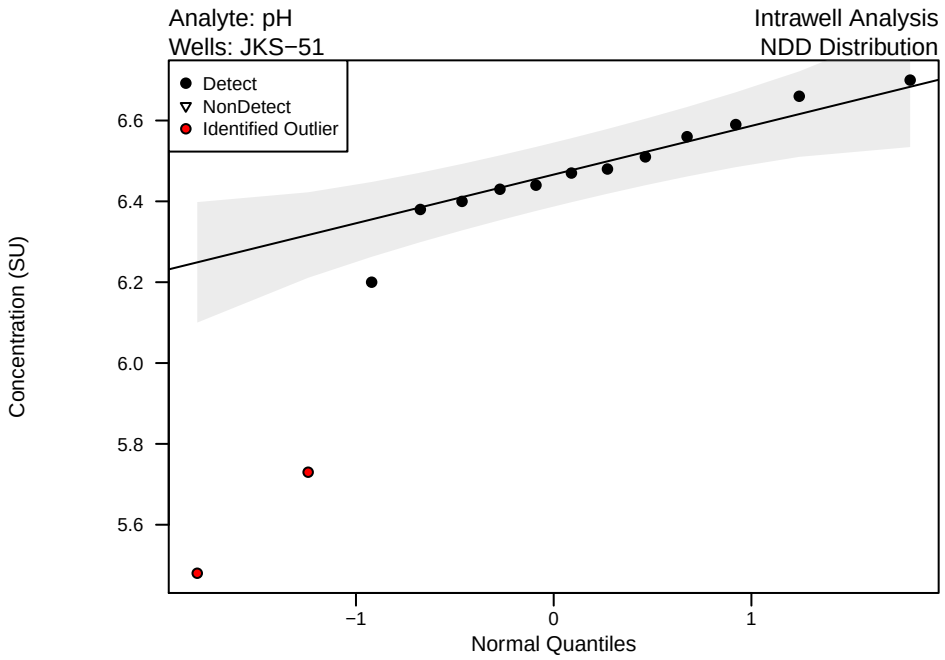
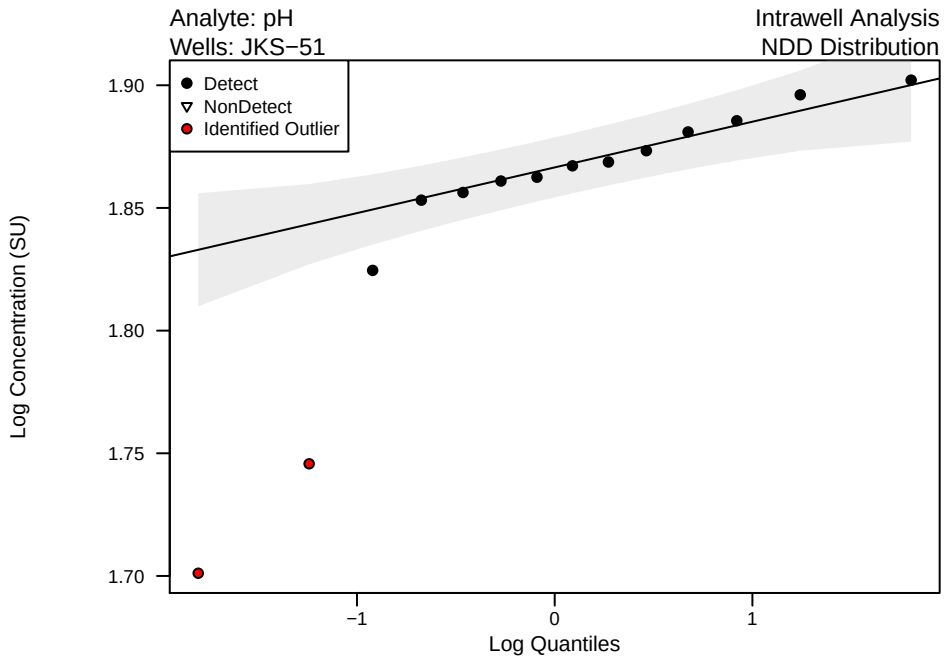
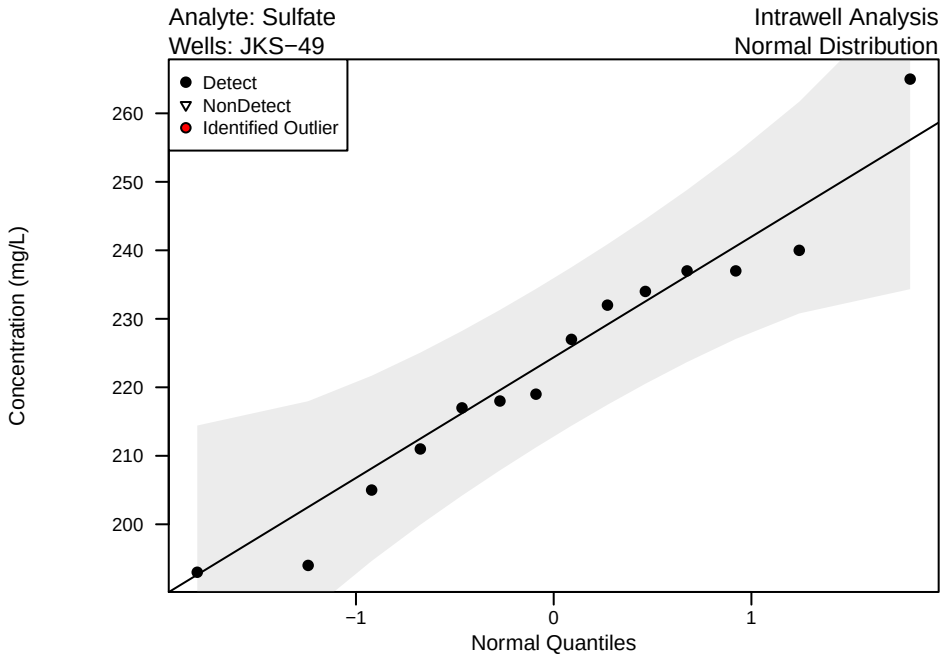




Appendix B − Figure 2
Unit: Bottom Ash Ponds
QQ Plots of Upgradient Wells







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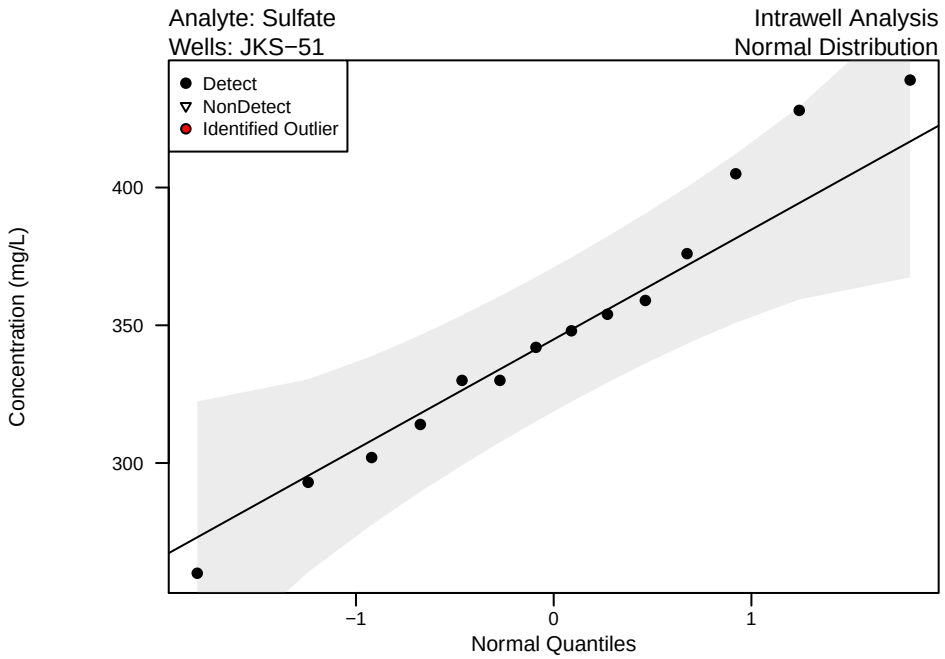
Appendix B − Figure 2
Unit: Bottom Ash Ponds
QQ Plots of Upgradient Wells



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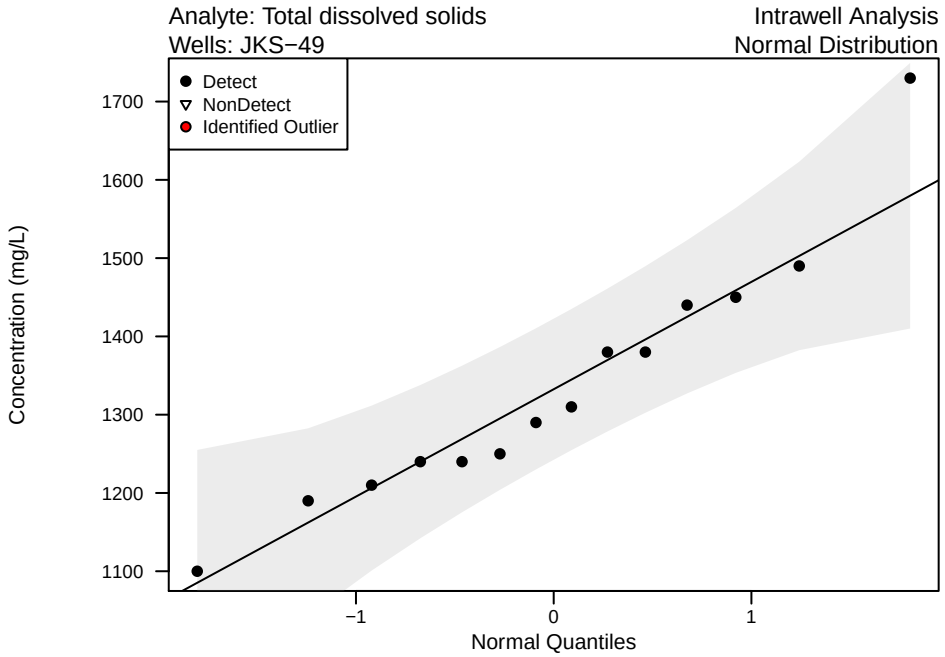

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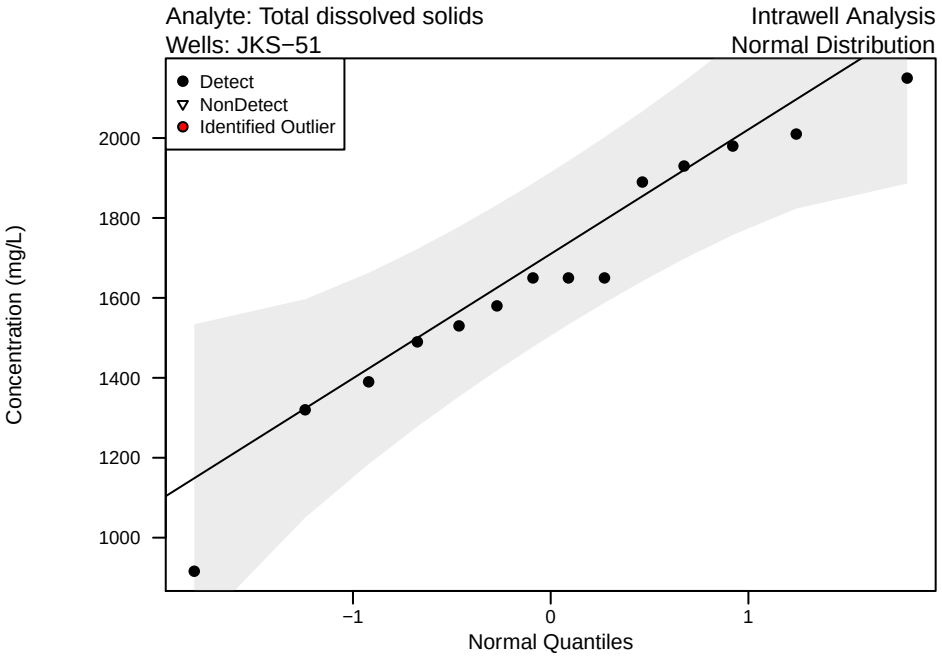

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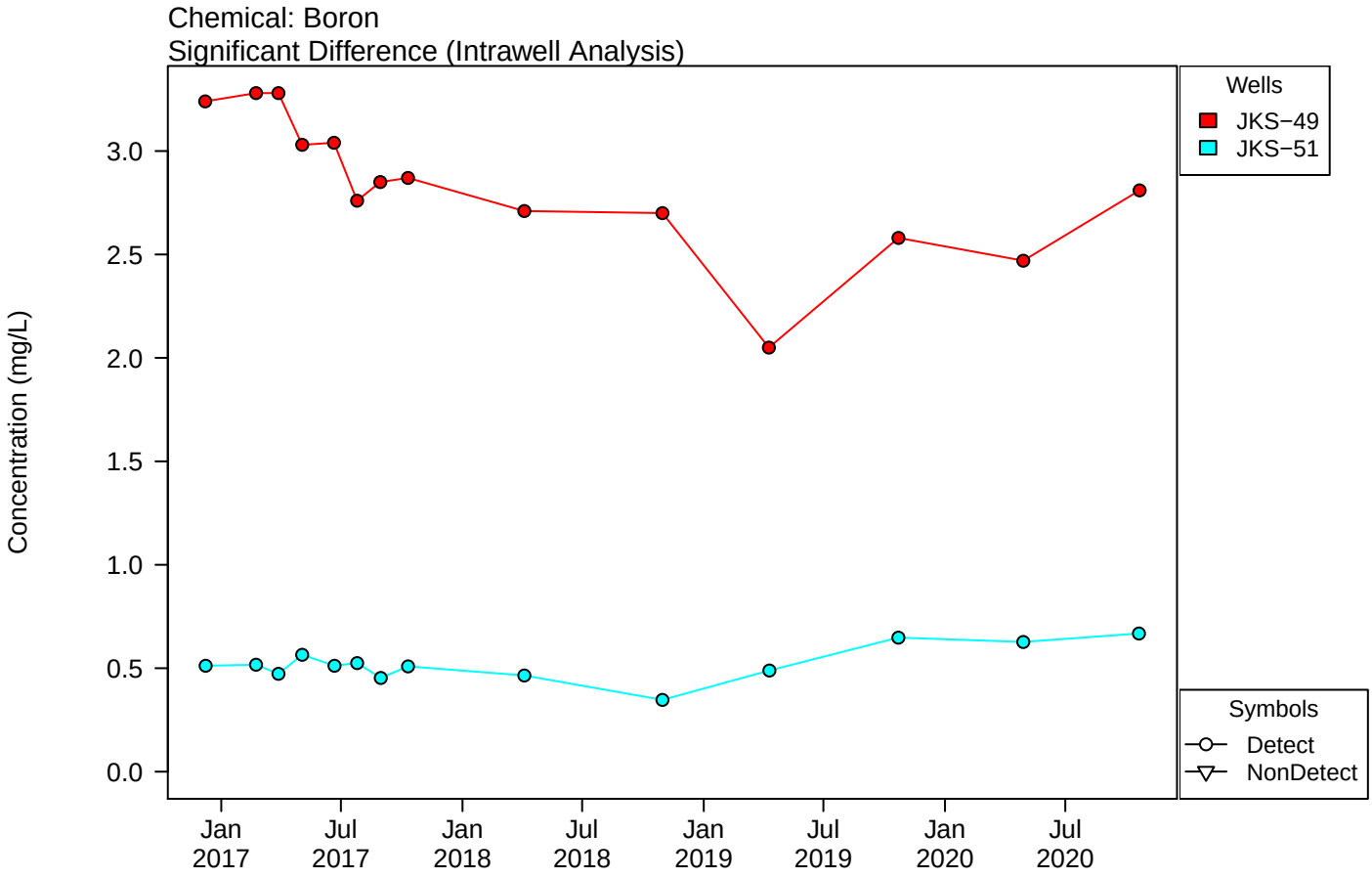
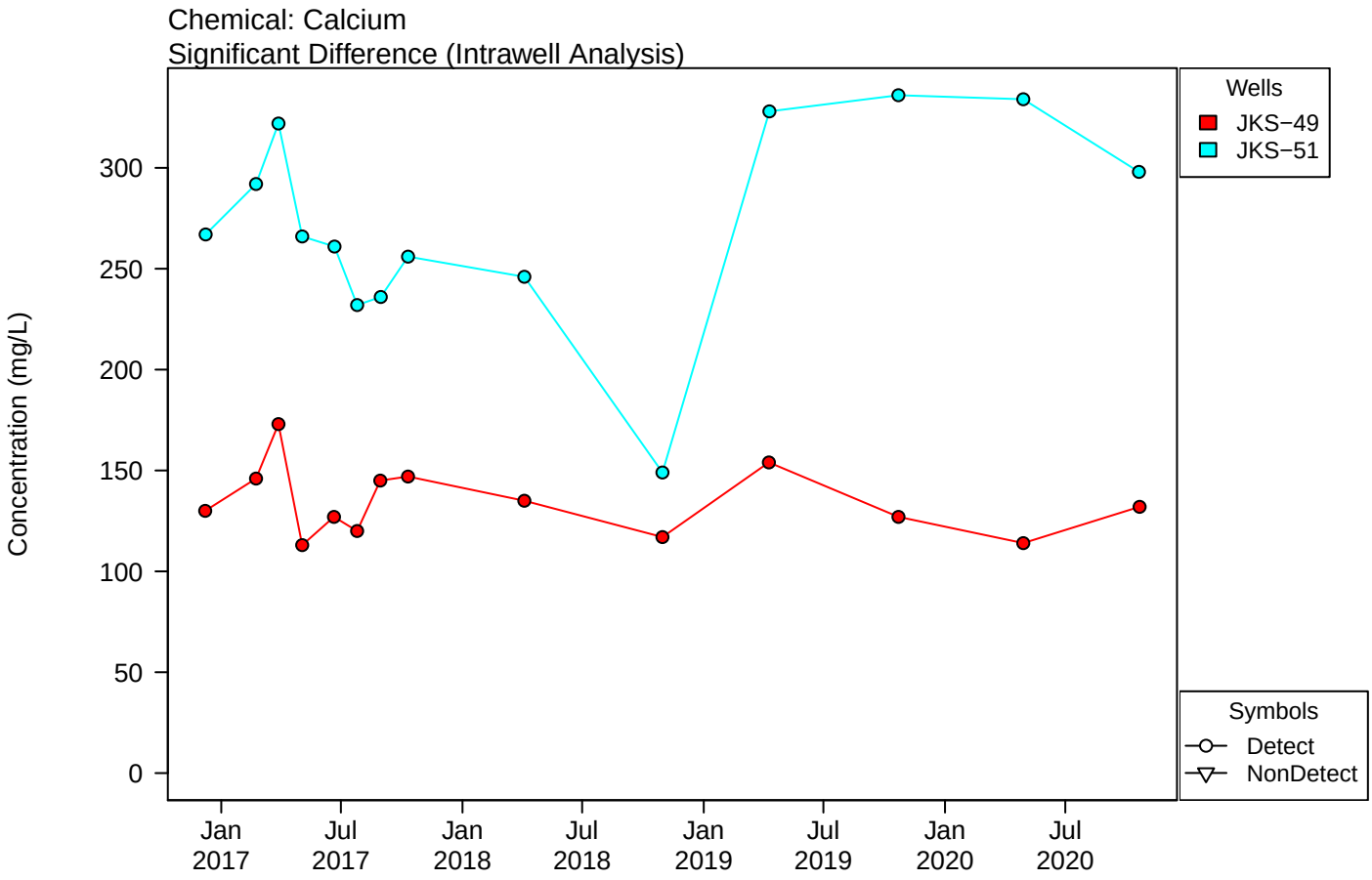
Appendix B − Figure 3
Unit: Bottom Ash Ponds
Timeseries of Upgradient Wells





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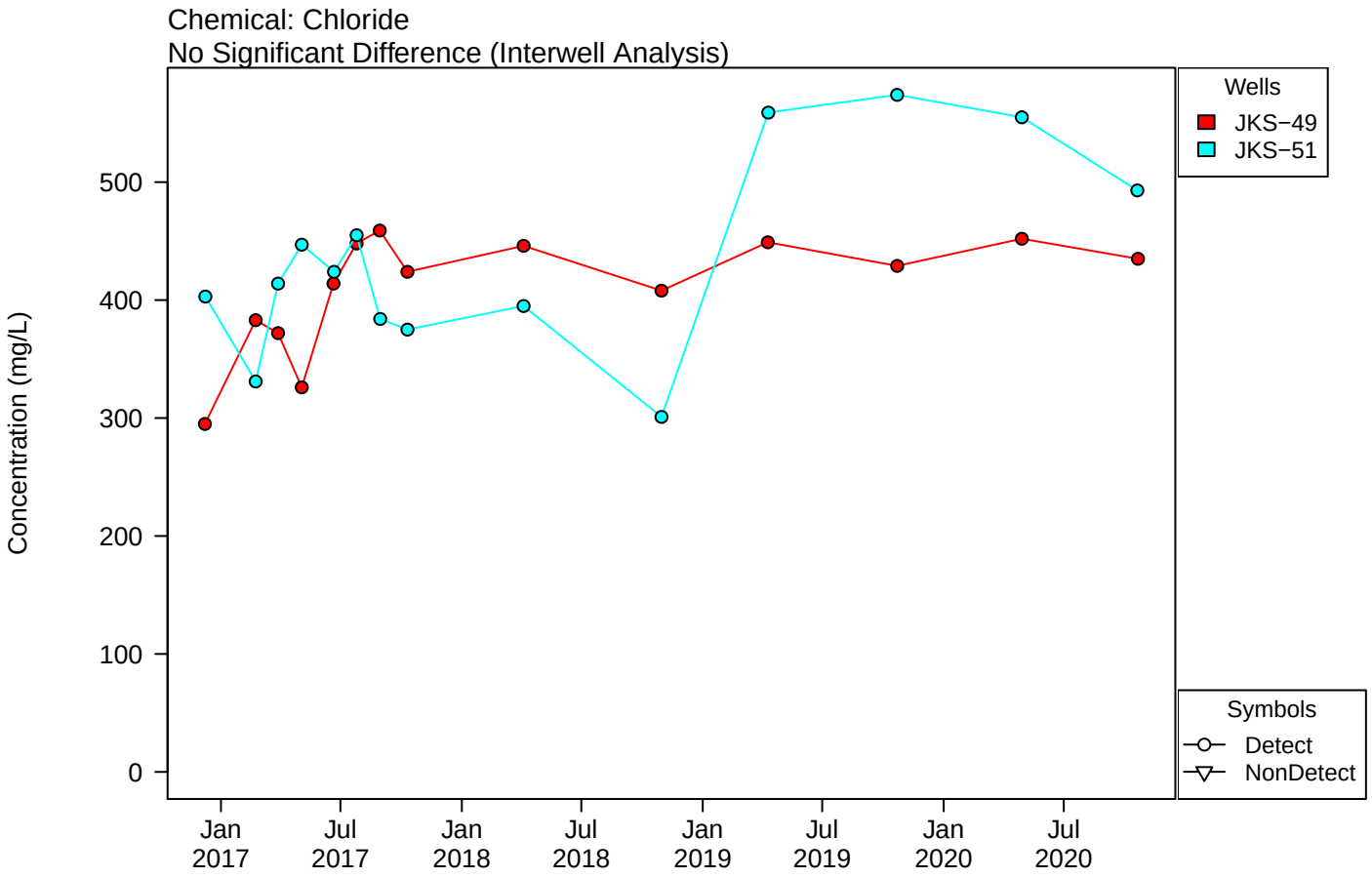

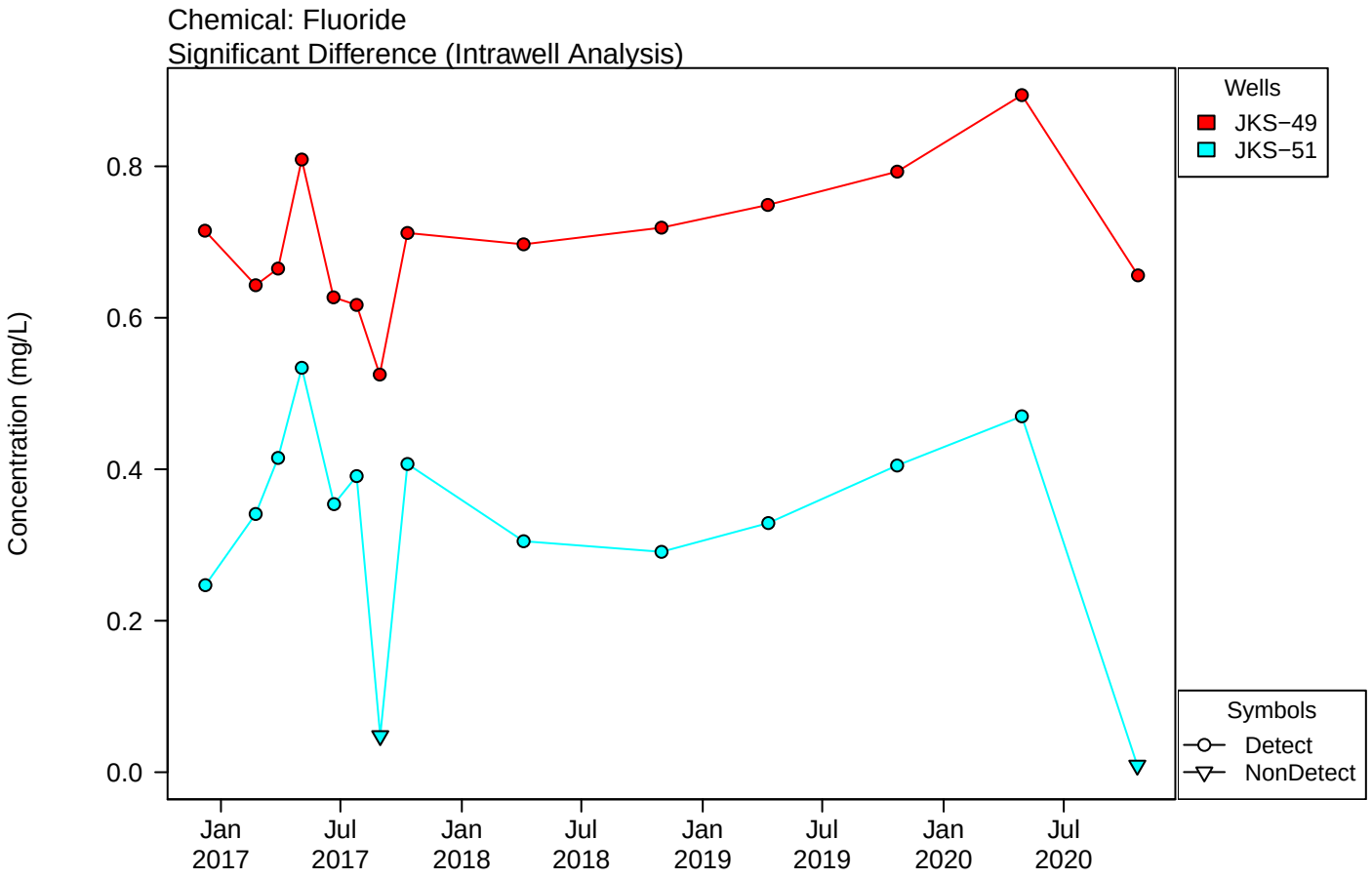

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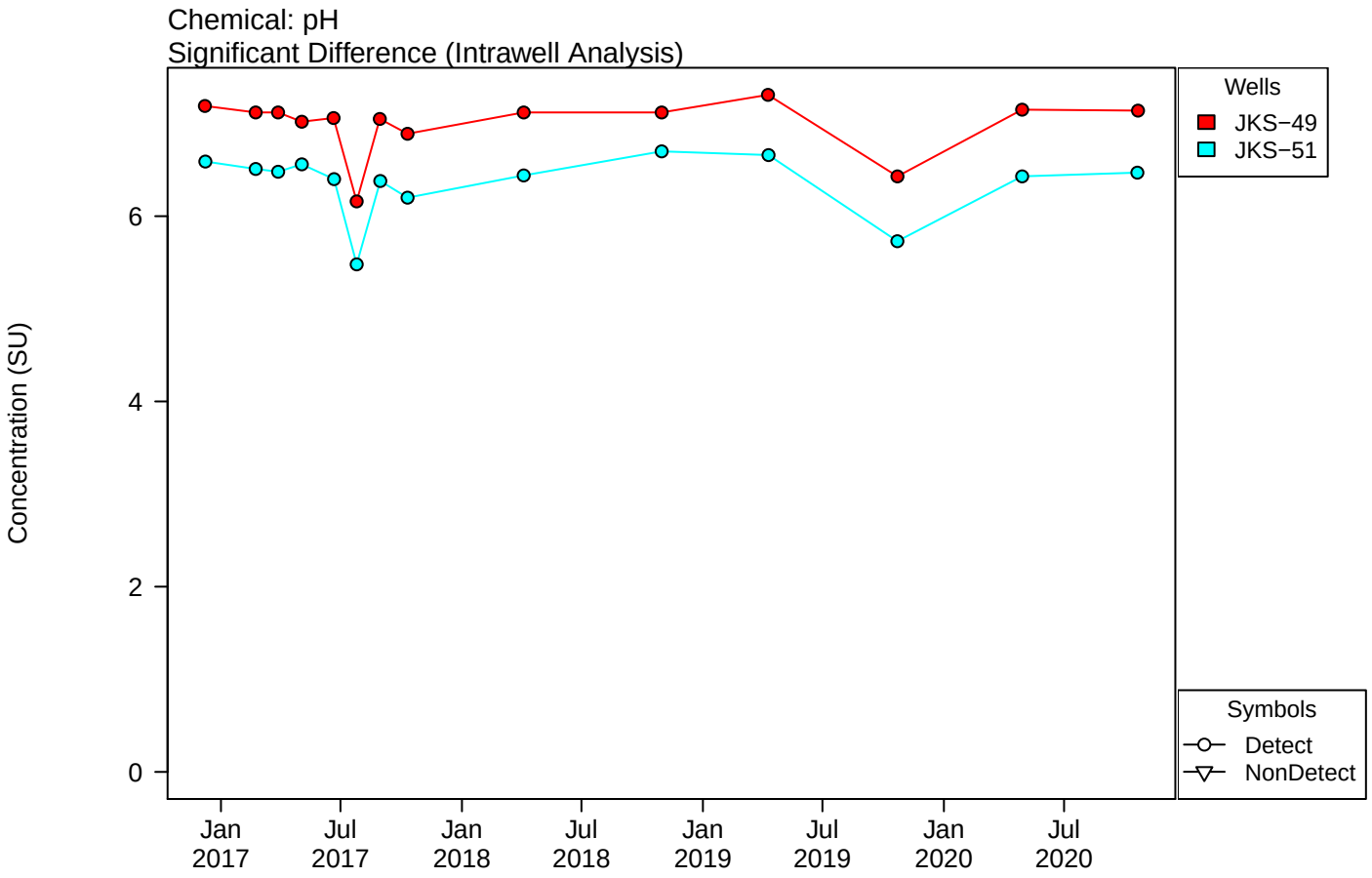

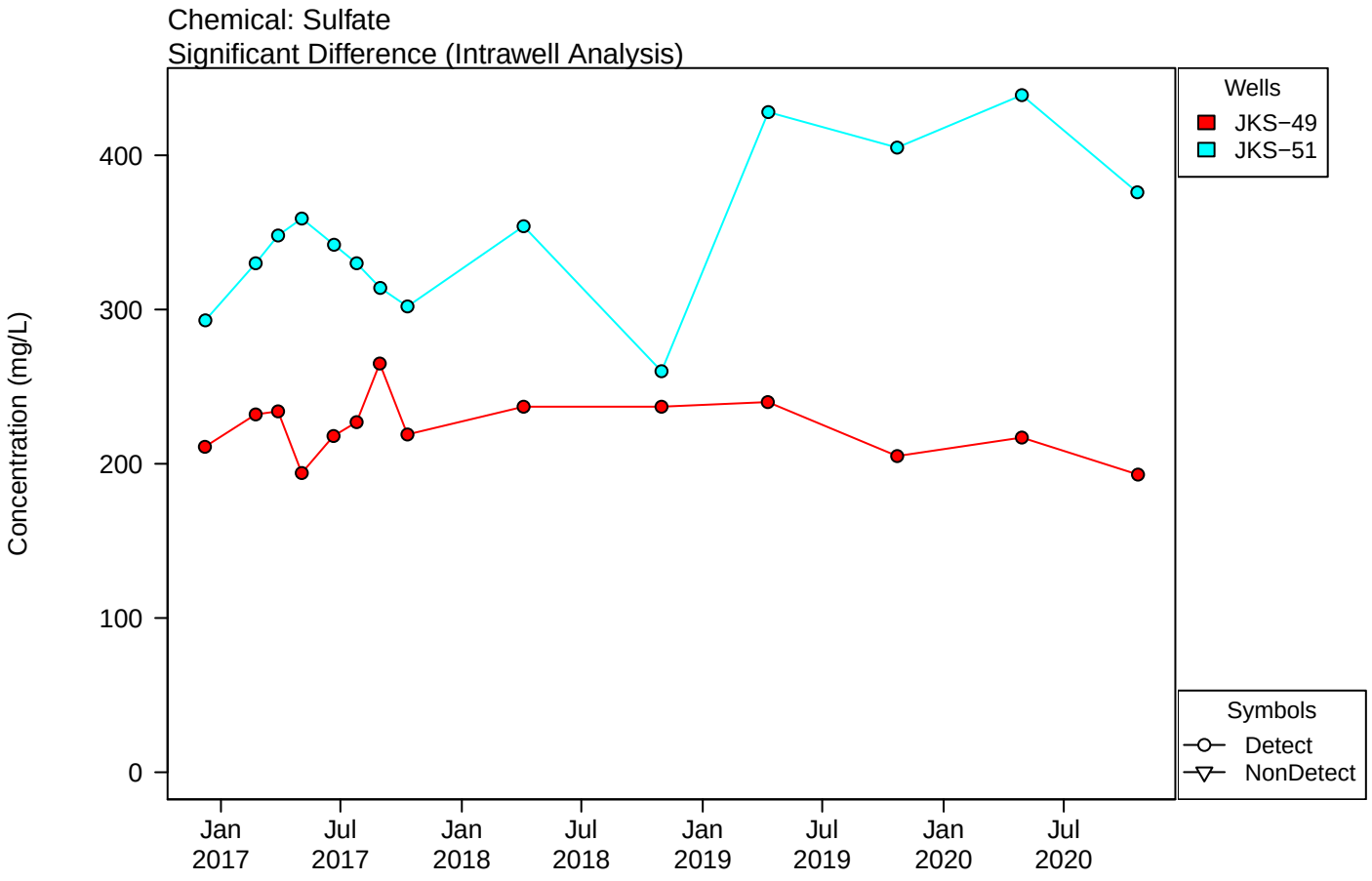

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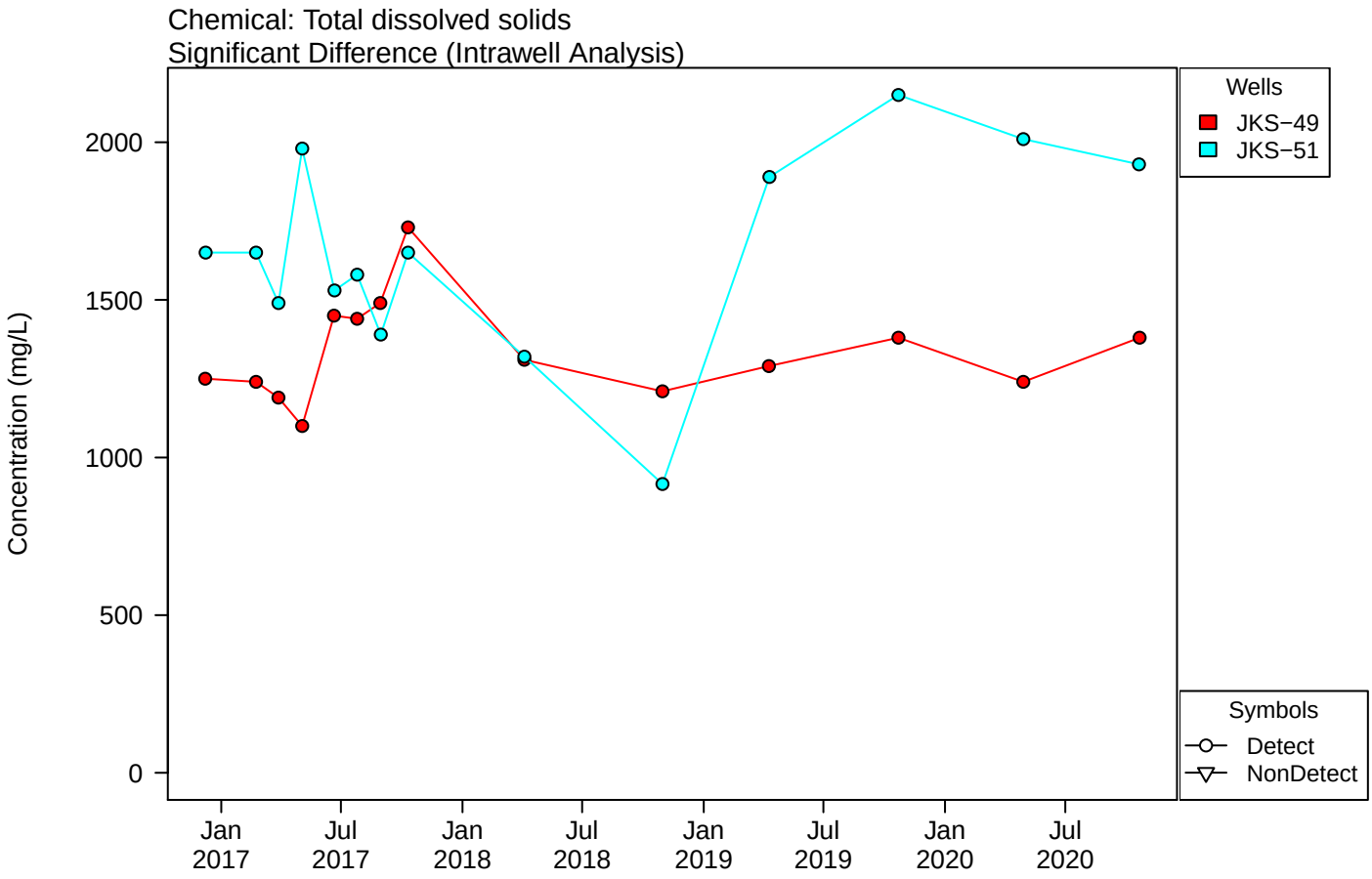
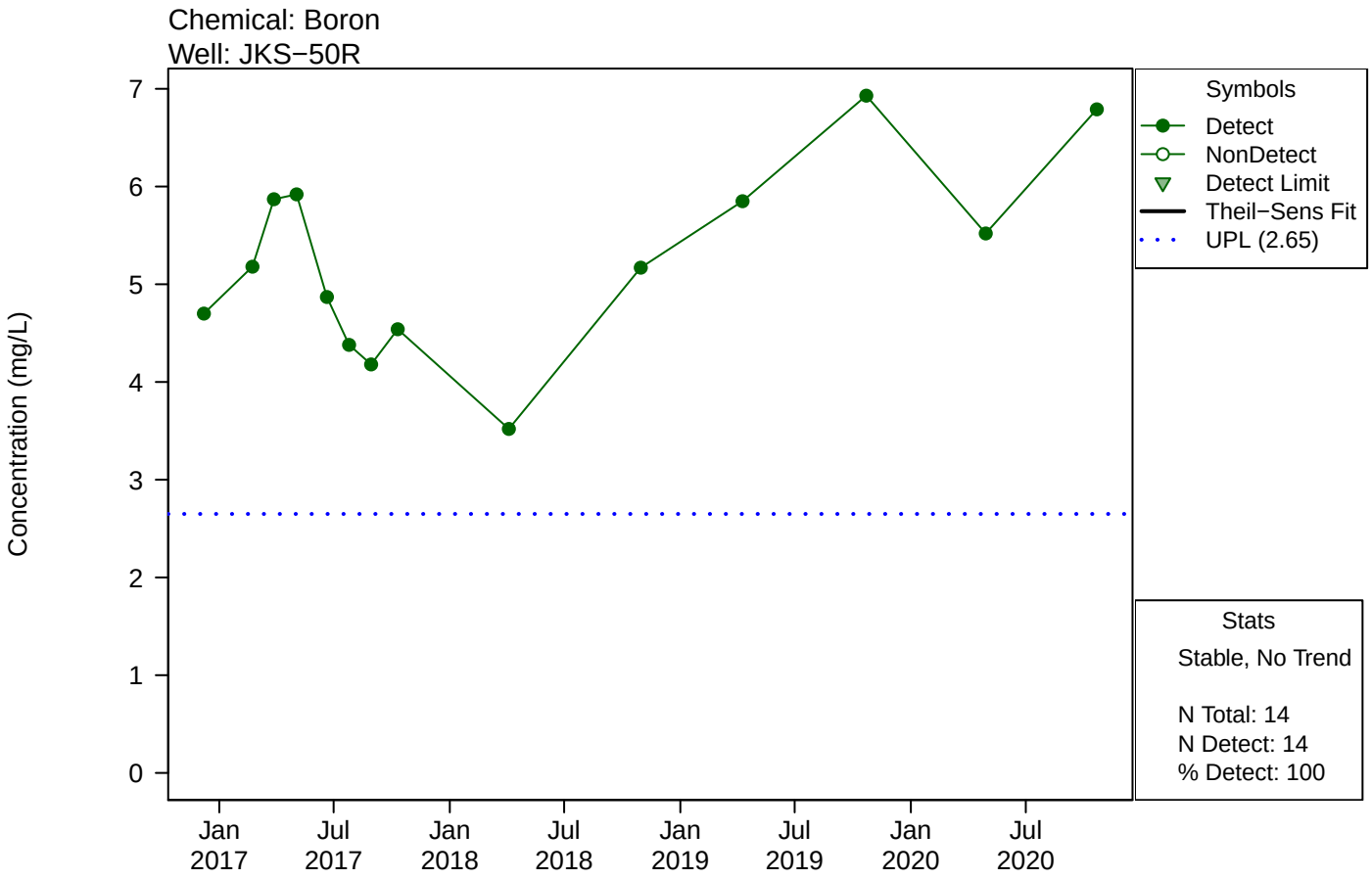
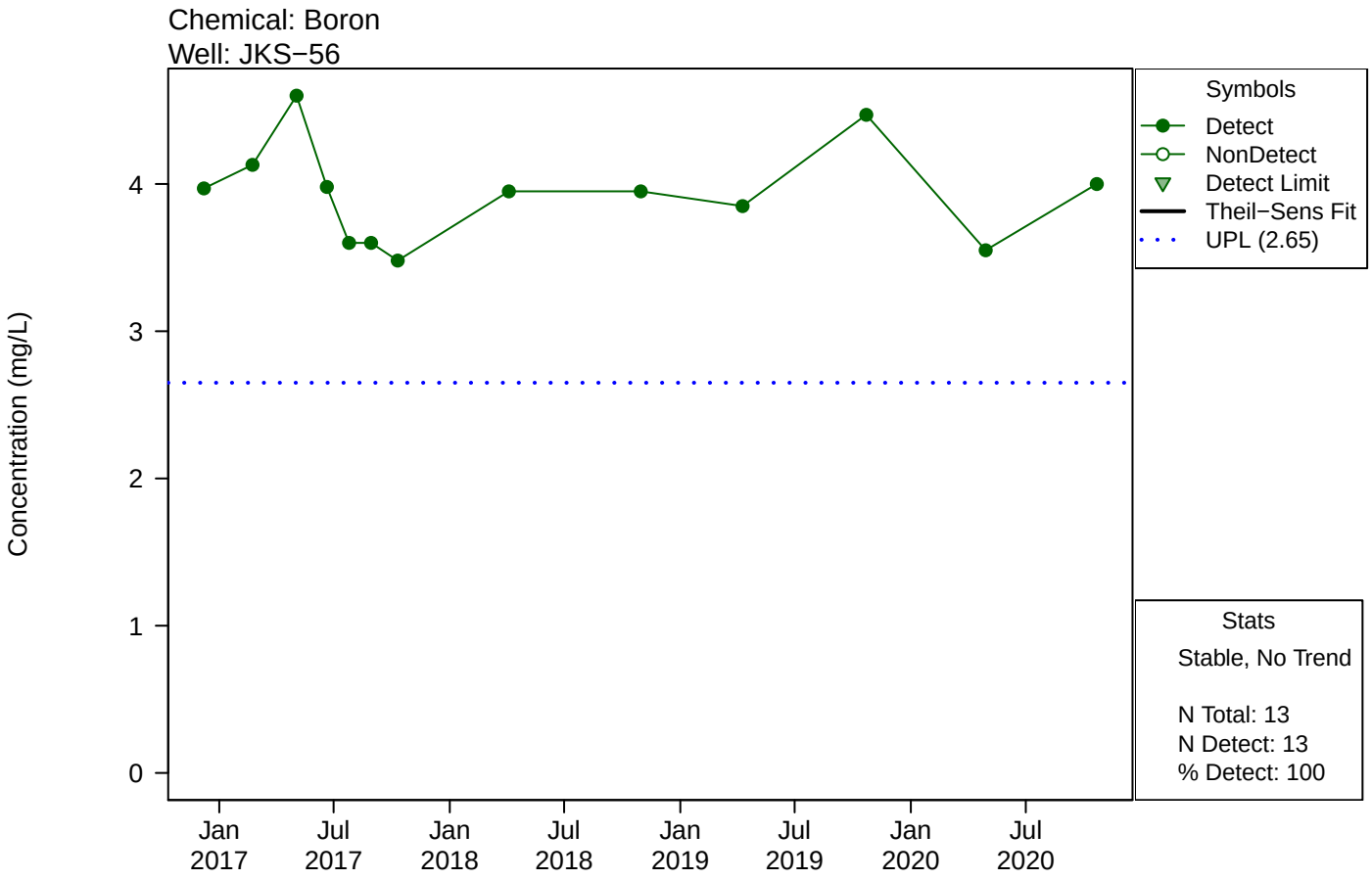


Appendix B − Figure 4
Unit: Bottom Ash Ponds
Trend Analysis of Downgradient Wells with Exceedances





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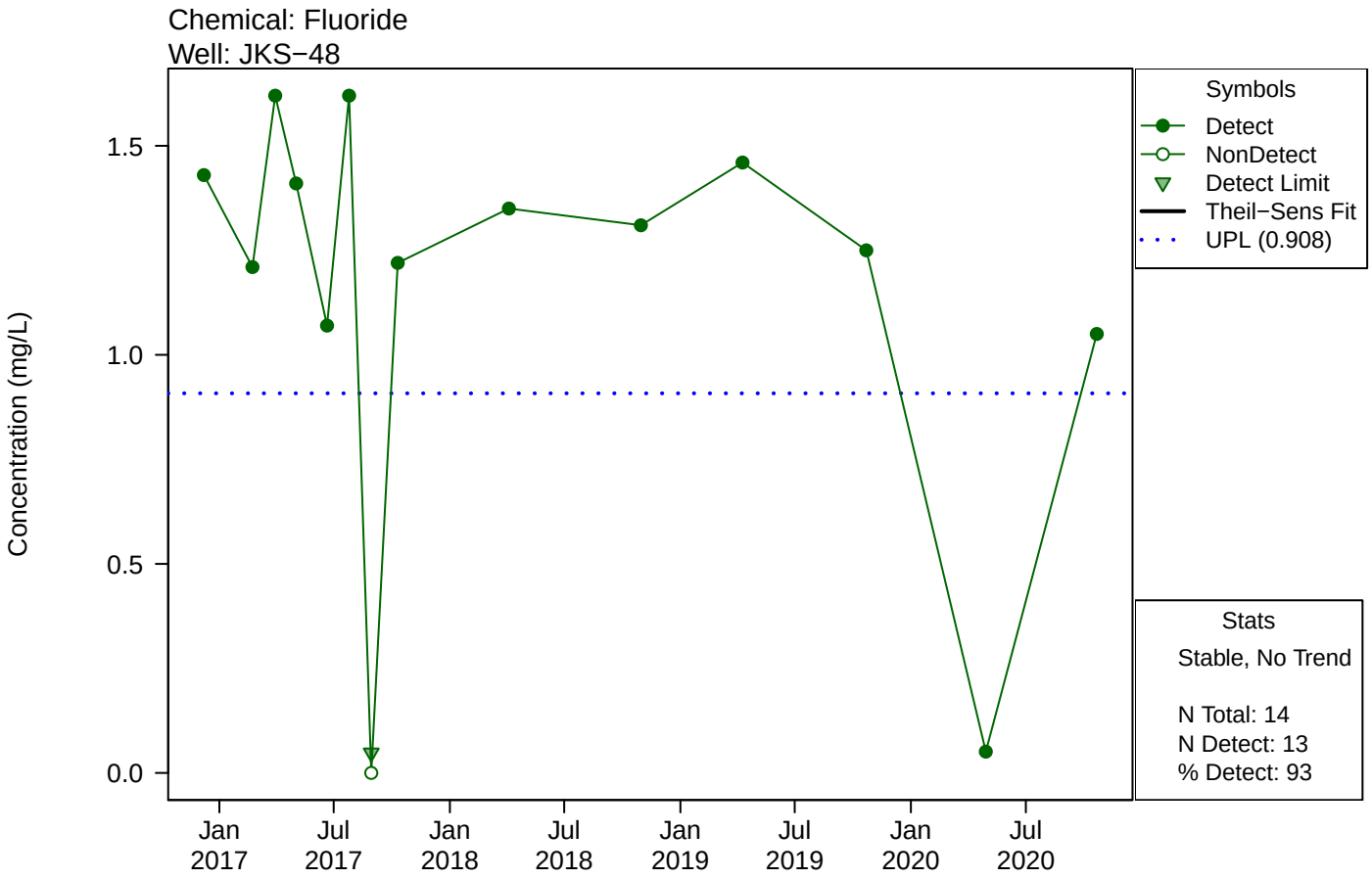
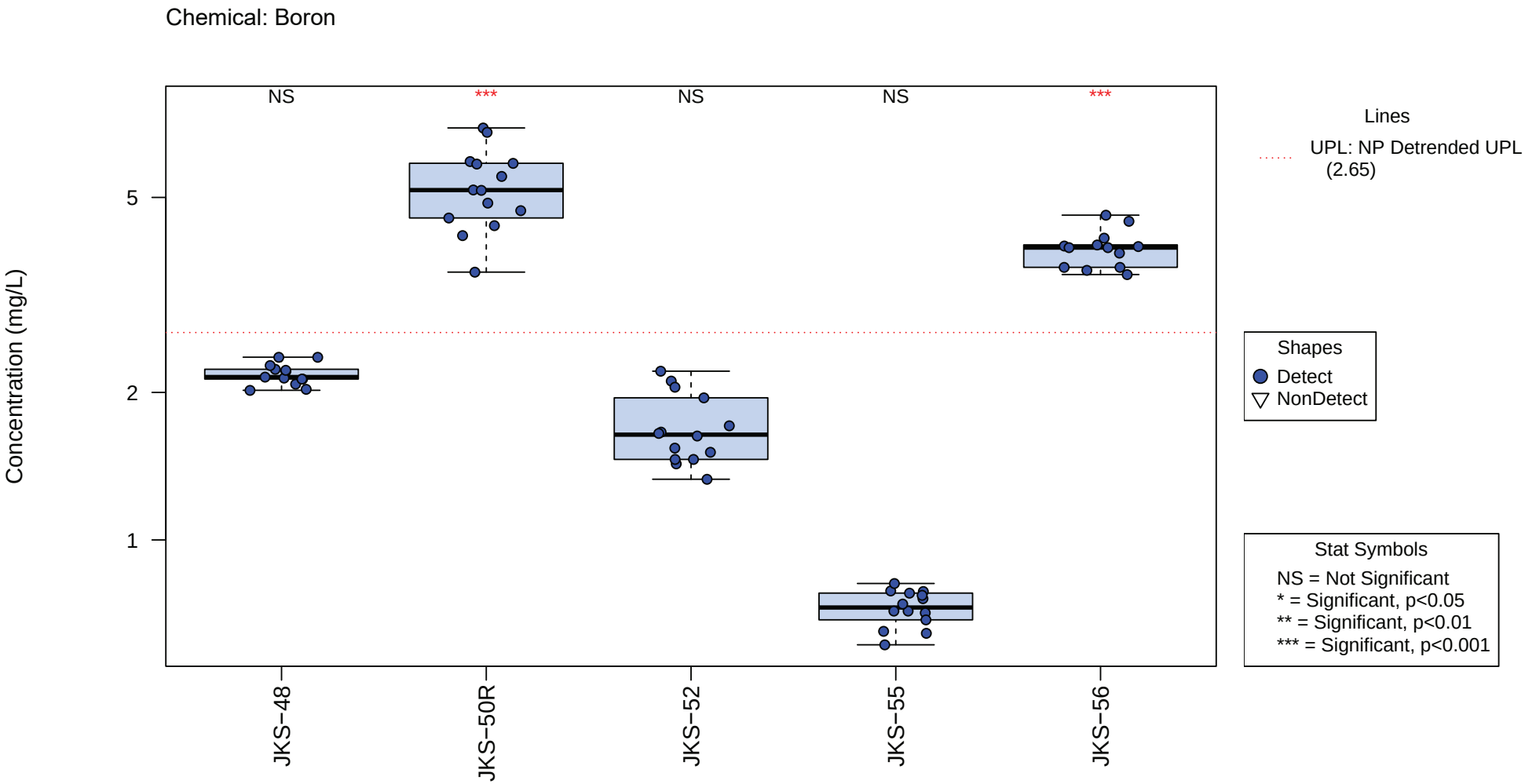


Appendix B - Figure 5
Unit: Bottom Ash Ponds
Boxplots of Downgradient Wells



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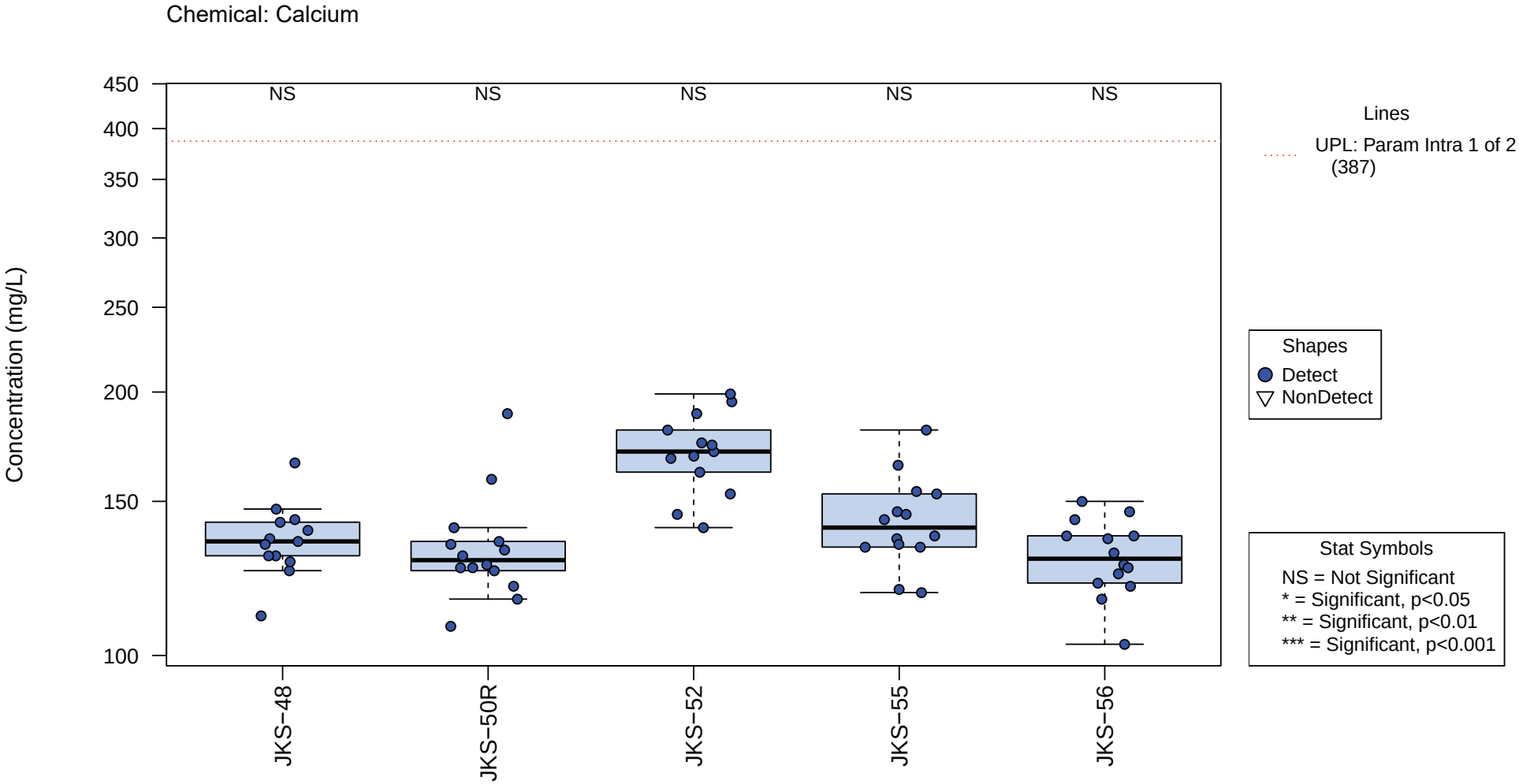

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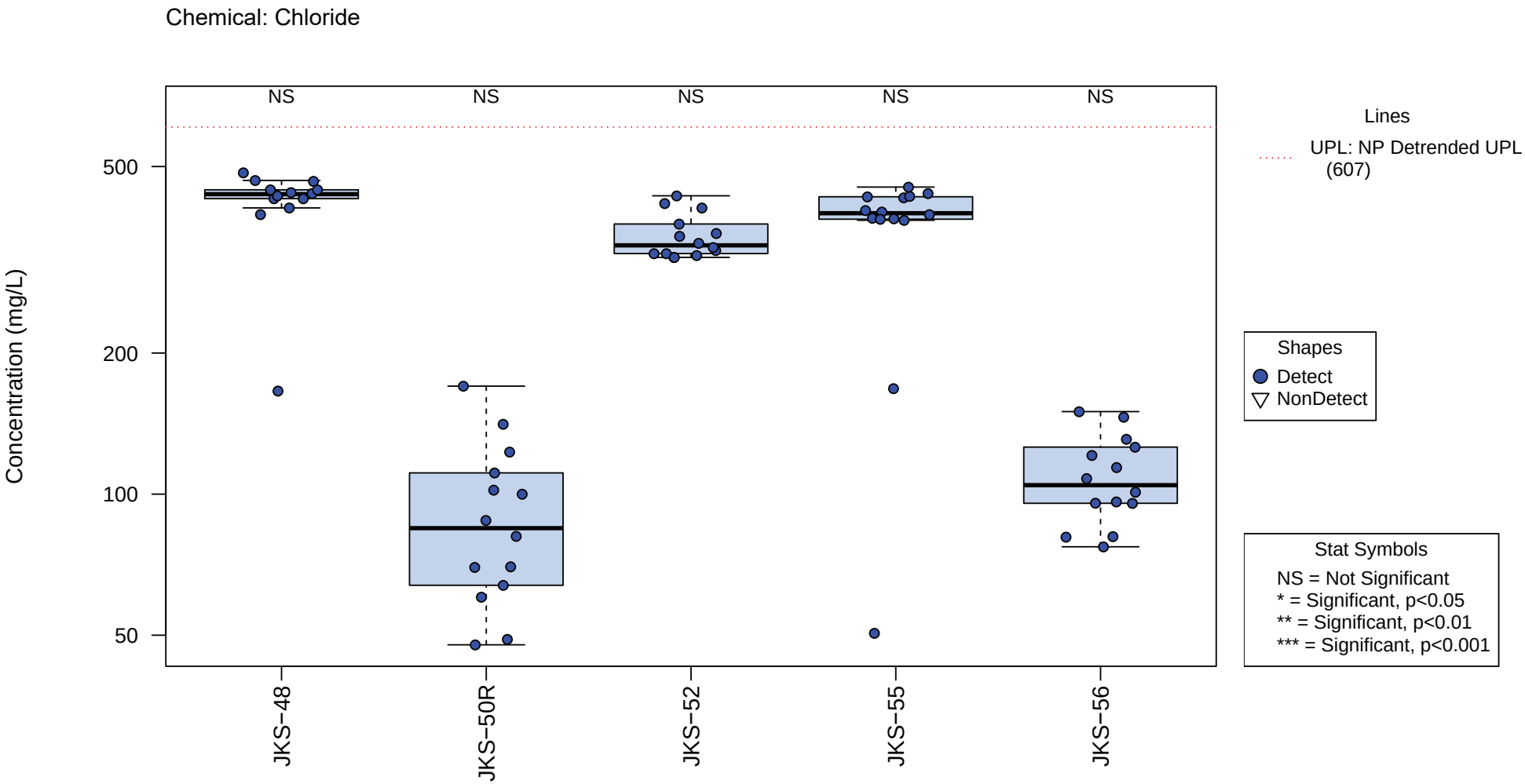

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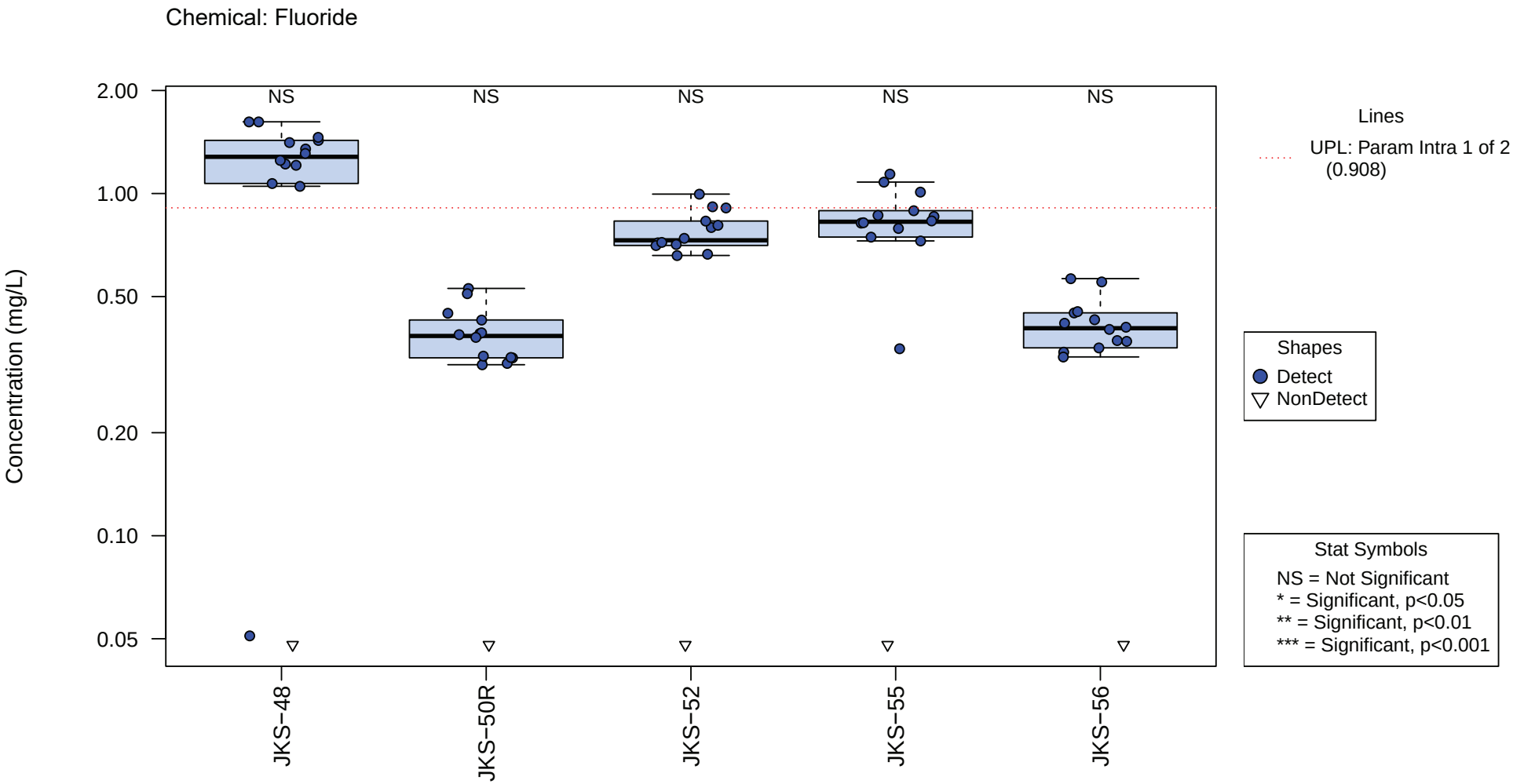

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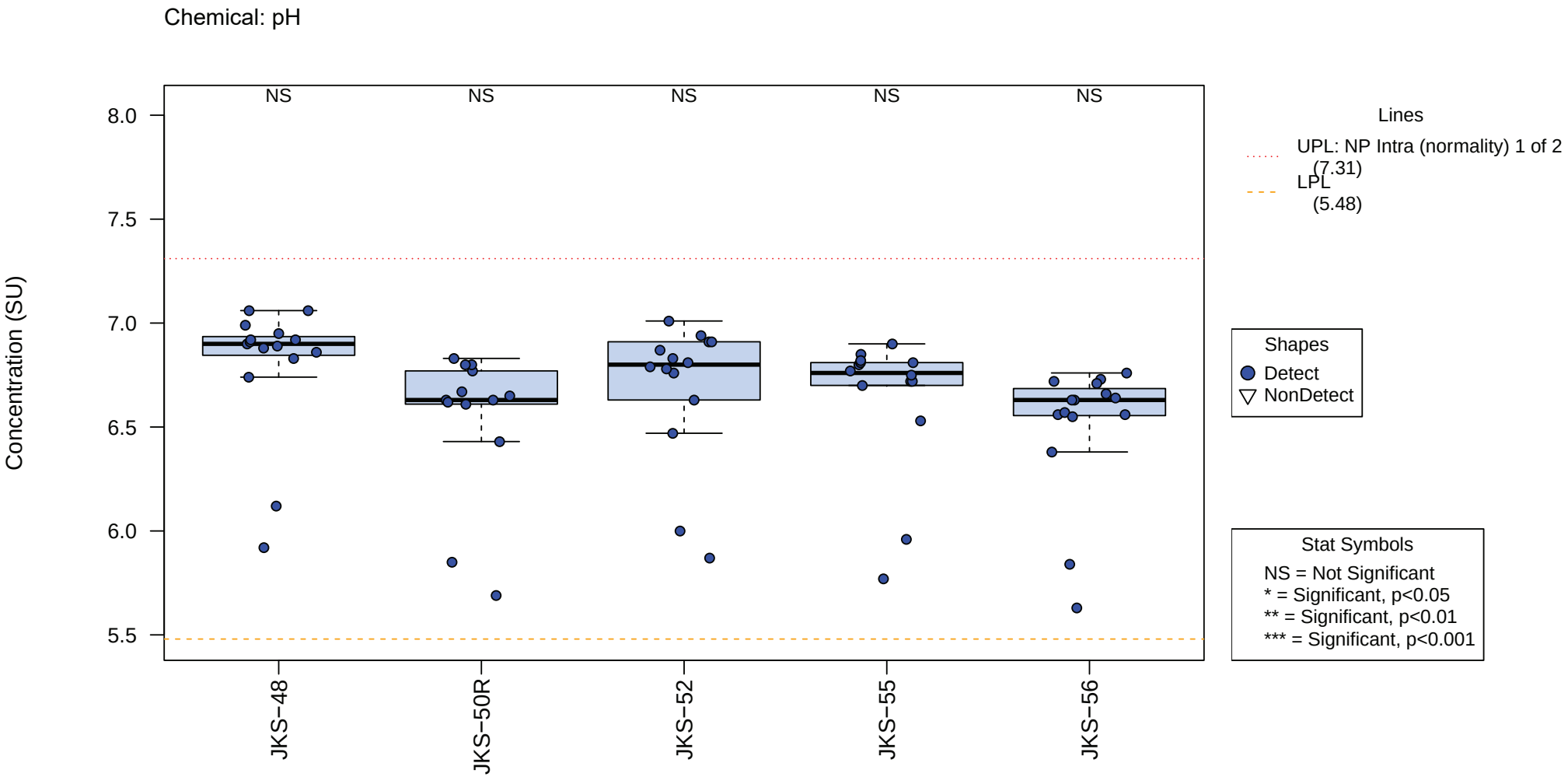

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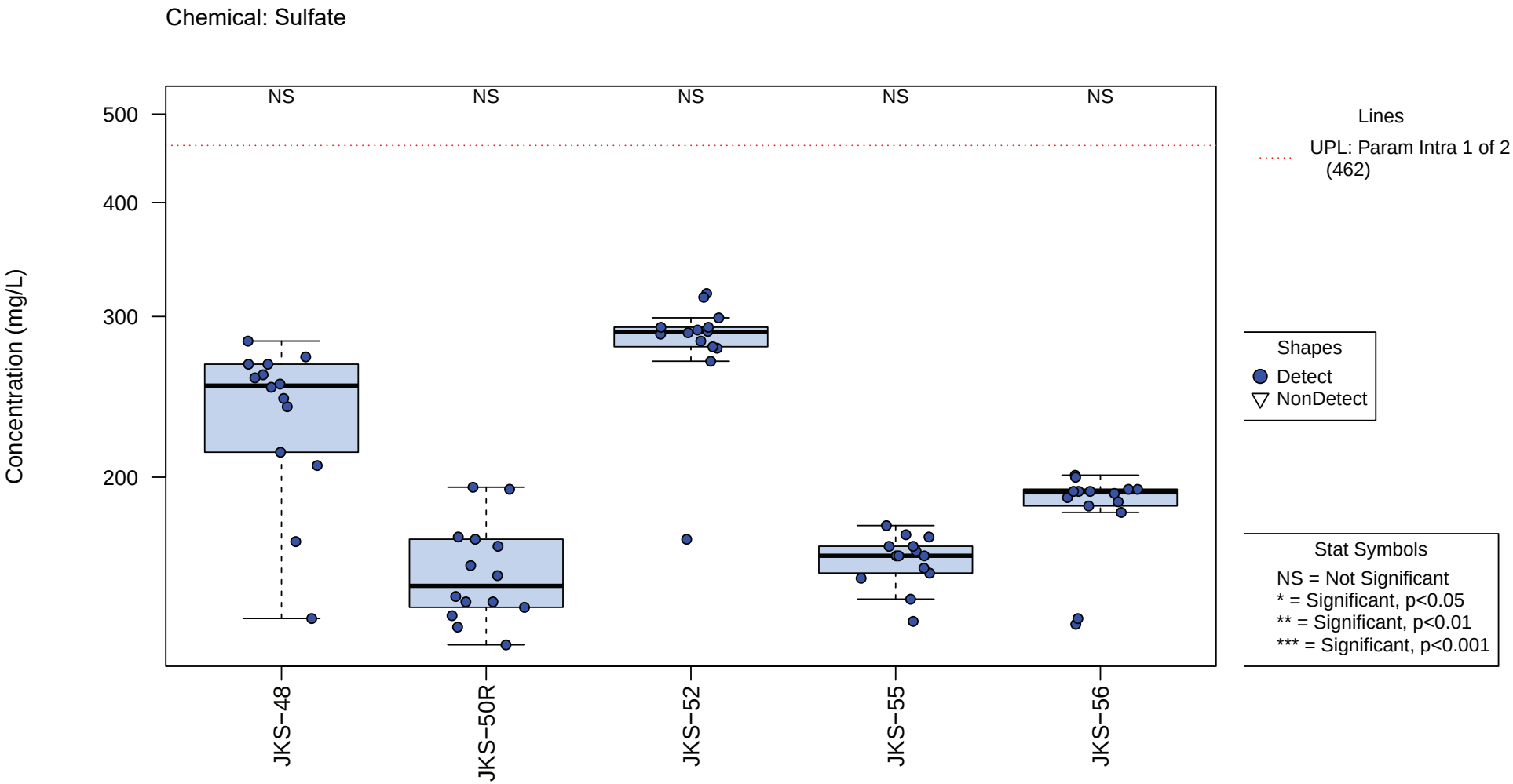

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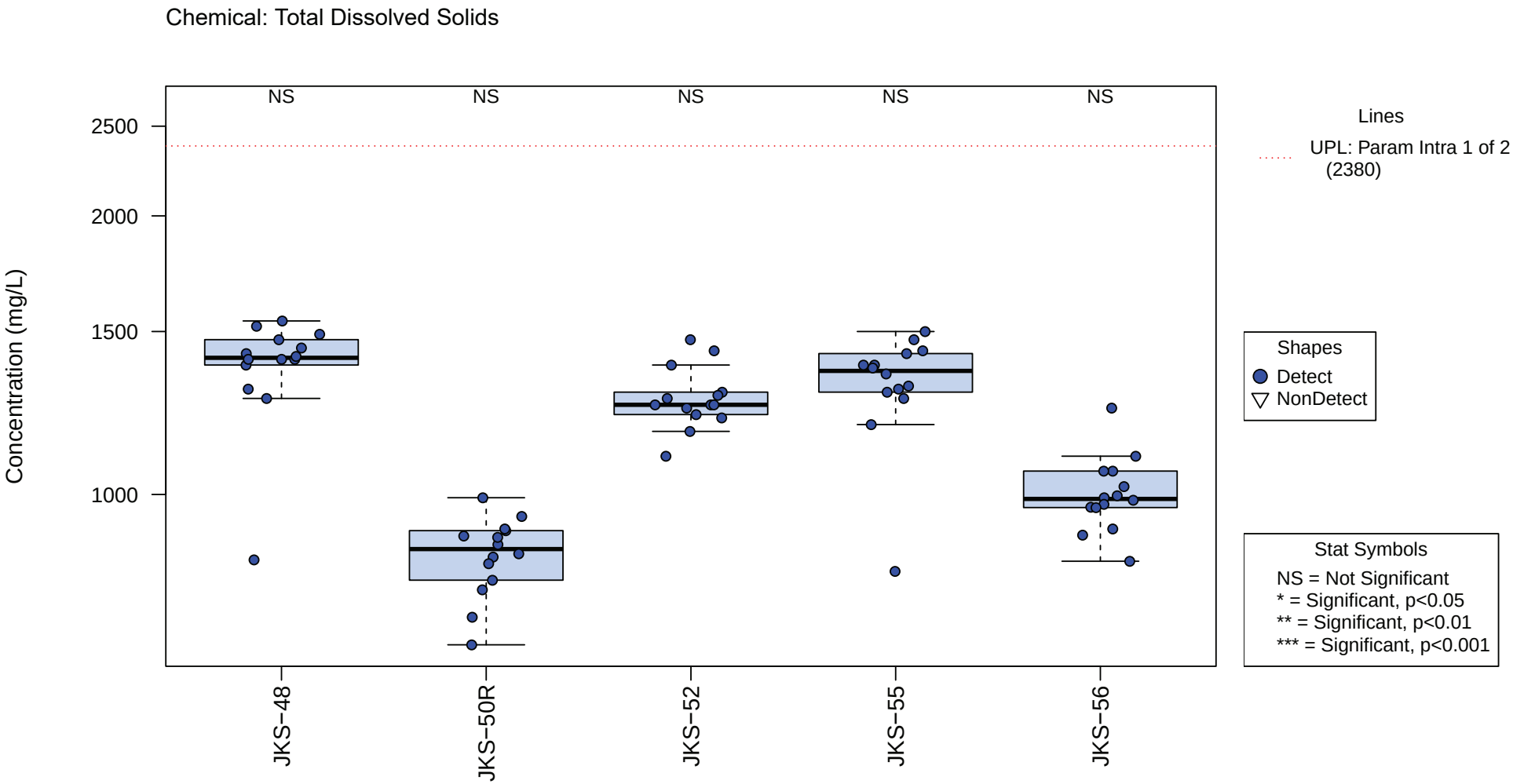

April 2020 Groundwater Sampling Event – Calaveras Power Station CCR Units

Appendix C

ERM

CityCentre Four
840 West Sam Houston Parkway
North, Suite 600
Houston, Texas 77024-3920

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

www.erm.com

September 25, 2020

Mr. Michael Malone
CPS Energy
145 Navarro Street
San Antonio, Texas 78205

Reference: Project No. 0503422\A10320

Subject: April 2020 Groundwater Sampling Event and August 2020 Resampling Event
Calaveras Power Station CCR Units
San Antonio, Texas

Dear Mr. Malone:

Introduction

Title 40, Code of Federal Regulations, Part 257 (40 CFR §257) (a.k.a. the 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* and *2019 Annual Groundwater Monitoring and Corrective Action Reports* for each CCR unit, the downgradient monitoring well results from the October 2017 and October 2018 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 evaluations of the April and August 2020 groundwater sample results indicated a potential SSI for a limited number of constituents from the EP, FAL, BAPs, and 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 a 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.

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Texas Board of Professional Geoscientist Firm 50036

To address the potential SSIs identified in the previous three *Annual Groundwater Monitoring and Corrective Action Reports*, CPS Energy prepared three *Written Demonstrations – Responses to Potential Statistically Significant Increases* (dated April 4, 2018; February 27, 2019; and April 27, 2020; respectively). Based on the evidence provided in the *Written 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 2020 was conducted on April 28 through April 29, 2020. 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. A resampling event of JKS-54 only was conducted on August 24, 2020.

For each CCR unit, the downgradient monitoring well results from the April and August 2020 sampling events were compared to the updated UPLs and LPLs recalculated in their respective *2019 Annual Groundwater Monitoring and Corrective Action Report*. The April and August 2020 groundwater sample results for the downgradient monitoring wells in each CCR unit are summarized in Attachment 1.

Although the evaluations of the April and August 2020 groundwater sample results indicate a potential SSI for a limited number of constituents, with the exception of sulfate in JKS-54 associated with the SRH Pond, 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 Demonstrations*. The evaluations of the April and August 2020 groundwater sample results with potential SSIs are summarized below.

EP – The constituents associated with potential SSIs include fluoride in JKS-36 and JKS-61; and pH in JKS-36 and JKS-62. As previously presented in the *Written Demonstrations*, the concentrations of fluoride and pH appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. The reported April 2020 concentrations were within the range of naturally occurring concentrations identified in the *Written Demonstrations*.

FAL – The constituent associated with a potential SSI is pH in JKS-31 and JKS-46. As previously presented in the *Written Demonstrations*, the concentrations of pH appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. The reported April 2020 concentrations were within the range of naturally occurring concentrations identified in the *Written Demonstrations*.

BAPs – The constituents associated with potential SSIs include boron in JKS-50R and JKS-56; and fluoride in JKS-52 and JKS-55. As previously presented in the *Written Demonstrations*, the concentrations of boron and fluoride appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. The reported April 2020 concentrations were within the range of naturally occurring concentrations identified in the *Written Demonstrations*.

SRH Pond – The constituents associated with potential SSIs include fluoride in JKS-52 and JKS-54; and sulfate in JKS-54. As previously noted in the *April 2019 Groundwater Sampling Report*, the concentrations of fluoride appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit and the reported April 2020 concentrations are within the range of naturally occurring concentrations identified in the *Annual Groundwater Monitoring and Corrective Action Reports*. Although a potential SSI of sulfate was not previously presented in the *Written Demonstrations*, the concentrations of sulfate in JKS-54 appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. While the concentration reported in the April 2020 sampling event (443 mg/L) was the highest concentration reported in JKS-54, the concentration reported in the August 2020 resampling event (425 mg/L) is within the range of concentrations reported in upgradient monitoring well JKS-51 over the previous three sampling events (405 to 439 mg/L).

Conclusions

Based on the April and August 2020 groundwater sample results and the evidence provided in one or all of the *Written 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 2020.

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

Sincerely,

Environmental Resources Management

Walter Zverina
Principal Consultant

ATTACHMENT 1 APRIL AND AUGUST 2020 GROUNDWATER SAMPLE RESULTS

September 2020
Project No. 0503422

April 2020 Groundwater Sample Results
CCR Unit: Evaporation Pond
CPS Energy Calaveras Power Station
San Antonio, TX

			CCR Unit	EP	EP	EP	EP
			Well Designation	Downgradient	Downgradient	Downgradient	Downgradient
			Well ID	JKS-36	JKS-61	JKS-61	JKS-62
			Sample Date	4/29/2020	4/29/2020	4/29/2020	4/29/2020
			Sample Type Code	N	N	FD	N
Constituent	Units	2019 LPL - EP	2019 UPL - EP				
Boron	mg/L	--	1.88	0.459	1.82	1.85	0.484
Calcium	mg/L	--	1,300	175	154	157	122
Chloride	mg/L	--	2,780	63.3	312	317	284
Fluoride	mg/L	--	0.382	1.18	0.494	0.549	0.331
pH, Field	SU	4.58	6.47	3.42	6.27	6.27	6.54
Sulfate	mg/L	--	2,110	189	604	608	190
Total dissolved solids	mg/L	--	6,660	1,790	1,870	1,870	1,100

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

April 2020 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	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020
			Sample Type Code	N	N	N	FD	N
Constituent	Units	2019 LPL - FAL	2019 UPL - FAL					
Boron	mg/L	--	4.29	0.429	1.18	0.864	0.806	0.325
Calcium	mg/L	--	583	171 J	573 J	143 J	133 J	530 J
Chloride	mg/L	--	841	272	756	17.9	19.2	168
Fluoride	mg/L	--	4.86	1.00	1.68	1.61 J	2.44 J	0.188
pH, Field	SU	3.98	6.73	3.70	6.30	3.10	3.10	6.61
Sulfate	mg/L	--	7,630	877	1,620	1,180	1,240	1,280
Total dissolved solids	mg/L	--	11,900	1,890	4,370	1,970	1,780	3,180

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

April 2020 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	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020
			Sample Type Code	N	N	N	FD	N	N
Constituent	Units	2019 LPL - BAP	2019 UPL - BAP						
Boron	mg/L	--	2.40	2.36	5.52	2.05	2.16	0.779	3.55
Calcium	mg/L	--	368	130 J	126 J	174 J	180 J	137 J	103 J
Chloride	mg/L	--	608	485	102	433	430	452	101
Fluoride	mg/L	--	0.847	0.051 JH	0.510	0.908	0.952	1.01	0.552
pH, Field	SU	5.48	7.31	6.89	6.65	6.83	6.83	6.81	6.72
Sulfate	mg/L	--	431	206	194	315	313	177	138
Total dissolved solids	mg/L	--	2,240	1,400	918	1,470	1,420	1,350	904

NOTES:

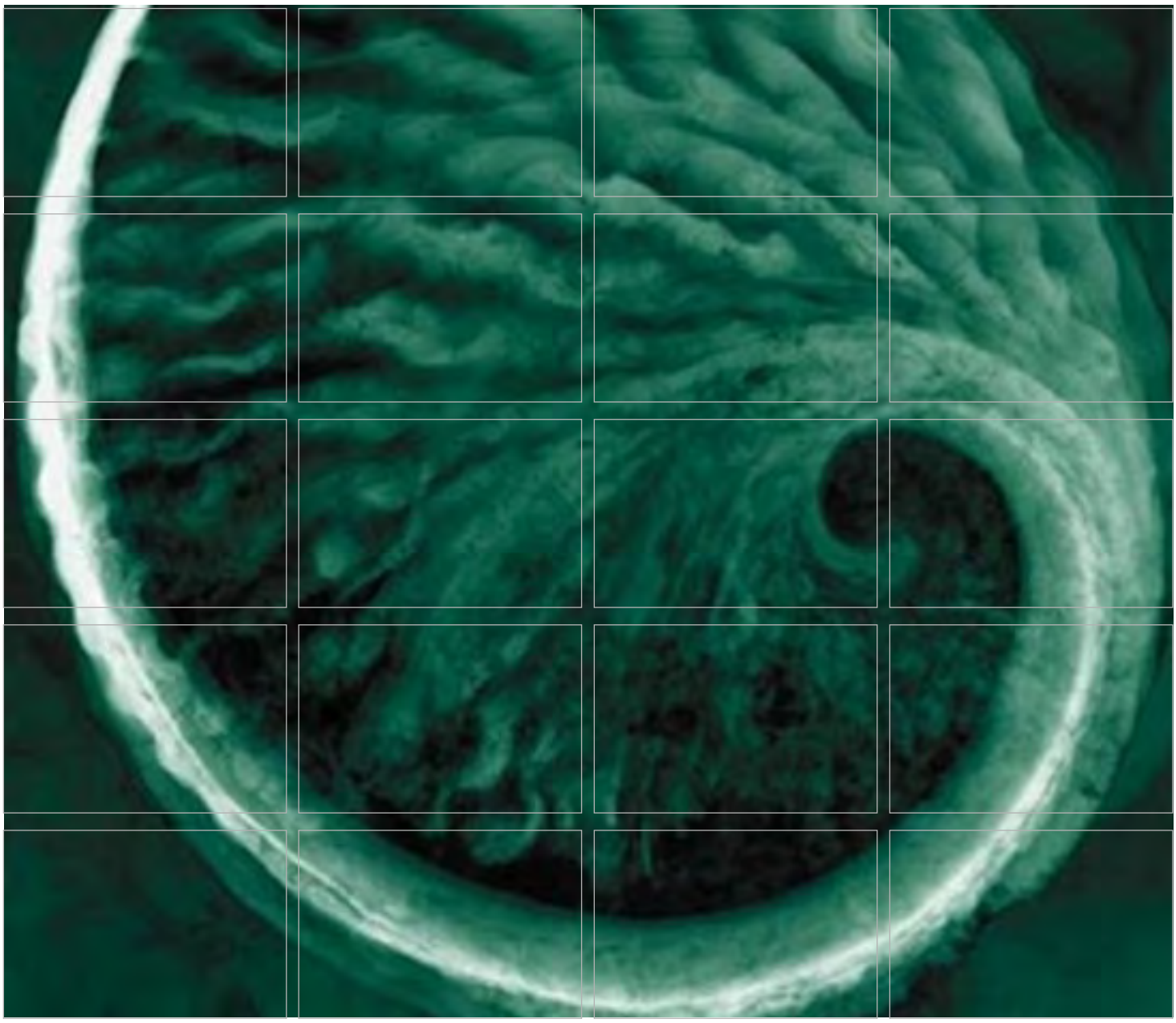
Shaded results either exceed of the Upper Prediction Limit (UPL) or are below the Lower Prediction Limit (LPL) for this CCR unit.
Sample Type Code: N - Normal; FD - Field Duplicate
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.

April and August 2020 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	SRH Pond
			Well Designation	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient
			Well ID	JKS-52	JKS-52	JKS-53	JKS-54	JKS-54
			Sample Date	4/28/2020	4/28/2020	4/28/2020	4/28/2020	8/24/2020
			Sample Type Code	N	FD	N	N	R
Constituent	Units	2019 LPL - SRH	2019 UPL - SRH					
Boron	mg/L	--	2.40	2.05	2.16	1.43	1.23	NA
Calcium	mg/L	--	357	174 J	180 J	114 J	118 J	NA
Chloride	mg/L	--	608	433	430	381	380	NA
Fluoride	mg/L	--	0.831	0.908	0.952	0.428	0.861	0.579
pH, Field	SU	5.48	7.31	6.83	6.83	6.67	6.76	NA
Sulfate	mg/L	--	421	315	313	244	443	425
Total dissolved solids	mg/L	--	2,180	1,470	1,420	1,160	1,570	NA

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; R - Resample
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
NA: Not analyzed for this constituent



Annual Groundwater Monitoring and Corrective Action Report

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

January 2021

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Calaveras Power Station – Evaporation Pond

Annual Groundwater Monitoring and Corrective Action Report

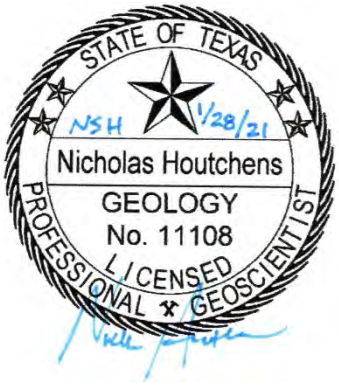
January 2021

Project No. 0503422
San Antonio, Texas

Jeffery L. Bauguss, P.E.
Partner-in-Charge

Walter Zverina
Project Manager

Karen Fletcher
Senior Scientist



Nicholas Houtchens, P.G.
Senior Geologist

Environmental Resources Management
206 East 9th Street, Suite 1700
Austin, TX 78701
T: 512-459-4700

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

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1. CURRENT STATUS SUMMARY

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

- At the start of the 2020 annual reporting period, the Evaporation Pond was operating under the detection monitoring program, as defined in §257.94;
- At the end of the 2020 annual reporting period, the Evaporation Pond 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 Evaporation Pond;
- A remedy was not required or selected pursuant to §257.97 during the 2020 annual reporting period; and
- No remedial activities were initiated or are ongoing pursuant to §257.98 during the 2020 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) (a.k.a. the CCR Rule). The Power Station is located in unincorporated Bexar County, Texas, approximately 13 miles southeast of San Antonio. Currently, CPS Energy operates three CCR units at the Power Station: Evaporation Pond, Fly Ash Landfill, and the Sludge Recycle Holding (SRH) Pond. This *Annual Groundwater Monitoring and Corrective Action Report* (Report) only addresses the Evaporation Pond.

This Report was produced by Environmental Resource Management (ERM), on behalf of CPS Energy, and summarizes the groundwater monitoring activities for the Evaporation Pond and provides a statistical summary of the findings for samples collected during the 2020 semi-annual monitoring events. Consistent with the requirements of the CCR Rule, this Report will be posted to the facility's operating record and notification will be made to the State of Texas. Additionally, this Report will be placed on the CPS Energy publically accessible internet site. Unless otherwise mentioned, the analyses in this Report follow the *Groundwater Sampling and Analysis Program* (SAP) (ERM, 2017) posted on the internet site. 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 Evaporation Pond is located northeast of the Power Station generating units and is south of the Fly Ash Landfill. The Evaporation Pond currently receives boiler chemical cleaning waste and other authorized liquid wastes. The Evaporation Pond 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 to 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.

The groundwater monitoring well network consists of three upgradient monitoring wells (JKS-47, JKS-63R, and JKS-64) and three downgradient monitoring wells (JKS-36, JKS-61, and JKS-62). As previously reported in the *2019 Groundwater Monitoring and Corrective Action Report*, monitoring well JKS-63R was installed in May 2019 to replace upgradient monitoring well JKS-63, which had become blocked with tree roots in the well casing. All monitoring wells are screened within the uppermost groundwater bearing unit (GWBU). 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 monitoring well locations are shown in Figure 1. No problems were encountered in the data collection or in well performance with the exception of monitoring wells JKS-62 and JKS-63R. Groundwater samples were not collected from JKS-62 or JKS-63R during the October 2020 monitoring event due to blockages in the well casings. Upon further inspection of both wells, it was discovered that tree rootlets had entered both well casings which prevented sample collection. The tree rootlets were cleared from each well casing and a groundwater sample was collected from JKS-62 and JKS-63R in November 2020.

3.1. GROUNDWATER FLOW RATE AND DIRECTION

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

Groundwater elevations collected during the monitoring events are summarized in Table 1. Groundwater elevations and the potentiometric surfaces for the April and October 2020 monitoring events are shown on Figure 2A and Figure 2B, respectively. For both sampling events, groundwater upgradient of the Evaporation Pond appears to flow southeast from a potential groundwater divide (generally located west of the CCR unit) and northeast from the Closed Landfills (located south of the CCR unit) towards the CCR unit. Downgradient of the Evaporation Pond, groundwater appears to flow generally east towards Calaveras Lake. The horizontal gradient for both the April and October 2020 events was approximately 0.003 feet/foot. A non-proportional change in water levels was observed at JKS-36 during the 2020 monitoring events. Groundwater monitoring networks that exhibit a substantially flat gradient are more likely to experience differences in groundwater flow direction. The potentiometric surface elevations will continue to be monitored and a water level study will be initiated in 2021.

3.2. SAMPLING SUMMARY

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

The Evaporation Pond monitoring wells were sampled by CPS Energy using low flow sampling techniques during the monitoring events. No data gaps were identified during the 2020 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, located in San Antonio, Texas for analysis. 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. A summary of the data qualifiers are 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 the SAP, a prediction limit approach [40 CFR §257.93(f)] was used to identify potential impacts to groundwater. Tables and figures generated as part of the statistical analysis are provided in Appendix B. The steps outlined in the decision framework in the SAP include:

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

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 C.

4.1. INTERWELL VS 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 test shows that:

- One Appendix III analyte [fluoride] will follow interwell analysis, with no significant differences present in upgradient data; and
- The remaining six Appendix III analytes [boron, calcium, chloride, pH, sulfate, and total dissolved solids (TDS)] will follow intrawell analysis, with significant differences present in upgradient data.

Interwell analytes will use a pooled upgradient dataset for subsequent report sections. Conversely, intrawell analytes will have each individual upgradient dataset used for subsequent report sections.

4.2. ESTABLISHMENT OF UPGRADIENT DATASET

When evaluating the concentrations of analytes in groundwater, USEPA Unified 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 Evaporation Pond (Appendix B, Table 2). The descriptive statistics highlight a number of relevant characteristics about the upgradient datasets including:

- There are a total of 19 well-analyte combinations for the upgradient dataset;
- 19 well-analyte combinations have detection rates greater than or equal to 50 percent;
- 17 well-analyte combinations have 100 percent detects;

- Nine well-analyte combinations follow a normal distribution (using Shapiro-Wilks Normality Test);
- Three well-analyte combinations follow a log-normal distribution; and
- Seven well-analyte combinations have no discernible distribution.

4.2.2. Outlier Determination

Both statistical and visual outlier tests were performed on the upgradient datasets. Data points identified as both a statistical and visual outlier (Appendix B, Table 3 and Appendix B, Figure 2) were reviewed before they were excluded from the dataset. A total of six potential outliers were initially flagged in the upgradient datasets. However, these values were consistent with seasonal fluctuations and concentrations detected in other upgradient wells or in historical groundwater sampling results. No analytical or sampling issues were identified during data review; therefore, the six values were considered valid and were retained for upper prediction limit (UPL) calculations.

4.2.3. Check for Temporal Stability

A trend test was performed for all values in the upgradient wells that had 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 following summarizes the results of the trend analysis:

- There are a total of 19 well-analyte combinations in the upgradient dataset;
- 19 well-analyte combinations meet the data requirements of the trend test of which:
    - Four well-analyte combinations had an increasing trend;
    - Two well-analyte combinations had a decreasing trend; and
    - 13 well-analyte combinations had no trend (i.e., concentrations were stable over time).

4.3. CALCULATION OF PREDICTION LIMITS

A multi-part assessment of the monitoring wells was performed to determine what type of UPL to calculate as a compliance point. A decision framework was applied for each upgradient well based on inter/intrawell analysis, data availability, and presence of temporal trends.

A total of six well-analyte combinations were found to have either increasing or decreasing trends. For these well-analyte combinations, a bootstrapped UPL calculated around a Theil Sen trend was used to derive a more accurate UPL. The remaining 13 well-analyte combinations were found to have no 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 October 2020 sampling results in the downgradient wells. A final lower prediction limit (LPL) was also selected for pH. For the one analyte following interwell analysis, the upgradient dataset was pooled prior to UPL calculations, resulting in a single UPL value per analyte. For the six analytes following 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 calculations are provided in Appendix B, Table 5.

Final UPL and LPL Values

Analysis Type	Analyte	LPL	UPL	Unit
Intrawell	Boron	--	1.90	mg/L
Intrawell	Calcium	--	1,060	mg/L
Intrawell	Chloride	--	3,200	mg/L
Interwell	Fluoride	--	0.382	mg/L
Intrawell	pH	4.58	6.21	SU
Intrawell	Sulfate	--	2,120	mg/L
Intrawell	TDS	--	8,330	mg/L

4.4. CONCLUSIONS

The downgradient samples collected during the October 2020 monitoring event were used for compliance comparisons. All downgradient wells were less than the UPLs and greater than the LPLs for pH with the following exceptions shown in the table below. All downgradient wells with initial exceedances were examined for trends to assess the stability of concentrations. A summary of these trend test results are provided in Appendix B, Figure 4.

Downgradient UPL Exceedances

Analyte	Well	LPL	UPL	Sample Date	Value	Unit
Fluoride	JKS-36	--	0.382	2020-10-21	1.07	mg/L
pH	JKS-36	4.58	6.21	2020-10-21	3.98	SU
pH	JKS-61	4.58	6.21	2020-10-21	6.57	SU
pH	JKS-62	4.58	6.21	2020-11-17	6.55	SU

Additionally, each downgradient well-analyte pair had a Wilcoxon Rank Sum test comparing if their median is greater than the UPL or less than the LPL for pH. This nonparametric, rank-based test was used as an additional line of evidence for downgradient well compliance. Specific well-analyte pairs are of interest if: (1) there is a recent exceedance of the UPL, but historic concentrations place the median less than the UPL, or (2) there is not a recent exceedance of the UPL, but historic concentrations place the median greater than the UPL. All downgradient wells had medians less than the UPLs and greater than the LPLs for pH with the following exceptions shown in the table below. Full downgradient results are provided in Appendix B, Table 6, with boxplots in Appendix B, Figure 5.

Downgradient Median Exceedances

Analyte	Well
Fluoride	JKS-36
pH	JKS-61
pH	JKS-62

All initial exceedances of the UPL may be confirmed with re-testing of the downgradient wells per the 1-of-2 re-testing scheme. If the initial exceedance is confirmed with re-testing results from the same well, and if the well-analyte combination median is greater than the UPL, the well-analyte combination will be declared a statistically significant increase (SSI) above background. Any wells with re-testing results at or less than the UPL will be considered in compliance and will not require further action. Any resampling results will be reported in the subsequent *Written Demonstration*.

5. RECOMMENDATIONS

Currently, there are no plans to transition from detection monitoring to assessment monitoring. Consistent with the 1-of-2 re-testing approach described in the Unified Guidance and the SAP, initial exceedances may be re-tested within 90 days. Based on these re-testing results, if an SSI is found, a notification or *Written Demonstration* will be prepared within 90 days. Based on the findings of the *Written Demonstration*, detection monitoring or assessment monitoring will be initiated as appropriate under §257.94 and §257.95.

6. REFERENCES

ERM, 2017. *Groundwater Sampling and Analysis Program.*

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 Upgradient	
		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

		JKS-36 Downgradient		JKS-61 Downgradient		JKS-62 Downgradient	
		TOC Elevation	508.41	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

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 - 2020	2016 - 2020 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	
Evaporation Pond	JKS-36	Downgradient Monitoring	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection
	JKS-47	Upgradient Monitoring	14	X	(1)	X	X	X	X	X	X	X	X	X	X	X	X	Detection
	JKS-61	Downgradient Monitoring	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection
	JKS-62	Downgradient Monitoring	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X (6)	Detection
	JKS-63	Upgradient Monitoring	8	X	X	X	X	(2)	X	X	X	X	(3)	(3)	(3)	(3)	(3)	Detection
	JKS-63R	Upgradient Monitoring	4	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4) (5)	X	X	X (6)	Detection
	JKS-64	Upgradient 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.
(1) JKS-47 was re-sampled on 2/28/2017.
(2) A sample was not collected at JKS-63 during Event 5 (June 2017), due to the well going dry during sampling activities.
(3) A sample was not collected at JKS-63 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.

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
	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
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
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
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
Chloride	mg/L	107	150	232 D	193	168	148 JH	210 D	68.5	151	186	279	53.9 X	107	60.9
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
Sulfate	mg/L	213 D	267 D	369 D	299	266 D	248 JH	284 D	171	236	262	347	210 X	257	195
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
Total dissolved solids	mg/L	811	922	1170	1060	979	806 JH	904	677	787	727	1240	665	772	782
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

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
	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
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
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
Calcium	mg/L	783	914	713	1060	(1)	835	174	872	836	(2)	221	953 D	952	1050
Chloride	mg/L	1230 D	1160 D	1220 D	1340	(1)	1960 JHD	1890 D	1420	1670	(2)	2360 D	2240	2530	2830
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
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
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
Total dissolved solids	mg/L	5750	4760	4870	5560	(1)	6410	5000	5080	5220	(2)	6660	5200	7240	8190
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
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
Barium	mg/L	0.0626	0.0540	0.0336	0.0316	(1)	0.0294	0.0258	0.0222	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
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
Chromium	mg/L	1.49	0.735	0.371	0.114	(1)	0.0742	0.0584	0.0130	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
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
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
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
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
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
Selenium	mg/L	0.0188	0.0210	0.0257	0.0188	(1)	0.0288	0.0318	0.0244	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
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
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

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 Upgradient													
	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
	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
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
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
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
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
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
Sulfate	mg/L	171	182	184	174	172	170 JH	172	164	189	196	193	192 X	209	212
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
Total dissolved solids	mg/L	594	585	611	581	572	555 JH	463	576	549	525	551	588	569	664
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

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-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
	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
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
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
Calcium	mg/L	69.7	165	147	282	247	255 JHX	241	289	281	311 D	315 D	265 D	175	259
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
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
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
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
Total dissolved solids	mg/L	368	1010	591	1610	1820	1700 JH	1220	1770	1650	1630	1520	1600	1790	1930
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

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
	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
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
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
Calcium	mg/L	134	95.9	155	113	115	107 JH	105	135	171	197 D	176	168 D	154	172
Chloride	mg/L	198	158	162	168	193	190 JH	218 D	210	285	213	253	248	312	281
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
Sulfate	mg/L	401 D	377 JD	382 D	388	408 D	390 JHD	385 D	401	562	548	619	548 D	604	533
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
Total dissolved solids	mg/L	1400	1180	1190	1260	1430	1290 JH	1170	1280	1620	514	1650	1790	1870	2000
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

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**
	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**
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**
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
Calcium	mg/L	155	152	220	156	150	134 JH	150	158	160	161 D	205 D	151 D	122	144
Chloride	mg/L	257 D	279 DX	279 D	278	291 D	260 JHD	281 D	241	312	279	336	276	284	284
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
Sulfate	mg/L	190	187	193	188	184	181 JH	188 D	175	200	183	191	183	190	212
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
Total dissolved solids	mg/L	1120	1170	1140	1100	1080	976 JH	1080	1080	1110	956	1190	1160	1100	1040
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

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.

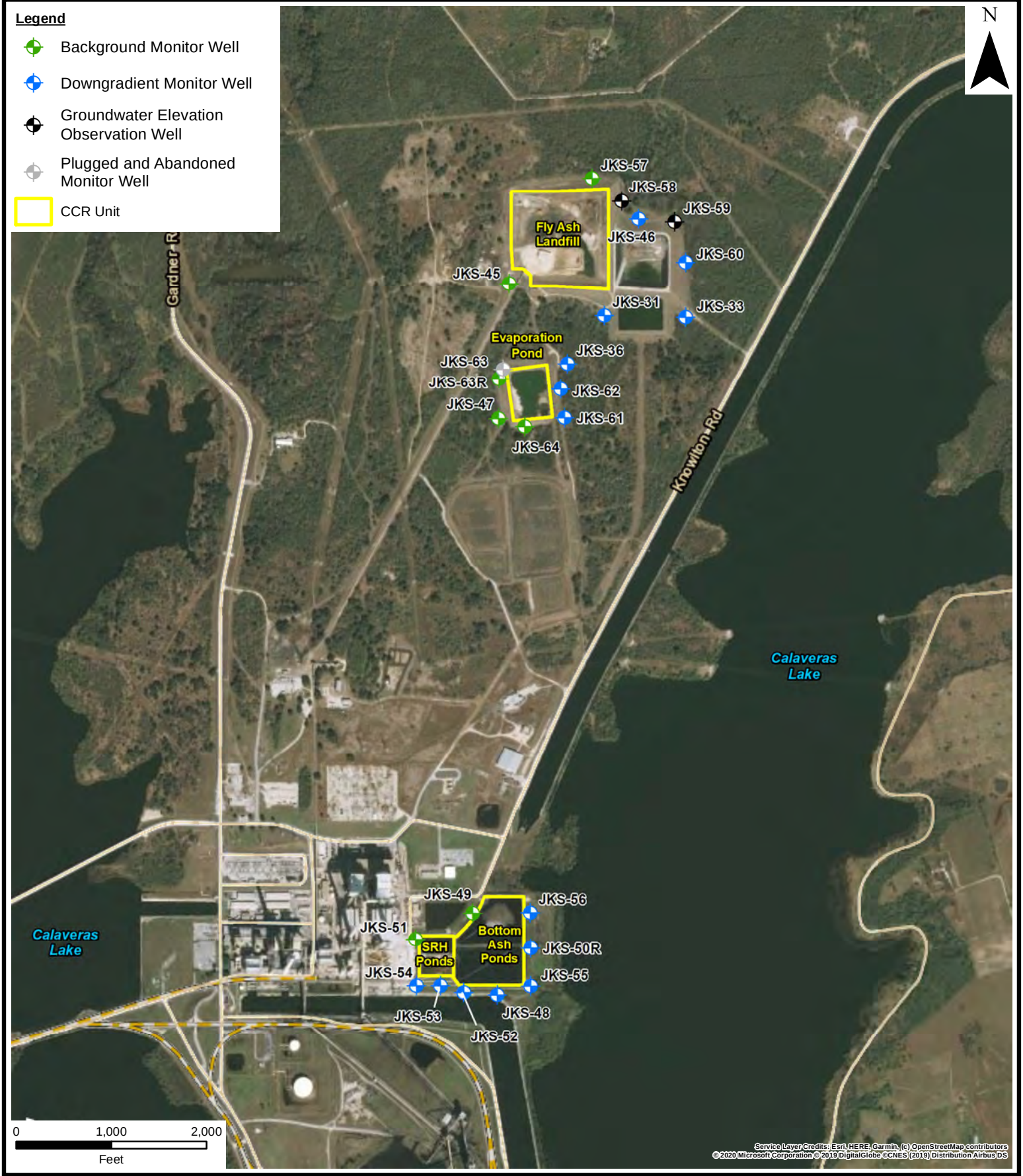
H: Bias in sample result likely to be high.

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.

Figures



Environmental Resources Management

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DATE:	1/17/2020	SCALE:	AS SHOWN	REVISION:	0

\\ushoufs01\Data\Houston\Projects\0503422 CPS Energy Calaveras 2019 CCR Tasks.WZ\GIS_CAD\MXD\2019gwmon\fig1_0503422_CPSCalv_WellLocs.mxd

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

ERM

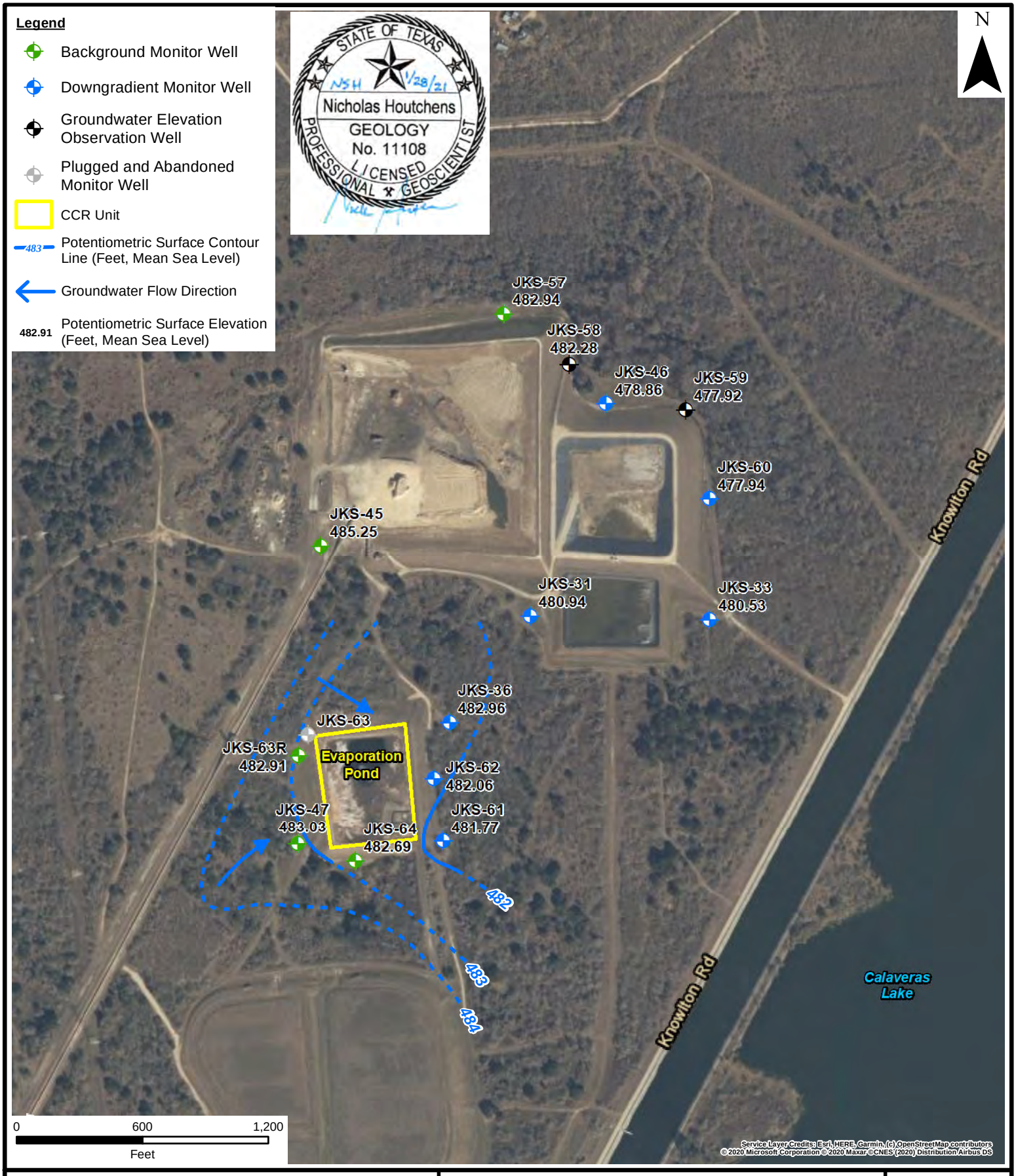

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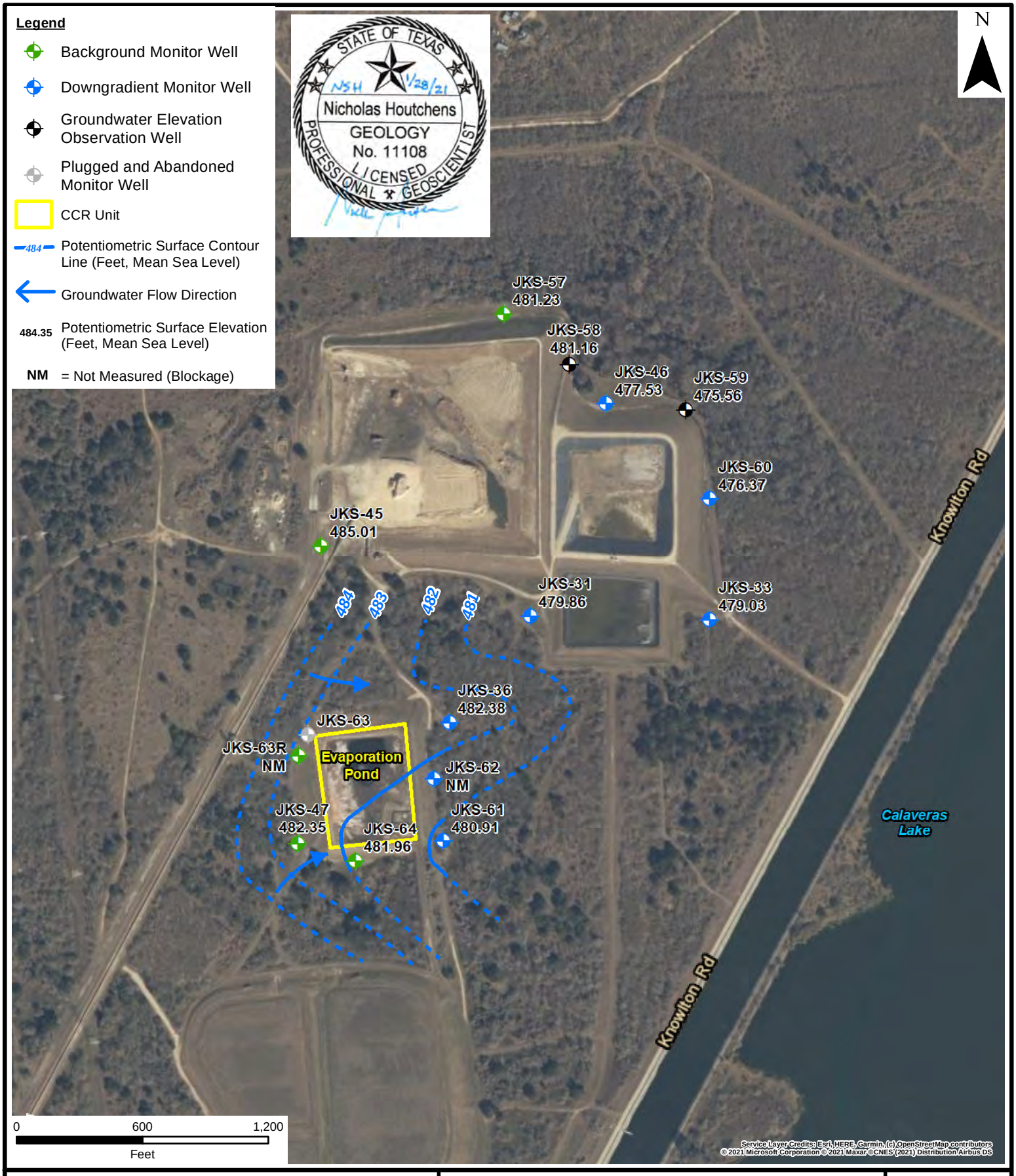
FIGURE 2A
POTENTIOMETRIC SURFACE MAP - APRIL 2020
Evaporation Pond CCR Unit
CPS Energy - Calaveras Power Station
San Antonio, Texas

ERM



Environmental Resources Management

DESIGN:	NH	DRAWN:	LSC	CHKD.:	WZ
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FIGURE 2B
POTENTIOMETRIC SURFACE MAP - OCTOBER 2020
Evaporation Pond CCR Unit
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	Num Detects	Percent Detect	DF	KW Statistic	p-value	Conclusion	UPL Type
Boron	39	39	100.00%	2	12.7	0.00176	Significant Difference	Intrawell
Calcium	40	40	100.00%	2	34.2	<0.001	Significant Difference	Intrawell
Chloride	40	40	100.00%	2	34.6	<0.001	Significant Difference	Intrawell
Fluoride	40	27	67.50%	2	0.289	0.866	No Significant Difference	Interwell
pH	41	41	100.00%	2	15.3	<0.001	Significant Difference	Intrawell
Sulfate	40	39	97.50%	2	24.2	<0.001	Significant Difference	Intrawell
Total dissolved solids	40	40	100.00%	2	34.6	<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	Num Detects	Percent Detect	Min ND	Max ND	Min Detect	Median	Mean	Max Detect	SD	CV	Distribution
Boron	JKS-47	mg/L	14	14	100.00%			0.59	0.82	0.827	1.05	0.115	0.13943233	Normal
Boron	JKS-63	mg/L	11	11	100.00%			0.8	1.06	1.14	2.03	0.333	0.29220418	Lognormal
Boron	JKS-64	mg/L	14	14	100.00%			0.711	0.836	0.848	1.14	0.108	0.12718512	Lognormal
Calcium	JKS-47	mg/L	14	14	100.00%			26.2	58	65.7	168	39.4	0.59984232	Lognormal
Calcium	JKS-63	mg/L	12	12	100.00%			174	854	780	1060	290	0.37217927	NDD
Calcium	JKS-64	mg/L	14	14	100.00%			20.3	23.7	23.5	31.4	2.81	0.11991249	NDD
Chloride	JKS-47	mg/L	14	14	100.00%			53.9	150	151	279	66.8	0.44205264	Normal
Chloride	JKS-63	mg/L	12	12	100.00%			1160	1780	1820	2830	570	0.31301683	Normal
Chloride	JKS-64	mg/L	14	14	100.00%			9.63	12.6	13.6	18.2	2.75	0.2025478	Normal
Fluoride	Pooled	mg/L	40	27	67.50%	0.009	0.18	0.0573	0.148	0.149	0.382	0.116	0.78039246	NDD
pH	JKS-47	SU	15	15	100.00%			4.58	5.85	5.74	6	0.349	0.06072719	NDD
pH	JKS-63	SU	12	12	100.00%			4.76	5.68	5.62	5.88	0.31	0.05516597	NDD
pH	JKS-64	SU	14	14	100.00%			4.82	6.14	6.01	6.46	0.416	0.06911982	NDD
Sulfate	JKS-47	mg/L	14	14	100.00%			171	260	259	369	54.9	0.21213909	Normal
Sulfate	JKS-63	mg/L	12	11	91.67%	0.023	0.023	1750	1860	1740	2120	561	0.32178096	NDD
Sulfate	JKS-64	mg/L	14	14	100.00%			164	183	184	212	14.9	0.08075078	Normal
Total dissolved solids	JKS-47	mg/L	14	14	100.00%			665	808	879	1240	177	0.2019093	Normal
Total dissolved solids	JKS-63	mg/L	12	12	100.00%			4760	5390	5830	8190	1080	0.18471415	Normal
Total dissolved solids	JKS-64	mg/L	14	14	100.00%			463	574	570	664	45	0.07888675	Normal

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)
NDD: No Discernible Distribution

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
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-47-20201021-CCR	10/21/2020	Boron	mg/L	TRUE	0.904	Intrawell	Normal		X			X		
JKS-63	63R001	8/20/2019	Boron	mg/L	TRUE	2.03	Intrawell	Lognormal	X	X	X		X		
JKS-64	JKS-64549681-009	3/29/2017	Boron	mg/L	TRUE	1.14	Intrawell	Lognormal	X	X	X		X		
JKS-47	JKS-47549681-004	3/29/2017	Calcium	mg/L	TRUE	168	Intrawell	Lognormal	X	X	X				
JKS-47	JKS47620699-005	4/10/2019	Calcium	mg/L	TRUE	128	Intrawell	Lognormal	X	X	X				
JKS-64	JKS-64549681-009	3/29/2017	Calcium	mg/L	TRUE	31.4	Intrawell	NDD	X	X	X	X	X	X	0
JKS-47	JKS-47549681-004	3/29/2017	Fluoride	mg/L	TRUE	0.315	Interwell	NDD	X						
JKS-47	JKS-47552352-008	5/3/2017	Fluoride	mg/L	TRUE	0.382	Interwell	NDD	X						
JKS-47	JKS 47555913-009	6/21/2017	Fluoride	mg/L	TRUE	0.213	Interwell	NDD	X						
JKS-63	JKS-63547064-005	2/22/2017	Fluoride	mg/L	TRUE	0.32	Interwell	NDD	X						
JKS-63	JKS-63549681-007	3/29/2017	Fluoride	mg/L	TRUE	0.297	Interwell	NDD	X						
JKS-63	JKS-63552352-009	5/3/2017	Fluoride	mg/L	TRUE	0.364	Interwell	NDD	X						
JKS-63	JKS-63561592-006	8/30/2017	Fluoride	mg/L	TRUE	0.182	Interwell	NDD	X						
JKS-63	63R001	8/20/2019	Fluoride	mg/L	TRUE	0.206	Interwell	NDD	X						
JKS-63	JKS-63R005	10/23/2019	Fluoride	mg/L	TRUE	0.352	Interwell	NDD	X						
JKS-64	JKS-64547201-002	2/23/2017	Fluoride	mg/L	TRUE	0.294	Interwell	NDD	X						
JKS-64	JKS-64549681-009	3/29/2017	Fluoride	mg/L	TRUE	0.332	Interwell	NDD	X						
JKS-64	JKS-64552439-003	5/4/2017	Fluoride	mg/L	TRUE	0.188	Interwell	NDD	X						
JKS-64	JKS 64555913-007	6/21/2017	Fluoride	mg/L	TRUE	0.231	Interwell	NDD	X						
JKS-64	JKS-64561592-005	8/30/2017	Fluoride	mg/L	TRUE	0.224	Interwell	NDD	X						
JKS-47	JKS-47-WG-20170223	2/23/2017	pH	SU	TRUE	5.42	Intrawell	NDD	X	X	X	X	X	X	0
JKS-47	JKS-47-WG-20191023-02	10/23/2019	pH	SU	TRUE	4.58	Intrawell	NDD	X	X	X	X	X	X	0
JKS-63	JKS-63-WG-20170222	2/22/2017	pH	SU	TRUE	5.35	Intrawell	NDD		X			X		
JKS-63	JKS-63R-WG-20191023-02	10/23/2019	pH	SU	TRUE	4.76	Intrawell	NDD	X	X	X	X	X	X	0
JKS-64	JKS-64-WG-20170223	2/23/2017	pH	SU	TRUE	5.5	Intrawell	NDD		X		X	X	X	0
JKS-64	JKS-64-WG-20191023-02	10/23/2019	pH	SU	TRUE	4.82	Intrawell	NDD	X	X	X	X	X	X	0
JKS-47	JKS47620699-005	4/10/2019	Sulfate	mg/L	TRUE	347	Intrawell	Normal		X					
JKS-63	WELL 63581537-002	4/5/2018	Sulfate	mg/L	TRUE	2110	Intrawell	NDD		X			X		
JKS-47	JKS-47549681-004	3/29/2017	Total dissolved solids	mg/L	TRUE	1170	Intrawell	Normal		X					
JKS-64	JKS-64-20201021-CCR	10/21/2020	Total dissolved solids	mg/L	TRUE	664	Intrawell	Normal	X	X	X	X	X	X	0

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	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
pH	Intrawell	JKS-47	15	15	100.00%	0.428	0.153	Stable, No Trend
pH	Intrawell	JKS-63	12	12	100.00%	0.545	0.152	Stable, No Trend
pH	Intrawell	JKS-64	14	14	100.00%	0.0117	-0.508	Decreasing Trend
Sulfate	Intrawell	JKS-47	14	14	100.00%	0.193	-0.275	Stable, No Trend
Sulfate	Intrawell	JKS-63	12	11	91.67%	0.679	0.0923	Stable, No Trend
Sulfate	Intrawell	JKS-64	14	14	100.00%	0.0158	0.486	Increasing Trend
Total dissolved solids	Intrawell	JKS-47	14	14	100.00%	0.0617	-0.385	Stable, No Trend
Total dissolved solids	Intrawell	JKS-63	12	12	100.00%	0.0311	0.485	Increasing Trend
Total dissolved solids	Intrawell	JKS-64	14	14	100.00%	0.388	-0.187	Stable, No 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 (a=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
Boron	Intrawell	Stable, No Trend	JKS-47	14	14	100.00%		1.06	mg/L	None	No	0.0025	Param Intra 1 of 2		
Boron	Intrawell	Stable, No Trend	JKS-63	11	11	100.00%		1.9	mg/L	None	ln(x)	0.0025	Param Intra 1 of 2		X
Boron	Intrawell	Decreasing Trend	JKS-64	14	14	100.00%		0.937	mg/L	None	No	0.0025	NP Detrended UPL		
Calcium	Intrawell	Stable, No Trend	JKS-47	14	14	100.00%		168	mg/L	None	ln(x)	0.0025	Param Intra 1 of 2		
Calcium	Intrawell	Stable, No Trend	JKS-63	12	12	100.00%		1060	mg/L	None	No	0.0108	NP Intra (normality) 1 of 2		X
Calcium	Intrawell	Stable, No Trend	JKS-64	14	14	100.00%		31.4	mg/L	None	No	0.00861	NP Intra (normality) 1 of 2		
Chloride	Intrawell	Stable, No Trend	JKS-47	14	14	100.00%		287	mg/L	None	No	0.0025	Param Intra 1 of 2		
Chloride	Intrawell	Increasing Trend	JKS-63	12	12	100.00%		3200	mg/L	None	No	0.0025	NP Detrended UPL		X
Chloride	Intrawell	Increasing Trend	JKS-64	14	14	100.00%		20.9	mg/L	None	No	0.0025	NP Detrended UPL		
Fluoride	Interwell	Stable, No Trend	JKS-47, JKS-63, JKS-64	40	27	67.50%		0.382	mg/L	None	No	0.00115	NP Inter (normality) 1 of 2		X
pH	Intrawell	Stable, No Trend	JKS-47	15	15	100.00%	4.58	6	SU	None	No	0.0151	NP Intra (normality) 1 of 2	X	
pH	Intrawell	Stable, No Trend	JKS-63	12	12	100.00%	4.76	5.88	SU	None	No	0.0216	NP Intra (normality) 1 of 2		
pH	Intrawell	Decreasing Trend	JKS-64	14	14	100.00%	4.84	6.21	SU	None	No	0.0172	NP Detrended UPL		X
Sulfate	Intrawell	Stable, No Trend	JKS-47	14	14	100.00%		371	mg/L	None	No	0.0025	Param Intra 1 of 2		
Sulfate	Intrawell	Stable, No Trend	JKS-63	12	11	91.67%		2120	mg/L	None	No	0.0108	NP Intra (normality) 1 of 2		X
Sulfate	Intrawell	Increasing Trend	JKS-64	14	14	100.00%		219	mg/L	None	No	0.0025	NP Detrended UPL		
Total dissolved solids	Intrawell	Stable, No Trend	JKS-47	14	14	100.00%		1240	mg/L	None	No	0.0025	Param Intra 1 of 2		
Total dissolved solids	Intrawell	Increasing Trend	JKS-63	12	12	100.00%		8330	mg/L	None	No	0.0025	NP Detrended UPL		X
Total dissolved solids	Intrawell	Stable, No Trend	JKS-64	14	14	100.00%		662	mg/L	None	No	0.0025	Param Intra 1 of 2		

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.

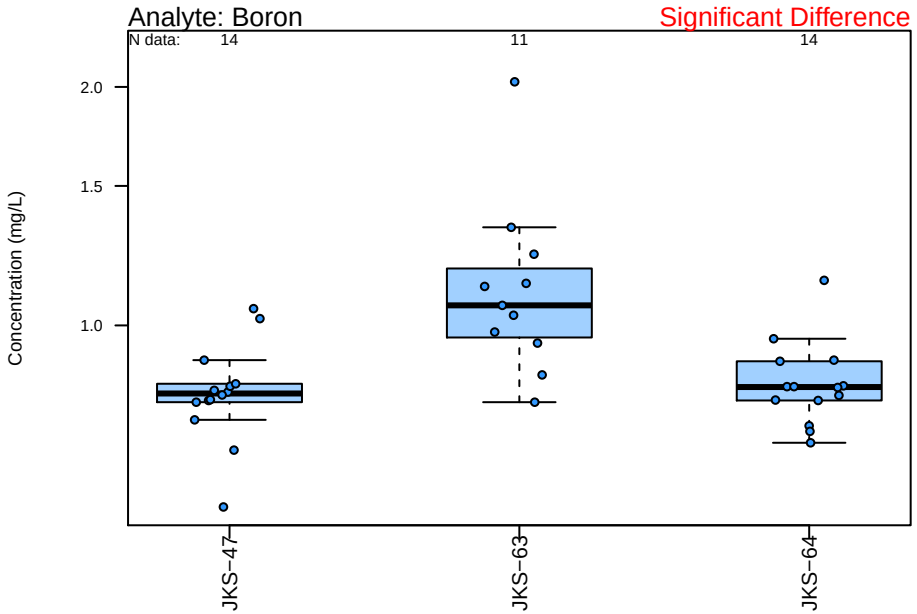
APPENDIX B - TABLE 6
Comparisons of Downgradient Wells to UPLs
Calaveras Power Station
Evaporation Pond

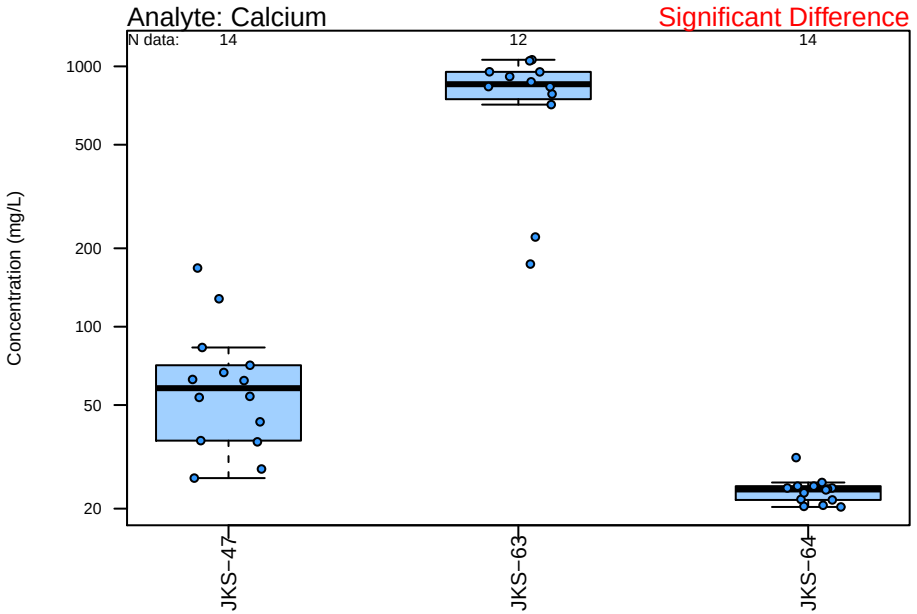
Analyte	Well	LPL	UPL	Units	Recent Date	Observation	Obs > UPL	Notes	Mann Kendall p-value	Mann Kendall tau	WRS p-value	WRS Conclusion	Exceed Median	Overall Conclusion
Boron	JKS-36		1.9	mg/L	10/21/2020	0.456					1	NS		No Exceedance
Boron	JKS-61		1.9	mg/L	10/21/2020	1.82					0.884	NS		No Exceedance
Boron	JKS-62		1.9	mg/L	11/17/2020	0.537					1	NS		No Exceedance
Calcium	JKS-36		1060	mg/L	10/21/2020	259					1	NS		No Exceedance
Calcium	JKS-61		1060	mg/L	10/21/2020	172					1	NS		No Exceedance
Calcium	JKS-62		1060	mg/L	11/17/2020	144					1	NS		No Exceedance
Chloride	JKS-36		3200	mg/L	10/21/2020	319					1	NS		No Exceedance
Chloride	JKS-61		3200	mg/L	10/21/2020	281					1	NS		No Exceedance
Chloride	JKS-62		3200	mg/L	11/17/2020	284					1	NS		No Exceedance
Fluoride	JKS-36		0.382	mg/L	10/21/2020	1.07	X	Trend Test: Stable, No Trend	0.279	0.231	<0.001	***	X	Both Exceedance
Fluoride	JKS-61		0.382	mg/L	10/21/2020	0.366					0.0765	NS		No Exceedance
Fluoride	JKS-62		0.382	mg/L	11/17/2020	0.295					0.998	NS		No Exceedance
pH	JKS-36	4.58	6.21	SU	10/21/2020	3.98	X	Trend Test: Decreasing Trend	0.0264	-0.451	0.108	NS		UPL Exceedance
pH	JKS-61	4.58	6.21	SU	10/21/2020	6.57	X	Trend Test: Stable, No Trend	0.125	-0.309	0.00716	**	X	Both Exceedance
pH	JKS-62	4.58	6.21	SU	11/17/2020	6.55	X	Trend Test: Stable, No Trend	0.0617	-0.385	0.00537	**	X	Both Exceedance
Sulfate	JKS-36		2120	mg/L	10/21/2020	890					1	NS		No Exceedance
Sulfate	JKS-61		2120	mg/L	10/21/2020	553					1	NS		No Exceedance
Sulfate	JKS-62		2120	mg/L	11/17/2020	212					1	NS		No Exceedance
Total dissolved solids	JKS-36		8330	mg/L	10/21/2020	1930					1	NS		No Exceedance
Total dissolved solids	JKS-61		8330	mg/L	10/21/2020	2000					1	NS		No Exceedance
Total dissolved solids	JKS-62		8330	mg/L	11/17/2020	1040					1	NS		No Exceedance

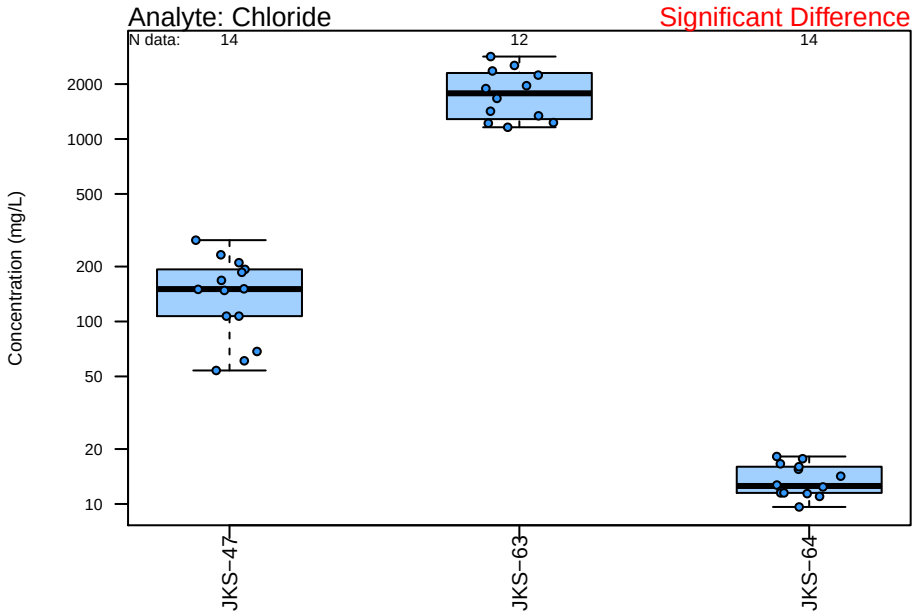
NOTES:

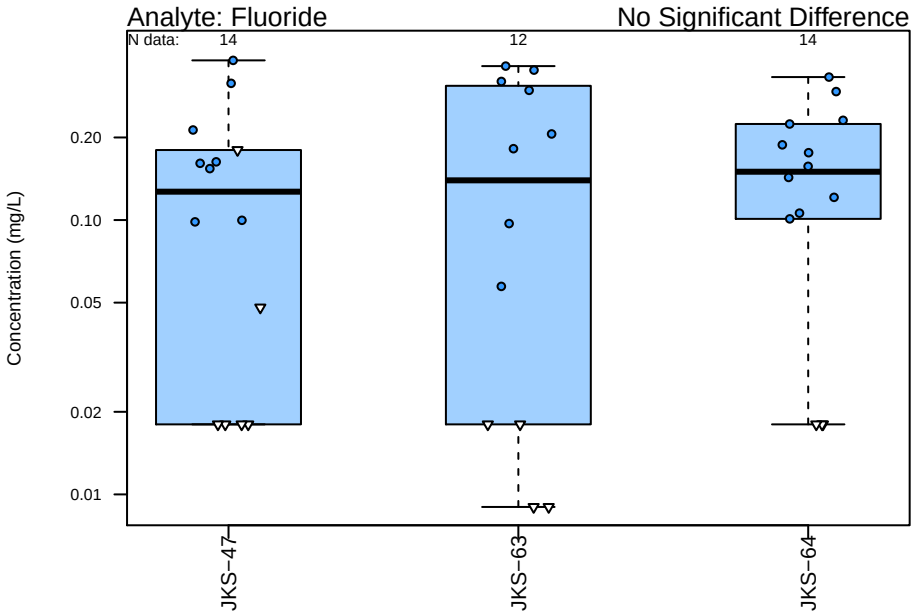
Non-detects were substituted with a value of zero for trend calculations
UPL: Upper Prediction Limit
ND: Not detected
SU: Standard units
tau: Kendall's tau statistic
Obs > UPL: Exceed 'X' indicates that the most recent observed value is higher than the UPL (or out of range of the LPL and UPL in the case of pH.)
Obs > UPL: Exceed 'X0' indicates that the two most recent values are higher than the UPL, but the upgradient well is 100% ND.
Obs > UPL: 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

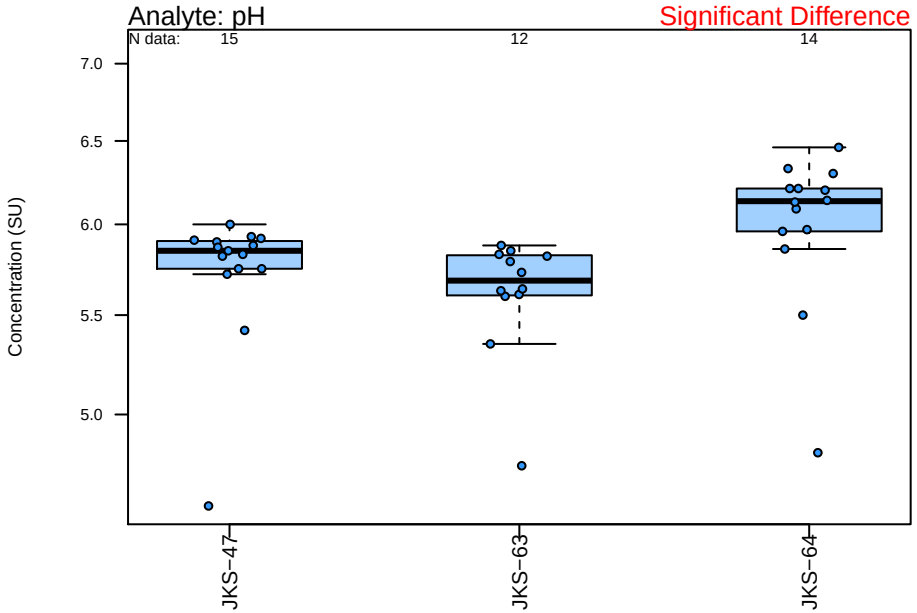


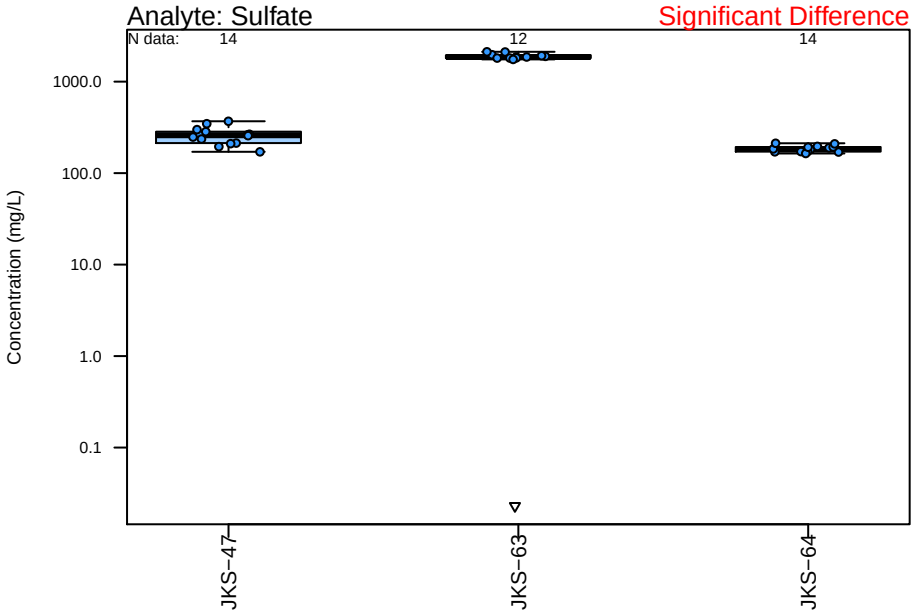


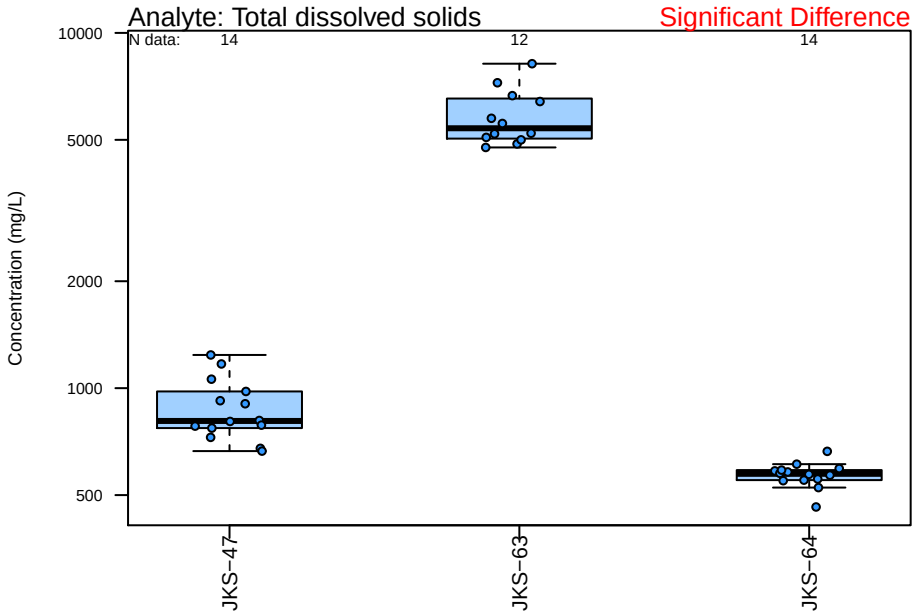




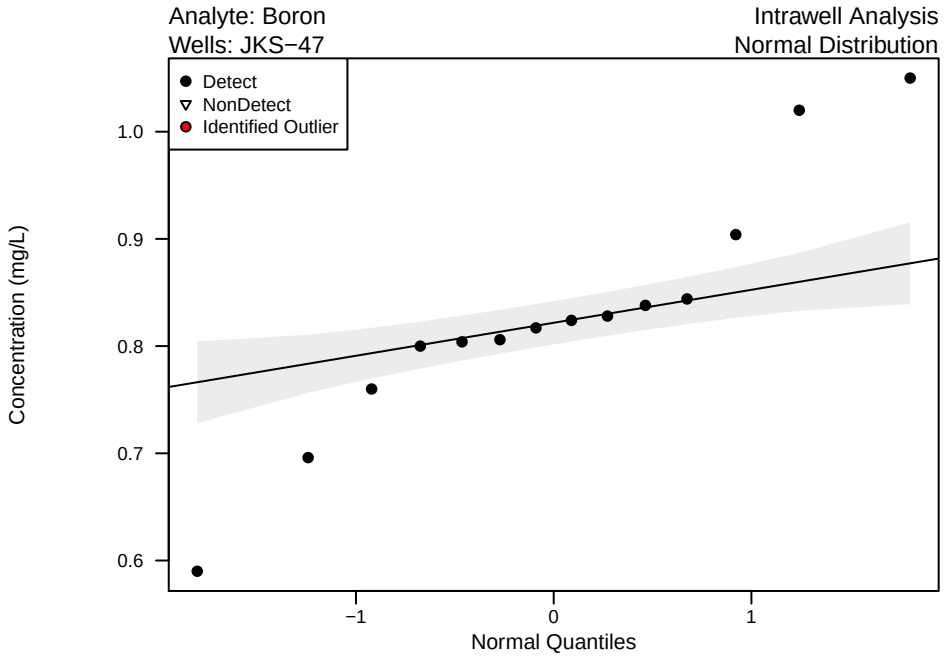
Appendix B − Figure 1
Unit: Evaporation Pond
Boxplots of Upgradient Wells







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



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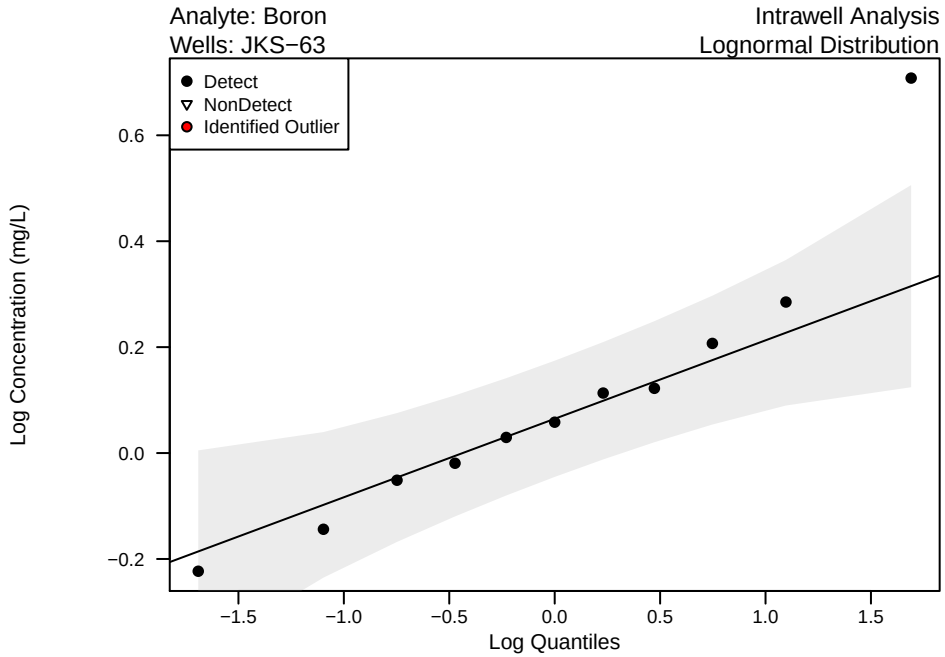

Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells

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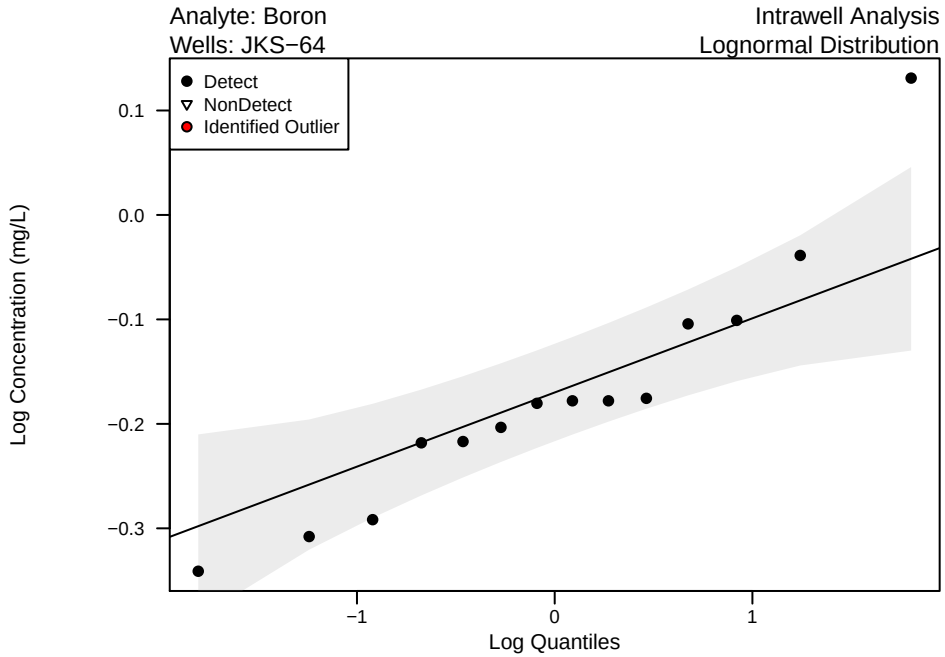

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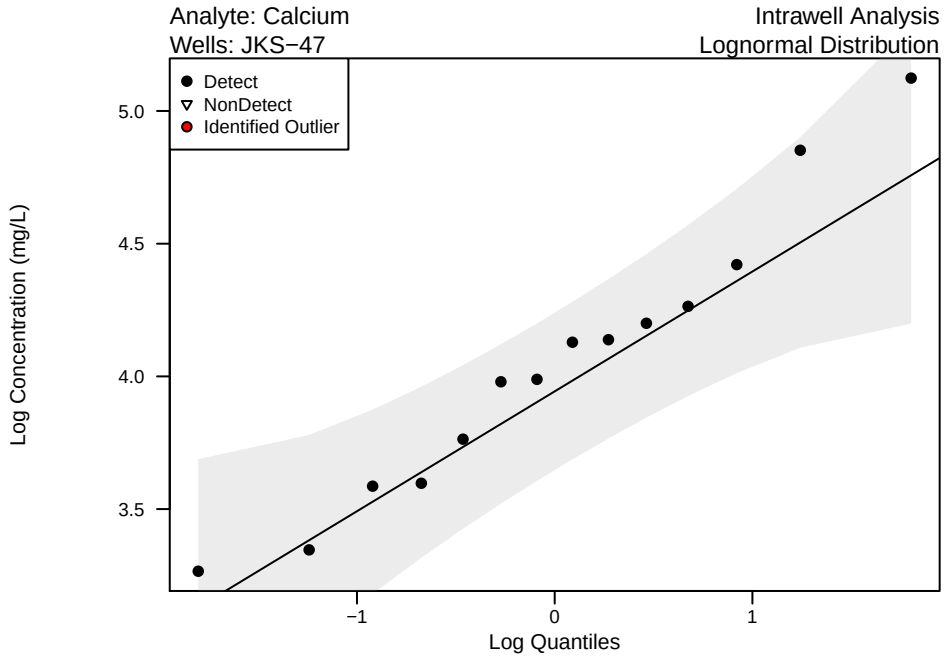
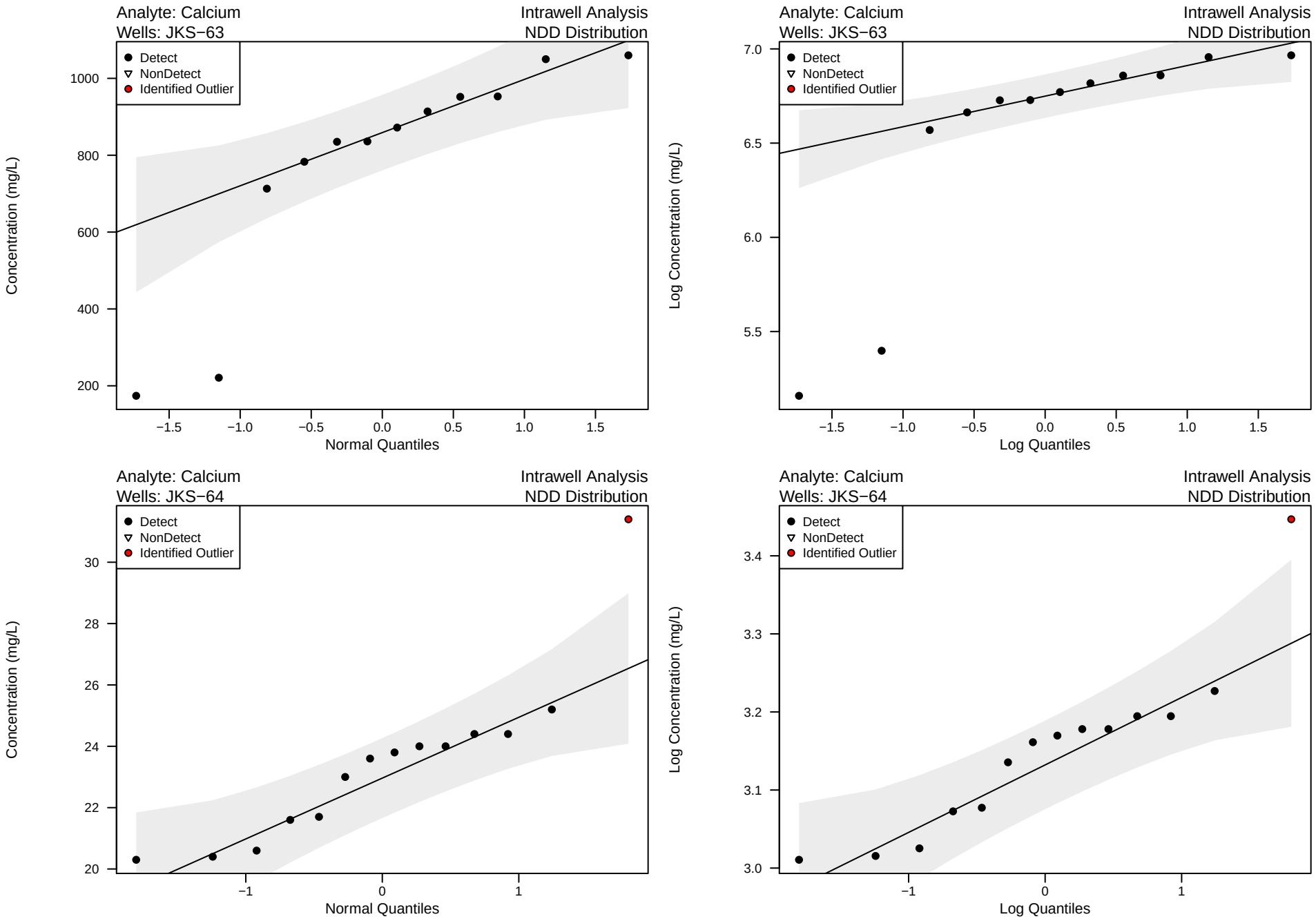
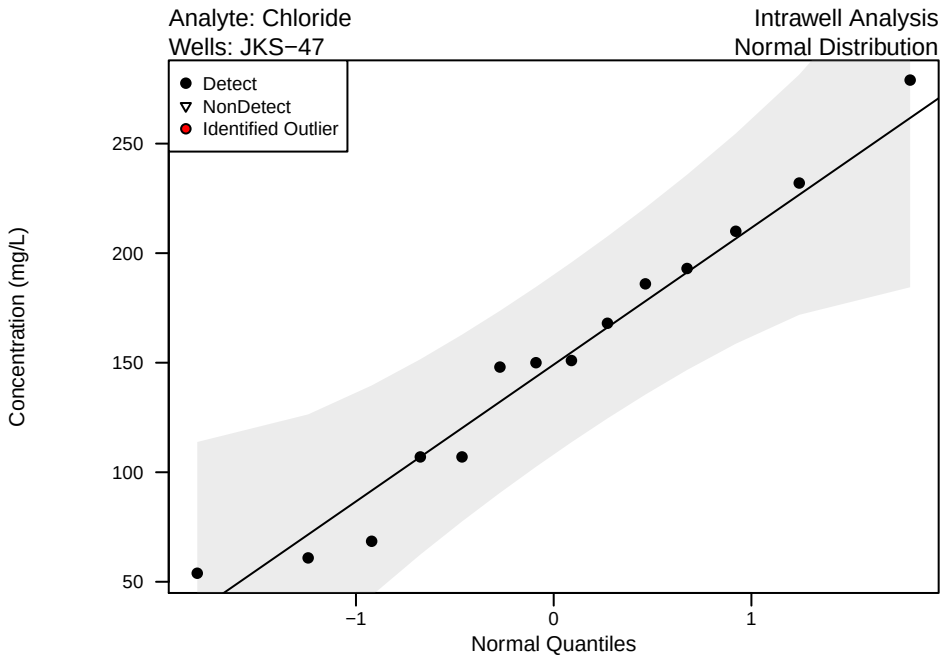


Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells



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



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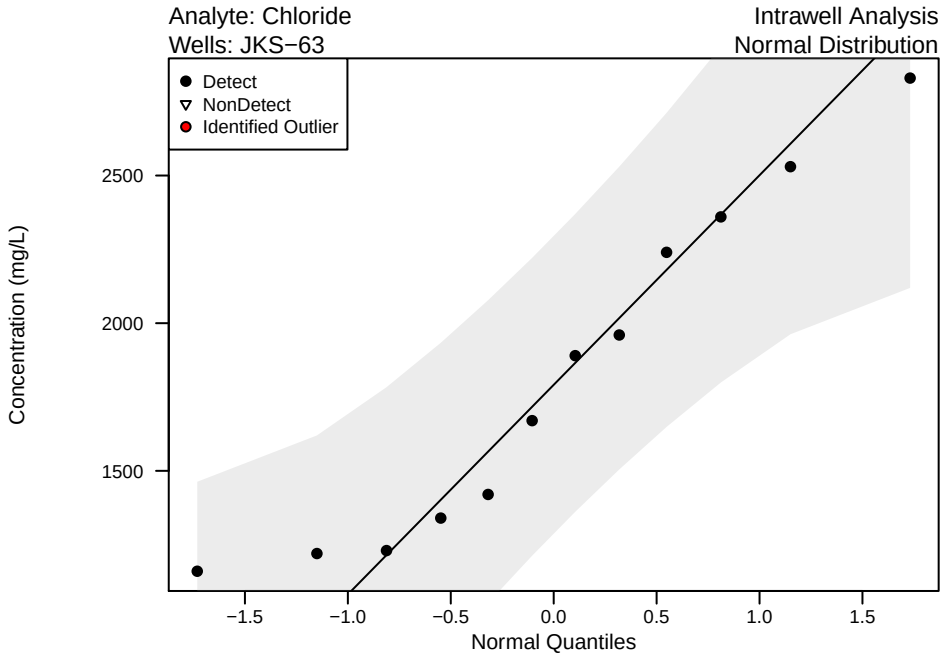

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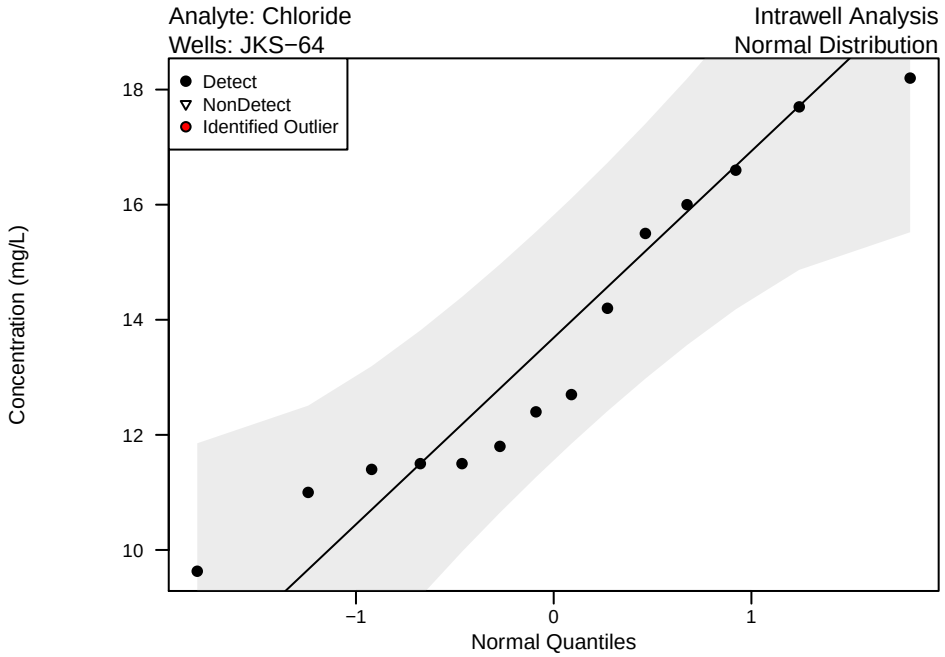
Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells



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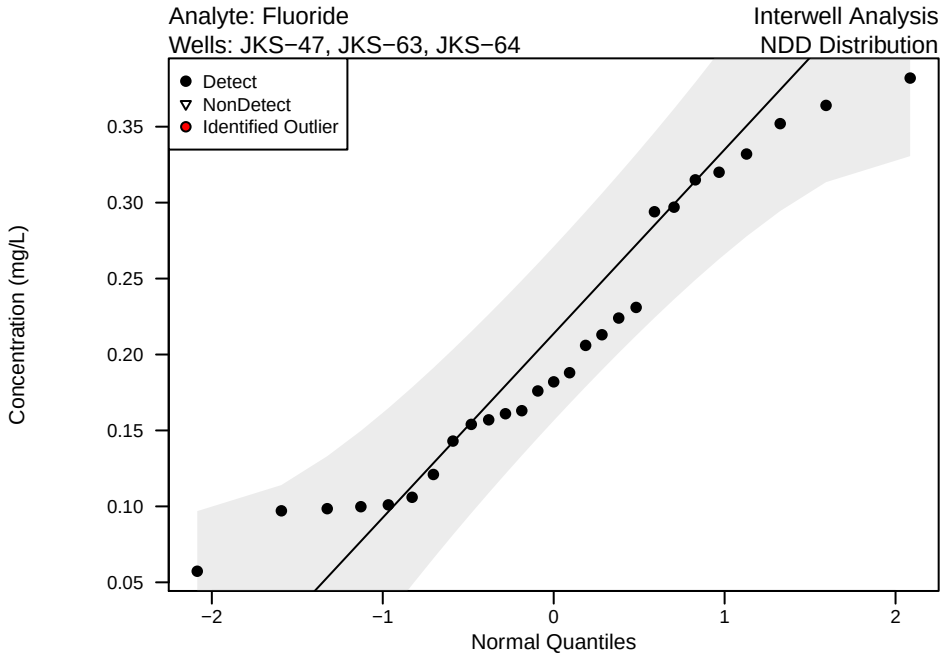
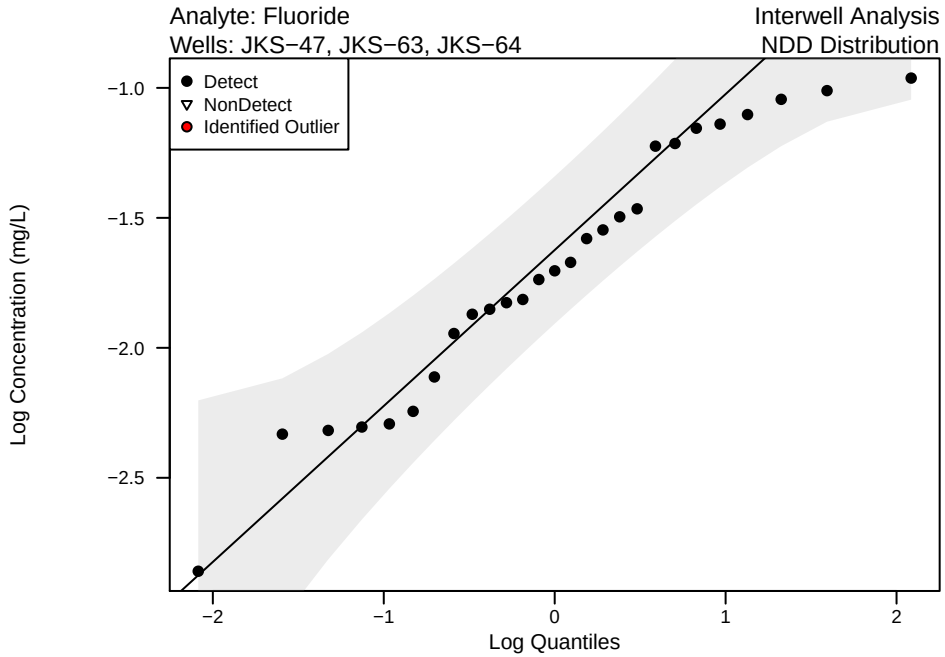
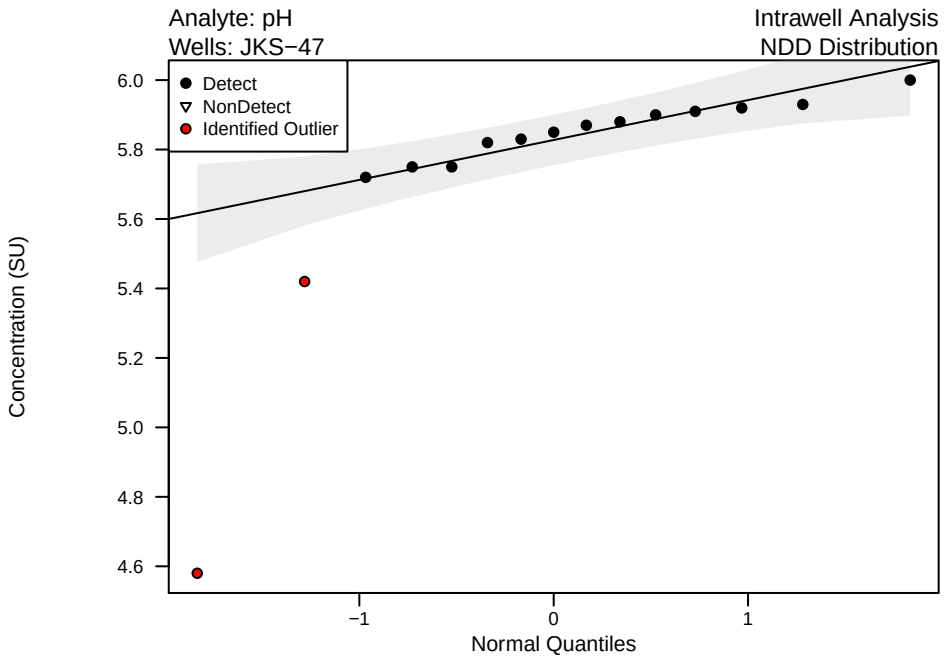
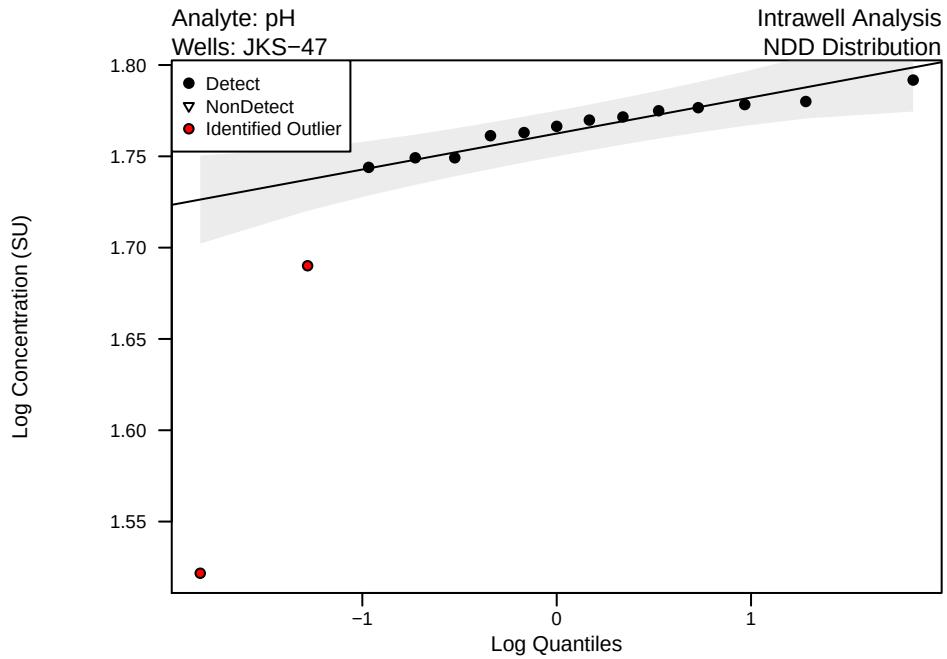
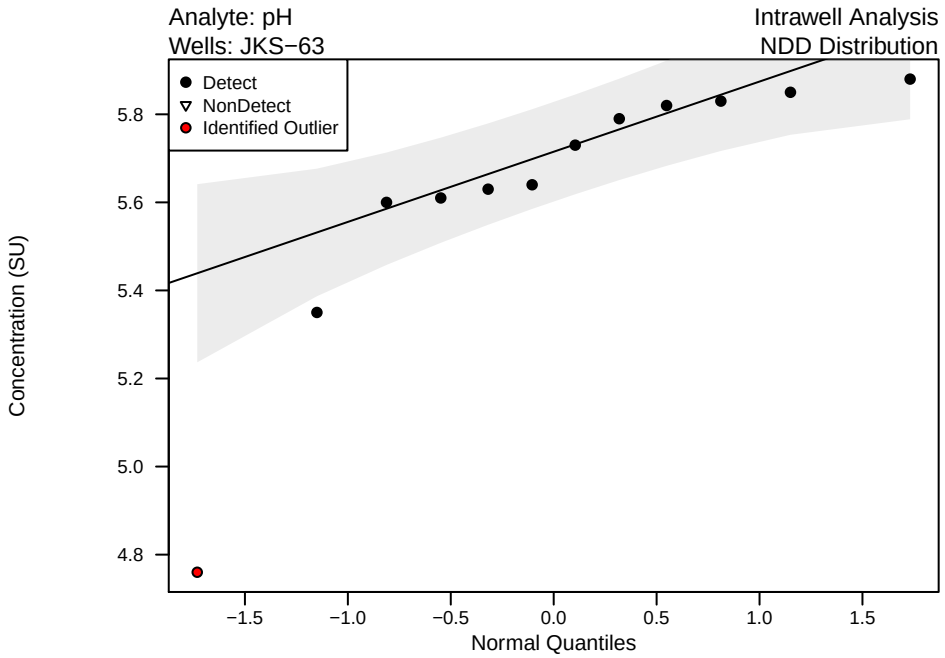


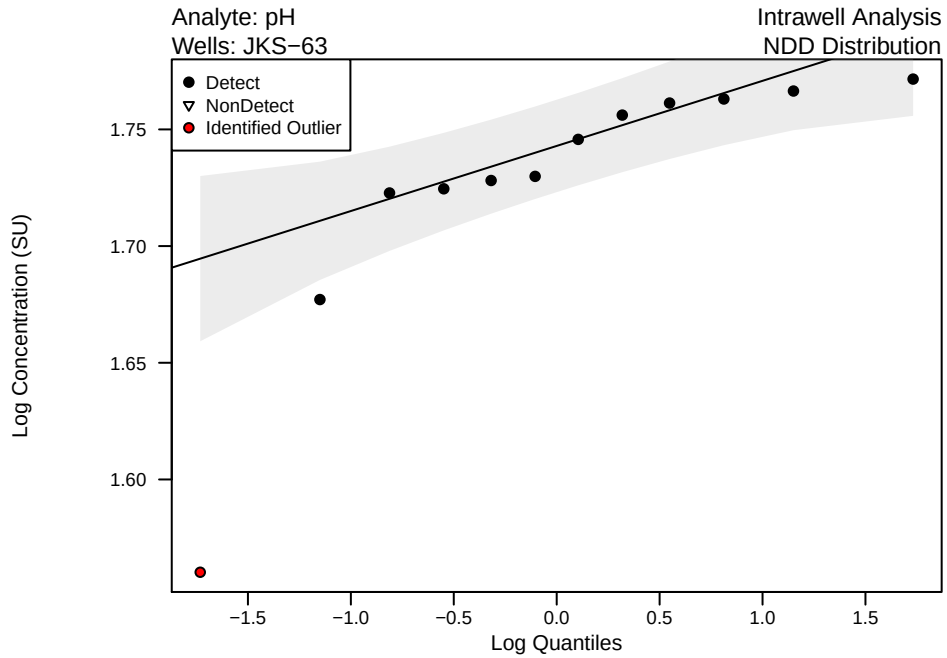


Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells

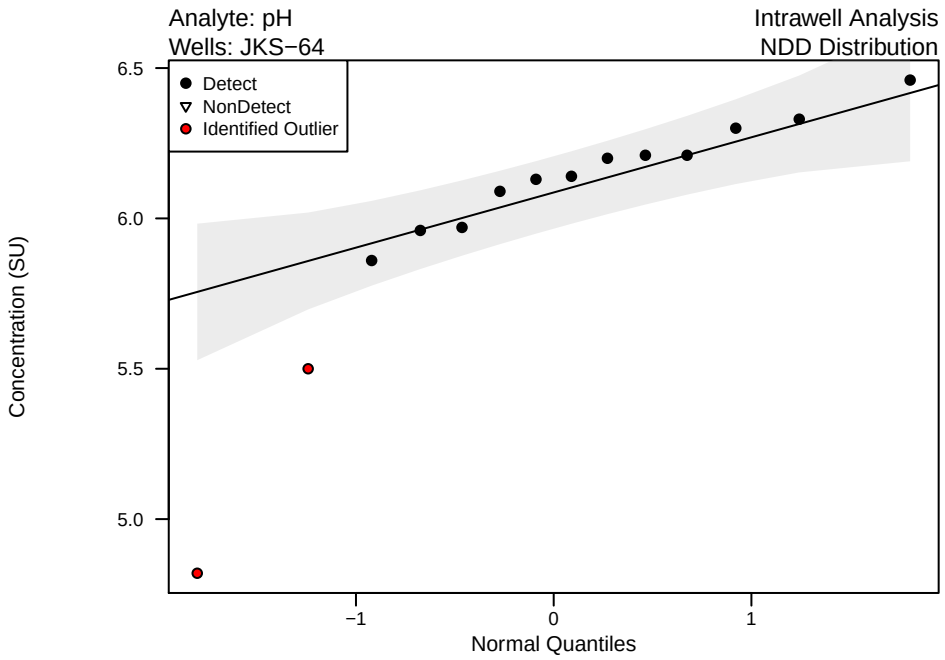


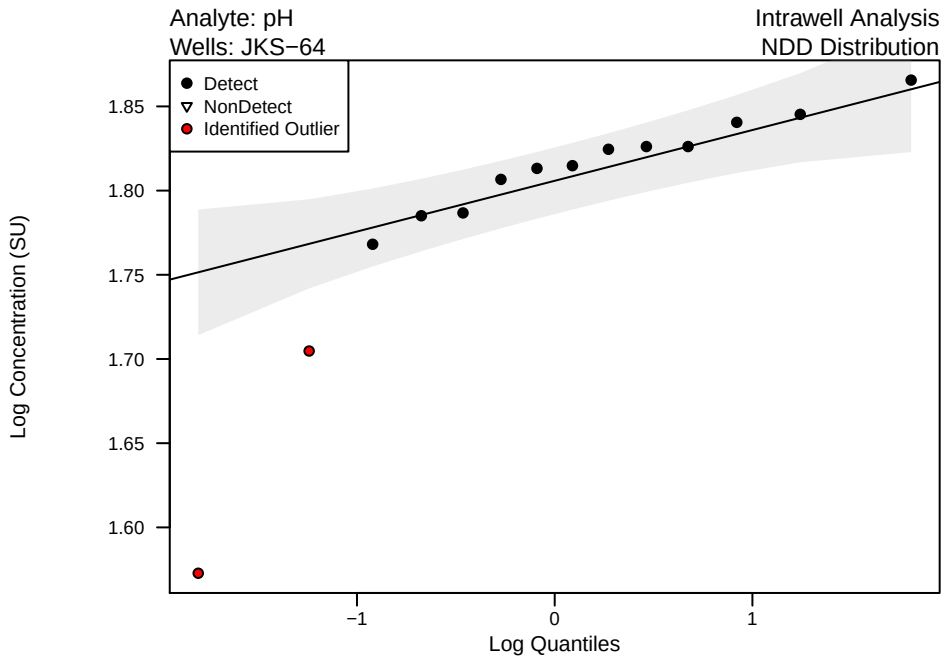


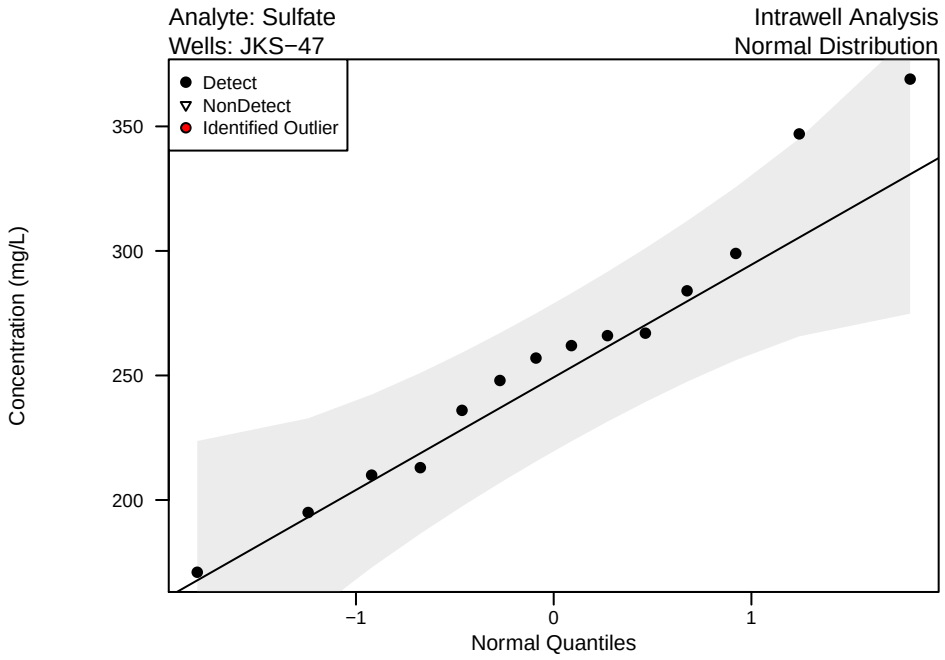




Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells







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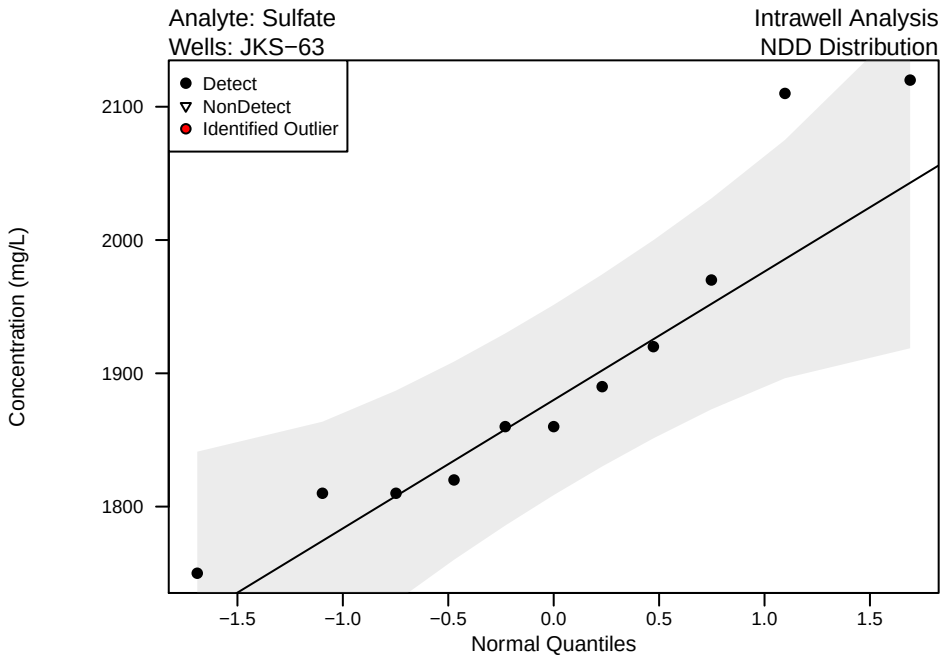
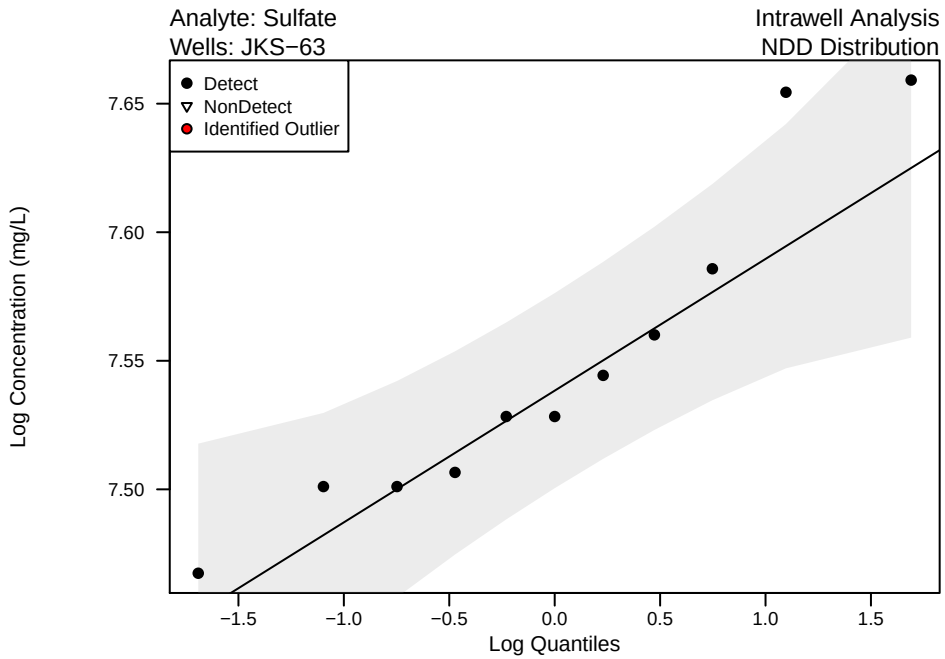
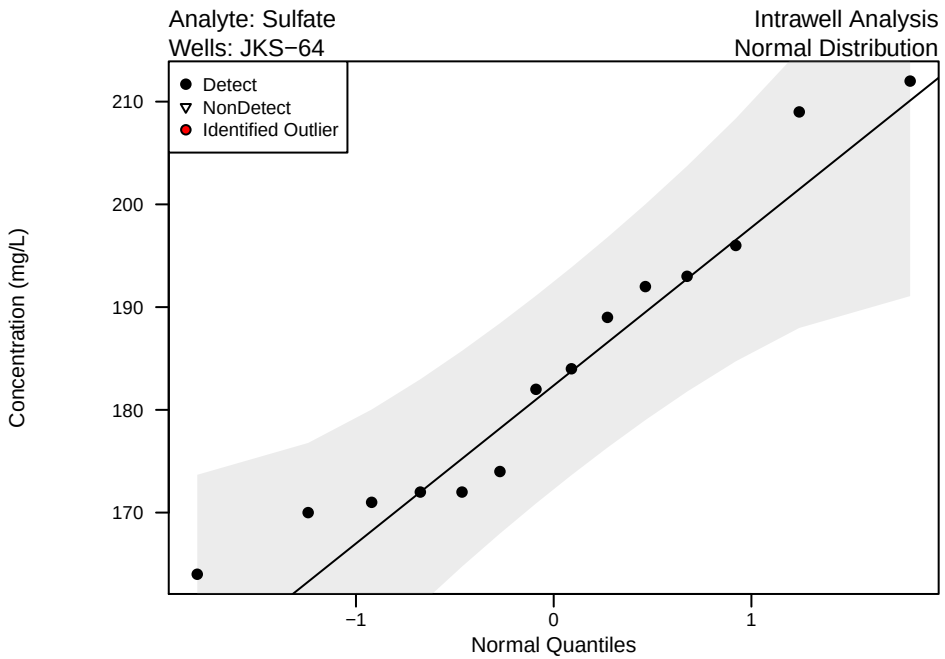
Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells







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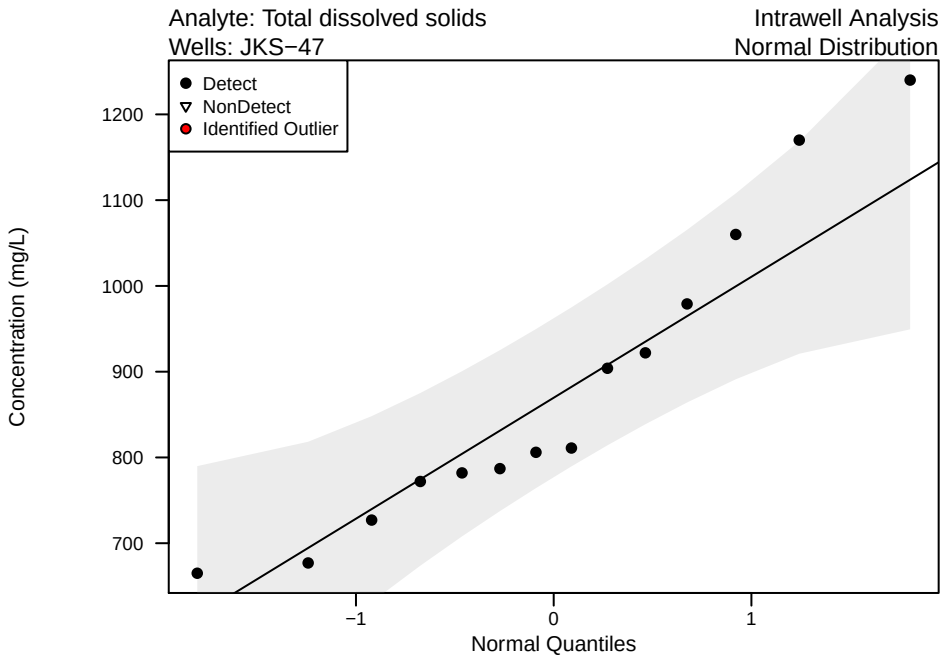
Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells



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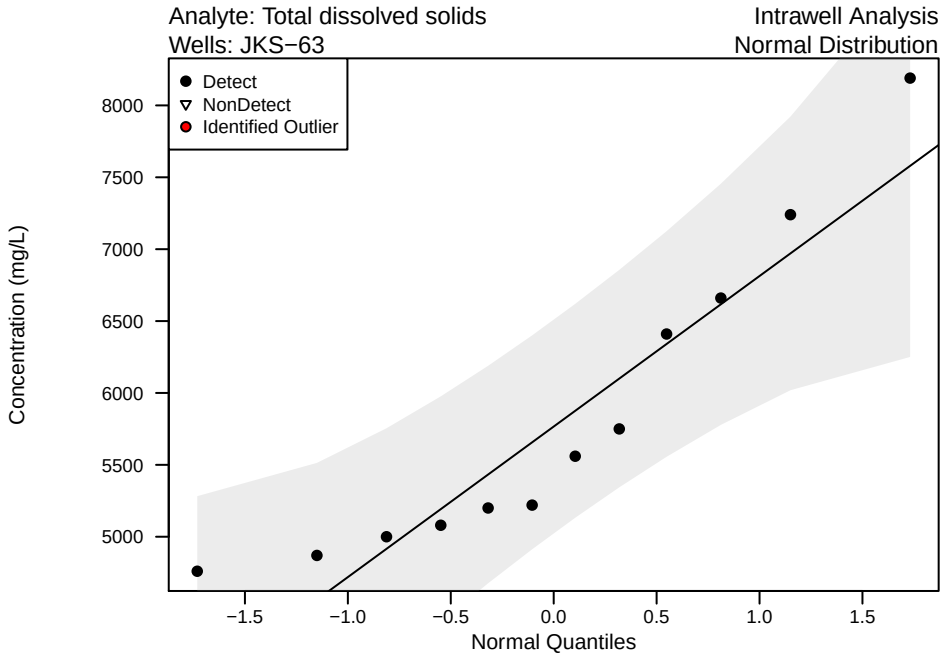

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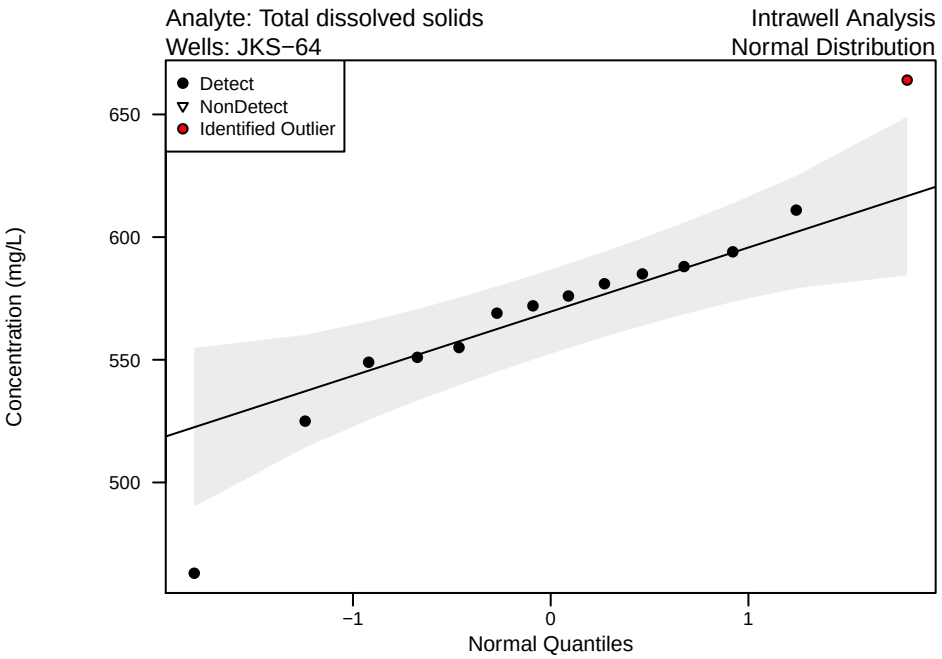
Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells



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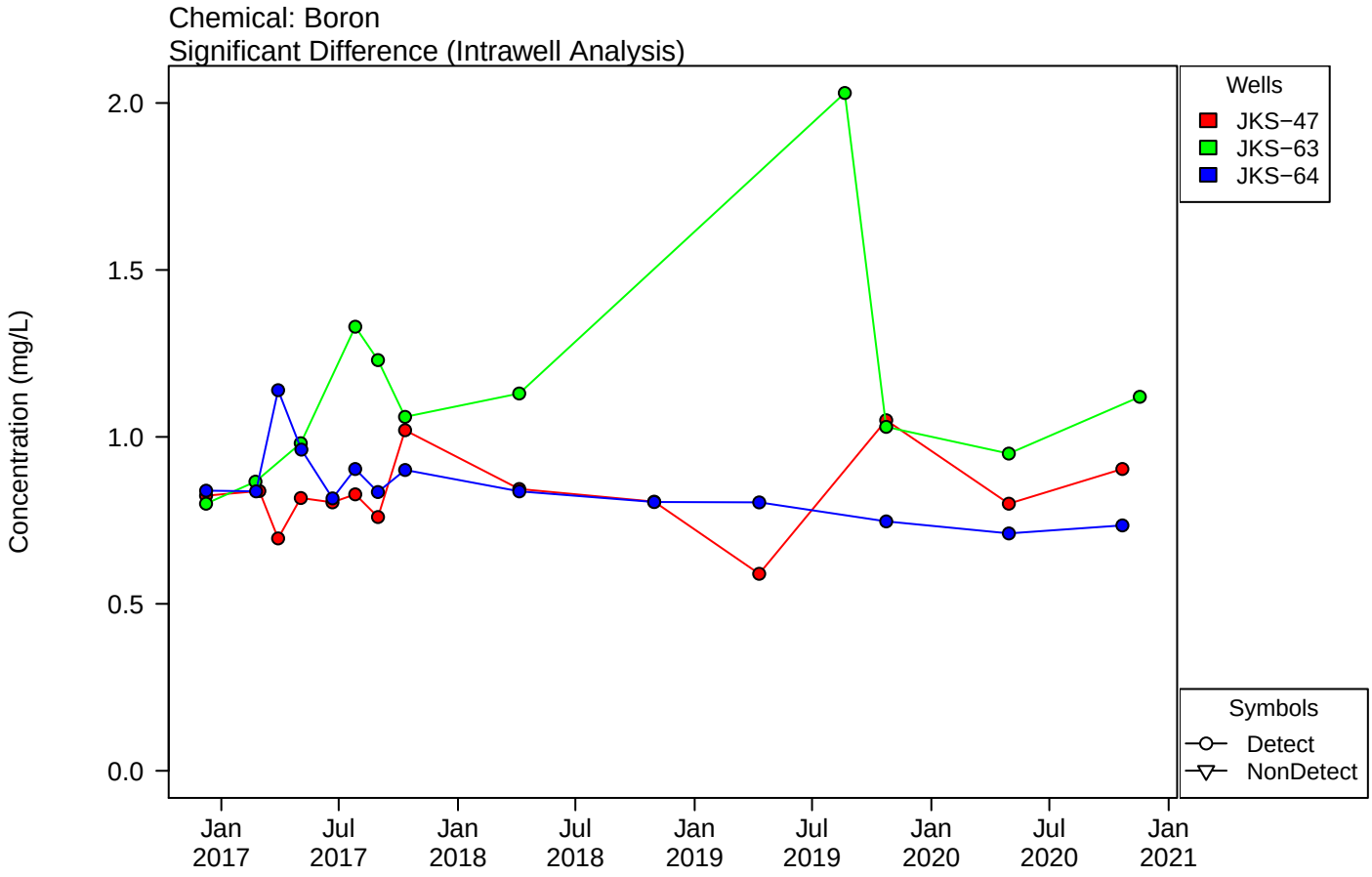
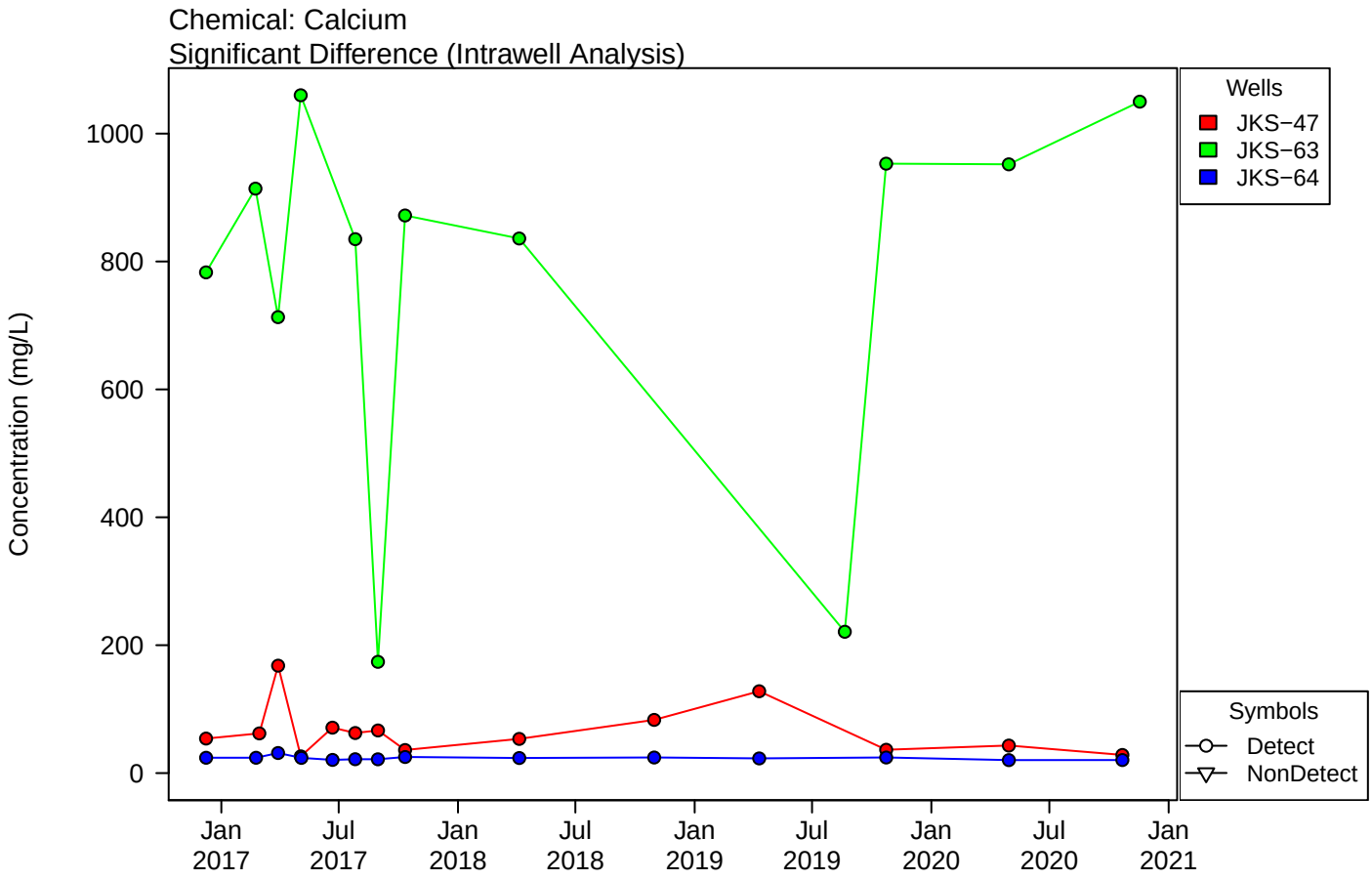
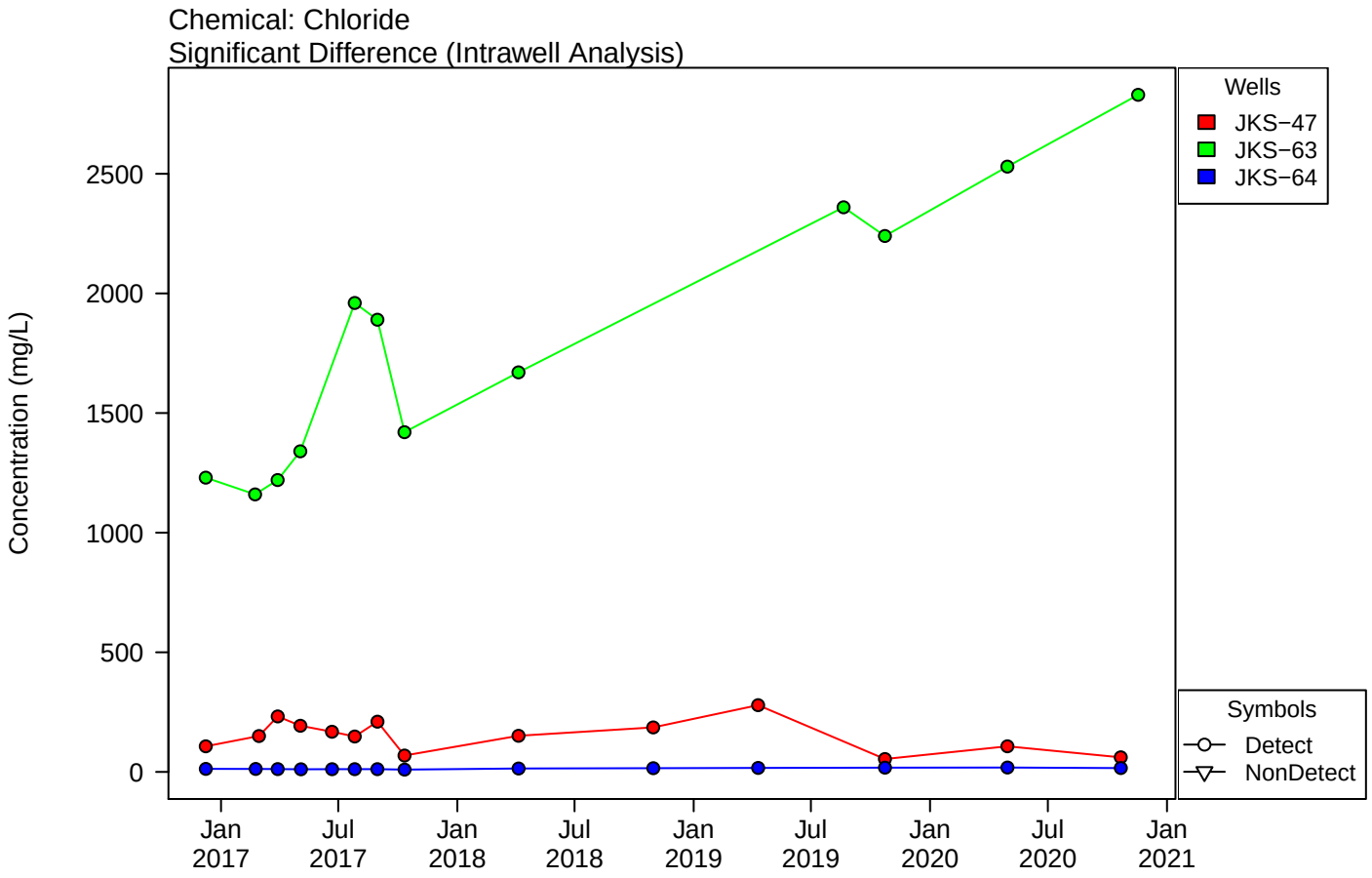
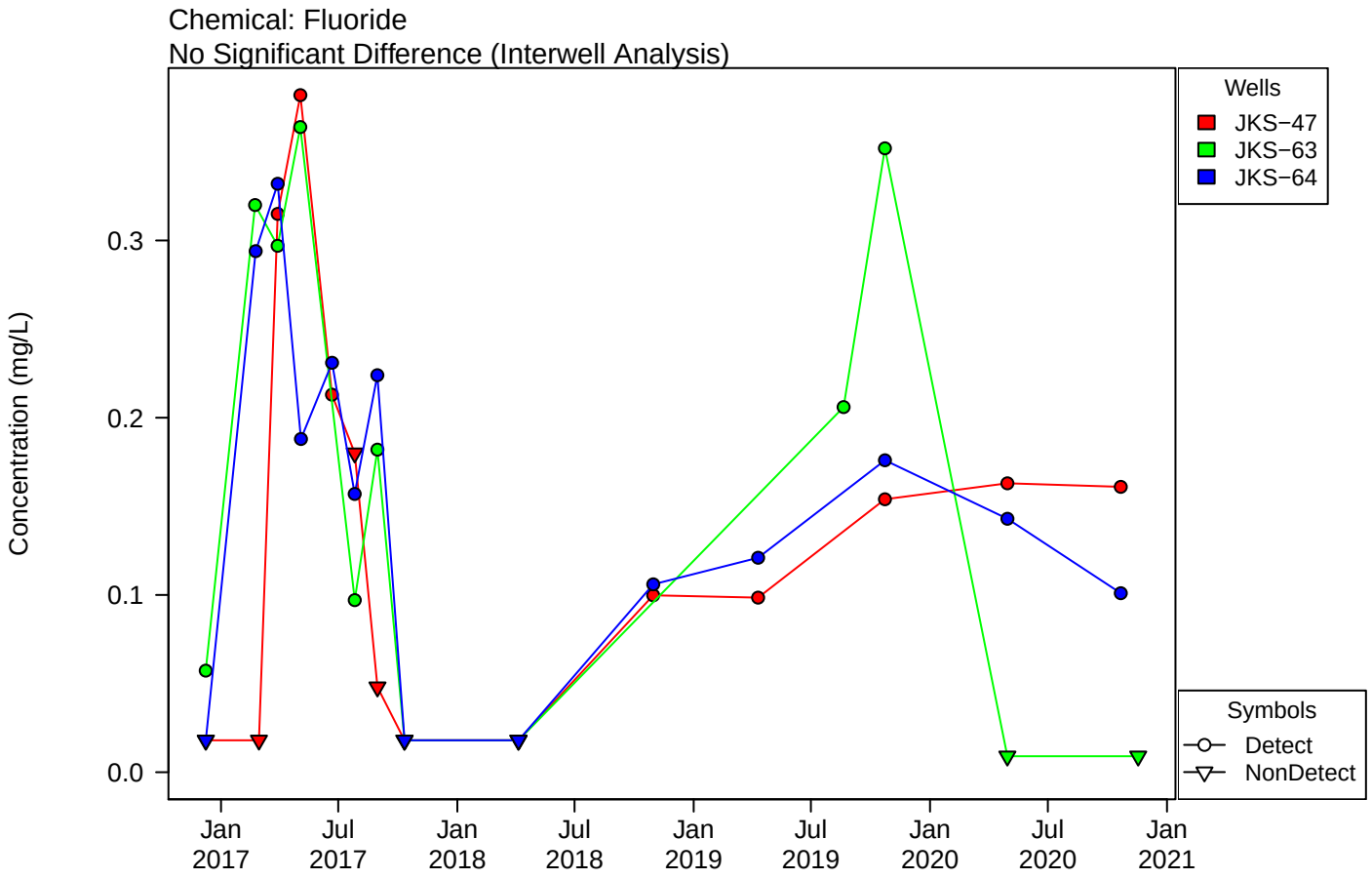
Appendix B − Figure 3
Unit: Evaporation Pond
Timeseries of Upgradient Wells



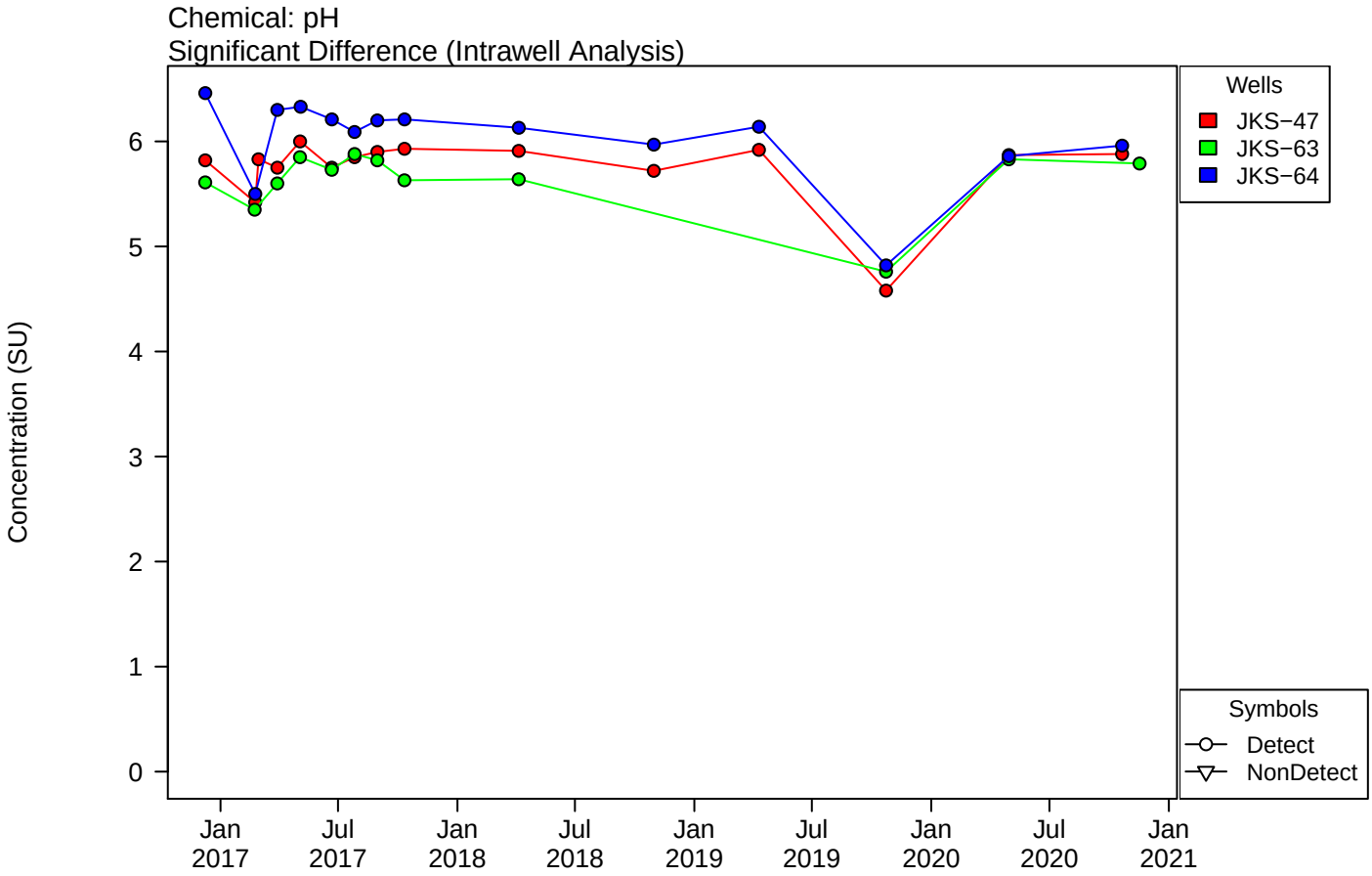


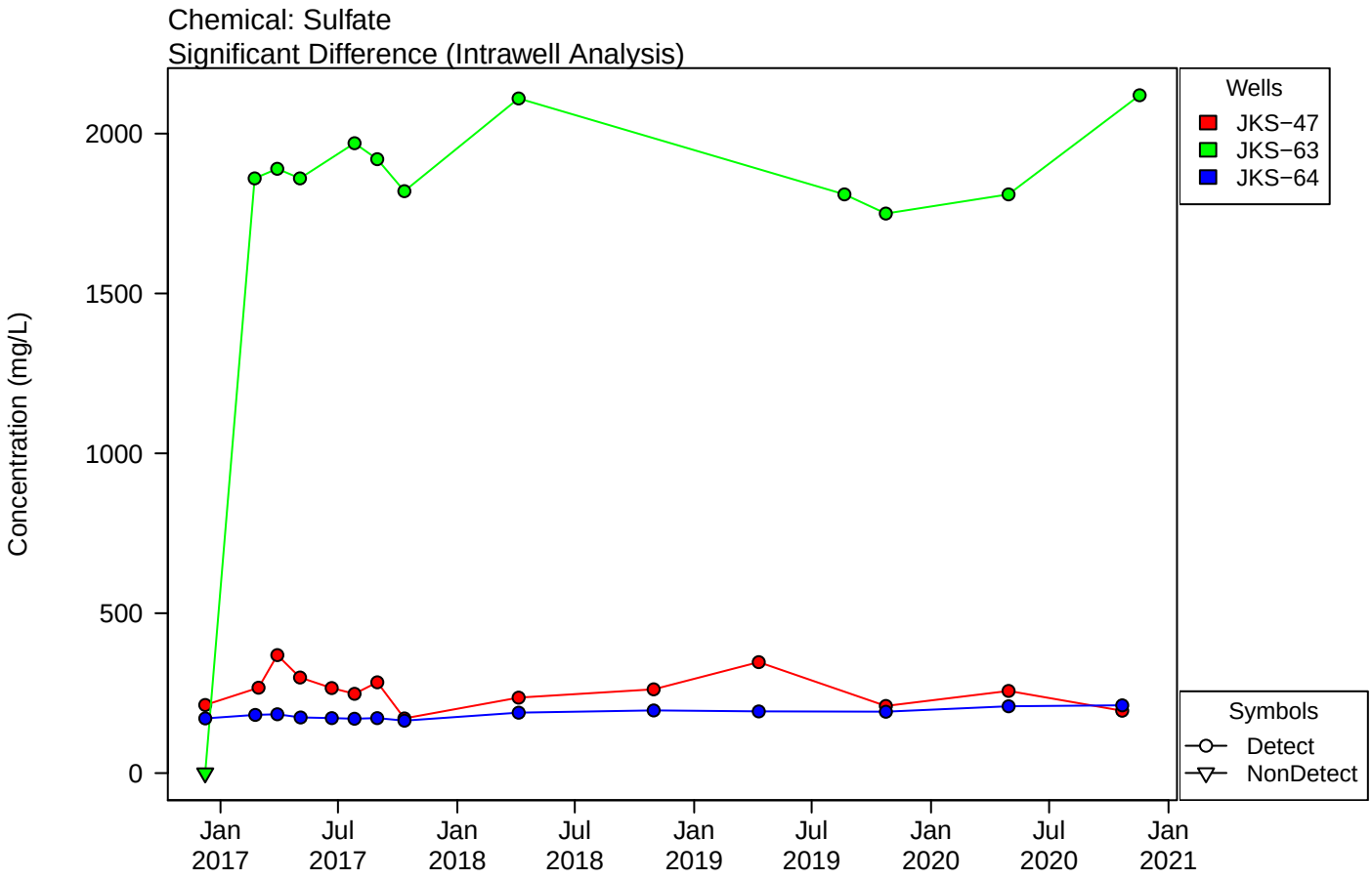
Appendix B − Figure 3
Unit: Evaporation Pond
Timeseries of Upgradient Wells



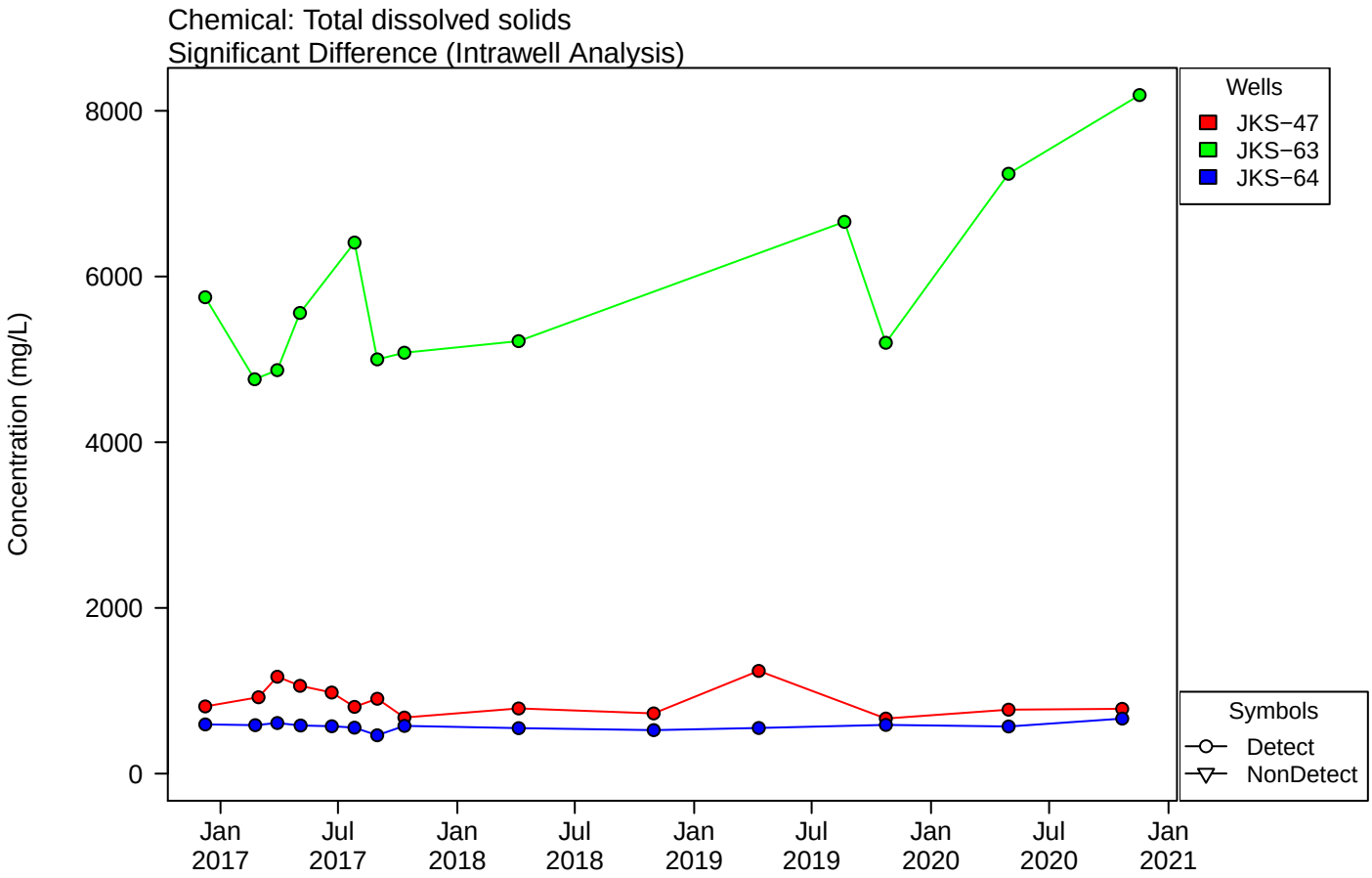


Appendix B − Figure 3
Unit: Evaporation Pond
Timeseries of Upgradient Wells

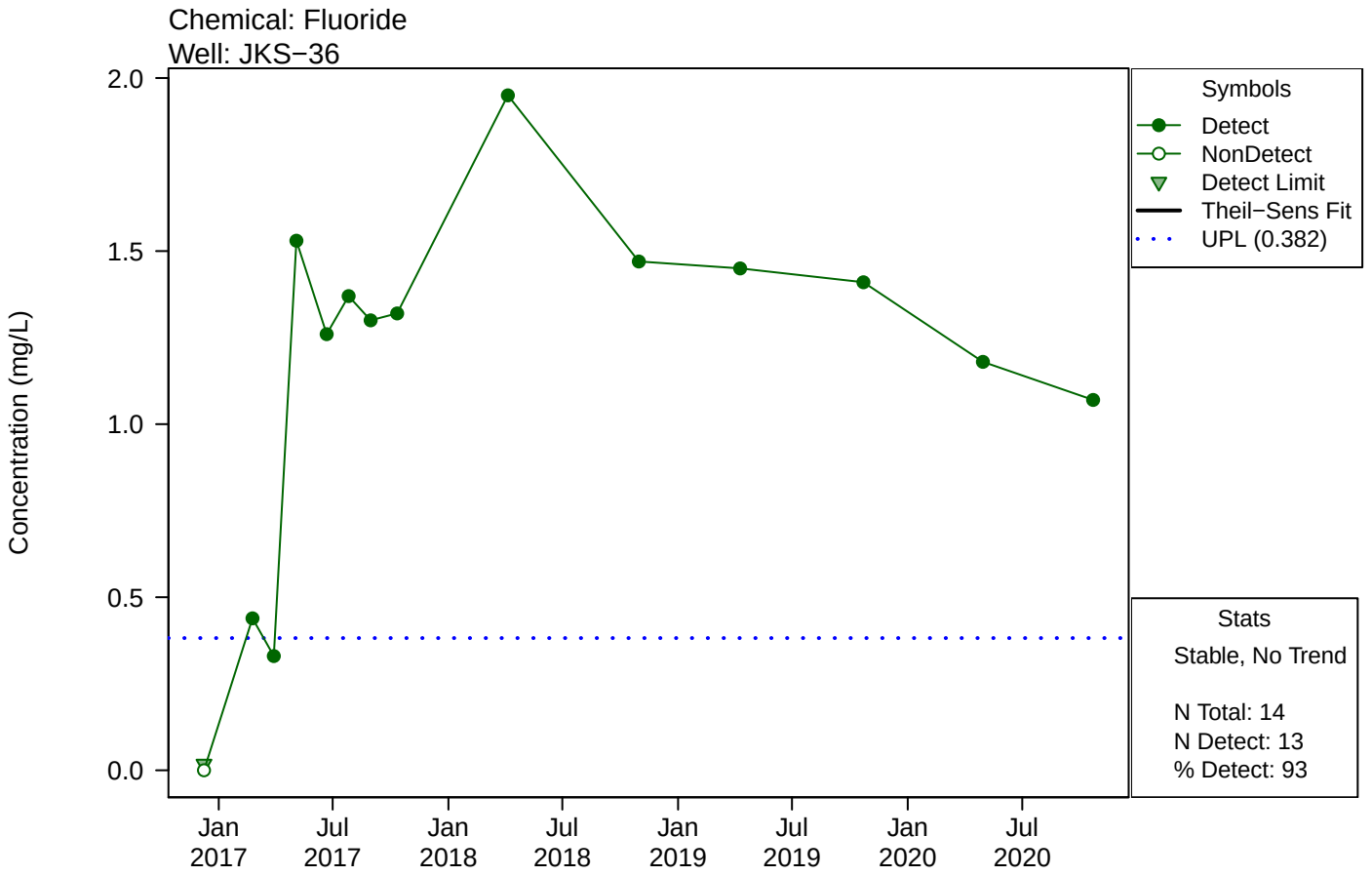


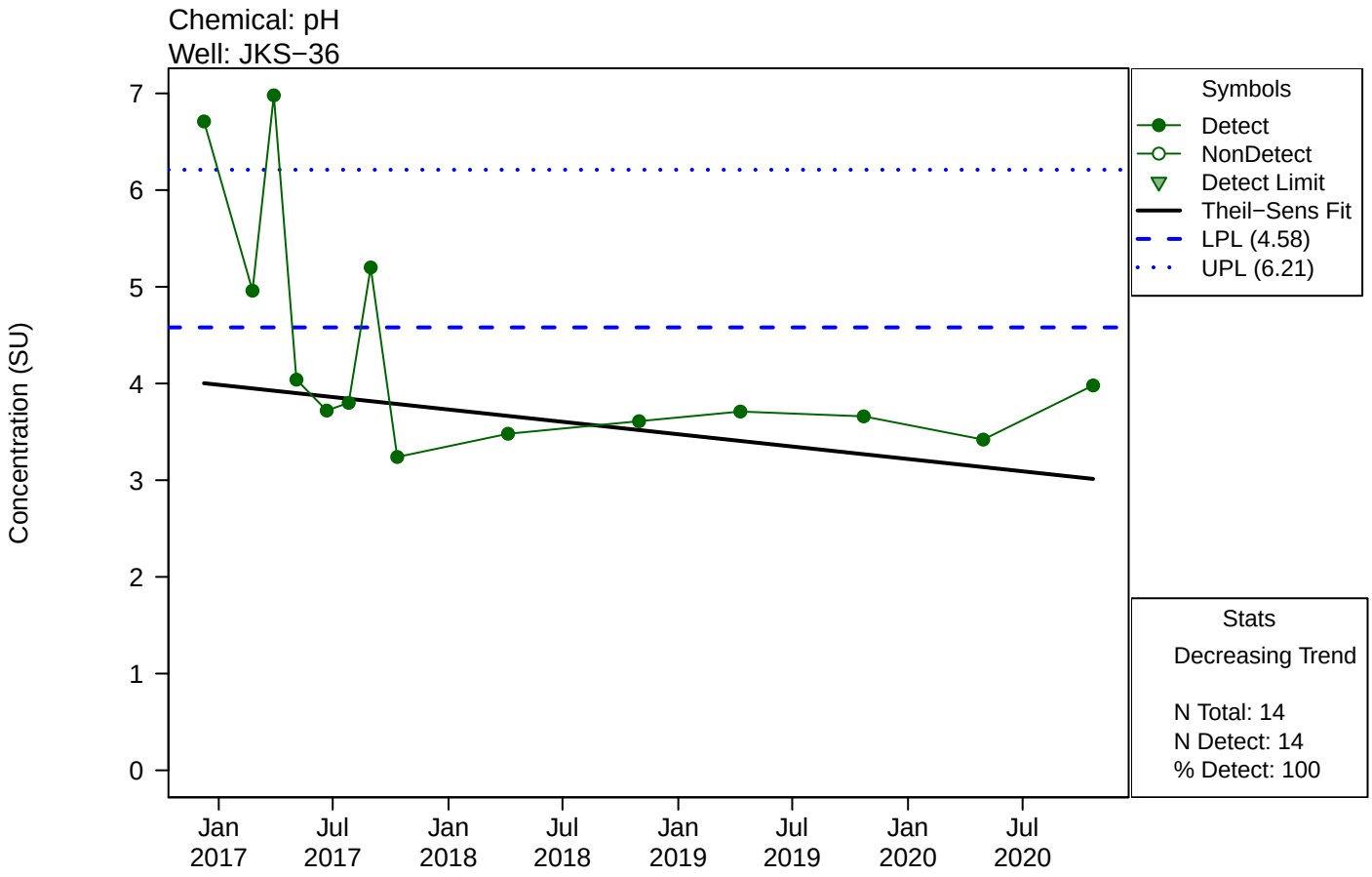


Appendix B − Figure 3
Unit: Evaporation Pond
Timeseries of Upgradient Wells

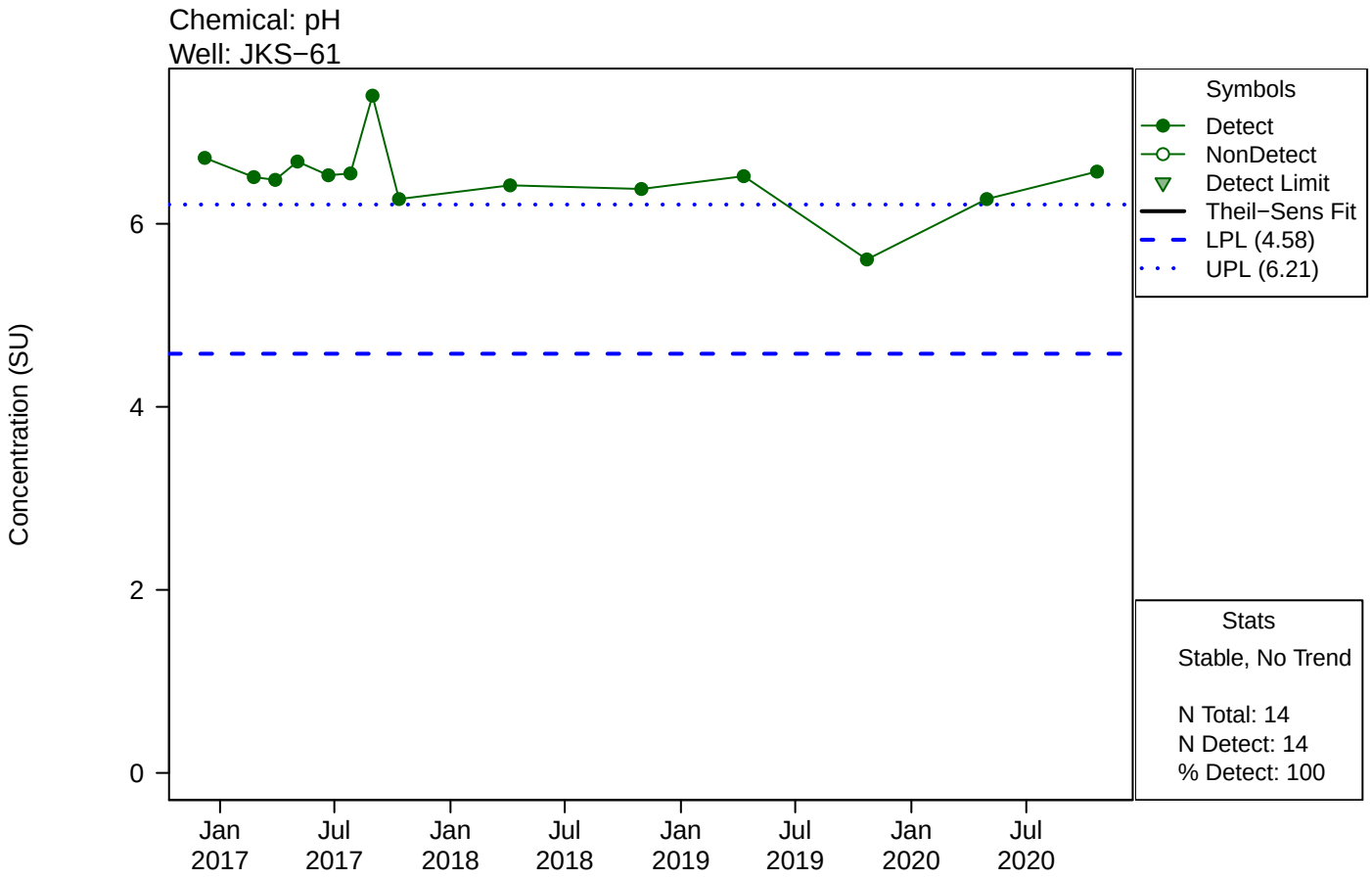


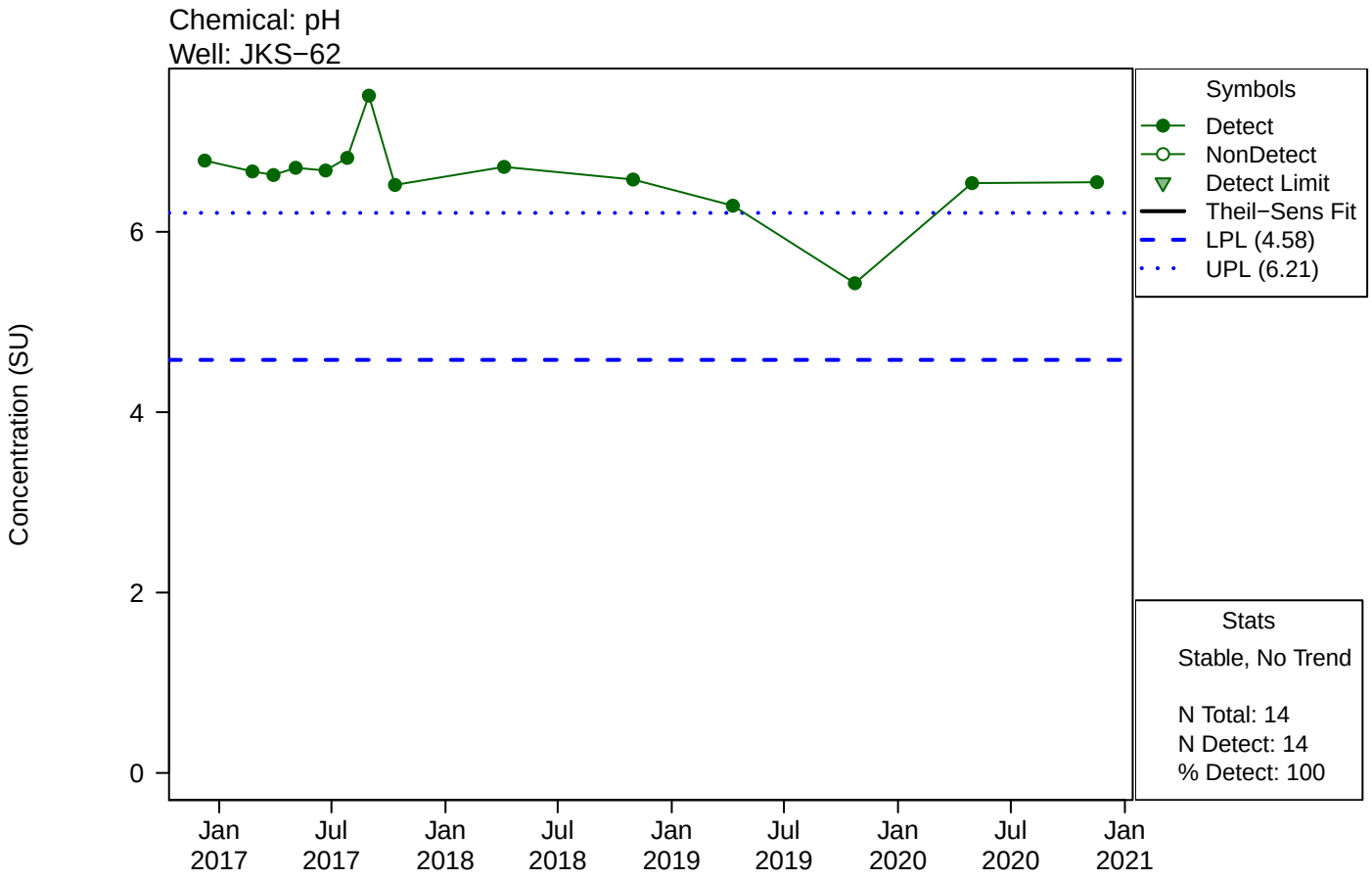
Appendix B − Figure 4
Unit: Evaporation Pond
Trend Analysis of Downgradient Wells with Exceedances



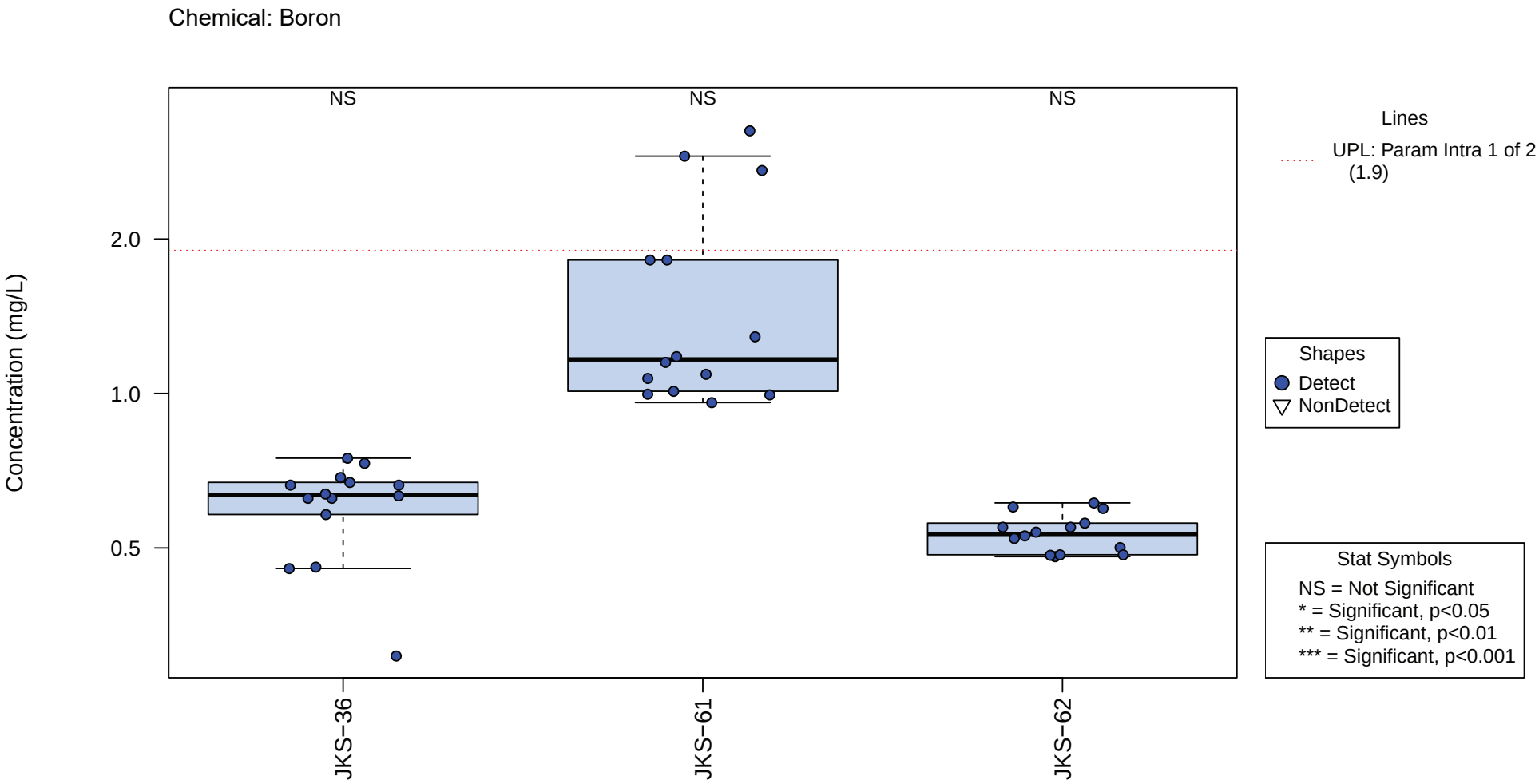


Appendix B − Figure 4
Unit: Evaporation Pond
Trend Analysis of Downgradient Wells with Exceedances

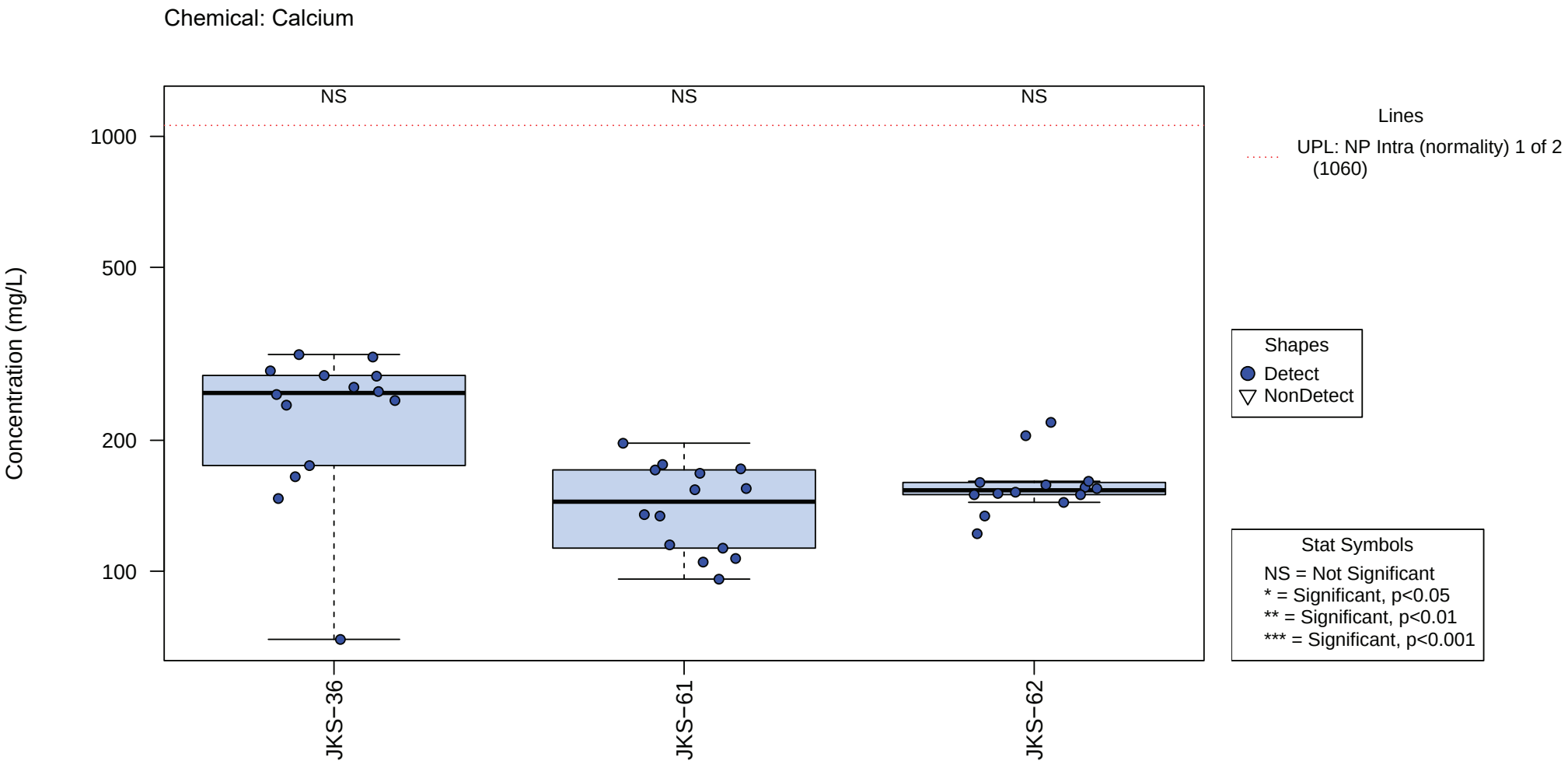




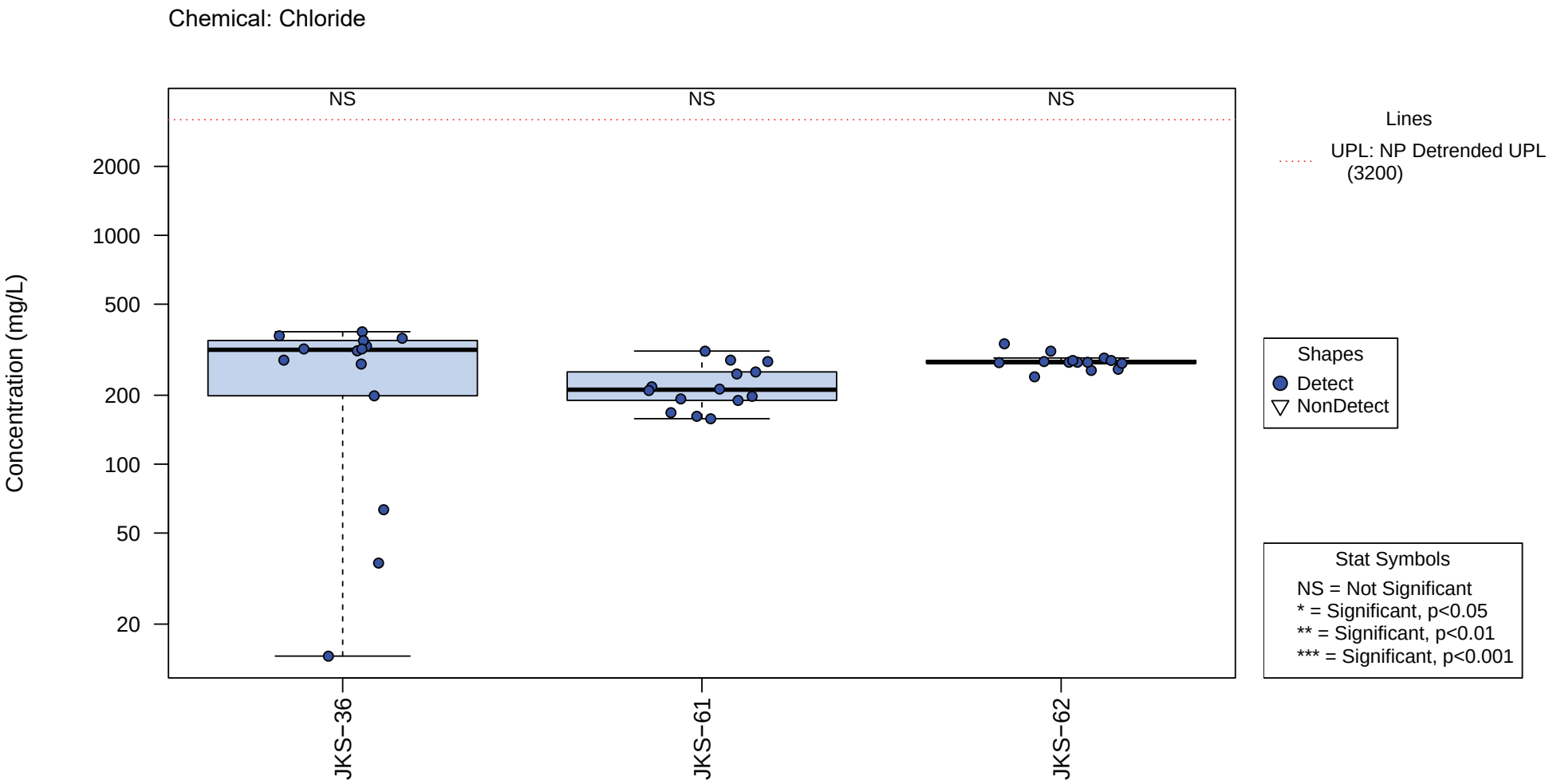
Appendix B - Figure 5
Unit: Evaporation Pond
Boxplots of Downgradient Wells



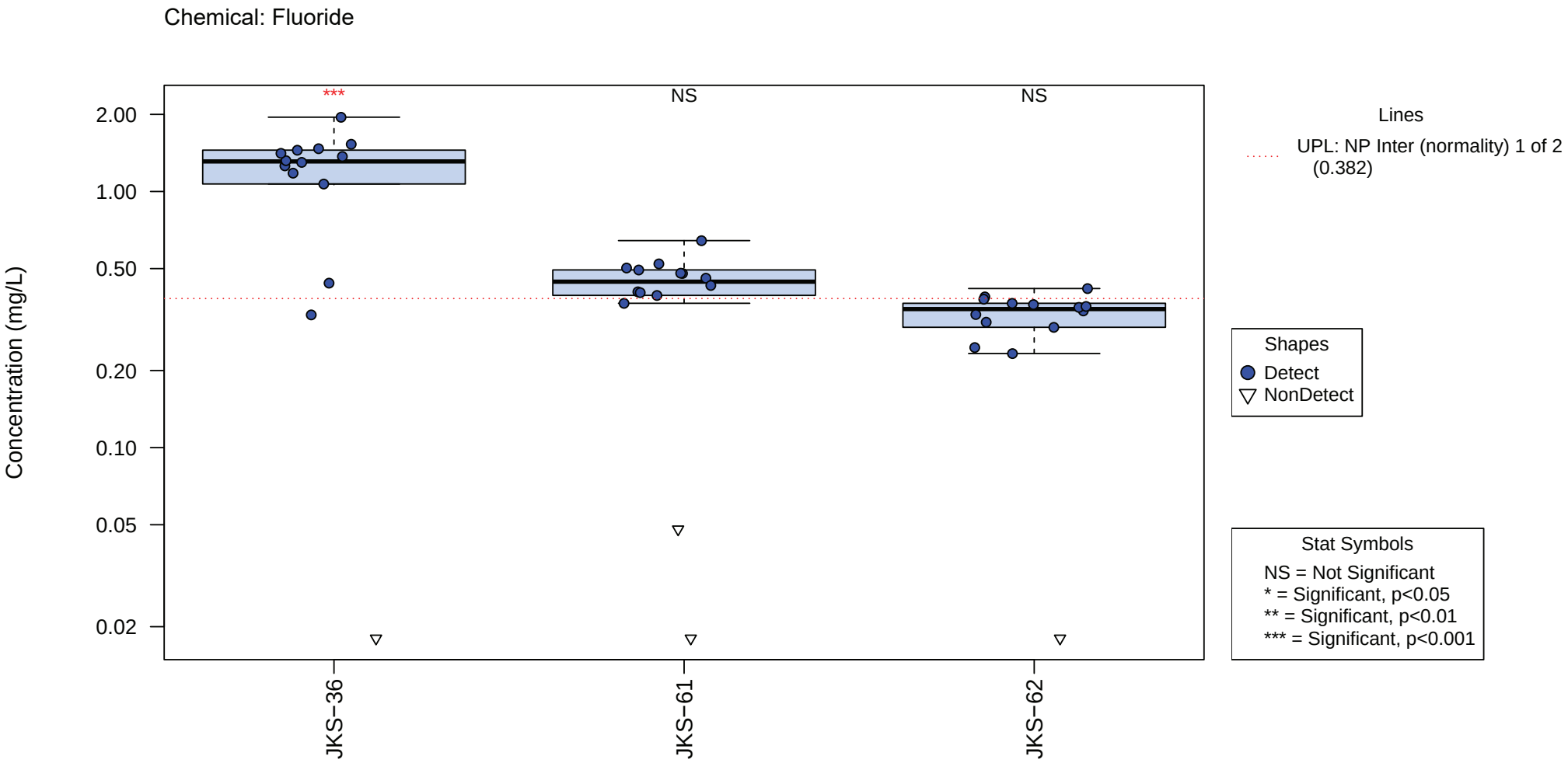
Appendix B - Figure 5
Unit: Evaporation Pond
Boxplots of Downgradient Wells



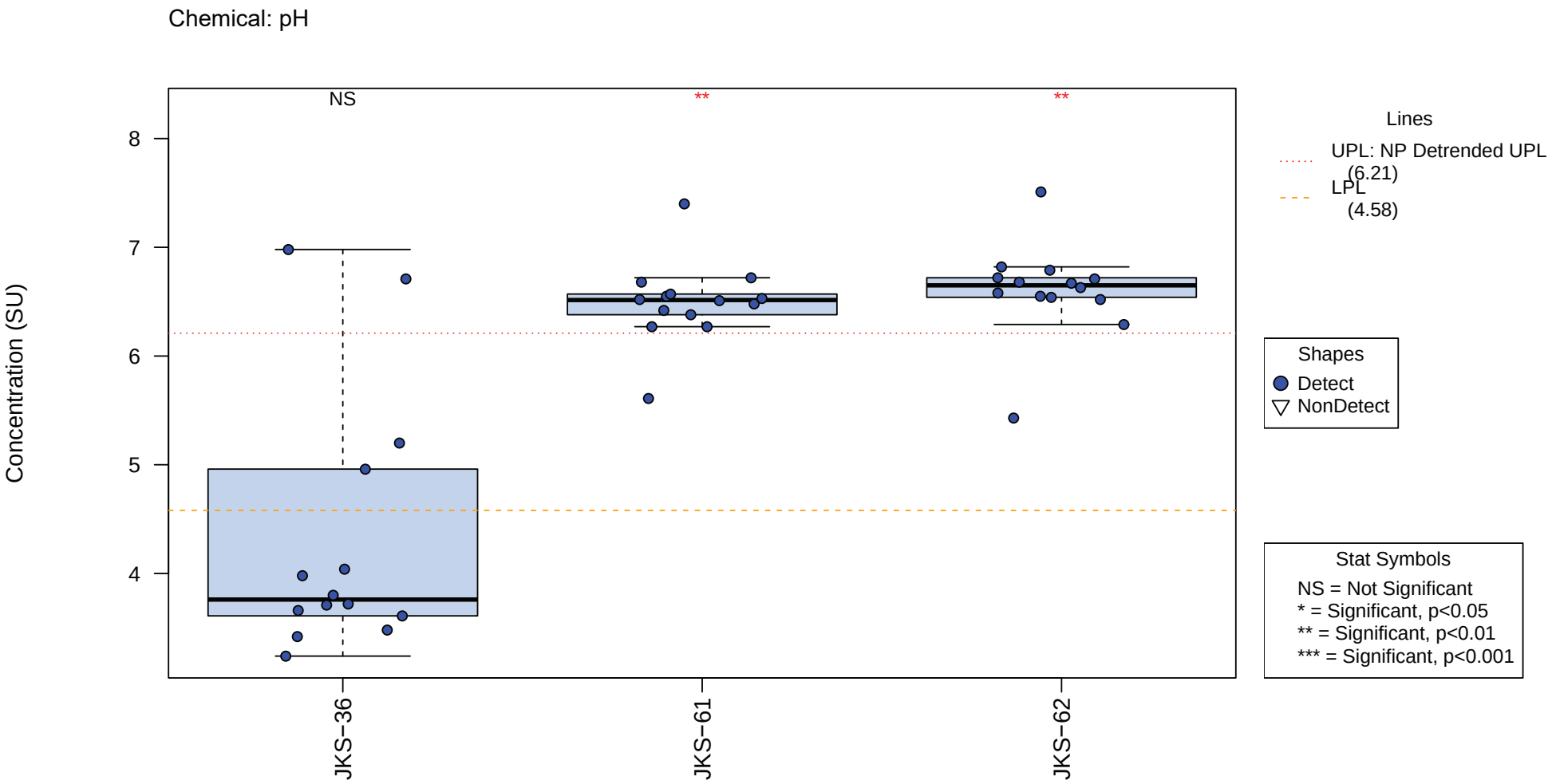
Appendix B - Figure 5
Unit: Evaporation Pond
Boxplots of Downgradient Wells



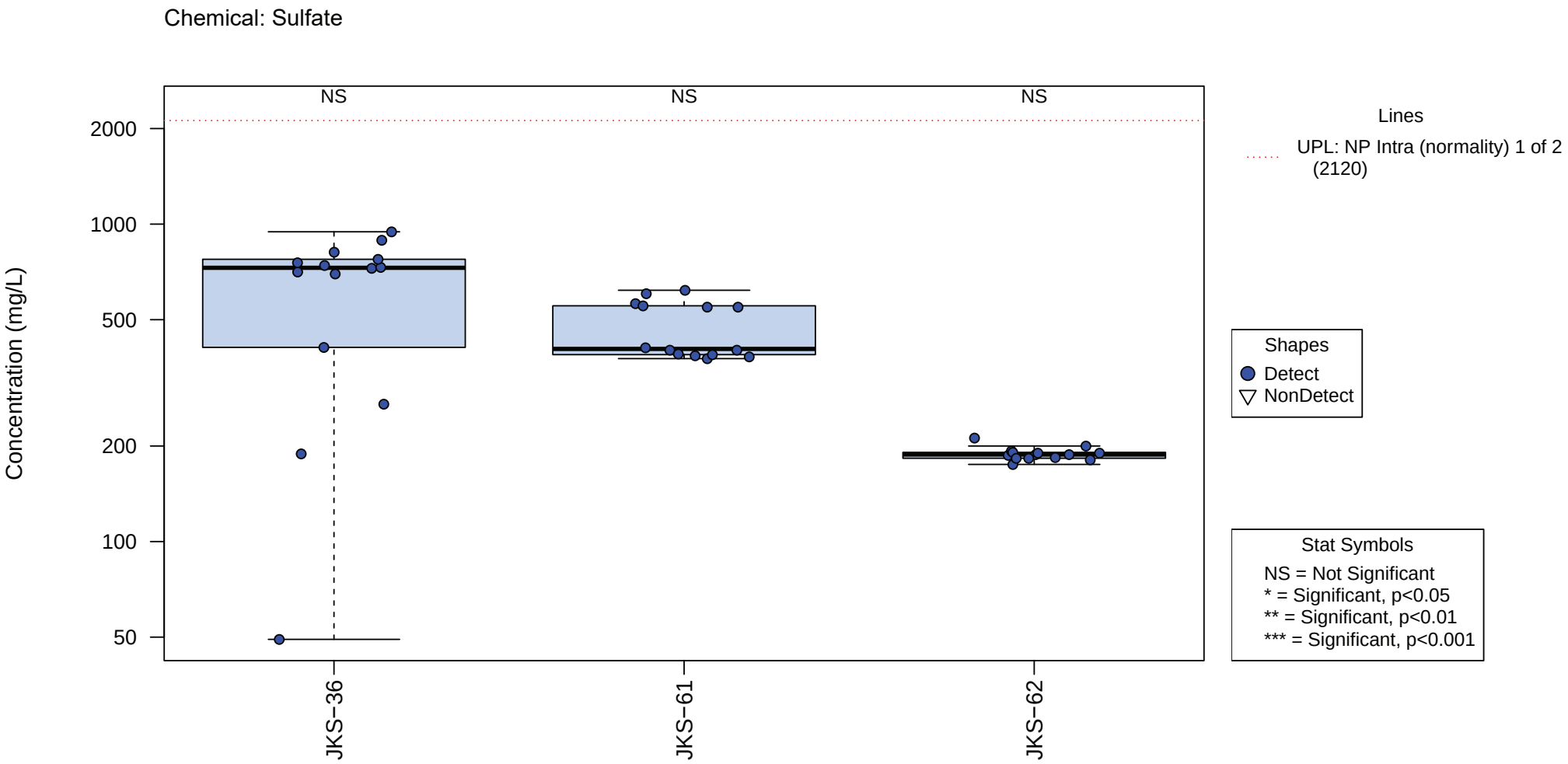
Appendix B - Figure 5
Unit: Evaporation Pond
Boxplots of Downgradient Wells



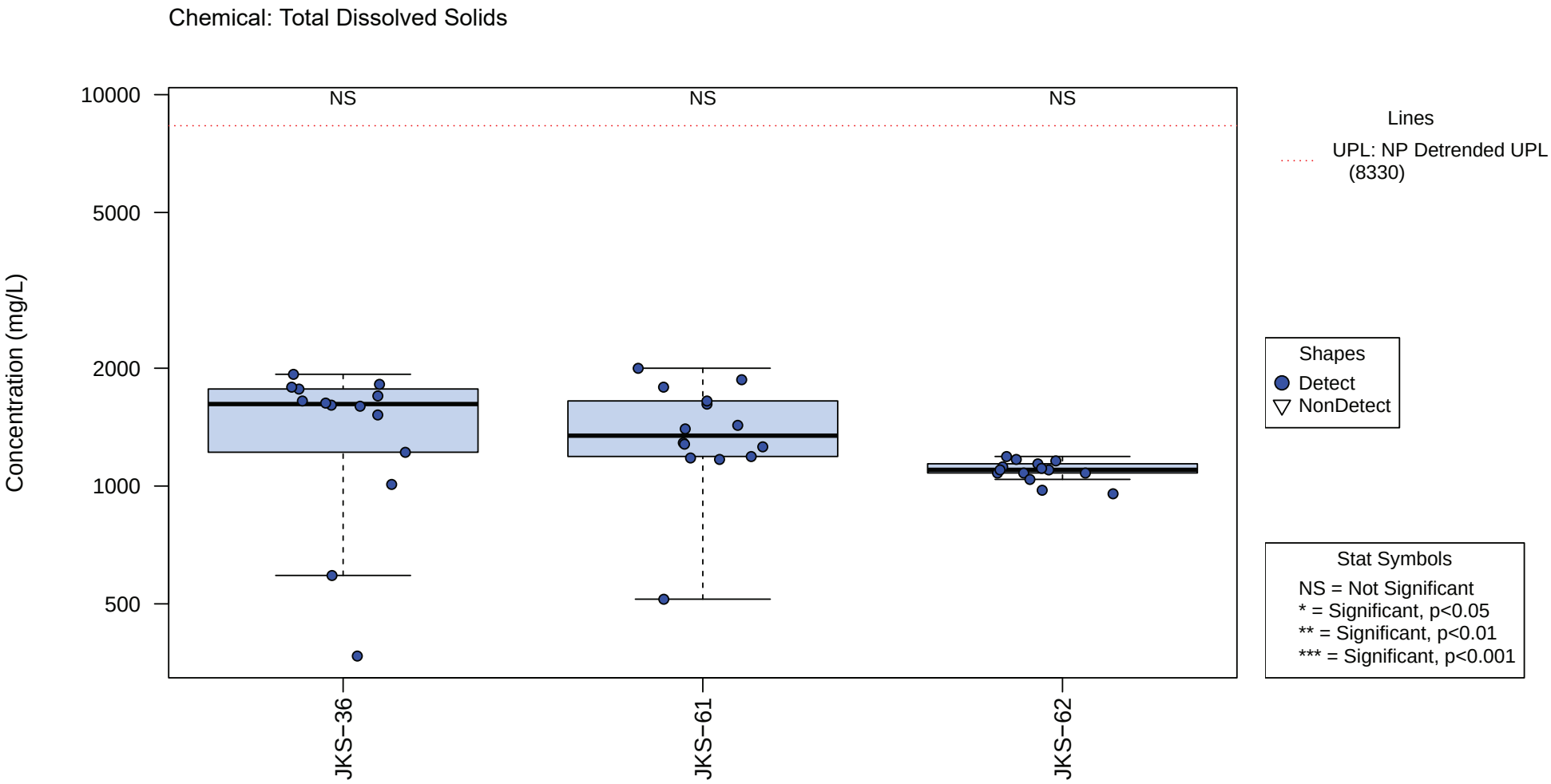
Appendix B - Figure 5
Unit: Evaporation Pond
Boxplots of Downgradient Wells



Appendix B - Figure 5
Unit: Evaporation Pond
Boxplots of Downgradient Wells



Appendix B - Figure 5
Unit: Evaporation Pond
Boxplots of Downgradient Wells



April 2020 Groundwater Sampling Event – Calaveras Power Station CCR Units

Appendix C

ERM

CityCentre Four
840 West Sam Houston Parkway
North, Suite 600
Houston, Texas 77024-3920

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

www.erm.com

September 25, 2020

Mr. Michael Malone
CPS Energy
145 Navarro Street
San Antonio, Texas 78205

Reference: Project No. 0503422\A10320

Subject: April 2020 Groundwater Sampling Event and August 2020 Resampling Event
Calaveras Power Station CCR Units
San Antonio, Texas

Dear Mr. Malone:

Introduction

Title 40, Code of Federal Regulations, Part 257 (40 CFR §257) (a.k.a. the 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* and *2019 Annual Groundwater Monitoring and Corrective Action Reports* for each CCR unit, the downgradient monitoring well results from the October 2017 and October 2018 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 evaluations of the April and August 2020 groundwater sample results indicated a potential SSI for a limited number of constituents from the EP, FAL, BAPs, and 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 a 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.

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To address the potential SSIs identified in the previous three *Annual Groundwater Monitoring and Corrective Action Reports*, CPS Energy prepared three *Written Demonstrations – Responses to Potential Statistically Significant Increases* (dated April 4, 2018; February 27, 2019; and April 27, 2020; respectively). Based on the evidence provided in the *Written 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 2020 was conducted on April 28 through April 29, 2020. 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. A resampling event of JKS-54 only was conducted on August 24, 2020.

For each CCR unit, the downgradient monitoring well results from the April and August 2020 sampling events were compared to the updated UPLs and LPLs recalculated in their respective *2019 Annual Groundwater Monitoring and Corrective Action Report*. The April and August 2020 groundwater sample results for the downgradient monitoring wells in each CCR unit are summarized in Attachment 1.

Although the evaluations of the April and August 2020 groundwater sample results indicate a potential SSI for a limited number of constituents, with the exception of sulfate in JKS-54 associated with the SRH Pond, 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 Demonstrations*. The evaluations of the April and August 2020 groundwater sample results with potential SSIs are summarized below.

EP – The constituents associated with potential SSIs include fluoride in JKS-36 and JKS-61; and pH in JKS-36 and JKS-62. As previously presented in the *Written Demonstrations*, the concentrations of fluoride and pH appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. The reported April 2020 concentrations were within the range of naturally occurring concentrations identified in the *Written Demonstrations*.

FAL – The constituent associated with a potential SSI is pH in JKS-31 and JKS-46. As previously presented in the *Written Demonstrations*, the concentrations of pH appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. The reported April 2020 concentrations were within the range of naturally occurring concentrations identified in the *Written Demonstrations*.

BAPs – The constituents associated with potential SSIs include boron in JKS-50R and JKS-56; and fluoride in JKS-52 and JKS-55. As previously presented in the *Written Demonstrations*, the concentrations of boron and fluoride appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. The reported April 2020 concentrations were within the range of naturally occurring concentrations identified in the *Written Demonstrations*.

SRH Pond – The constituents associated with potential SSIs include fluoride in JKS-52 and JKS-54; and sulfate in JKS-54. As previously noted in the *April 2019 Groundwater Sampling Report*, the concentrations of fluoride appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit and the reported April 2020 concentrations are within the range of naturally occurring concentrations identified in the *Annual Groundwater Monitoring and Corrective Action Reports*. Although a potential SSI of sulfate was not previously presented in the *Written Demonstrations*, the concentrations of sulfate in JKS-54 appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. While the concentration reported in the April 2020 sampling event (443 mg/L) was the highest concentration reported in JKS-54, the concentration reported in the August 2020 resampling event (425 mg/L) is within the range of concentrations reported in upgradient monitoring well JKS-51 over the previous three sampling events (405 to 439 mg/L).

Conclusions

Based on the April and August 2020 groundwater sample results and the evidence provided in one or all of the *Written 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 2020.

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

Sincerely,

Environmental Resources Management

Walter Zverina
Principal Consultant

ATTACHMENT 1 APRIL AND AUGUST 2020 GROUNDWATER SAMPLE RESULTS

September 2020
Project No. 0503422

April 2020 Groundwater Sample Results
CCR Unit: Evaporation Pond
CPS Energy Calaveras Power Station
San Antonio, TX

			CCR Unit	EP	EP	EP	EP
			Well Designation	Downgradient	Downgradient	Downgradient	Downgradient
			Well ID	JKS-36	JKS-61	JKS-61	JKS-62
			Sample Date	4/29/2020	4/29/2020	4/29/2020	4/29/2020
			Sample Type Code	N	N	FD	N
Constituent	Units	2019 LPL - EP	2019 UPL - EP				
Boron	mg/L	--	1.88	0.459	1.82	1.85	0.484
Calcium	mg/L	--	1,300	175	154	157	122
Chloride	mg/L	--	2,780	63.3	312	317	284
Fluoride	mg/L	--	0.382	1.18	0.494	0.549	0.331
pH, Field	SU	4.58	6.47	3.42	6.27	6.27	6.54
Sulfate	mg/L	--	2,110	189	604	608	190
Total dissolved solids	mg/L	--	6,660	1,790	1,870	1,870	1,100

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

April 2020 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	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020
			Sample Type Code	N	N	N	FD	N
Constituent	Units	2019 LPL - FAL	2019 UPL - FAL					
Boron	mg/L	--	4.29	0.429	1.18	0.864	0.806	0.325
Calcium	mg/L	--	583	171 J	573 J	143 J	133 J	530 J
Chloride	mg/L	--	841	272	756	17.9	19.2	168
Fluoride	mg/L	--	4.86	1.00	1.68	1.61 J	2.44 J	0.188
pH, Field	SU	3.98	6.73	3.70	6.30	3.10	3.10	6.61
Sulfate	mg/L	--	7,630	877	1,620	1,180	1,240	1,280
Total dissolved solids	mg/L	--	11,900	1,890	4,370	1,970	1,780	3,180

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

April 2020 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	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020
			Sample Type Code	N	N	N	FD	N	N
Constituent	Units	2019 LPL - BAP	2019 UPL - BAP						
Boron	mg/L	--	2.40	2.36	5.52	2.05	2.16	0.779	3.55
Calcium	mg/L	--	368	130 J	126 J	174 J	180 J	137 J	103 J
Chloride	mg/L	--	608	485	102	433	430	452	101
Fluoride	mg/L	--	0.847	0.051 JH	0.510	0.908	0.952	1.01	0.552
pH, Field	SU	5.48	7.31	6.89	6.65	6.83	6.83	6.81	6.72
Sulfate	mg/L	--	431	206	194	315	313	177	138
Total dissolved solids	mg/L	--	2,240	1,400	918	1,470	1,420	1,350	904

NOTES:

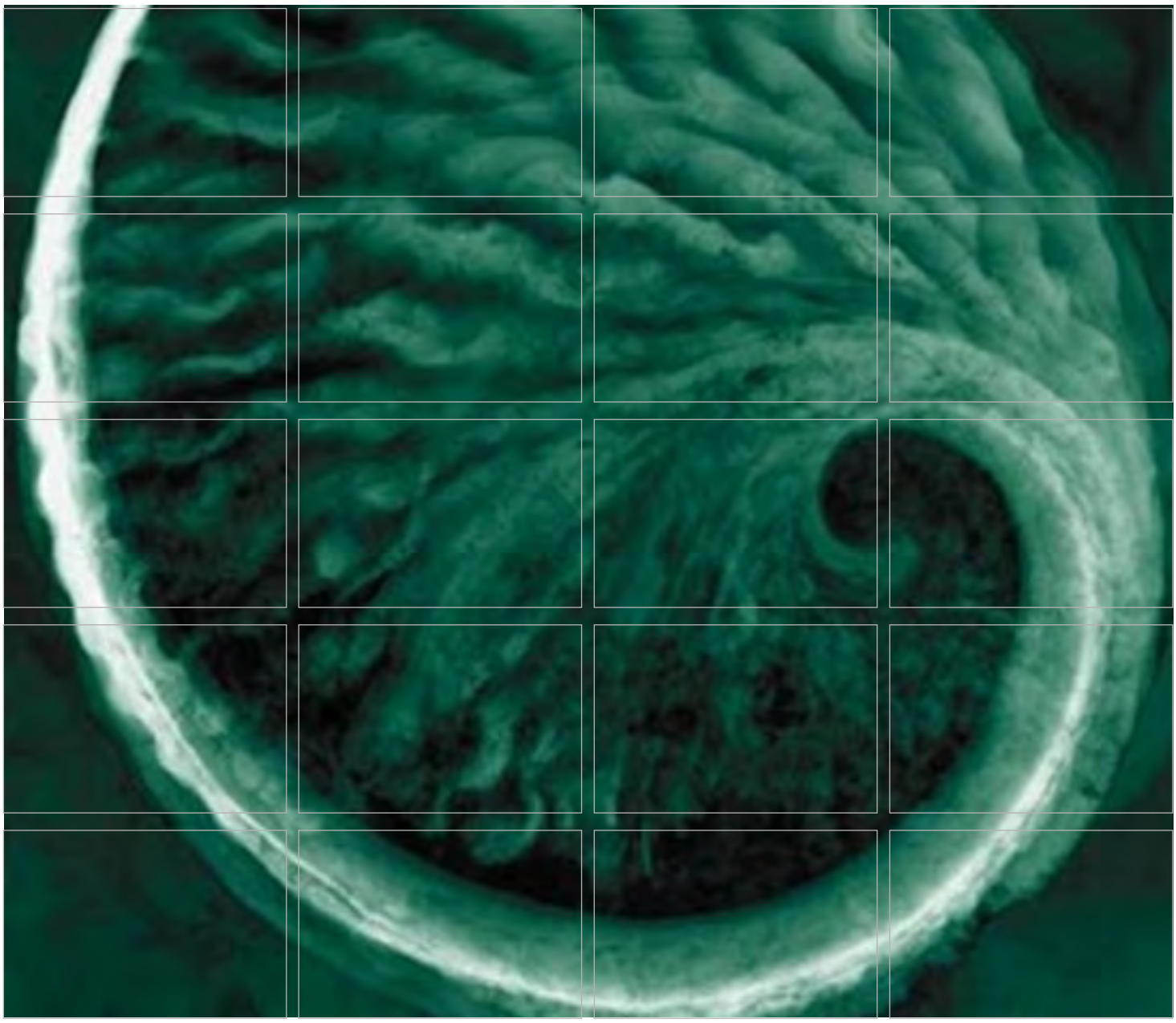
Shaded results either exceed of the Upper Prediction Limit (UPL) or are below the Lower Prediction Limit (LPL) for this CCR unit.
Sample Type Code: N - Normal; FD - Field Duplicate
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.

April and August 2020 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	SRH Pond
			Well Designation	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient
			Well ID	JKS-52	JKS-52	JKS-53	JKS-54	JKS-54
			Sample Date	4/28/2020	4/28/2020	4/28/2020	4/28/2020	8/24/2020
			Sample Type Code	N	FD	N	N	R
Constituent	Units	2019 LPL - SRH	2019 UPL - SRH					
Boron	mg/L	--	2.40	2.05	2.16	1.43	1.23	NA
Calcium	mg/L	--	357	174 J	180 J	114 J	118 J	NA
Chloride	mg/L	--	608	433	430	381	380	NA
Fluoride	mg/L	--	0.831	0.908	0.952	0.428	0.861	0.579
pH, Field	SU	5.48	7.31	6.83	6.83	6.67	6.76	NA
Sulfate	mg/L	--	421	315	313	244	443	425
Total dissolved solids	mg/L	--	2,180	1,470	1,420	1,160	1,570	NA

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; R - Resample
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
NA: Not analyzed for this constituent



Annual Groundwater Monitoring and Corrective Action Report

CPS Energy
Calaveras Power Station – Fly Ash Landfill
San Antonio, Texas

January 2021

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Calaveras Power Station – Fly Ash Landfill

Annual Groundwater Monitoring and Corrective Action Report

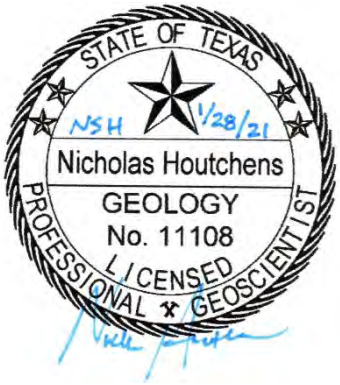
January 2021

Project No. 0503422
San Antonio, Texas

Jeffery L. Bauguss, P.E.
Partner-in-Charge

Walter Zverina
Project Manager

Karen Fletcher
Senior Scientist



Nicholas Houtchens, P.G.
Senior Geologist

Environmental Resources Management
206 East 9th Street, Suite 1700
Austin, TX 78701
T: 512-459-4700

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

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1. CURRENT STATUS SUMMARY

As required in Title 40, Code of Federal Regulations, §257.90, this section provides an overview of the current status of the groundwater monitoring and corrective action program for the Fly Ash Landfill located at the CPS Energy Calaveras Power Station:

- At the start of the 2020 annual reporting period, the Fly Ash Landfill was operating under the detection monitoring program, as defined in §257.94;
- At the end of the 2020 annual reporting period, the Fly Ash Landfill 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 Fly Ash Landfill;
- A remedy was not required or selected pursuant to §257.97 during the 2020 annual reporting period; and
- No remedial activities were initiated or are ongoing pursuant to §257.98 during the 2020 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) (a.k.a. the CCR Rule). The Power Station is located in unincorporated Bexar County, Texas, approximately 13 miles southeast of San Antonio. Currently, CPS Energy operates three CCR units at the Power Station: Evaporation Pond, Fly Ash Landfill, and the Sludge Recycle Holding (SRH) Pond. This *Annual Groundwater Monitoring and Corrective Action Report* (Report) only addresses the Fly Ash Landfill.

This Report was produced by Environmental Resource Management (ERM), on behalf of CPS Energy, and summarizes the groundwater monitoring activities for the Fly Ash Landfill and provides a statistical summary of the findings for samples collected during the 2020 semi-annual monitoring events. Consistent with the requirements of the CCR Rule, this Report will be posted to the facility's operating record and notification will be made to the State of Texas. Additionally, this Report will be placed on the CPS Energy publically accessible internet site. Unless otherwise mentioned, the analyses in this Report follow the *Groundwater Sampling and Analysis Program* (SAP) (ERM, 2017) posted on the internet site. 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 Fly Ash Landfill is located northeast of the Power Station generating units and is north of the Evaporation Pond. The Fly Ash Landfill currently receives fly ash, bottom ash, economizer ash, scrubber sludge from flue gas desulphurization ponds, and flue gas desulphurization gypsum. The Fly Ash Landfill was constructed in 1992. The CCR unit location is shown on Figure 1.

3. PROGRAM STATUS

From December 2016 to 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.

The groundwater monitoring well network consists of two upgradient monitoring wells (JKS-45 and JKS-57) and four downgradient monitoring wells (JKS-31, JKS-33, JKS-46, and JKS-60). All monitoring wells are screened within the uppermost groundwater bearing unit (GWBU). The uppermost GWBU is approximately 5 to over 25 feet thick and is comprised of clayey/silty sand to well-sorted sand. The uppermost GWBU is located below unconsolidated material (i.e., sands, silts, and low to medium plasticity clays), and above a high plasticity clay (lower confining unit).

The monitoring well locations are shown in Figure 1. No problems were encountered in the data collection or in well performance, and no action was required to resolve any issues. No new monitoring wells were installed or decommissioned after the certification of the well network.

3.1. GROUNDWATER FLOW RATE AND DIRECTION

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

Groundwater elevations collected during the monitoring events are summarized in Table 1. Groundwater elevations and the potentiometric surface for the April and October 2020 monitoring events are shown on Figure 2A and Figure 2B, respectively. For both sampling events, groundwater in the vicinity of the Fly Ash Landfill appears to flow radially to the northwest, northeast, and east from a potentiometric high located at JKS-45. The horizontal gradient is approximately 0.009 feet/foot and 0.013 feet/foot for the April and October 2020 monitoring events, respectively. A non-proportional change in water levels was observed at JKS-57 during the 2020 monitoring events. The potentiometric surface elevations will continue to be monitored and a water level study will be initiated in 2021.

3.2. SAMPLING SUMMARY

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

The Fly Ash Landfill monitoring wells were sampled by CPS Energy using low flow sampling techniques during the monitoring events. No data gaps were identified during the 2020 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, located in San Antonio, Texas for analysis. 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. A summary of the data qualifiers are 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 the SAP, a prediction limit approach [40 CFR §257.93(f)] was used to identify potential impacts to groundwater. Tables and figures generated as part of the statistical analysis are provided in Appendix B. The steps outlined in the decision framework in the SAP include:

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

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 C.

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 test shows that:

- One Appendix III analyte [chloride] will follow interwell analysis, with no significant differences present in upgradient data; and
- The remaining six Appendix III analytes [boron, calcium, fluoride, pH, sulfate, and total dissolved solids (TDS)] will follow intrawell analysis, with significant differences present in upgradient data.

Interwell analytes will use a pooled upgradient dataset for subsequent report sections. Conversely, intrawell analytes will have each individual upgradient dataset used for subsequent report sections.

4.2. ESTABLISHMENT OF UPGRADIENT DATASET

When evaluating the concentrations of analytes in groundwater, USEPA Unified 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 Fly Ash Landfill (Appendix B, Table 2). The descriptive statistics highlight a number of relevant characteristics about the upgradient datasets including:

- There are a total of 13 well-analyte combinations for the upgradient dataset;
- 13 well-analyte combinations have detection rates greater than or equal to 50 percent;
- 11 well-analyte combinations have 100 percent detects;
- Five well-analyte combinations follow a normal distribution (using Shapiro-Wilks Normality Test);
- One well-analyte combination follows a log-normal distribution; and
- Seven well-analyte combinations have no discernible distribution.

4.2.2. Outlier Determination

Both statistical and visual outlier tests were performed on the upgradient datasets. Data points identified as both a statistical and visual outliers (Appendix B, Table 3 and Appendix B, Figure 2) were reviewed before they were excluded from the dataset. A total of eleven potential outliers were initially flagged in the upgradient datasets. After review, it was determined that eight of the eleven values were consistent with seasonal fluctuations and concentrations

detected in other upgradient wells or in historical groundwater sampling results. No analytical or sampling issues were identified for eight potential outliers during data review; therefore, the eight values were considered valid and were retained for upper prediction limit (UPL) calculations.

The three values excluded as outliers were chloride samples at JKS-57 with concentrations exceeding 3,000 mg/L. Historically, samples both at JKS-57 and the other pooled upgradient well were consistently less than 1,000 mg/L. These elevated chloride concentrations in JKS-57 have been noted and will be closely monitored in 2021.

4.2.3. Check for Temporal Stability

A trend test was performed for all values in the upgradient wells that had 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 following summarize the results of the trend analysis:

- There are a total of 13 well-analyte combinations in the upgradient dataset;
- 13 well-analyte combinations meet the data requirements of the trend test of which:
    - Four well-analyte combinations had an increasing trend; and
    - Nine well-analyte combinations had no trend (i.e., concentrations were stable over time).

4.3. CALCULATION OF PREDICTION LIMITS

A multi-part assessment of the monitoring wells was performed to determine what type of UPL to calculate as a compliance point. A decision framework was applied for each upgradient well based on inter/intrawell analysis, data availability, and presence of temporal trends.

A total of four well-analyte combinations were found to have either increasing or decreasing trends. For these well-analyte combinations, a bootstrapped UPL calculated around a Theil Sen trend was used to derive a more accurate UPL. The remaining nine well-analyte combinations were found to have no 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 October 2020 sampling results in the downgradient wells. A final lower prediction limit (LPL) was also selected for pH. For the one analyte following interwell analysis, the upgradient dataset was pooled prior to UPL calculations, resulting in a single UPL value per analyte. For the six analytes following 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 calculations are provided in Appendix B, Table 5.

Final UPL and LPL Values

Analysis Type	Analyte	LPL	UPL	Unit
Intrawell	Boron	--	5.97	mg/L
Intrawell	Calcium	--	673	mg/L
Interwell	Chloride	--	841	mg/L
Intrawell	Fluoride	--	4.29	mg/L
Intrawell	pH	3.98	6.73	SU
Intrawell	Sulfate	--	9,320	mg/L
Intrawell	TDS	--	15,900	mg/L

4.4. CONCLUSIONS

The downgradient samples collected during the October 2020 monitoring event were used for compliance comparisons. All downgradient wells were less than the UPLs and greater than the LPLs for pH with the following exceptions shown in the table below. All downgradient wells with initial exceedances were examined for trends to assess the stability of concentrations. A summary of these trend test results are provided in Appendix B, Figure 4.

Downgradient UPL Exceedances

Analyte	Well	LPL	UPL	Sample Date	Value	Unit
pH	JKS-31	3.98	6.73	2020-10-20	3.68	SU
pH	JKS-46	3.98	6.73	2020-10-20	3.01	SU

Additionally, each downgradient well-analyte pair had a Wilcoxon Rank Sum test comparing if their median is greater than the UPL or less than the LPL for pH. This nonparametric, rank-based test was used as an additional line of evidence for downgradient well compliance. Specific well-analyte pairs are of interest if: (1) there is a recent exceedance of the UPL, but historic concentrations place the median less than the UPL, or (2) there is not a recent exceedance of the UPL, but historic concentrations place the median greater than the UPL. All downgradient wells had medians less than the UPLs and greater than the LPLs for pH with the following exceptions shown in the table below. Full downgradient results are provided in Appendix B, Table 6, with boxplots in Appendix B, Figure 5.

Downgradient Median Exceedances

Analyte	Well
pH	JKS-46

All initial exceedances of the UPL may be confirmed with re-testing of the downgradient wells per the 1-of-2 re-testing scheme. If the initial exceedance is confirmed with re-testing results from the same well, and if the well-analyte combination median is greater than the UPL, the well-analyte combination will be declared a statistically significant increase (SSI) above background. Any wells with re-testing results at or less than the UPL will be considered in compliance and will not require further action. Any resampling results will be reported in the subsequent *Written Demonstration*.

5. RECOMMENDATIONS

Currently, there are no plans to transition from detection monitoring to assessment monitoring. Consistent with the 1-of-2 re-testing approach described in the Unified Guidance and the SAP, initial exceedances may be re-tested within 90 days. Based on these re-testing results, if an SSI is found, a notification or *Written Demonstration* will be prepared within 90 days. Based on the findings of the *Written Demonstration*, detection monitoring or assessment monitoring will be initiated as appropriate under §257.94 and §257.95.

6. REFERENCES

ERM, 2017. *Groundwater Sampling and Analysis Program.*

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
Fly Ash Landfill

		JKS-45 Upgradient		JKS-57 Upgradient		JKS-58 Water Level Only		JKS-59 Water Level Only	
		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
9	4/4/18 to 4/5/18	46.59	484.87	23.22	483.69	21.86	482.59	17.36	479.09
10	10/30/18 to 10/31/18	46.55	484.91	24.65	482.26	21.63	482.82	19.00	477.45
11	4/9/19 to 4/10/19	46.21	485.25	21.09	485.82	17.79	486.66	17.08	479.37
12	10/22/19 to 10/23/19	46.63	484.83	22.61	484.30	20.90	483.55	19.55	476.90
13	4/28/20 to 4/29/20	46.21	485.25	23.97	482.94	22.17	482.28	18.53	477.92
14	10/20/20 to 10/21/20	46.45	485.01	25.68	481.23	23.29	481.16	20.89	475.56

		JKS-31 Downgradient		JKS-33 Downgradient		JKS-46 Downgradient		JKS-60 Downgradient	
		TOC Elevation	507.45	TOC Elevation	498.71	TOC Elevation	499.08	TOC Elevation	495.70
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	27.01	480.44	18.03	480.68	17.61	481.47	17.15	478.55
2	2/21/17 to 2/23/17	26.50	480.95	17.32	481.39	16.30	482.78	16.34	479.36
3	3/28/17 to 3/30/17	25.98	481.47	16.99	481.72	16.10	482.98	15.93	479.77
4	5/2/17 to 5/4/17	26.60	480.85	17.27	481.44	16.70	482.38	15.96	479.74
5	6/20/17 to 6/21/17	26.70	480.75	18.08	480.63	17.98	481.10	16.43	479.27
6	7/25/17 to 7/26/17	26.77	480.68	18.50	480.21	18.80	480.28	17.00	478.70
7	8/29/17 to 8/30/17	26.58	480.87	18.23	480.48	18.91	480.17	17.52	478.18
8	10/10/17 to 10/11/17	26.73	480.72	18.10	480.61	19.37	479.71	17.20	478.50
9	4/4/18 to 4/5/18	26.86	480.59	17.28	481.43	19.65	479.43	16.95	478.75
10	10/30/18 to 10/31/18	26.70	480.75	18.25	480.46	20.54	478.54	17.75	477.95
11	4/9/19 to 4/10/19	25.10	482.35	17.10	481.61	18.90	480.18	16.53	479.17
12	10/22/19 to 10/23/19	27.04	480.41	18.80	479.91	20.45	478.63	18.03	477.67
13	4/28/20 to 4/29/20	26.51	480.94	18.18	480.53	20.22	478.86	17.76	477.94
14	10/20/20 to 10/21/20	27.59	479.86	19.68	479.03	21.55	477.53	19.33	476.37

NOTES:
btoc = below top of casing
msl = mean sea level

TABLE 2
Groundwater Sampling Summary
CPS Energy - Calaveras Power Station
Fly Ash Landfill

CCR Unit	Well ID	Well Function	Number of Samples Collected in 2016 - 2020	2016 - 2020 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	10/20/20 to 10/21/20	
Fly Ash Landfill	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

		JKS-45 Upgradient													
	Sample Date	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
	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
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
Appendix III - Detection Monitoring															
Boron	mg/L	1.65	1.51	2.27	1.11	2.03	1.91	2.02	2.21	2.28	3.24	2.78	2.98	3.01	2.81
Calcium	mg/L	144	122	184	105	101	103	120	130	128	161 D	195	161 D	141 J	132
Chloride	mg/L	196	187	181 J	160	152	0.803	345 JHD	24.8	118	137	167	144	113	98.7
Fluoride	mg/L	0.0360 U	0.207	0.334	0.337 JH	0.174 J	0.274 JH	0.0960 U	0.131 JH	0.0360 U	0.0360 U	0.0621 UJ	0.101 J	0.100	0.018 U
Sulfate	mg/L	623 D	639 D	661	613 X	602 D	2.95 JH	770 JHD	120	662 D	707	874	698	619	564
pH - Field Collected	SU	5.41	5.17	3.98	5.62	5.13	5.66	5.82	5.60	5.59	5.70	5.03	5.59	5.85	5.94
Total dissolved solids	mg/L	1270	1300	1330	1350	1270	1250	1680 JH	1100	1190	741	1350	1320	1590	1260
Appendix IV - Assessment Monitoring															
Antimony	mg/L	0.000240 U	0.000310 J	0.000400 J	0.00120 U	0.00120 U	0.000240 U	0.000348 J	0.000490 J	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.000534 J	0.00216	0.00595	0.00123 U	0.00123 U	0.000346 J	0.00283	0.000618 J	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.0185	0.0436	0.103	0.0128 J	0.0176 J	0.0114	0.0480	0.0142	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.00261 U	0.000383 J	0.000921 J	0.000654 U	0.000654 U	0.000149 J	0.000408 J	0.000229 J	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.000147 U	0.000147 U	0.000189 J	0.000734 U	0.000734 U	0.000147 U	0.000147 U	0.000147 U	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.00743	0.0152	0.0320	0.00403 J	0.00262 U	0.00313 J	0.0135	0.00272 J	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.00506	0.00465	0.00828	0.00346 J	0.00351 J	0.00277	0.00376	0.00358	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	0.0360 U	0.207	0.334	0.337 JH	0.174 J	0.274 JH	0.0960 U	0.131 JH	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.000571 J	0.00419	0.0117	0.000758 U	0.000758 U	0.000479 J	0.00482	0.000968 J	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.0329	0.0601	0.00238 U	0.0600	0.0639	0.0694	0.0935	0.0781	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.0000263 U	0.0000320 JX	0.0000263 U	0.0000263 U	0.0000300 J	0.0000263 U	0.0000263 U	0.0000263 U	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.00105 J	0.00245	0.00372	0.00128 U	0.00128 U	0.000255 U	0.00115 J	0.000271 J	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.0147	0.0144	0.0174	0.0121	0.0123	0.00990	0.0136	0.0118	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.000332 U	0.000332 U	0.000460 J	0.00166 U	0.00166 U	0.000332 U	0.000332 U	0.000332 U	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	4.78 ± 0.890	4.29 ± 0.612	7.63 ± 0.795	3.29 ± 0.485	4.24 ± 0.671	4.34 ± 0.607	3.65 ± 0.553	5.07 ± 0.718	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	1.92 ± 1.19	4.59 ± 1.34	2.27 ± 1.19	1.42 ± 0.908	2.84 ± 1.15	1.83 ± 0.868	1.86 ± 0.827	1.66 ± 0.847	NR	NR	NR	NR	NR	NR

NOTES:
mg/L: Milligrams per Liter.
SU: Standard Units.
pCi/L: Picocuries per Liter.
-- : Laboratory did not analyze sample for indicated constituent.
D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.
F: Relative percent difference exceeded laboratory control limits.
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
K: Sample analyzed outside of recommended hold time.
L: Bias in sample result likely to be low.
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
Fly Ash Landfill

		JKS-57 Upgradient													
	Sample Date	12/7/16	2/22/17	3/28/17	5/2/17	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	10/20/20
	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
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
Appendix III - Detection Monitoring															
Boron	mg/L	3.19	3.24	3.17	2.67	3.09	3.08	2.98	3.48	4.49	2.81	3.23	4.14	5.97	3.82
Calcium	mg/L	349	362	413	--	290	327	337	393	409	401 D	477 D	479 D	622 J	592
Chloride	mg/L	70.6	76.2	89.6	130	158	311 D	12.5 JH	185	534 D	3770	119	841	3460	3150
Fluoride	mg/L	3.62	3.32	2.84	2.27	3.42	3.43	0.0960 U	3.28	4.29	2.31	3.03	2.72	4.17	2.99
Sulfate	mg/L	2780 D	1980 DX	2090	2470 D	3080	3410 D	450 JH	3610	4260 D	5000	3570	4240	6510	3890
pH - Field Collected	SU	6.73	6.08	5.13	6.63	6.37	6.72	6.60	6.70	6.63	6.35	6.20	6.19	6.49	6.33
Total dissolved solids	mg/L	4770	3780	3320	4060	5800	5920	850 JH	5850	7390	9750	6000	6700	15100	12200
Appendix IV - Assessment Monitoring															
Antimony	mg/L	0.00120 U	0.000240 U	0.000240 U	0.000240 U	0.00120 U	0.000240 U	0.000240 U	0.000240 U	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00138 J	0.000630 J	0.000654 J	0.000561 J	0.00123 U	0.000480 J	0.000519 J	0.000486 J	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.0311	0.0211	0.0208	0.0174	0.0164 J	0.0149	0.0128	0.0145	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000654 U	0.000131 U	0.000161 J	0.000131 U	0.000654 U	0.000131 U	0.000131 U	0.000131 U	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.000734 U	0.000147 U	0.000147 U	0.000147 U	0.000734 U	0.000147 U	0.000147 U	0.000147 U	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.00262 U	0.000687 J	0.000525 U	0.000525 U	0.00262 U	0.000739 J	0.000816 J	0.00104 J	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.000520 J	0.00232	0.000297 J	0.000449 J	0.000407 J	0.000748 J	0.000195 J	0.000322 J	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	3.62	3.32	2.84	2.27	3.42	3.43	0.0960 U	3.28	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.000758 U	0.000152 U	0.000152 U	0.000152 U	0.000758 U	0.000152 U	0.000256 J	0.000152 U	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.545	0.287 X	0.00238 U	--	0.533	0.649	0.671	0.733	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.0000263 U	0.0000300 J	0.0000263 U	0.0000580 J	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.00128 U	0.000385 J	0.000278 J	0.000255 U	0.00128 U	0.000329 J	0.000283 J	0.000255 U	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.00237 J	0.000664 J	0.000594 J	0.000561 J	0.00227 U	0.000612 J	0.000858 J	0.000697 J	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.00166 U	0.000332 U	0.000332 U	0.000332 U	0.00166 U	0.000332 U	0.000332 U	0.000332 U	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	0.592 ± 0.325	0.322 ± 0.157	0.519 ± 0.219	0.356 ± 0.176	0.273 ± 0.273	0.338 ± 0.221	0.255 ± 0.176	0.0986 ± 0.153	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	1.15 ± 0.895	2.31 ± 1.03	0.794 ± 0.818	2.86 ± 1.27	0.903 ± 0.843	0.786 ± 0.900	1.9 ± 0.894	1.73 ± 1.00	NR	NR	NR	NR	NR	NR

NOTES:
mg/L: Milligrams per Liter.
SU: Standard Units.
pCi/L: Picocuries per Liter.
-- : Laboratory did not analyze sample for indicated constituent.
D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.
F: Relative percent difference exceeded laboratory control limits.
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
K: Sample analyzed outside of recommended hold time.
L: Bias in sample result likely to be low.
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
Fly Ash Landfill

		JKS-31 Downgradient													
	Sample Date	12/8/16	2/21/17	3/29/17	5/2/17	6/20/17	7/25/17	8/29/17	10/10/17	4/4/18	10/30/18	4/10/19	10/22/19	4/28/20	10/20/20
	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
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
Appendix III - Detection Monitoring															
Boron	mg/L	0.446	0.580	0.642	0.499	0.573	0.510	0.494	0.553	0.485	0.514	0.557	0.483	0.429	0.379
Calcium	mg/L	188	384 X	317	--	216	171	230	228	187	208 D	295 D	200 D	171 J	216
Chloride	mg/L	223 D	477 D	303 D	317	285 D	0.280 UDXF	0.347 U	288	253 D	256	322	267	272	319
Fluoride	mg/L	0.801	0.186 J	0.548	0.865	0.661	0.979 JHXF	0.0960 U	0.735 JH	0.839	0.694	0.791 U	0.784	1.00	0.786
Sulfate	mg/L	697 D	1130 D	768 D	875	782 D	1.17 JHDXF	0.160 JH	803	771 D	774	852	819	877	914
pH - Field Collected	SU	3.94	4.04	6.34	4.29	3.84	5.14	3.99	3.98	3.74	3.07	3.56	2.62	3.70	3.68
Total dissolved solids	mg/L	1470	2290	2430	1850	1730	1500	25.0 U	1890	1420	1390	1660	1620	1890	1700
Appendix IV - Assessment Monitoring															
Antimony	mg/L	0.00120 U	0.000240 U	0.000295 J	0.000301 J	0.00120 U	0.000527 J	0.000240 U	0.000559 J	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00151 J	0.0110	0.00834	0.00501	0.00363 J	0.00134 J	0.00556	0.00279	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.0167 J	0.0141	0.0198	0.0136	0.0127 J	0.0229	0.0129	0.0122	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.00793 J	0.00851	0.00885	0.00814	0.00865 J	0.00593	0.00827	0.00857	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.000734 U	0.000147 U	0.000147 U	0.000147 U	0.000734 U	0.000147 U	0.000147 U	0.000147 U	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.0200 J	0.000663 J	0.000596 J	0.000525 U	0.00262 U	0.000890 J	0.000849 J	0.000760 J	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.000440 J	0.0399	0.0623	0.0227	0.0173	0.0113	0.0302	0.0192	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	0.801	0.186 J	0.548	0.865	0.661	0.979 JHXF	0.0960 U	0.735 JH	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.000758 U	0.000415 J	0.000223 J	0.000344 J	0.000758 U	0.000348 J	0.00233	0.000580 J	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.533	0.510	0.00238 U	--	0.572	0.484	0.615	0.590	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.0000263 U	0.0000263 U	0.0000263 U	0.0000360 J	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.00128 U	0.000255 U	0.000255 U	0.000255 U	0.00128 U	0.000255 U	0.000255 U	0.000255 U	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.00227 U	0.00163 J	0.00175 J	0.00125 J	0.00227 U	0.00162 J	0.00177 J	0.00155 J	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.00166 U	0.000332 U	0.000332 U	0.000332 U	0.00166 U	0.000332 U	0.000332 U	0.000332 U	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	2.46 ± 0.574	2.60 ± 0.473	1.44 ± 0.425	1.40 ± 0.338	1.40 ± 0.403	1.28 ± 0.341	1.36 ± 0.399	1.01 ± 0.323	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	7.35 ± 1.59	8.16 ± 2.15	5.33 ± 1.47	5.85 ± 1.79	4.63 ± 1.23	4.44 ± 1.37	3.58 ± 1.22	4.96 ± 1.43	NR	NR	NR	NR	NR	NR

NOTES:
mg/L: Milligrams per Liter.
SU: Standard Units.
pCi/L: Picocuries per Liter.
-- : Laboratory did not analyze sample for indicated constituent.
D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.
F: Relative percent difference exceeded laboratory control limits.
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
K: Sample analyzed outside of recommended hold time.
L: Bias in sample result likely to be low.
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
Fly Ash Landfill

		JKS-33 Downgradient													
	Sample Date	12/7/16	2/22/17	3/28/17	5/2/17	6/20/17	7/26/17	8/29/17	10/10/17	4/5/18	10/30/18	4/10/19	10/22/19	4/28/20	10/20/20
	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
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
Appendix III - Detection Monitoring															
Boron	mg/L	0.940	1.02	1.05	0.987	1.09	1.01	1.03	1.11	0.990	0.791	1.13	1.18	1.18	1.09
Calcium	mg/L	564	600	553	--	563	558	567	531	552	385 D	631	553 D	573 J	493
Chloride	mg/L	735 D	679 D	731 D	690	692 D	693 D	125 JH	666	786	758	806	773 JLKD	756	751
Fluoride	mg/L	1.86	1.08	1.77	1.36	1.81	1.34	0.480 U	1.69	1.85	1.21	1.23	1.24 JLK	1.68	0.864
Sulfate	mg/L	1850 D	1670 D	1780 D	1710	1690 D	1710 D	3170 D	1640	1810	1740	1640	1690 JLKD	1620	1650
pH - Field Collected	SU	6.51	5.90	4.91	6.52	6.15	5.71	6.49	6.49	6.33	6.26	5.98	5.18	6.30	6.23
Total dissolved solids	mg/L	4000	3990	4310	4410	3750	4070	3580	4320	3970	3320	2650 JLK	4040 JLK	4370	4060
Appendix IV - Assessment Monitoring															
Antimony	mg/L	0.00120 U	0.000240 U	0.00120 U	0.000240 U	0.00120 U	0.000240 U	0.000240 U	0.000240 U	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00123 U	0.000246 U	0.00123 U	0.000257 J	0.00123 U	0.000279 J	0.000316 J	0.000246 U	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.0326	0.0318	0.0297	0.0268	0.0279	0.0274	0.0263	0.0264	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000654 U	0.000131 U	0.000709 J	0.000131 U	0.000654 U	0.000131 U	0.000131 U	0.000131 U	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.000734 U	0.000147 U	0.000734 U	0.000147 U	0.000734 U	0.000147 U	0.000147 U	0.000147 U	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.00262 U	0.000611 J	0.00262 U	0.000525 U	0.00262 U	0.000525 U	0.00113 J	0.00108 J	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.000690 J	0.000433 J	0.000487 J	0.000435 J	0.000512 J	0.000731 J	0.000902 J	0.000554 J	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	1.86	1.08	1.77	1.36	1.81	1.34	0.480 U	1.69	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.000758 U	0.000152 U	0.000758 U	0.000152 U	0.000758 U	0.000152 U	0.000157 J	0.000152 U	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.000476 U	0.000476 U	0.00238 U	--	0.194	0.181	0.255	0.176	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.0000263 U	0.0000263 U	0.0000263 U	0.0000720 J	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.00128 U	0.000255 U	0.00128 U	0.000255 U	0.00128 U	0.000255 U	0.000255 U	0.000255 U	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.0314	0.0356	0.0389	0.0368	0.0451	0.0495	0.0546	0.0342	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.00166 U	0.000332 U	0.00166 U	0.000332 U	0.00166 U	0.000332 U	0.000332 U	0.000332 U	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	2.04 ± 0.439	1.14 ± 0.328	2.36 ± 0.522	1.81 ± 0.365	1.73 ± 0.428	1.55 ± 0.422	1.37 ± 0.394	2.23 ± 0.491	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	2.95 ± 1.16	3.52 ± 1.07	4.69 ± 1.33	3.24 ± 1.26	1.73 ± 0.902	4.11 ± 1.19	1.98 ± 1.01	2.99 ± 1.26	NR	NR	NR	NR	NR	NR

NOTES:
mg/L: Milligrams per Liter.
SU: Standard Units.
pCi/L: Picocuries per Liter.
-- : Laboratory did not analyze sample for indicated constituent.
D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.
F: Relative percent difference exceeded laboratory control limits.
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
K: Sample analyzed outside of recommended hold time.
L: Bias in sample result likely to be low.
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
Fly Ash Landfill

		JKS-46 Downgradient													
	Sample Date	12/6/16	2/22/17	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	10/20/20
	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
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
Appendix III - Detection Monitoring															
Boron	mg/L	0.902	0.837	0.645	0.799	0.920	0.801	0.788	1.01	0.828	0.702	0.997	1.01	0.864	0.530
Calcium	mg/L	120	132	145	115	126	117	137	145	140	126 D	212 D	172 D	143 J	107
Chloride	mg/L	11.6	11.8	12.2	10.5	12.6	11.8	327 JHD	11.7	11.6	11.6	13.2	13.0	17.9	23.4
Fluoride	mg/L	1.51	1.38	1.03	1.59	2.25	2.34	0.460 JH	1.83	2.16	1.68	2.52	2.22	1.61 J	0.764
Sulfate	mg/L	700 D	692 D	608 D	677	0.0460 U	780 D	288 JHD	800	864 D	855	1030	1020	1180	734
pH - Field Collected	SU	3.60	3.55	2.10	3.57	2.96	3.54	3.21	3.20	3.15	3.00	2.85	2.62	3.10	3.01
Total dissolved solids	mg/L	1160	1040	926	1030	1270	1180	1170 JH	1390	1300	1220	1550	1500	1970	1160
Appendix IV - Assessment Monitoring															
Antimony	mg/L	0.000240 U	0.000240 U	0.000240 U	0.00120 U	0.00120 U	0.000240 U	0.000240 U	0.000240 U	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00190 J	0.00227	0.00144 J	0.00196 J	0.00277 J	0.00253	0.00295	0.00290	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.0429	0.0356	0.0308	0.0307	0.0364	0.0317	0.0323	0.0331	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.00381 J	0.00362	0.00340	0.00399 J	0.00459 J	0.00415	0.00462	0.00479	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.00110 J	0.000988 J	0.00121 J	0.00120 J	0.00101 J	0.00133 J	0.00141 J	0.00136 J	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.000942 J	0.00140 J	0.00104 J	0.00262 U	0.00262 U	0.00156 J	0.00191 J	0.00202 J	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.0303	0.0324	0.0329	0.0367	0.0387	0.0383	0.0412	0.0414	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	1.51	1.38	1.03	1.59	2.25	2.34	0.460 JH	1.83	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.0162	0.0134	0.0109	0.0144	0.0192	0.0201	0.0236	0.0257	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.0646	0.000476 U	0.00238 U	0.0673	0.0749	0.0799	0.107	0.0863	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
Molybdenum	mg/L	0.000255 U	0.000255 U	0.000255 U	0.00128 U	0.00128 U	0.000255 U	0.000255 U	0.000255 U	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.0255	0.0266	0.0205	0.0247	0.0296	0.0257	0.0298	0.0283	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.00293	0.00292	0.00235	0.00263 J	0.00314 J	0.00300	0.00335	0.00345	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	3.16 ± 0.701	1.69 ± 0.387	1.80 ± 0.448	1.2 0± 0.315	1.82 ± 0.420	1.40 ± 0.353	1.52 ± 0.375	1.99 ± 0.459	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	4.98 ± 1.41	2.17 ± 1.48	2.96 ± 1.24	1.98 ± 0.957	4.39 ± 1.13	2.80 ± 1.05	2.28 ± 1.13	3.82 ± 1.15	NR	NR	NR	NR	NR	NR

NOTES:
mg/L: Milligrams per Liter.
SU: Standard Units.
pCi/L: Picocuries per Liter.
-- : Laboratory did not analyze sample for indicated constituent.
D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.
F: Relative percent difference exceeded laboratory control limits.
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
K: Sample analyzed outside of recommended hold time.
L: Bias in sample result likely to be low.
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
Fly Ash Landfill

		JKS-60 Downgradient													
	Sample Date	12/7/16	2/22/17	3/28/17	5/2/17	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	10/20/20
	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
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
Appendix III - Detection Monitoring															
Boron	mg/L	0.655	0.504	0.449	0.456	0.442	0.394	0.436	0.479	0.399	0.334	0.405	0.377	0.325	0.433
Calcium	mg/L	433	375	290	--	379	336	350	383	363	382 D	501 D	524 D	530 J	380
Chloride	mg/L	411 D	311 D	311 D	285	300 D	319 D	287 JHD	352	366 D	202	149 X	183	168	235
Fluoride	mg/L	0.0360 U	0.319	0.324	0.421	0.306	0.338 JH	0.0960 U	0.284 JH	0.22 J	0.239 J	0.187 UJ	0.231 J	0.188	0.018 U
Sulfate	mg/L	1480 D	999 D	1010 D	976 X	1020 D	818 D	760 JHDX	759	801 D	906	968	1320	1280	963
pH - Field Collected	SU	5.82	5.38	4.21	5.75	6.07	6.44	5.93	5.97	6.09	6.42	5.93	6.23	6.61	6.16
Total dissolved solids	mg/L	2790	2340	2020	2110	2510	2120	1450 JH	2300	1860	1910	2010	2820	3180	2520
Appendix IV - Assessment Monitoring															
Antimony	mg/L	0.00120 U	0.000240 U	0.000240 U	0.000240 U	0.00120 U	0.000240 U	0.000240 U	0.000240 U	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00123 U	0.000861 J	0.000592 J	0.000366 J	0.00123 U	0.000367 J	0.000381 J	0.000266 J	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.0702	0.0491	0.0465	0.0450	0.0469	0.0454	0.0490	0.0503	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000654 U	0.000131 U	0.000131 U	0.000131 U	0.000654 U	0.000131 U	0.000131 U	0.000131 U	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.000774 J	0.000778 J	0.000786 J	0.000695 J	0.000734 U	0.000359 J	0.000608 J	0.000699 J	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.00262 U	0.000743 J	0.000525 U	0.000525 U	0.00262 U	0.000690 J	0.00204 J	0.00100 J	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.115	0.0542	0.0423	0.0389	0.0210	0.00896	0.0166	0.0183	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	0.0360 U	0.319	0.324	0.421	0.306	0.338 JH	0.0960 U	0.284 JH	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.000758 U	0.000152 U	0.000152 U	0.000152 U	0.000758 U	0.000152 U	0.000152 U	0.000216 J	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.000476 U	0.000476 U	0.00238 U	--	0.0305	0.0179 J	0.0635	0.0314	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.0000263 U	0.0000263 U	0.0000263 U	0.0000370 J	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.00128 U	0.000726 J	0.000622 J	0.000715 J	0.00148 J	0.00162 J	0.00124 J	0.00103 J	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.00227 U	0.00168 J	0.00132 J	0.00981	0.0390	0.0244	0.00761	0.00745	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.00166 U	0.000425 J	0.000412 J	0.000403 J	0.00166 U	0.000332 U	0.000372 J	0.000387 J	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	3.01 ± 0.578	2.29 ± 0.421	2.74 ± 0.572	1.71 ± 0.378	0.914 ± 0.341	1.57 ± 0.381	1.34 ± 0.378	4.61 ± 0.650	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	2.57 ± 1.15	2.62 ± 1.04	0.838 ± 0.826	0.269 ± 0.713	2.24 ± 1.02	0.701 ± 0.850	1.72 ± 0.940	2.48 ± 1.60	NR	NR	NR	NR	NR	NR

NOTES:
mg/L: Milligrams per Liter.
SU: Standard Units.
pCi/L: Picocuries per Liter.
-- : Laboratory did not analyze sample for indicated constituent.
D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.
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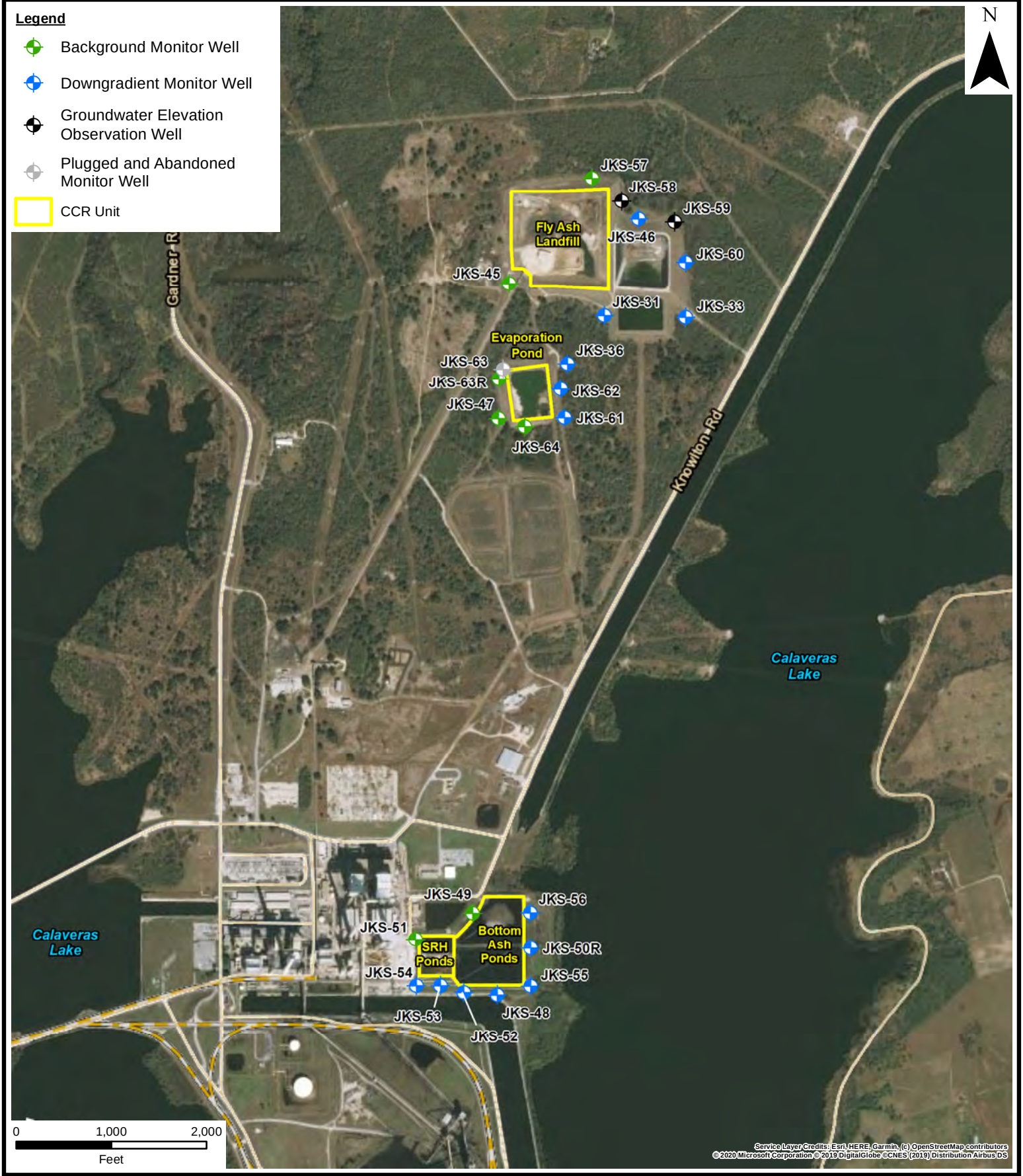
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
K: Sample analyzed outside of recommended hold time.
L: Bias in sample result likely to be low.
NR: Analysis of this constituent not required for detection monitoring.
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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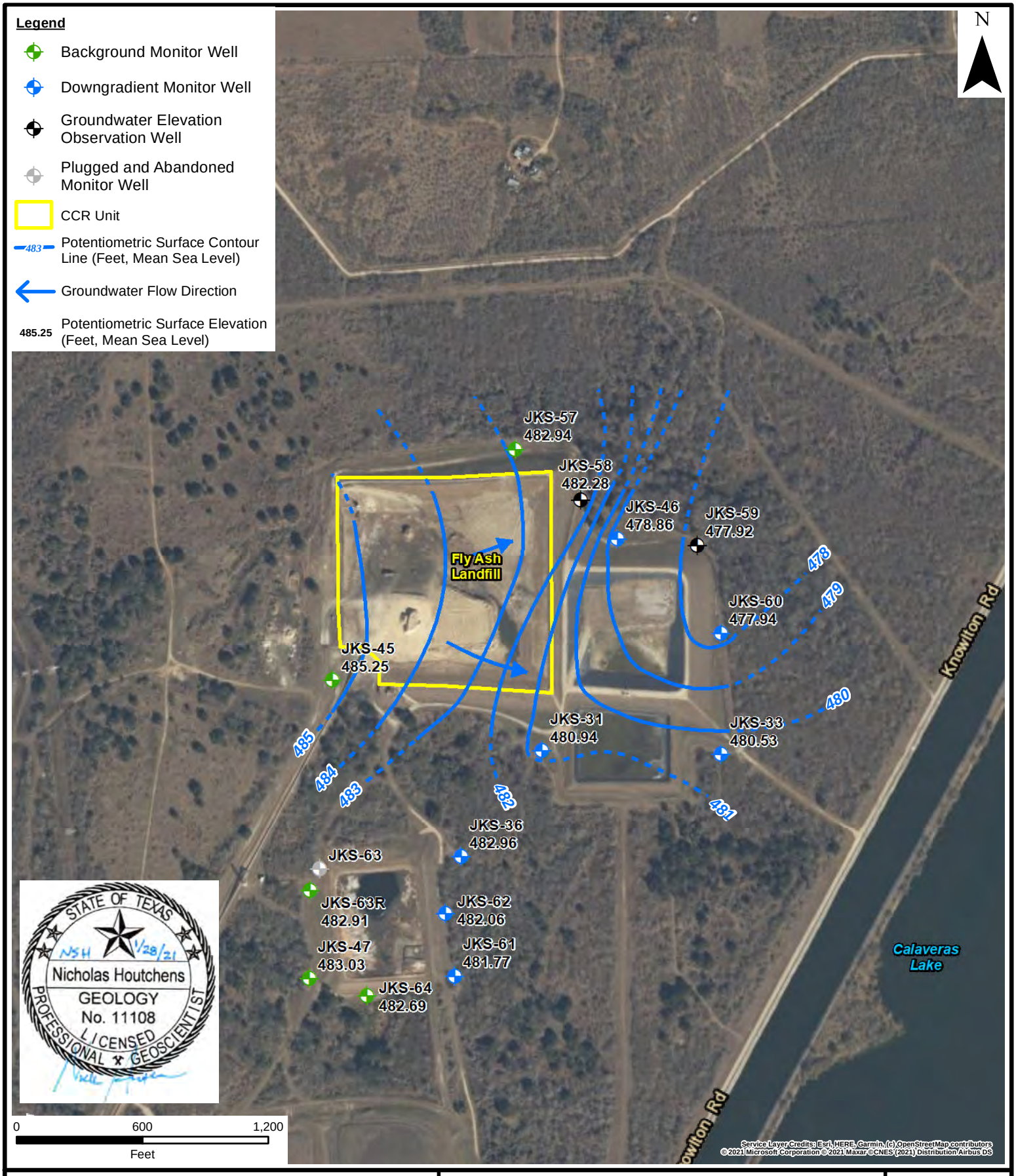
FIGURE 1
CCR WELL NETWORK LOCATION MAP
CPS Energy - Calaveras Power Station
San Antonio, Texas

ERM



Environmental Resources Management

DESIGN:	NH	DRAWN:	LSC	CHKD.:	WZ
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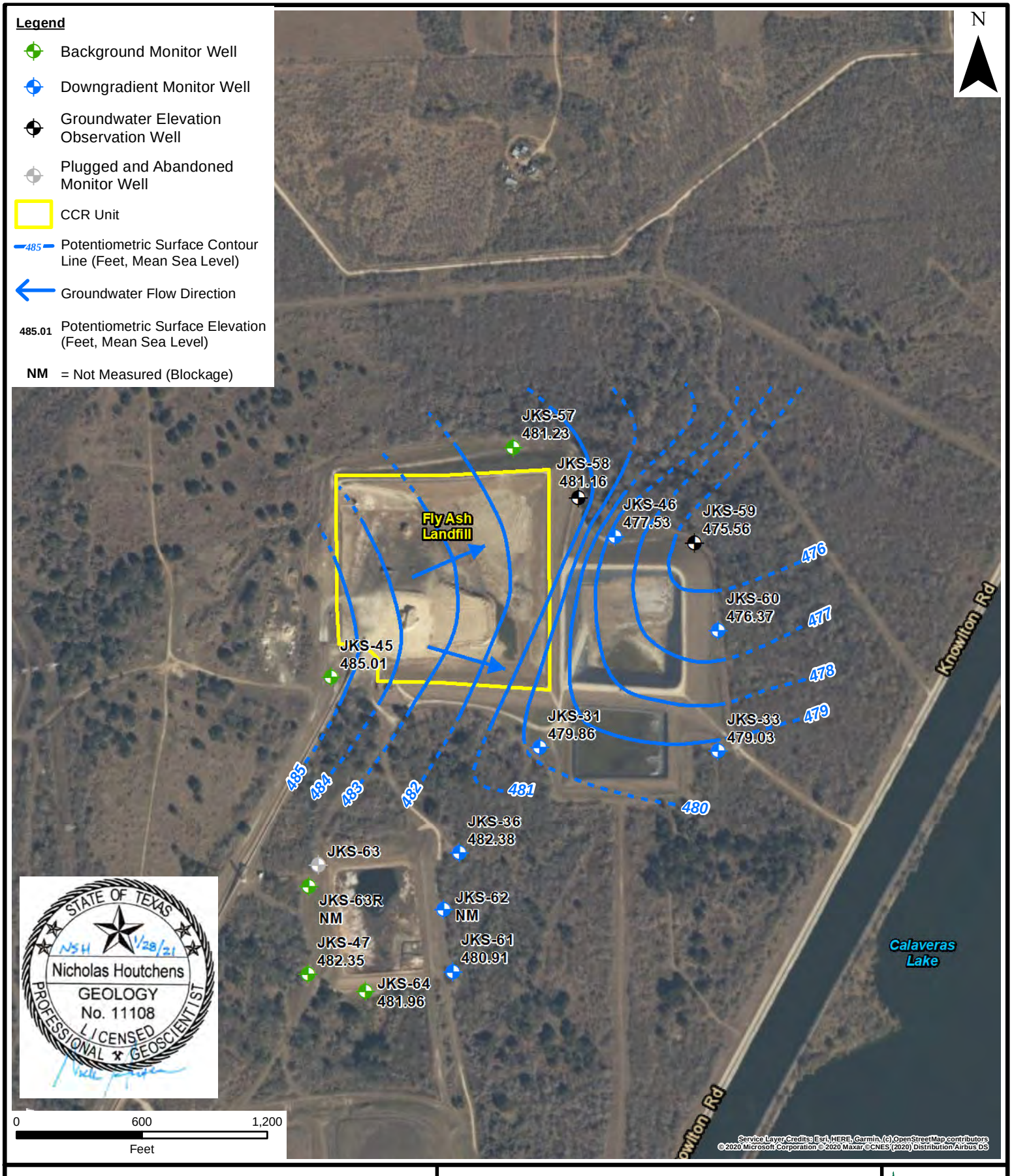
FIGURE 2A
POTENTIOMETRIC SURFACE MAP - APRIL 2020
Fly Ash Landfill CCR Unit
CPS Energy - Calaveras Power Station
San Antonio, Texas

ERM



Environmental Resources Management

DESIGN:	NH	DRAWN:	LSC	CHKD.:	WZ
DATE:	1/22/2021	SCALE:	AS SHOWN	REVISION:	2

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FIGURE 2B
POTENTIOMETRIC SURFACE MAP - OCTOBER 2020
Fly Ash Landfill CCR Unit
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
Fly Ash Landfill

Analyte	N	Num Detects	Percent Detect	DF	KW Statistic	p-value	Conclusion	UPL Type
Boron	28	28	100.00%	1	14	<0.001	Significant Difference	Intrawell
Calcium	27	27	100.00%	1	19.5	<0.001	Significant Difference	Intrawell
Chloride	28	28	100.00%	1	0.931	0.335	No Significant Difference	Interwell
Fluoride	28	22	78.57%	1	16.6	<0.001	Significant Difference	Intrawell
pH	28	28	100.00%	1	15.8	<0.001	Significant Difference	Intrawell
Sulfate	28	28	100.00%	1	15.6	<0.001	Significant Difference	Intrawell
Total dissolved solids	28	28	100.00%	1	15.3	<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
Fly Ash Landfill

Analyte	Well	Units	N	Num Detects	Percent Detect	Min ND	Max ND	Min Detect	Median	Mean	Max Detect	SD	CV	Distribution
Boron	JKS-45	mg/L	14	14	100.00%			1.11	2.24	2.27	3.24	0.627	0.27580402	Normal
Boron	JKS-57	mg/L	14	14	100.00%			2.67	3.21	3.53	5.97	0.864	0.24512105	NDD
Calcium	JKS-45	mg/L	14	14	100.00%			101	131	138	195	29	0.21065371	Normal
Calcium	JKS-57	mg/L	13	13	100.00%			290	401	419	622	99.7	0.23770679	Normal
Chloride	Pooled	mg/L	28	28	100.00%			0.803	155	533	3770	1050	1.96750993	NDD
Fluoride	JKS-45	mg/L	14	9	64.29%	0.009	0.048	0.0621	0.1	0.131	0.337	0.117	0.89567359	Lognormal
Fluoride	JKS-57	mg/L	14	13	92.86%	0.048	0.048	2.27	3.16	2.98	4.29	1.03	0.34537829	NDD
pH	JKS-45	SU	14	14	100.00%			3.98	5.6	5.44	5.94	0.5	0.09200693	NDD
pH	JKS-57	SU	14	14	100.00%			5.13	6.43	6.37	6.73	0.416	0.06530933	NDD
Sulfate	JKS-45	mg/L	14	14	100.00%			2.95	631	582	874	235	0.40375289	NDD
Sulfate	JKS-57	mg/L	14	14	100.00%			450	3490	3380	6510	1460	0.43224959	Normal
Total dissolved solids	JKS-45	mg/L	14	14	100.00%			741	1280	1290	1680	215	0.1674253	NDD
Total dissolved solids	JKS-57	mg/L	14	14	100.00%			850	5880	6540	15100	3700	0.56576224	Normal

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)
NDD: No Discernible Distribution

APPENDIX B - TABLE 3
Potential Outliers in Upgradient Wells
Calaveras Power Station
Fly Ash Landfill

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
JKS-57	JKS 57581381-013	4/4/2018	Boron	mg/L	TRUE	4.49	Intrawell	NDD		X						
JKS-57	JKS-57-20200429-CCR	4/28/2020	Boron	mg/L	TRUE	5.97	Intrawell	NDD	X	X	X		X		0	
JKS-45	JKS-45561478-015	8/29/2017	Chloride	mg/L	TRUE	345	Interwell	NDD		X			X			
JKS-57	JKS 57558406-015	7/25/2017	Chloride	mg/L	TRUE	311	Interwell	NDD		X			X			
JKS-57	JKS 57581381-013	4/4/2018	Chloride	mg/L	TRUE	534	Interwell	NDD	X	X	X		X		0	
JKS-57	JKS 57603951-015	10/30/2018	Chloride	mg/L	TRUE	3770	Interwell	NDD	X	X	X	X	X	X	X	X
JKS-57	JKS-57005	10/23/2019	Chloride	mg/L	TRUE	841	Interwell	NDD	X	X	X		X		0	
JKS-57	JKS-57-20200429-CCR	4/28/2020	Chloride	mg/L	TRUE	3460	Interwell	NDD	X	X	X	X	X	X	X	X
JKS-57	JKS-57-20201020-CCR	10/20/2020	Chloride	mg/L	TRUE	3150	Interwell	NDD	X	X	X	X	X	X	X	X
JKS-57	JKS-57-20200429-CCR	4/28/2020	Fluoride	mg/L	TRUE	4.17	Intrawell	NDD		X						
JKS-45	JKS-45-WG-20170328	3/28/2017	pH	SU	TRUE	3.98	Intrawell	NDD	X	X	X	X	X	X	0	
JKS-57	JKS-57-WG-20170328	3/28/2017	pH	SU	TRUE	5.13	Intrawell	NDD	X	X	X	X	X	X	0	
JKS-45	JKS45620556-016	4/9/2019	Sulfate	mg/L	TRUE	874	Intrawell	NDD	X	X	X		X		0	
JKS-45	JKS-45561478-015	8/29/2017	Total dissolved solids	mg/L	TRUE	1680	Intrawell	NDD	X	X	X	X	X	X	0	
JKS-45	JKS-45-20200429-CCR	4/28/2020	Total dissolved solids	mg/L	TRUE	1590	Intrawell	NDD	X	X	X		X		0	
JKS-57	JKS 57603951-015	10/30/2018	Total dissolved solids	mg/L	TRUE	9750	Intrawell	Normal		X						
JKS-57	JKS-57-20200429-CCR	4/28/2020	Total dissolved solids	mg/L	TRUE	15100	Intrawell	Normal		X						
JKS-57	JKS-57-20201020-CCR	10/20/2020	Total dissolved solids	mg/L	TRUE	12200	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
Fly Ash Landfill

Analyte	UPL Type	Well	N	Num Detects	Percent Detect	p-value	tau	Conclusion
Boron	Intrawell	JKS-45	14	14	100.00%	<0.001	0.648	Increasing Trend
Boron	Intrawell	JKS-57	14	14	100.00%	0.157	0.297	Stable, No Trend
Calcium	Intrawell	JKS-45	14	14	100.00%	0.228	0.243	Stable, No Trend
Calcium	Intrawell	JKS-57	13	13	100.00%	0.00162	0.641	Increasing Trend
Chloride	Interwell	JKS-45, JKS-57	25	25	100.00%	0.872	0.0267	Stable, No Trend
Fluoride	Intrawell	JKS-45	14	9	64.29%	0.103	-0.338	Stable, No Trend
Fluoride	Intrawell	JKS-57	14	13	92.86%	0.83	-0.0549	Stable, No Trend
pH	Intrawell	JKS-45	14	14	100.00%	0.0623	0.376	Stable, No Trend
pH	Intrawell	JKS-57	14	14	100.00%	0.324	-0.199	Stable, No Trend
Sulfate	Intrawell	JKS-45	14	14	100.00%	0.747	0.0769	Stable, No Trend
Sulfate	Intrawell	JKS-57	14	14	100.00%	0.00196	0.604	Increasing Trend
Total dissolved solids	Intrawell	JKS-45	14	14	100.00%	0.869	-0.0333	Stable, No Trend
Total dissolved solids	Intrawell	JKS-57	14	14	100.00%	<0.001	0.648	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 (a=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
Fly Ash Landfill

Analyte	UPL Type	Trend	Well	N	Num Detects	Percent Detects	LPL	UPL	Units	ND Adjustment	Transformation	Alpha	Method	Final LPL	Final UPL
Boron	Intrawell	Increasing Trend	JKS-45	14	14	100.00%		4.22	mg/L	None	No	0.00188	NP Detrended UPL		
Boron	Intrawell	Stable, No Trend	JKS-57	14	14	100.00%		5.97	mg/L	None	No	0.00861	NP Intra (normality) 1 of 2		X
Calcium	Intrawell	Stable, No Trend	JKS-45	14	14	100.00%		200	mg/L	None	No	0.00188	Param Intra 1 of 2		
Calcium	Intrawell	Increasing Trend	JKS-57	13	13	100.00%		673	mg/L	None	No	0.00188	NP Detrended UPL		X
Chloride	Interwell	Stable, No Trend	JKS-45, JKS-57	25	25	100.00%		841	mg/L	None	No	0.00274	NP Inter (normality) 1 of 2		X
Fluoride	Intrawell	Stable, No Trend	JKS-45	14	9	64.29%		2.76	mg/L	Aitchison`s	ln(x)	0.00188	Param Intra 1 of 2		
Fluoride	Intrawell	Stable, No Trend	JKS-57	14	13	92.86%		4.29	mg/L	None	No	0.00861	NP Intra (normality) 1 of 2		X
pH	Intrawell	Stable, No Trend	JKS-45	14	14	100.00%	3.98	5.94	SU	None	No	0.0172	NP Intra (normality) 1 of 2	X	
pH	Intrawell	Stable, No Trend	JKS-57	14	14	100.00%	5.13	6.73	SU	None	No	0.0172	NP Intra (normality) 1 of 2		X
Sulfate	Intrawell	Stable, No Trend	JKS-45	14	14	100.00%		874	mg/L	None	No	0.00861	NP Intra (normality) 1 of 2		
Sulfate	Intrawell	Increasing Trend	JKS-57	14	14	100.00%		9320	mg/L	None	No	0.00188	NP Detrended UPL		X
Total dissolved solids	Intrawell	Stable, No Trend	JKS-45	14	14	100.00%		1750	mg/L	None	No	0.00188	Param Intra 1 of 2		
Total dissolved solids	Intrawell	Increasing Trend	JKS-57	14	14	100.00%		15900	mg/L	None	No	0.00188	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.

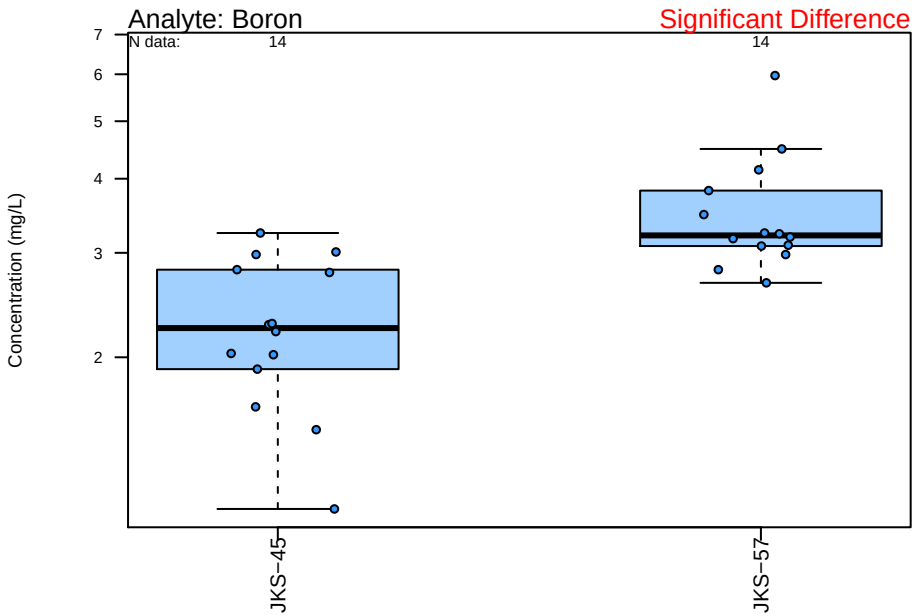
APPENDIX B - TABLE 6
Comparisons of Downgradient Wells to UPLs
Calaveras Power Station
Fly Ash Landfill

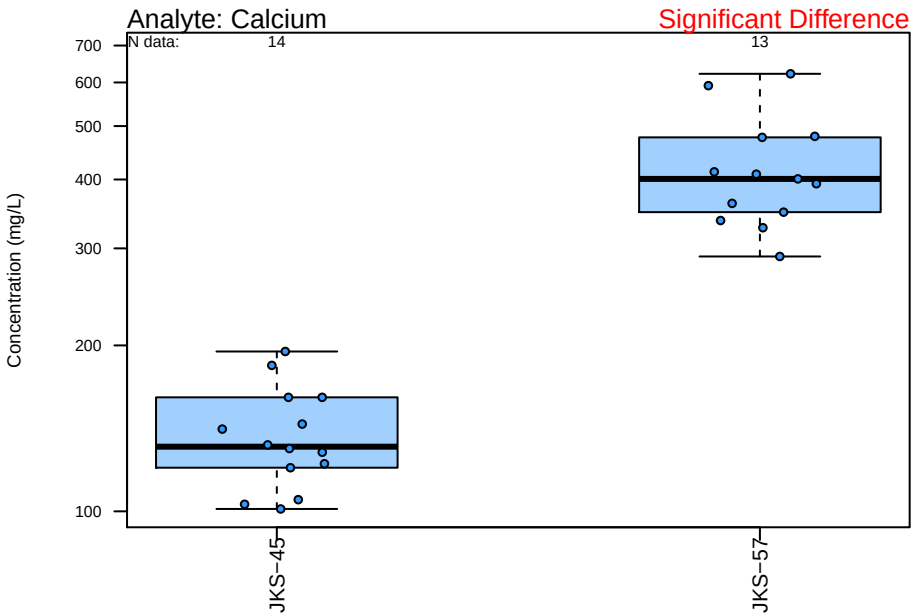
Analyte	Well	LPL	UPL	Units	Recent Date	Observation	Qualifier	Obs > UPL	Notes	Mann Kendall p-value	Mann Kendall tau	WRS p-value	WRS Conclusion	Exceed Median	Overall Conclusion
Boron	JKS-31		5.97	mg/L	10/20/2020	0.379						1	NS		No Exceedance
Boron	JKS-33		5.97	mg/L	10/20/2020	1.09						1	NS		No Exceedance
Boron	JKS-46		5.97	mg/L	10/20/2020	0.53						1	NS		No Exceedance
Boron	JKS-60		5.97	mg/L	10/20/2020	0.433						1	NS		No Exceedance
Calcium	JKS-31		673	mg/L	10/20/2020	216						0.999	NS		No Exceedance
Calcium	JKS-33		673	mg/L	10/20/2020	493						0.999	NS		No Exceedance
Calcium	JKS-46		673	mg/L	10/20/2020	107						1	NS		No Exceedance
Calcium	JKS-60		673	mg/L	10/20/2020	380						1	NS		No Exceedance
Chloride	JKS-31		841	mg/L	10/20/2020	319						1	NS		No Exceedance
Chloride	JKS-33		841	mg/L	10/20/2020	751						1	NS		No Exceedance
Chloride	JKS-46		841	mg/L	10/20/2020	23.4						1	NS		No Exceedance
Chloride	JKS-60		841	mg/L	10/20/2020	235						1	NS		No Exceedance
Fluoride	JKS-31		4.29	mg/L	10/20/2020	0.786						1	NS		No Exceedance
Fluoride	JKS-33		4.29	mg/L	10/20/2020	0.864						1	NS		No Exceedance
Fluoride	JKS-46		4.29	mg/L	10/20/2020	0.764						1	NS		No Exceedance
Fluoride	JKS-60		4.29	mg/L	10/20/2020	0.009	ND					1	NS		No Exceedance
pH	JKS-31	3.98	6.73	SU	10/20/2020	3.68		X	Trend Test: Decreasing Trend	0.00457	-0.56	0.265	NS		UPL Exceedance
pH	JKS-33	3.98	6.73	SU	10/20/2020	6.23						1	NS		No Exceedance
pH	JKS-46	3.98	6.73	SU	10/20/2020	3.01		X	Trend Test: Decreasing Trend	0.0264	-0.451	<0.001	***	X	Both Exceedance
pH	JKS-60	3.98	6.73	SU	10/20/2020	6.16						1	NS		No Exceedance
Sulfate	JKS-31		9320	mg/L	10/20/2020	914						1	NS		No Exceedance
Sulfate	JKS-33		9320	mg/L	10/20/2020	1650						1	NS		No Exceedance
Sulfate	JKS-46		9320	mg/L	10/20/2020	734						1	NS		No Exceedance
Sulfate	JKS-60		9320	mg/L	10/20/2020	963						1	NS		No Exceedance
Total dissolved solids	JKS-31		15900	mg/L	10/20/2020	1700						1	NS		No Exceedance
Total dissolved solids	JKS-33		15900	mg/L	10/20/2020	4060						1	NS		No Exceedance
Total dissolved solids	JKS-46		15900	mg/L	10/20/2020	1160						1	NS		No Exceedance
Total dissolved solids	JKS-60		15900	mg/L	10/20/2020	2520						1	NS		No Exceedance

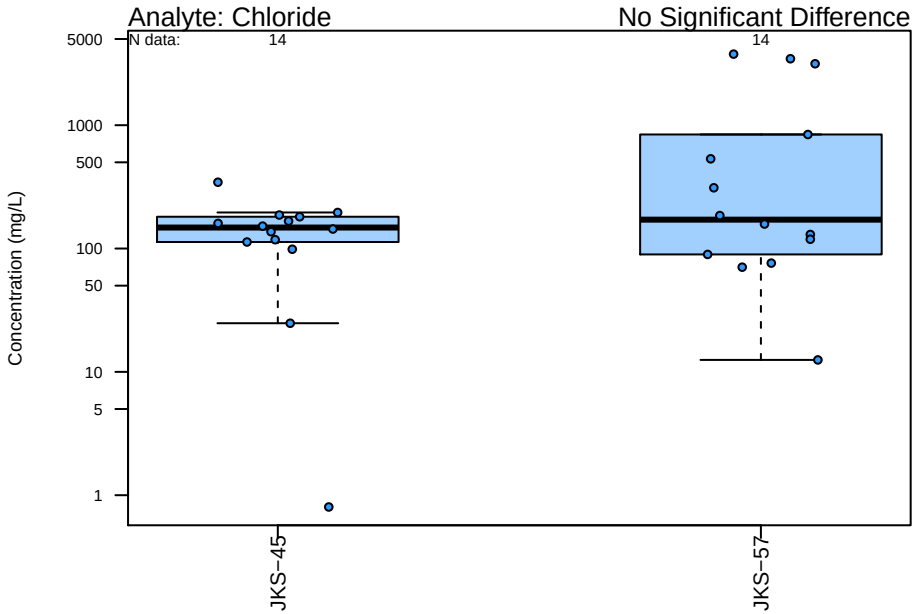
NOTES:

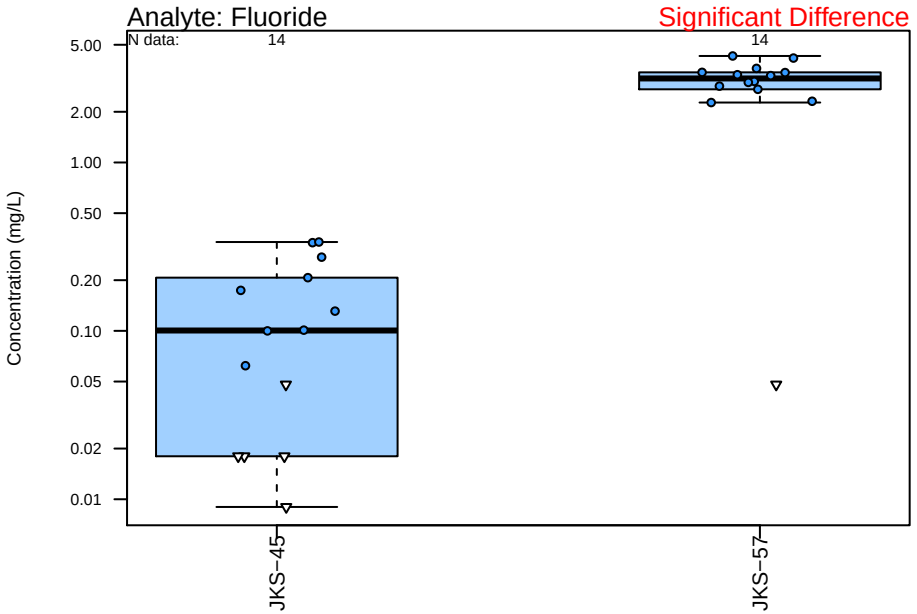
Non-detects were substituted with a value of zero for trend calculations
UPL: Upper Prediction Limit
ND: Not detected
SU: Standard units
tau: Kendall's tau statistic
Obs > UPL: Exceed 'X' indicates that the most recent observed value is higher than the UPL (or out of range of the LPL and UPL in the case of pH.)
Obs > UPL: Exceed 'X0' indicates that the two most recent values are higher than the UPL, but the upgradient well is 100% ND.
Obs > UPL: 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
OverallB7:Q50l: Both Exceedance - most recent sampling event exceeds the UPL and median of the well is larger than the UPL

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

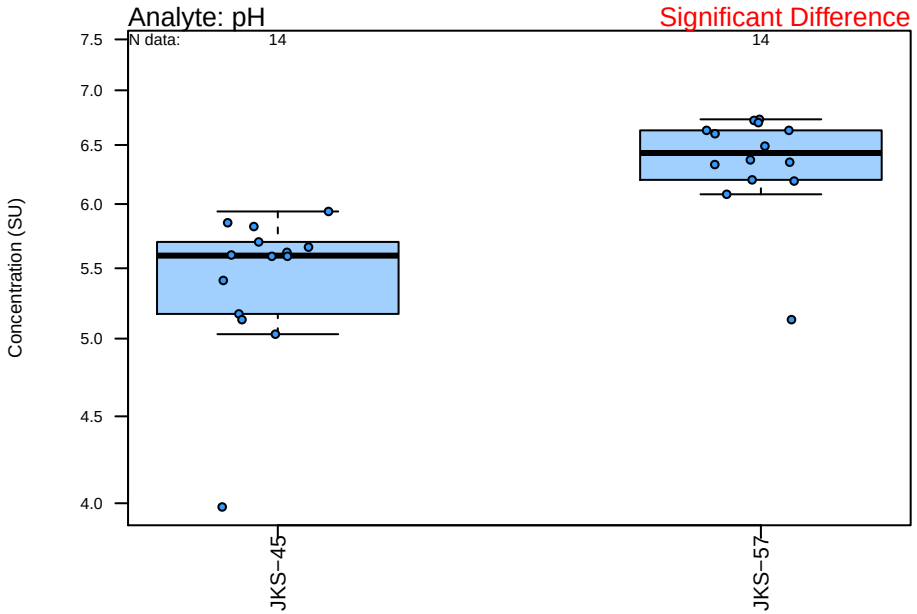


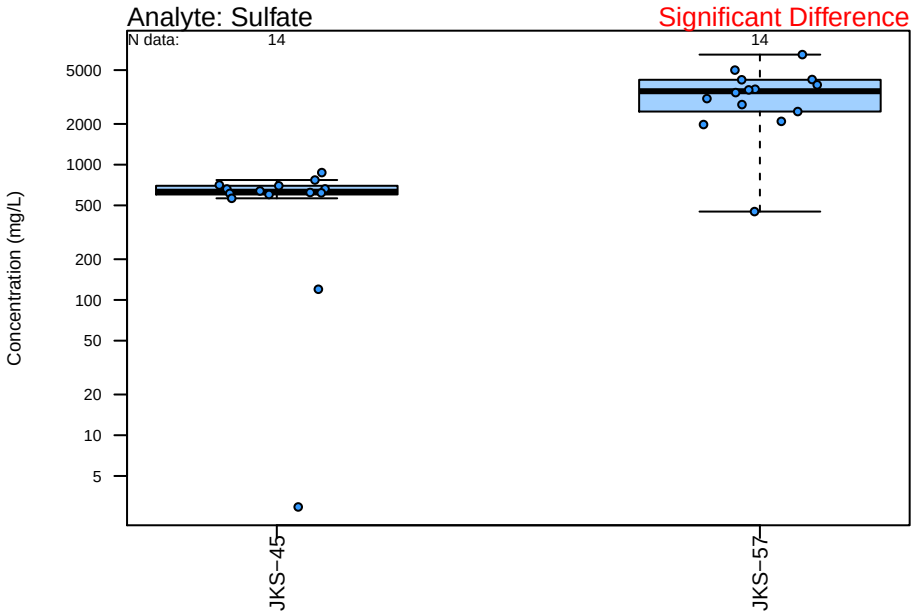


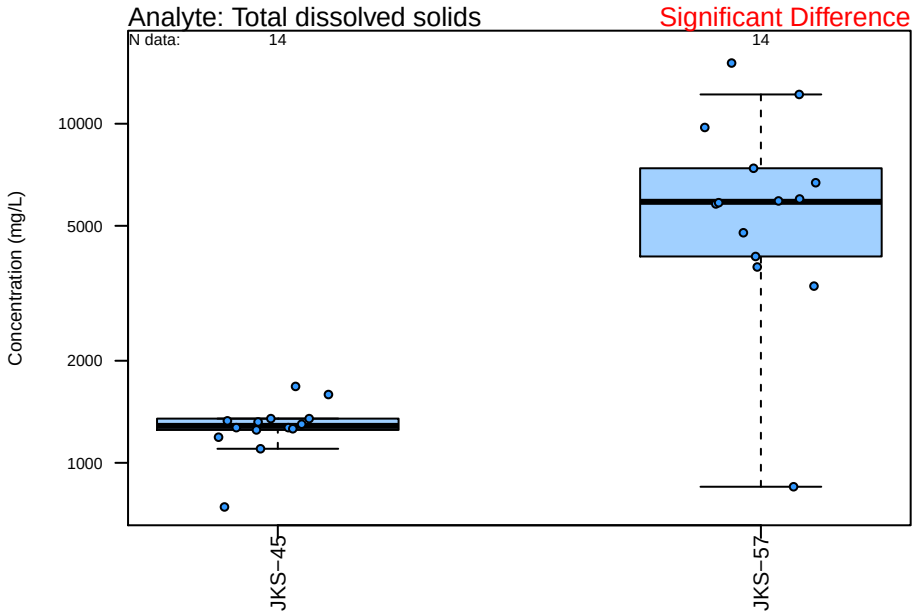




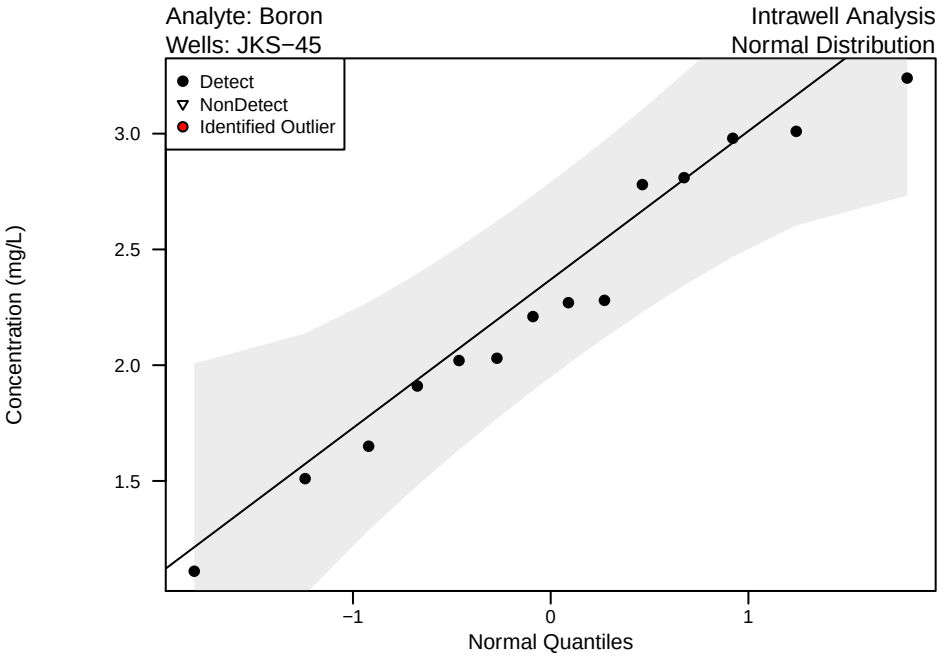
Appendix B − Figure 1
Unit: Fly Ash Landfill
Boxplots of Upgradient Wells







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



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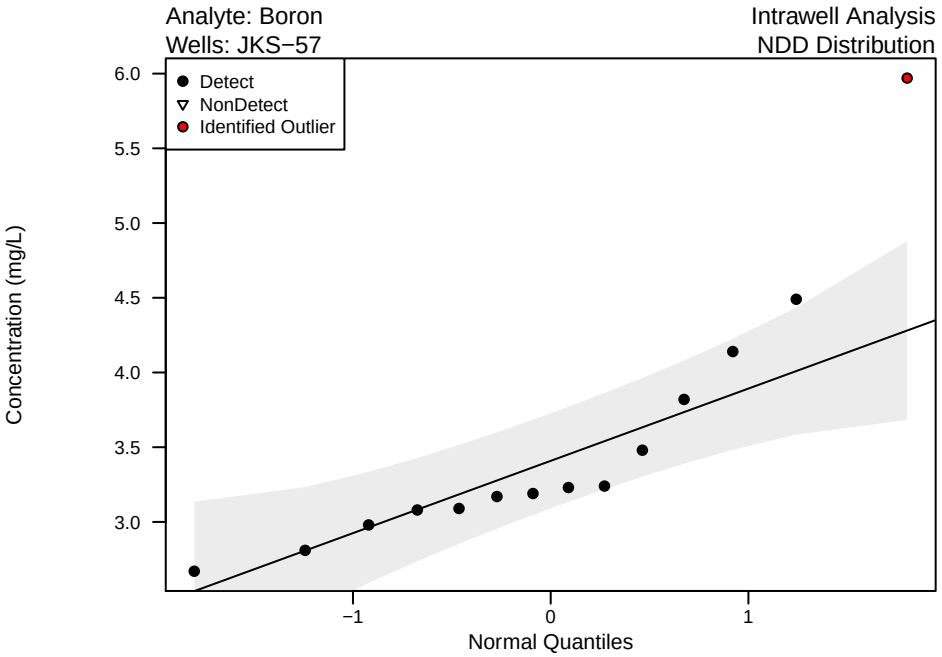
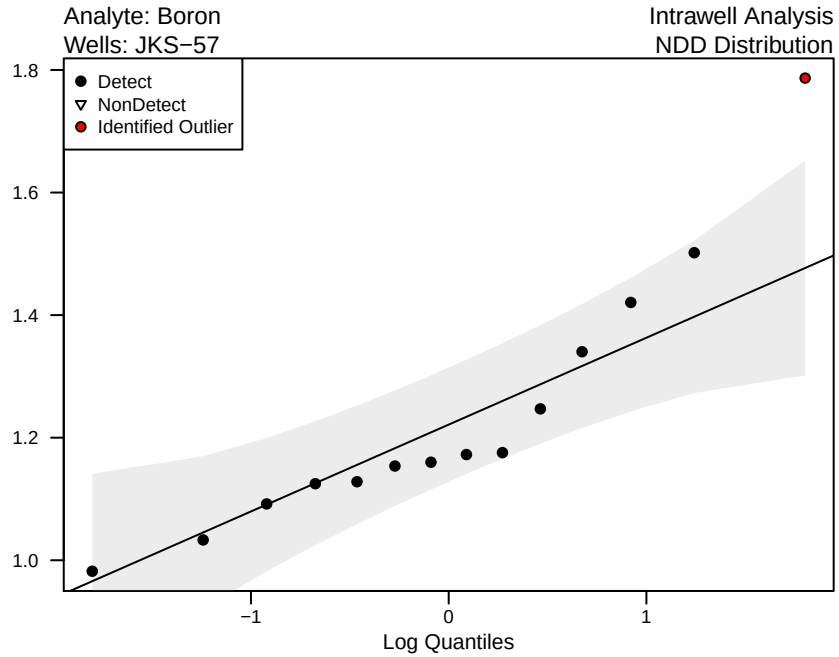
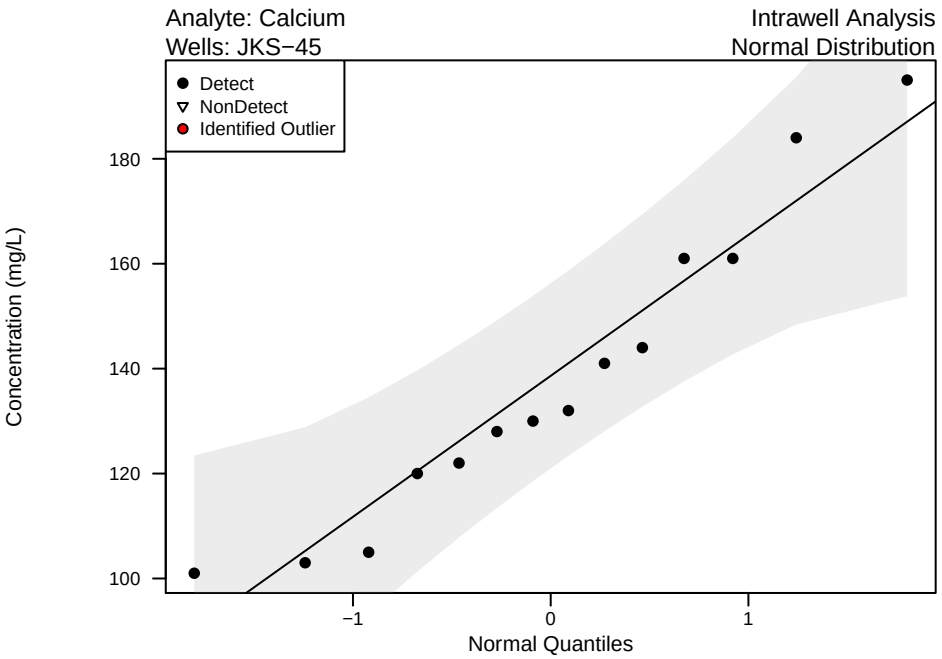




Appendix B − Figure 2
Unit: Fly Ash Landfill
QQ Plots of Upgradient Wells



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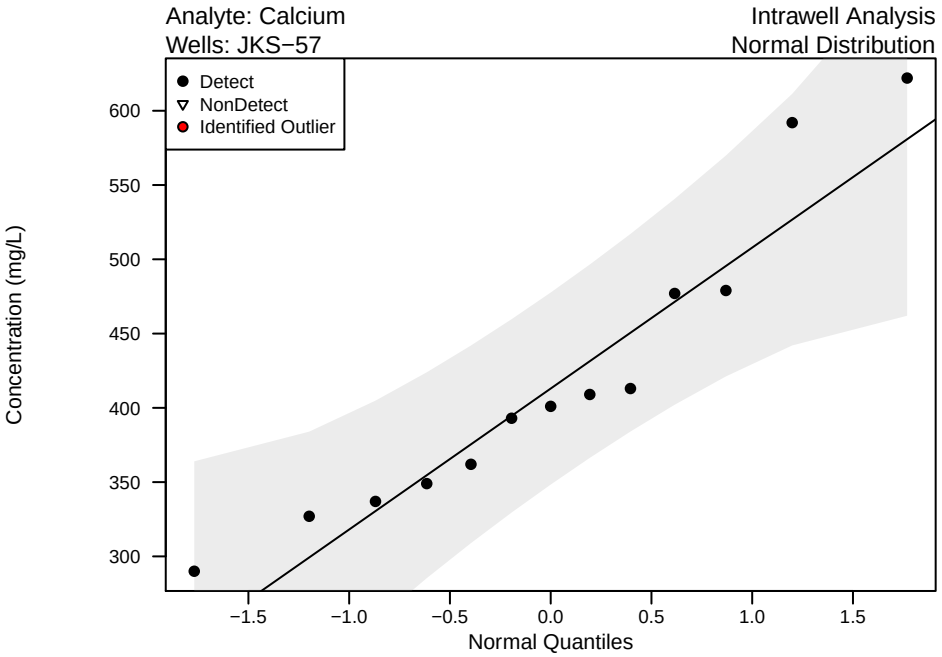

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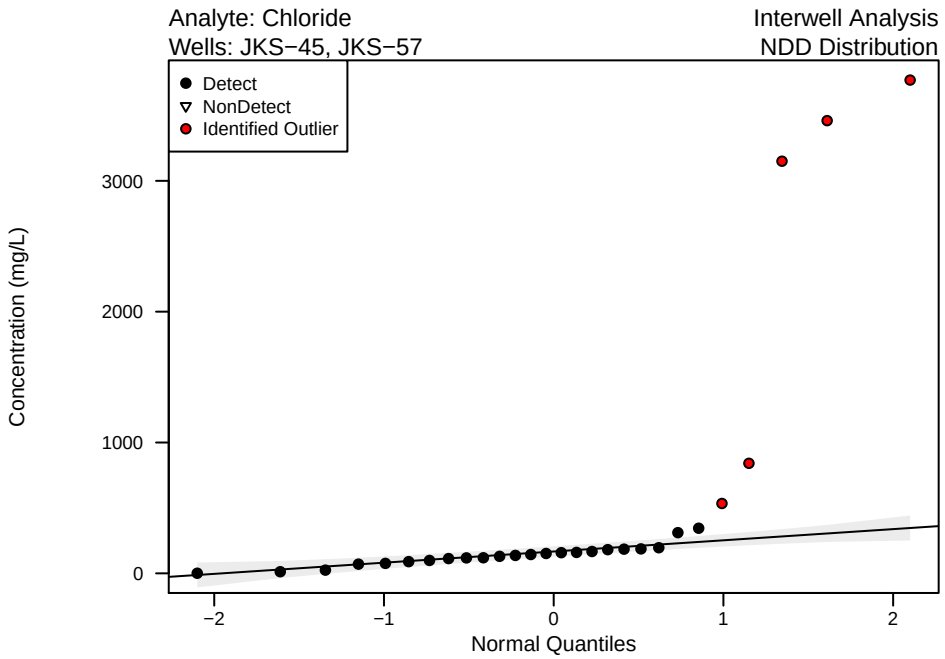
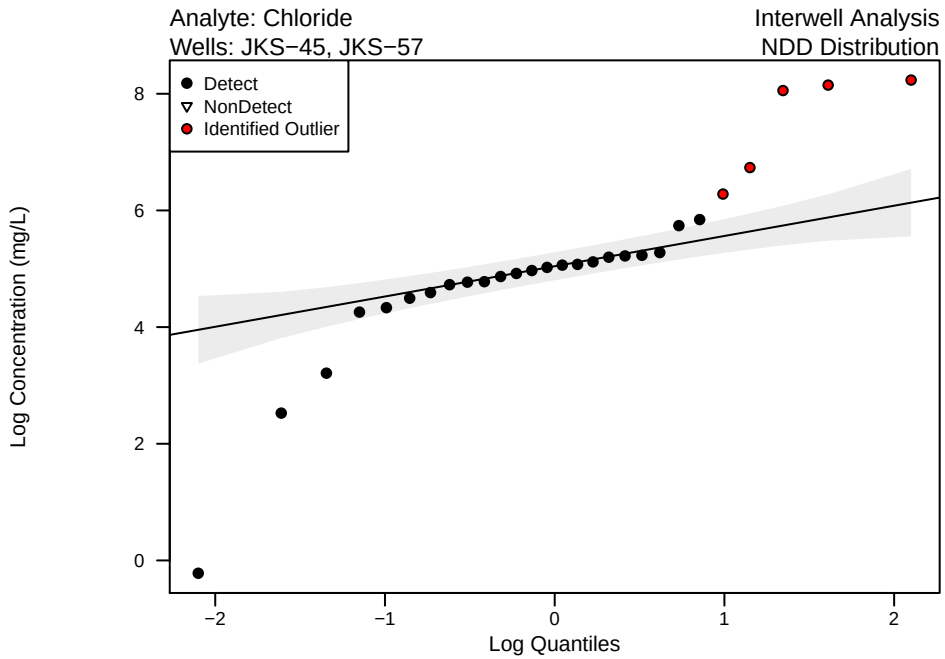
Appendix B − Figure 2
Unit: Fly Ash Landfill
QQ Plots of Upgradient Wells





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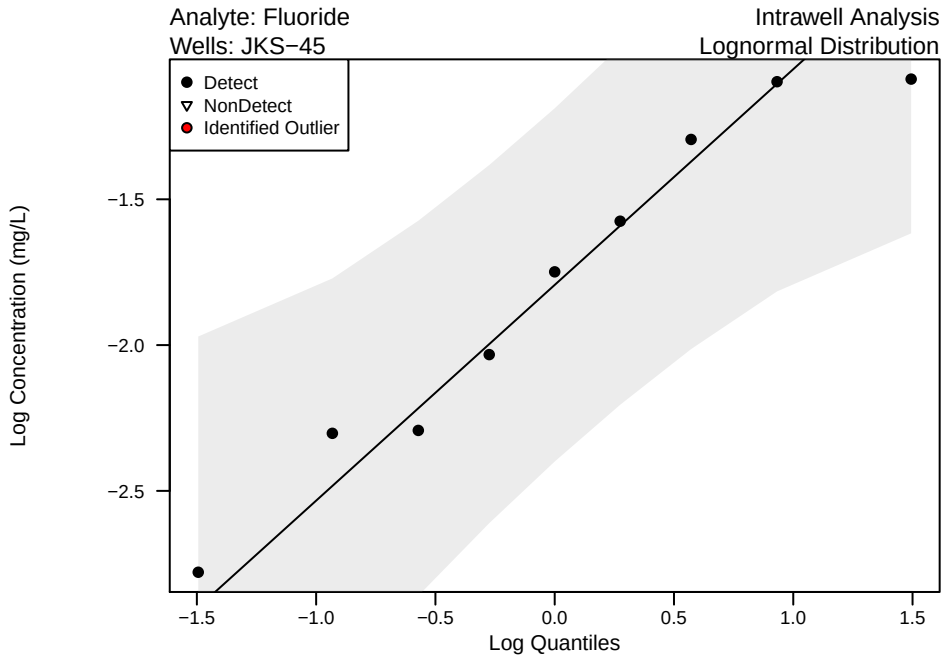
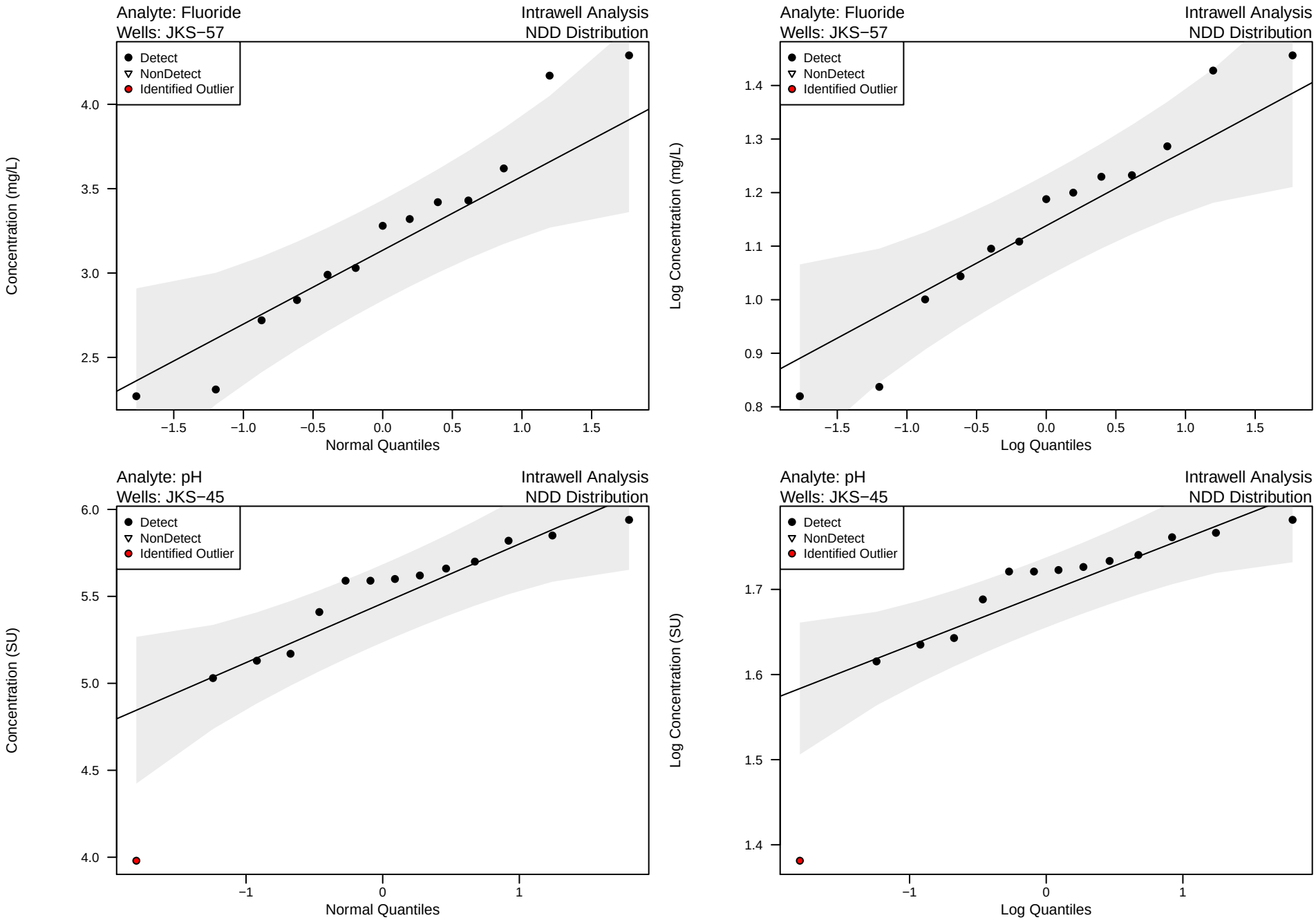
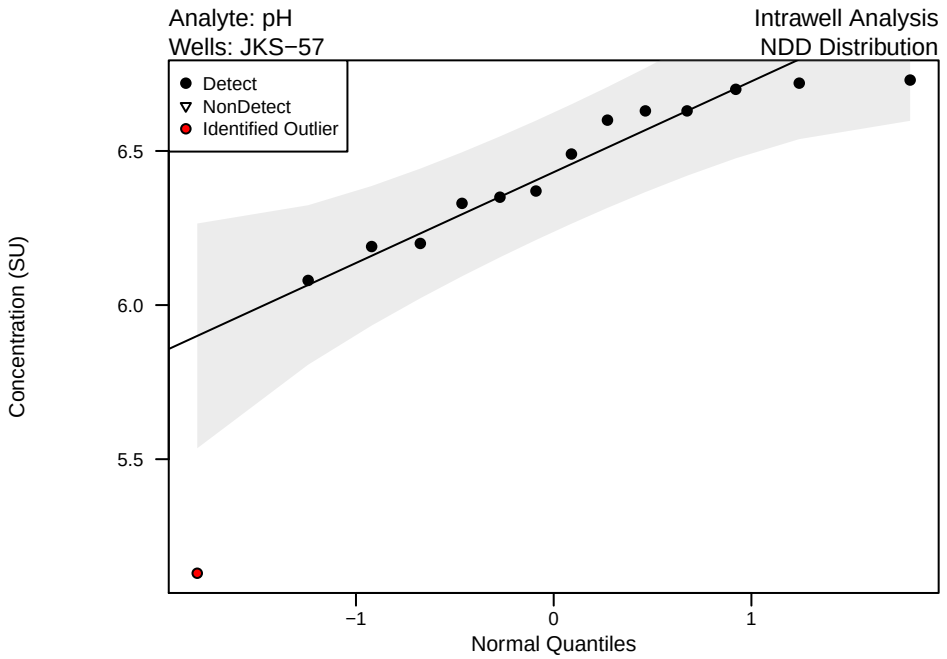
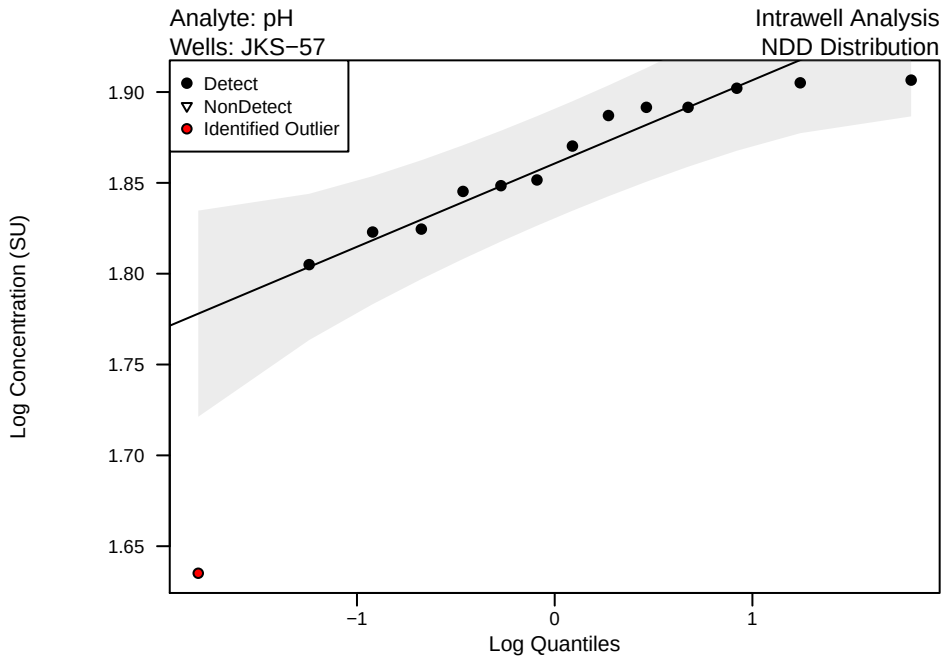


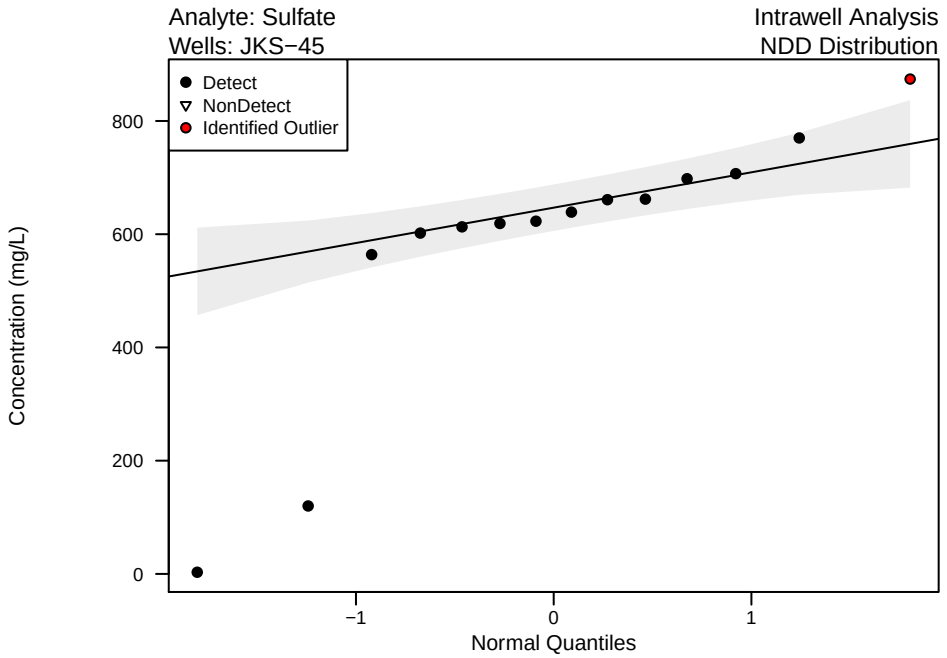
Appendix B − Figure 2
Unit: Fly Ash Landfill
QQ Plots of Upgradient Wells

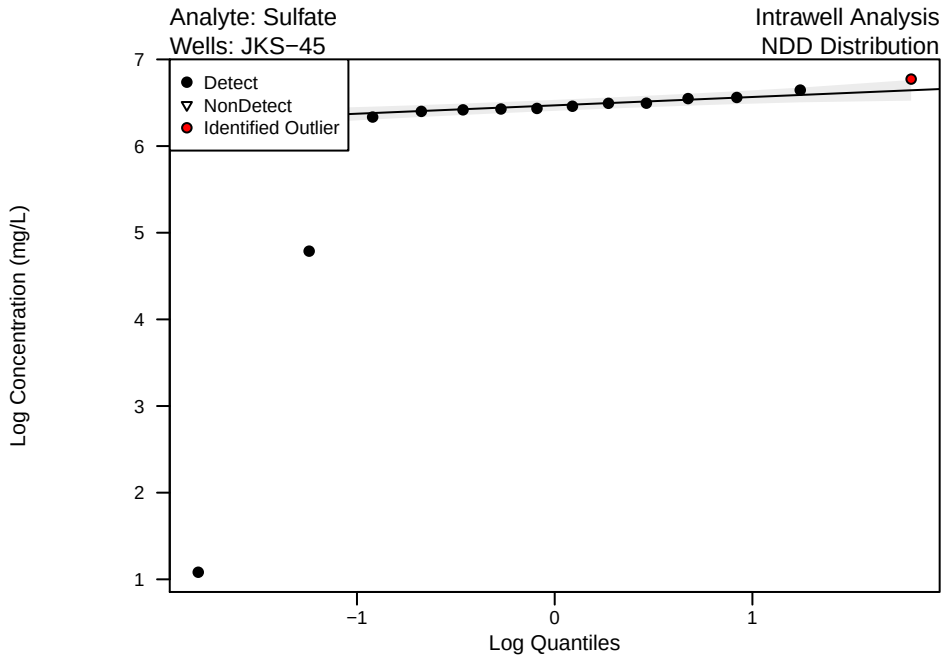


Appendix B − Figure 2
Unit: Fly Ash Landfill
QQ Plots of Upgradient Wells

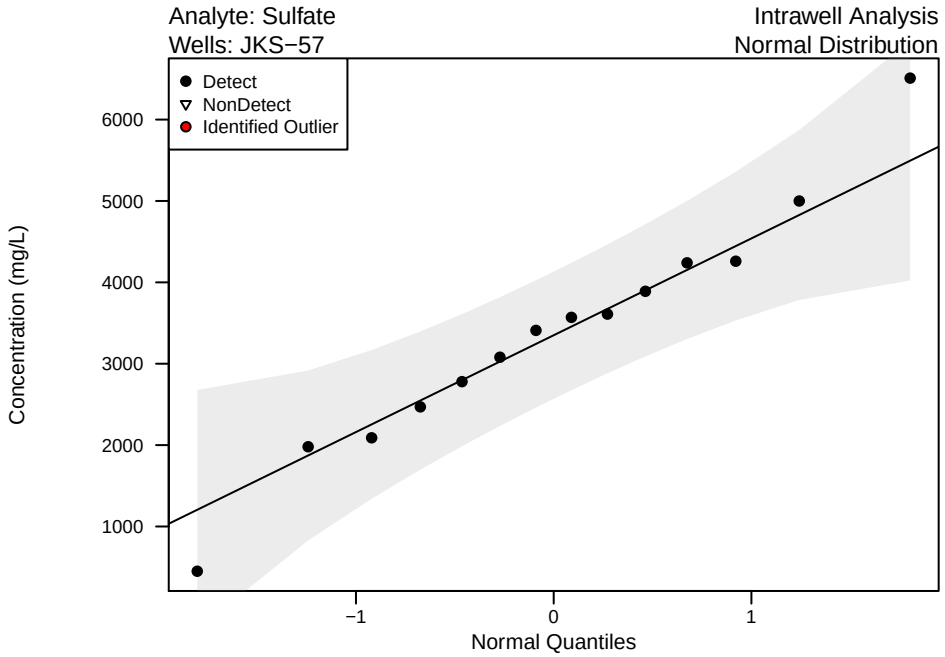








Appendix B − Figure 2
Unit: Fly Ash Landfill
QQ Plots of Upgradient Wells



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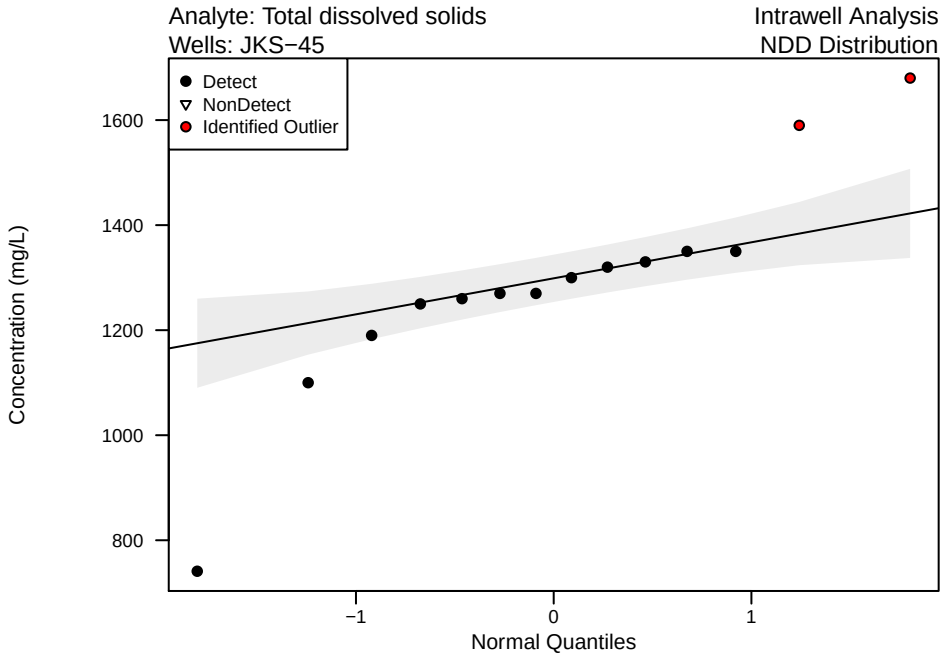
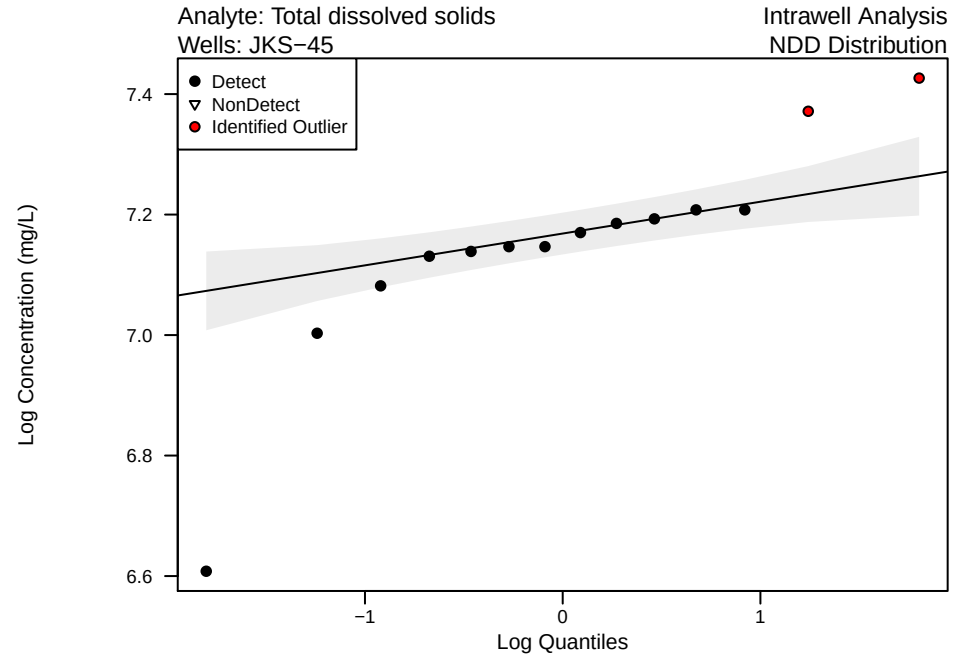
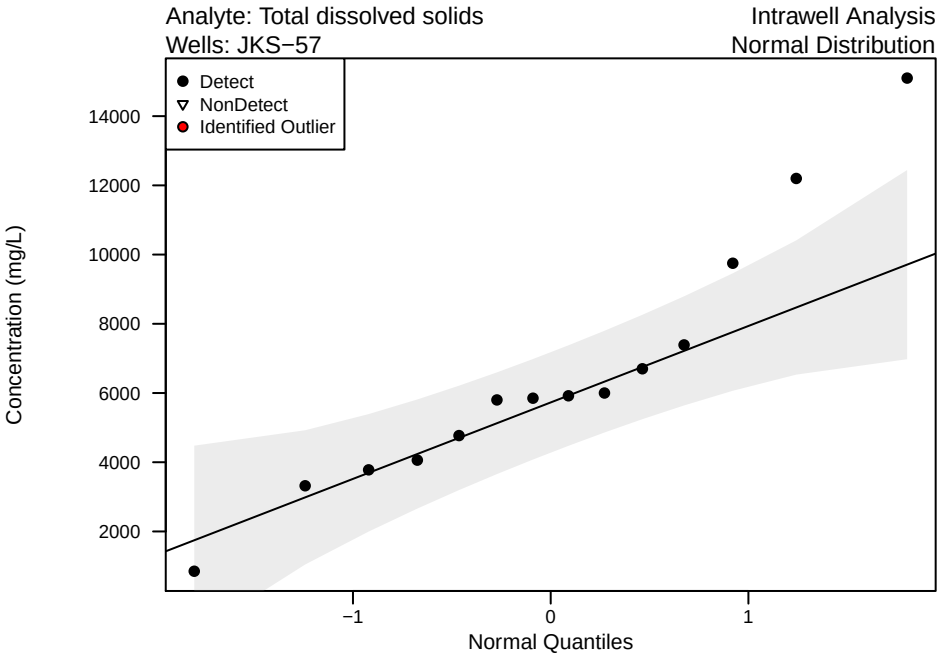
not Lognormal/NDD distribution.





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



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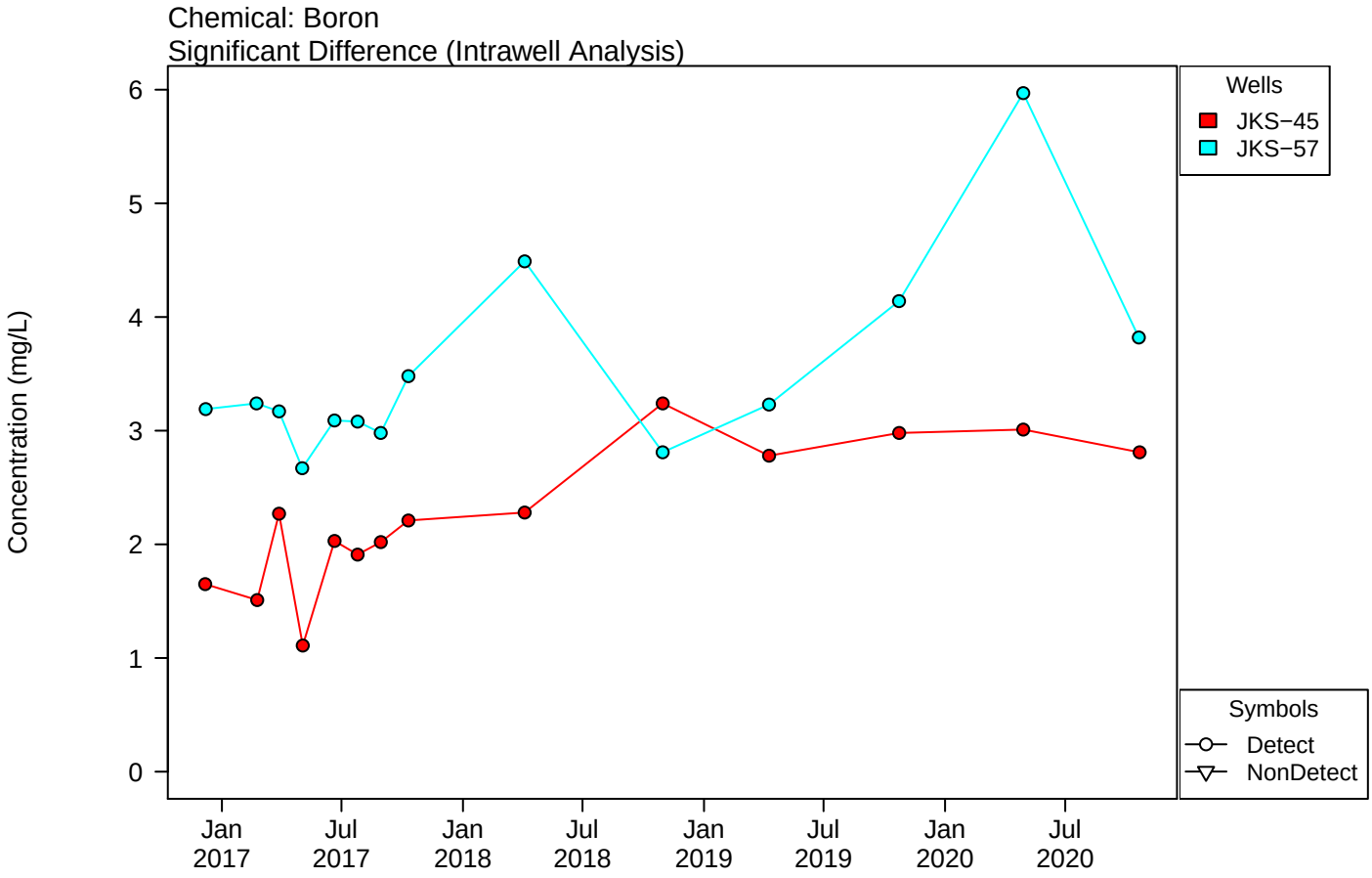
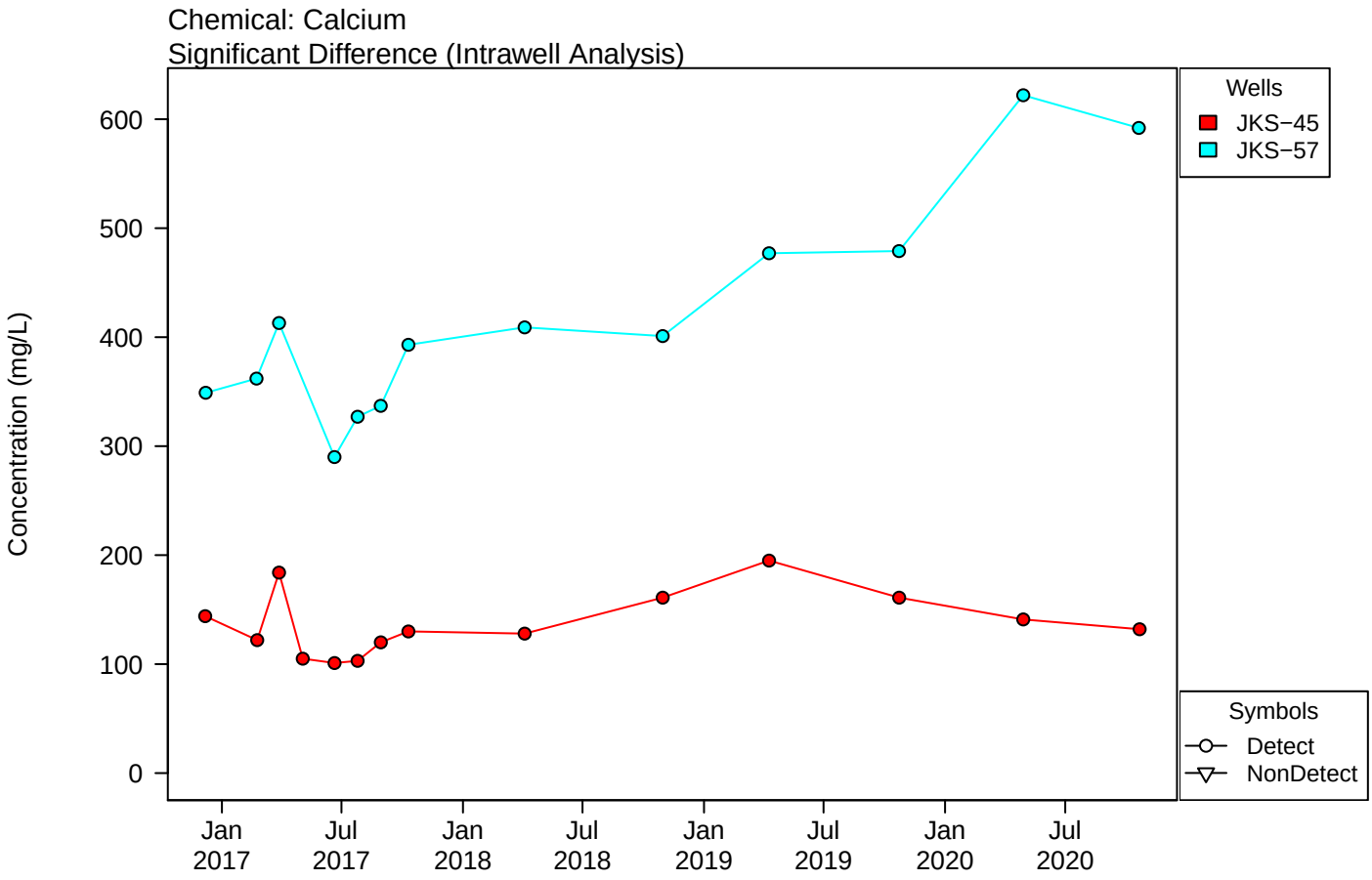
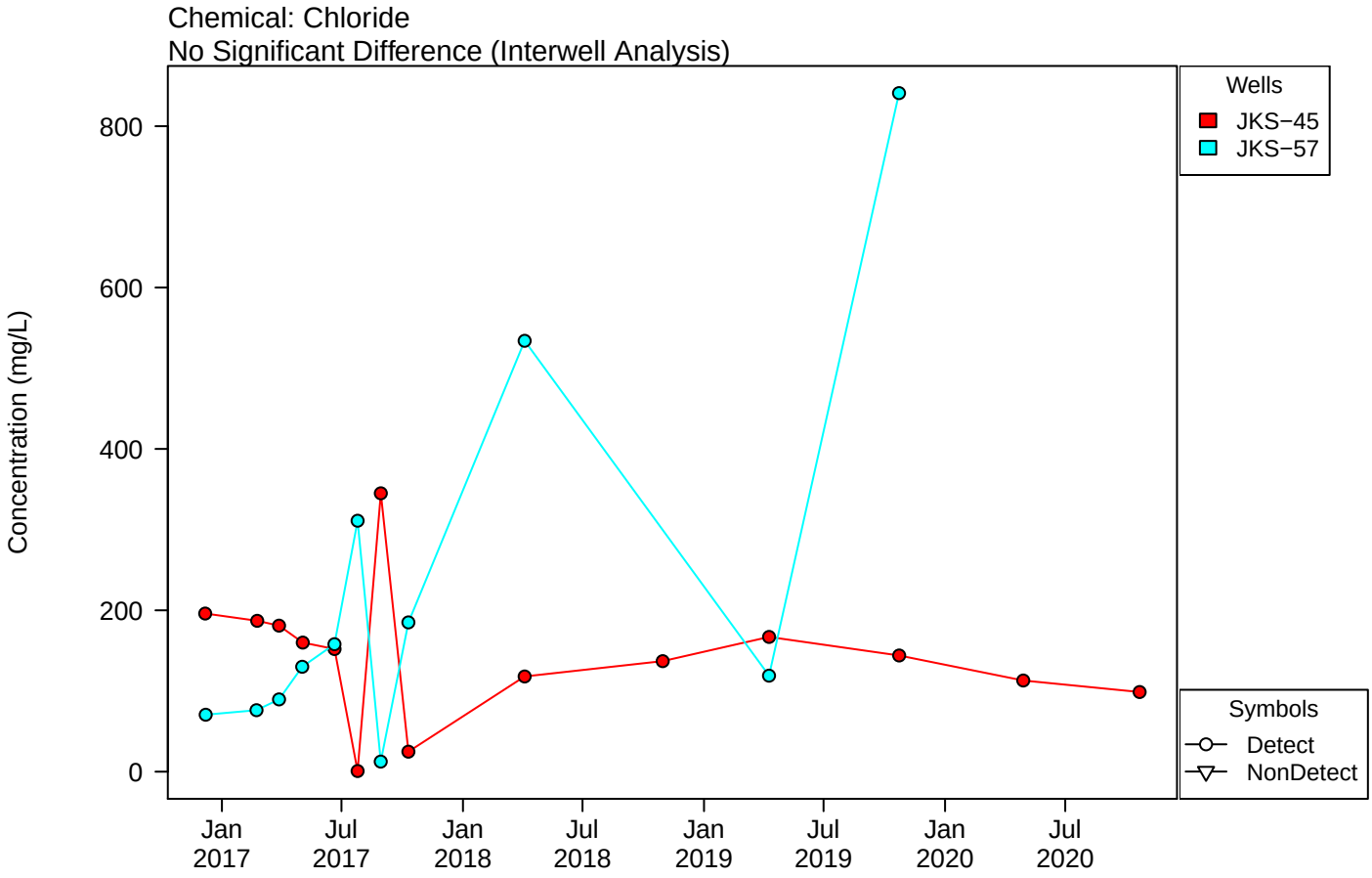
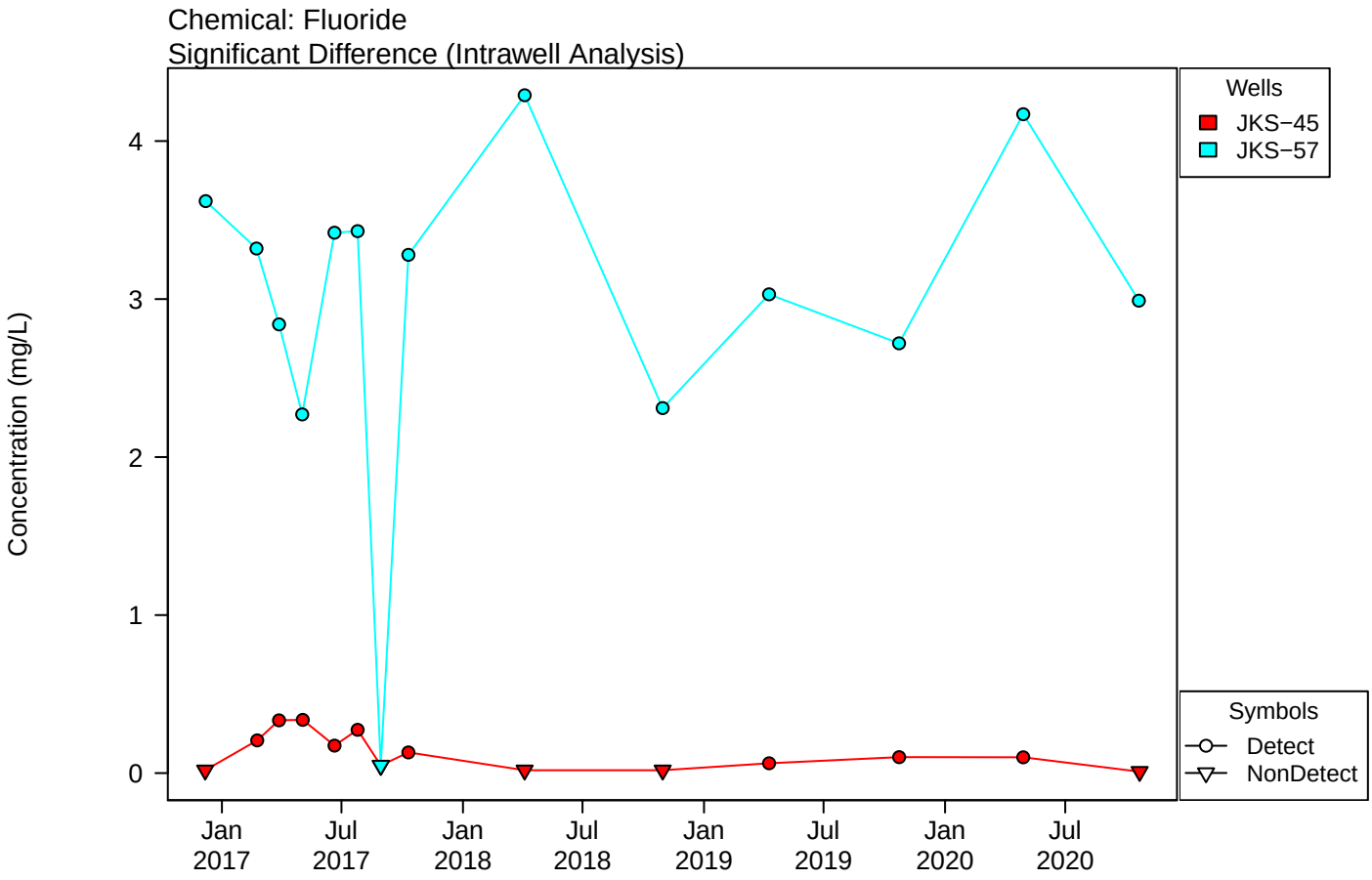
Appendix B − Figure 3
Unit: Fly Ash Landfill
Timeseries of Upgradient Wells



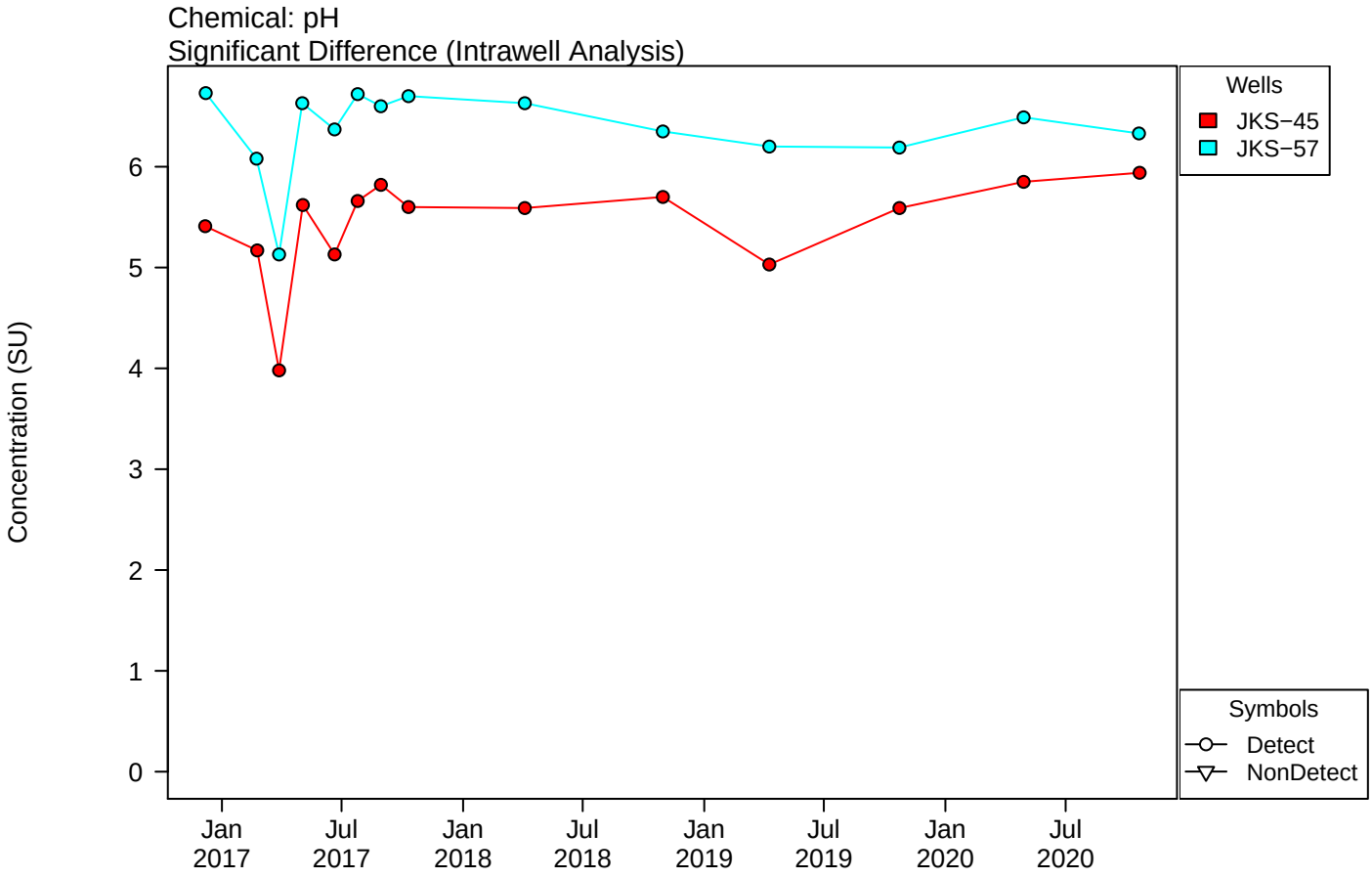


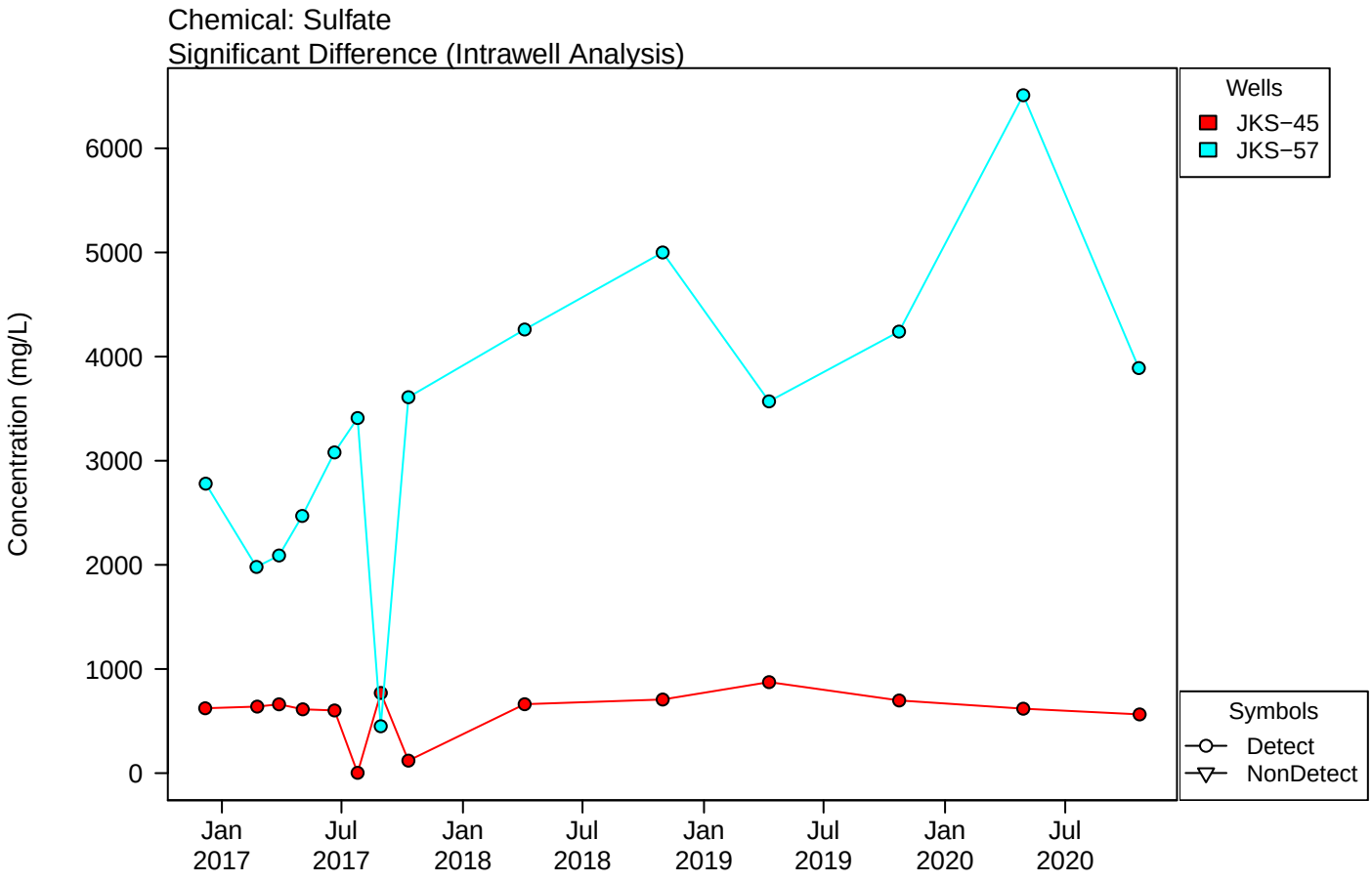
Appendix B − Figure 3
Unit: Fly Ash Landfill
Timeseries of Upgradient Wells



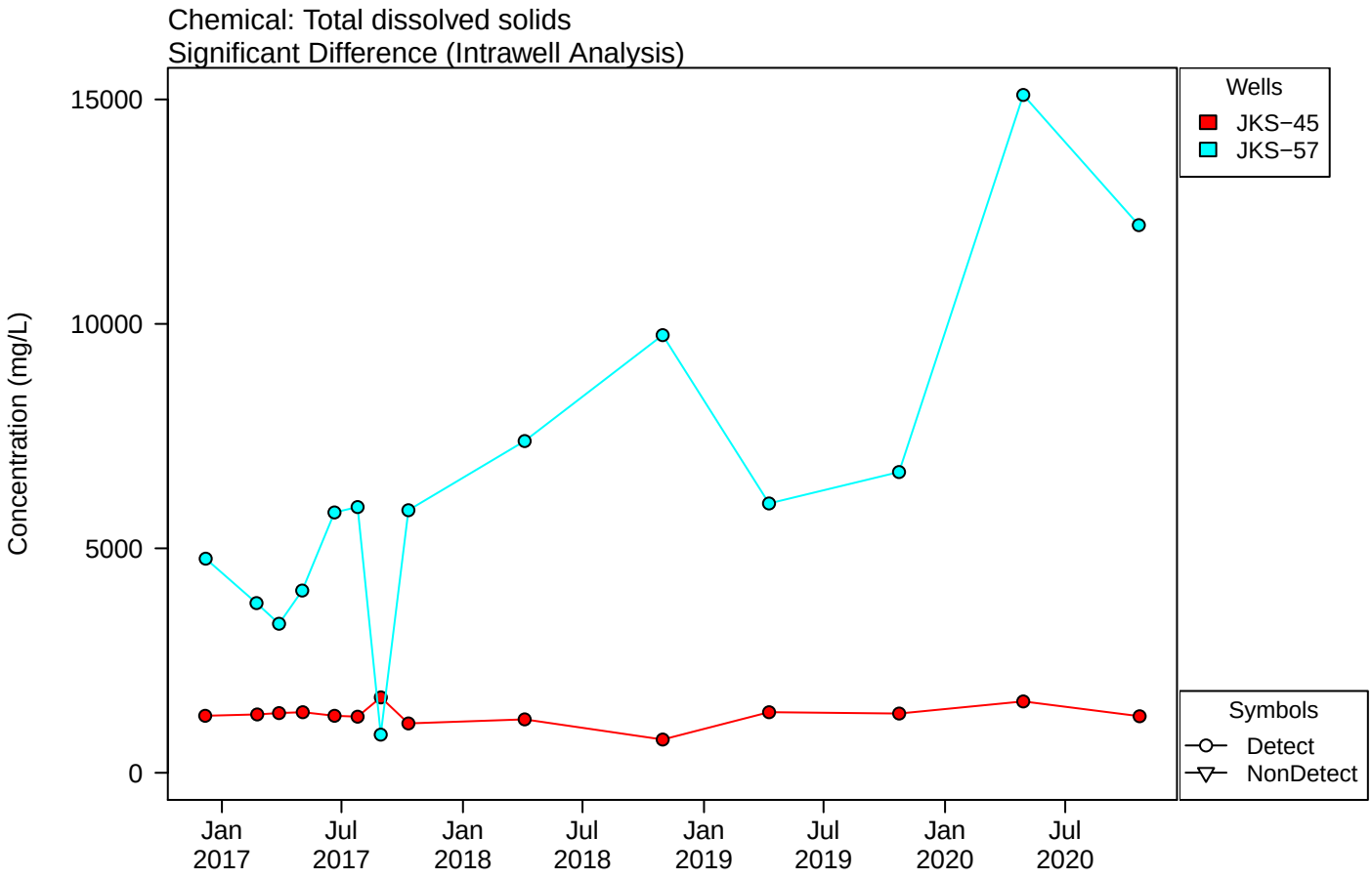


Appendix B − Figure 3
Unit: Fly Ash Landfill
Timeseries of Upgradient Wells

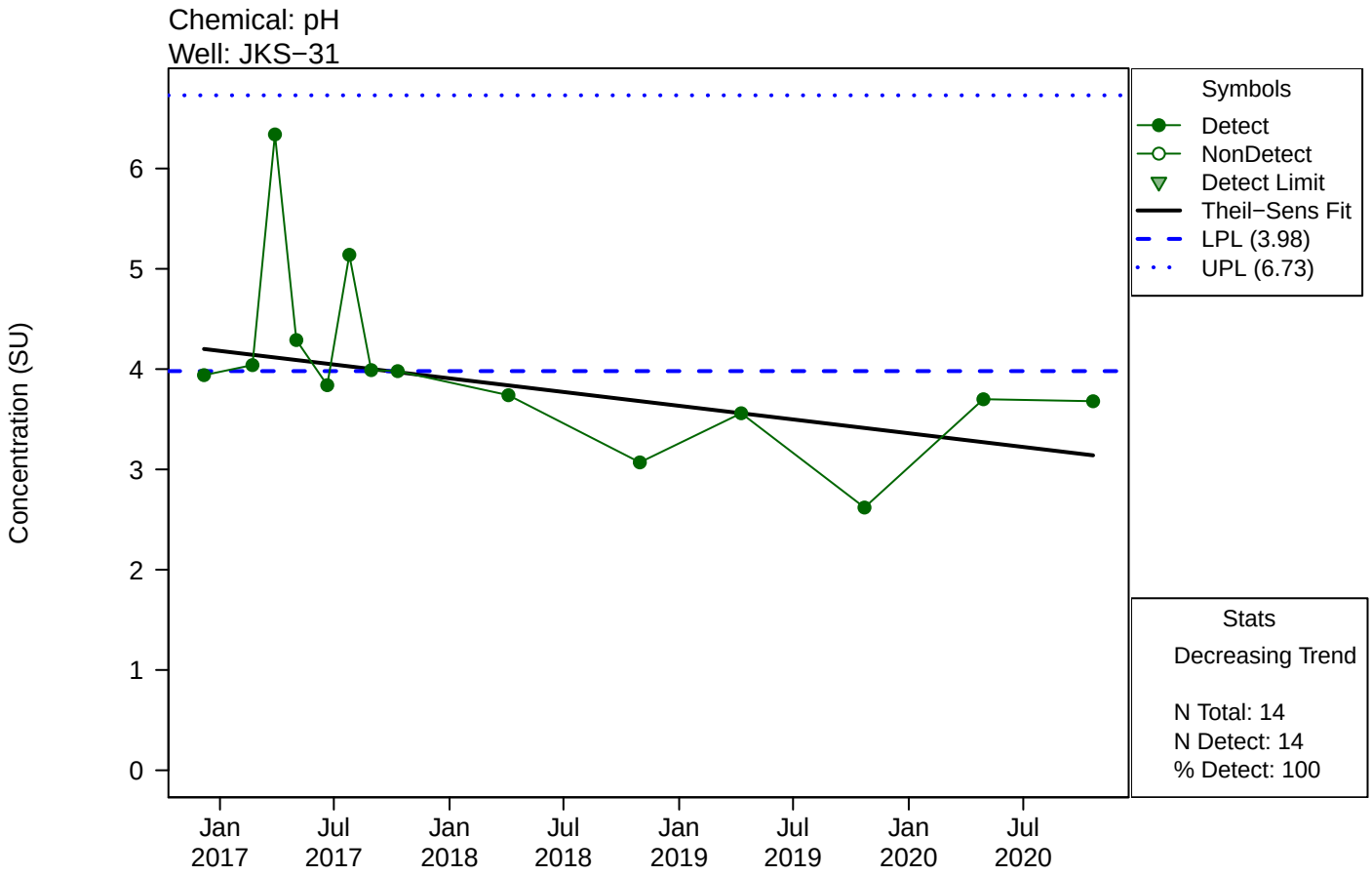


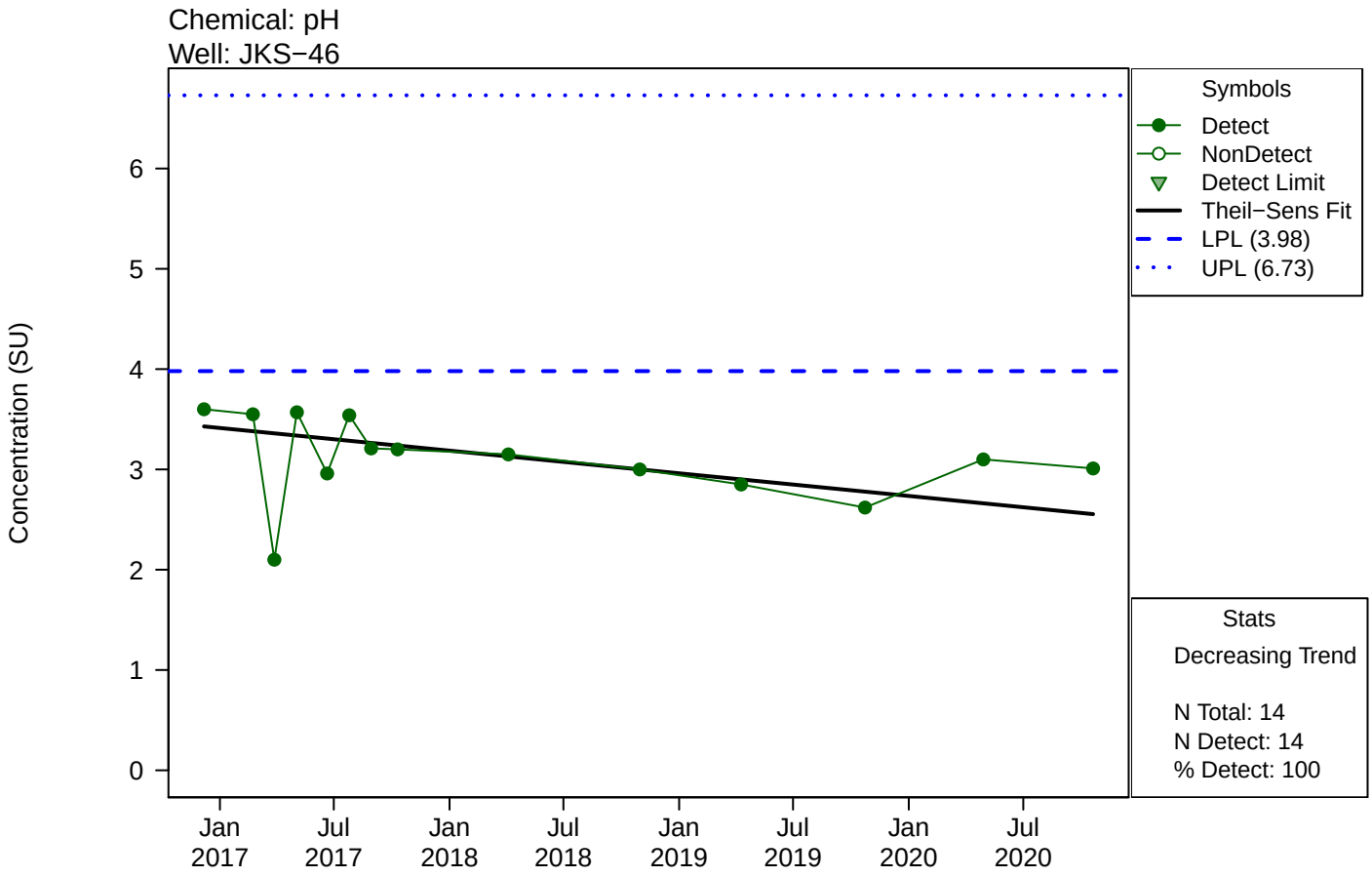


Appendix B − Figure 3
Unit: Fly Ash Landfill
Timeseries of Upgradient Wells

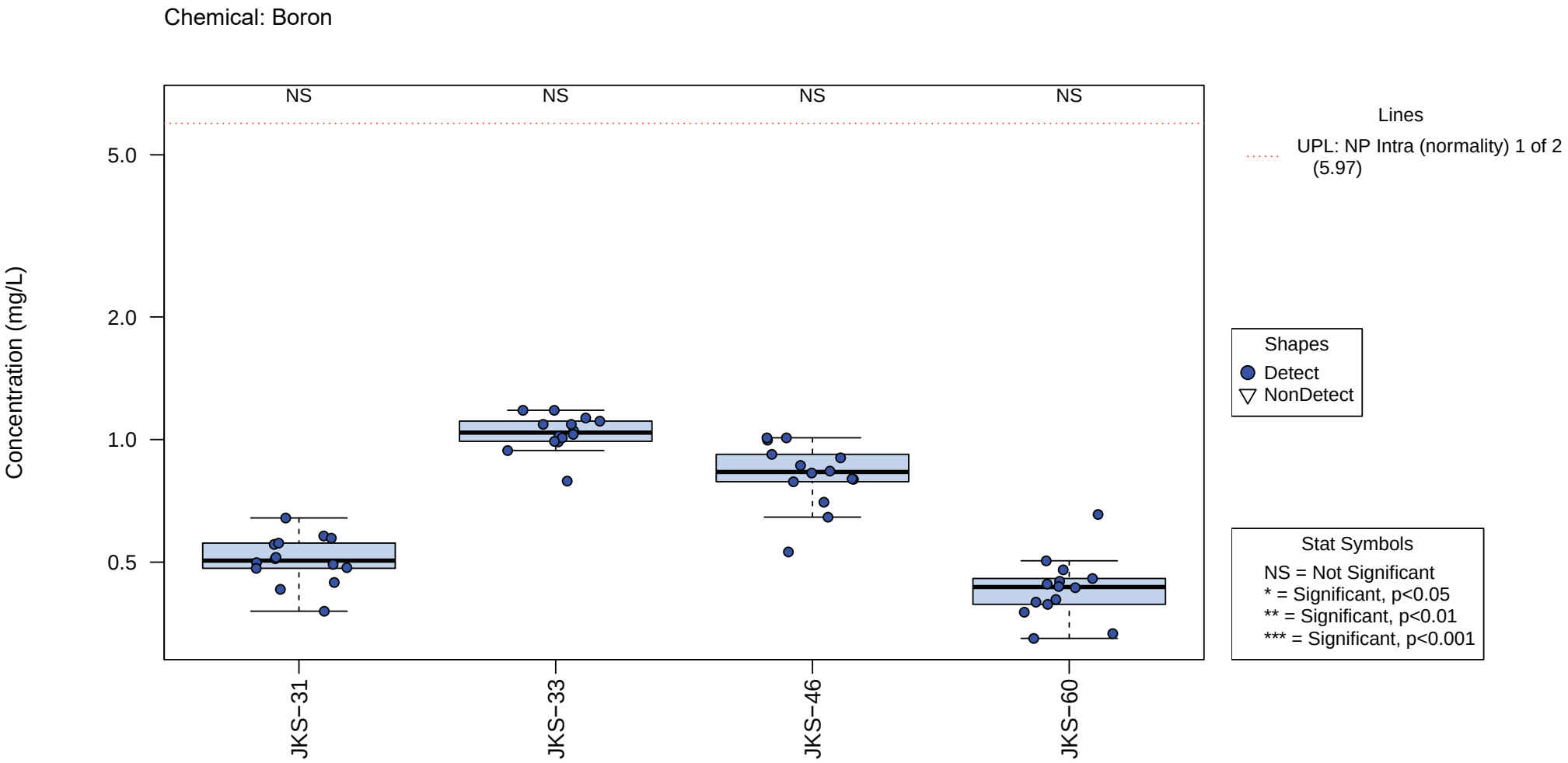


Appendix B − Figure 4
Unit: Fly Ash Landfill
Trend Analysis of Downgradient Wells with Exceedances

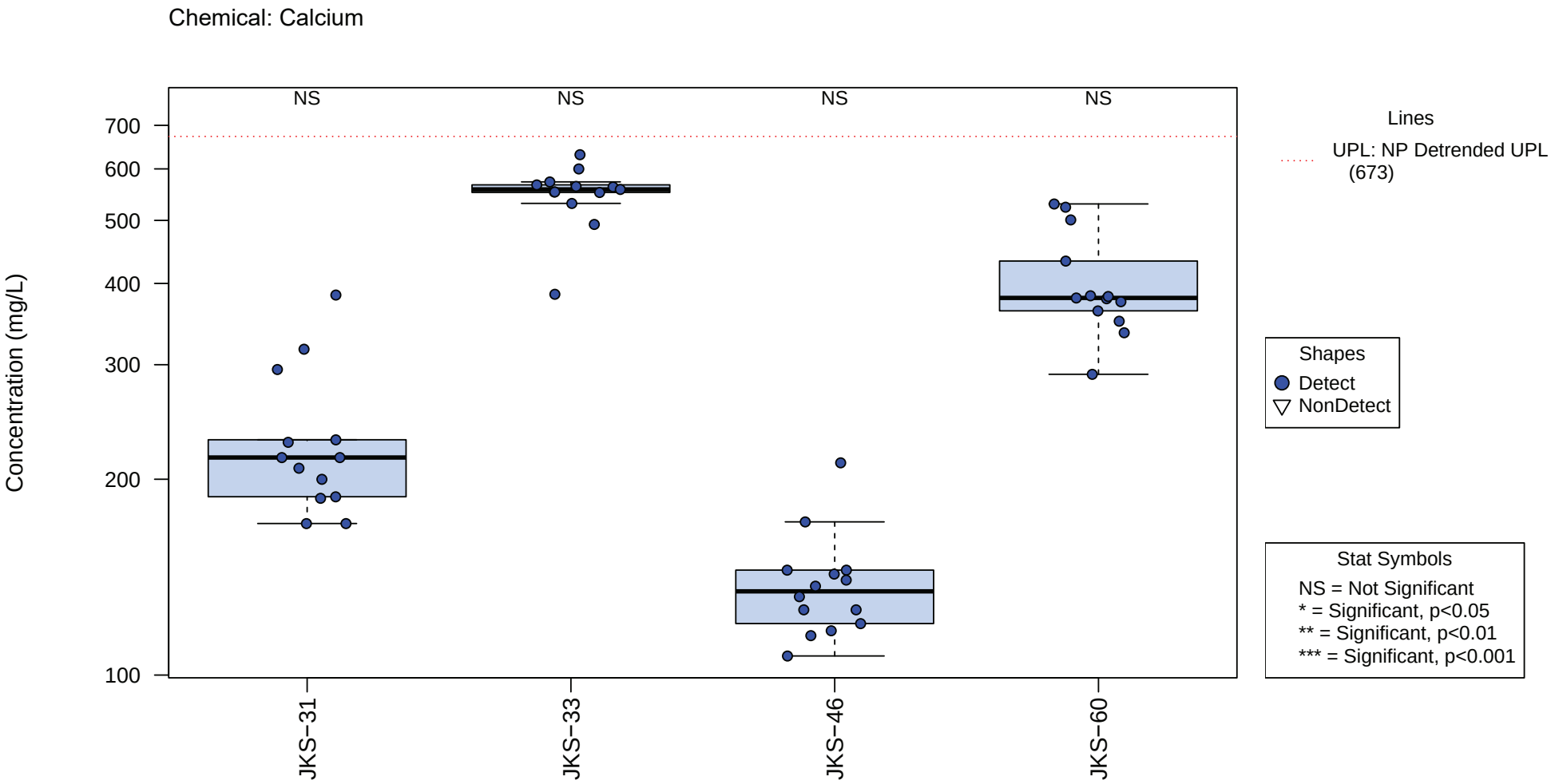




Appendix B - Figure 5
Unit: Fly Ash Landfill
Boxplots of Downgradient Wells



Appendix B - Figure 5
Unit: Fly Ash Landfill
Boxplots of Downgradient Wells



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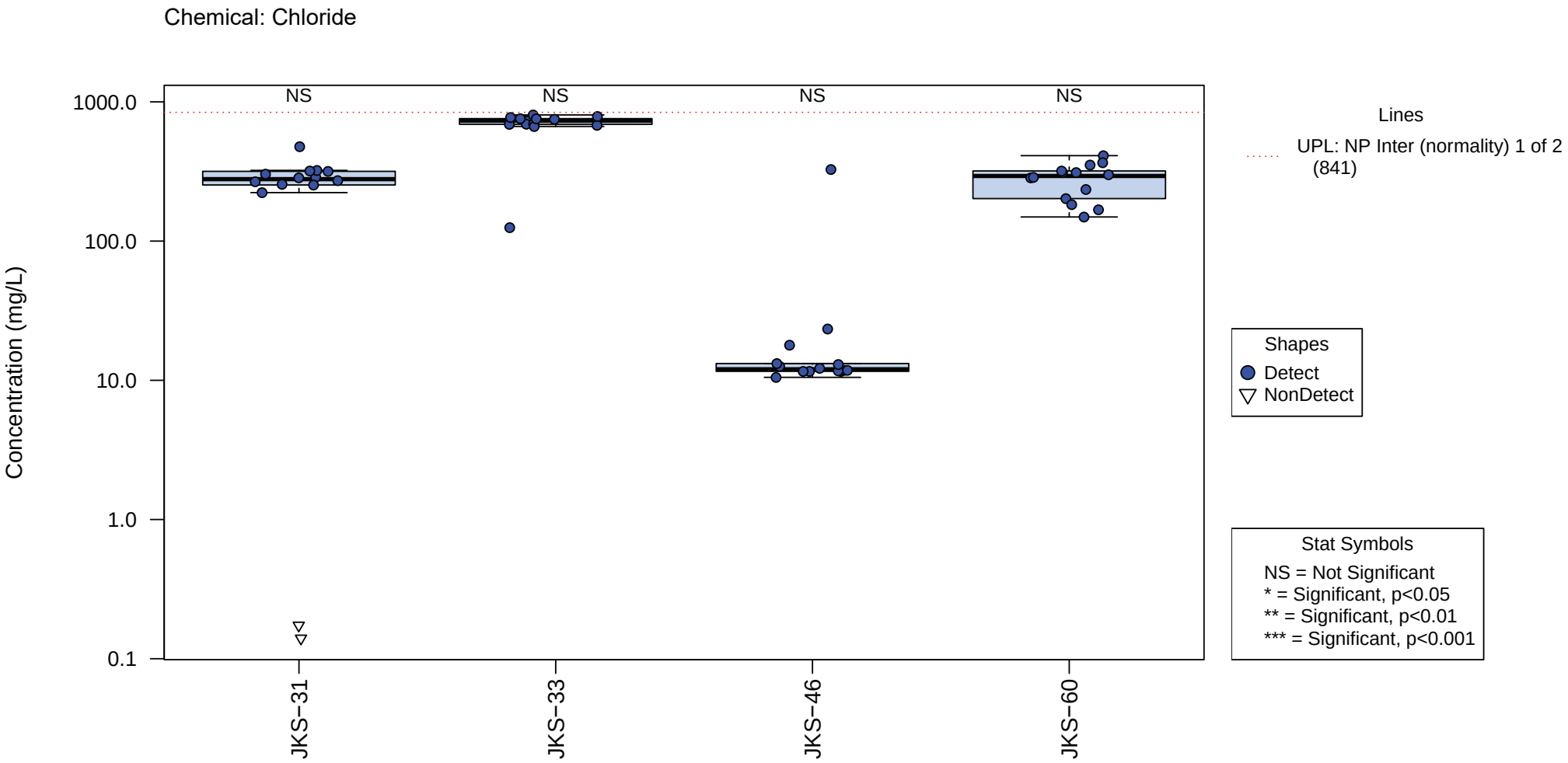

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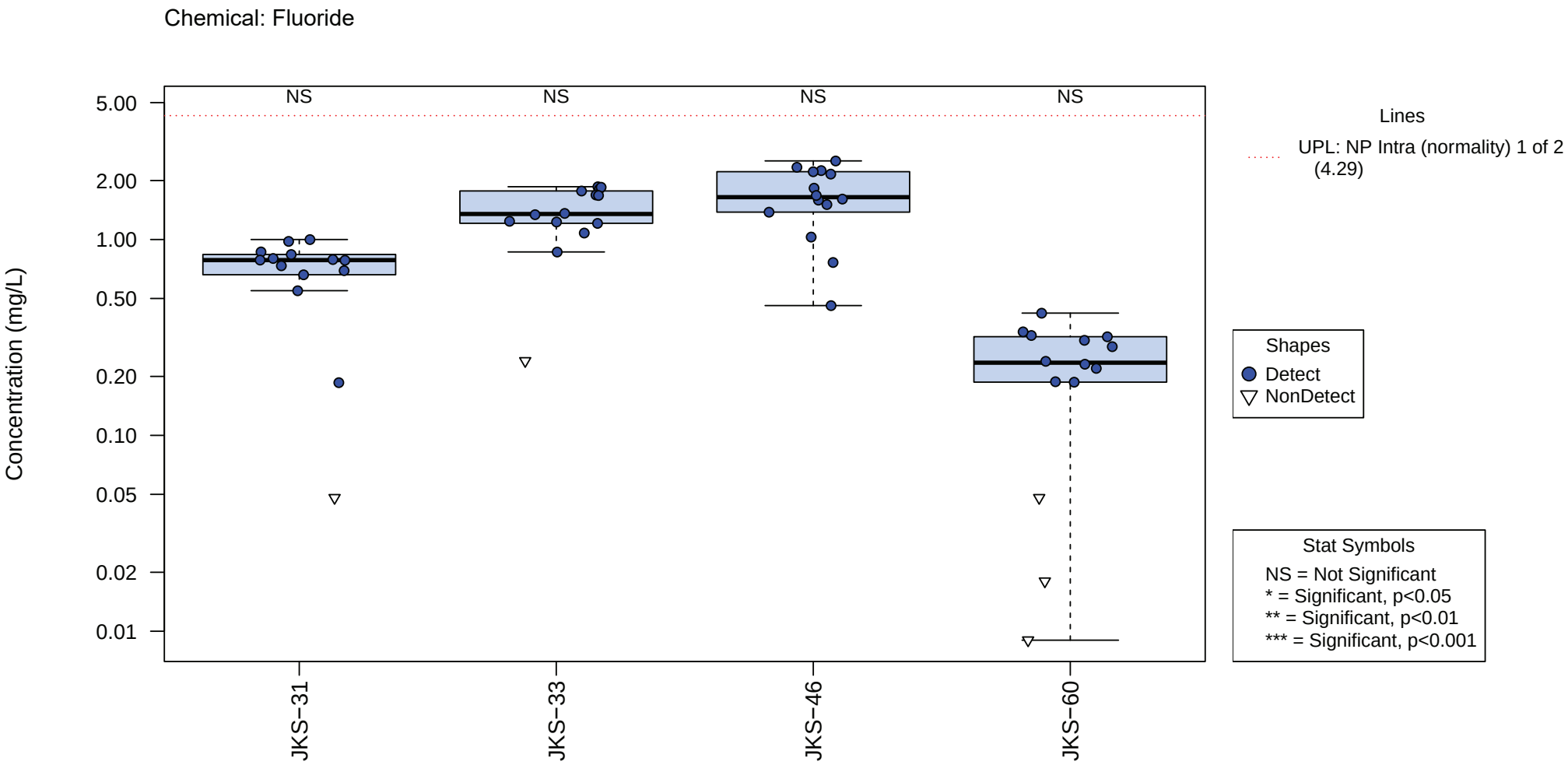
Boxplots of Downgradient Wells



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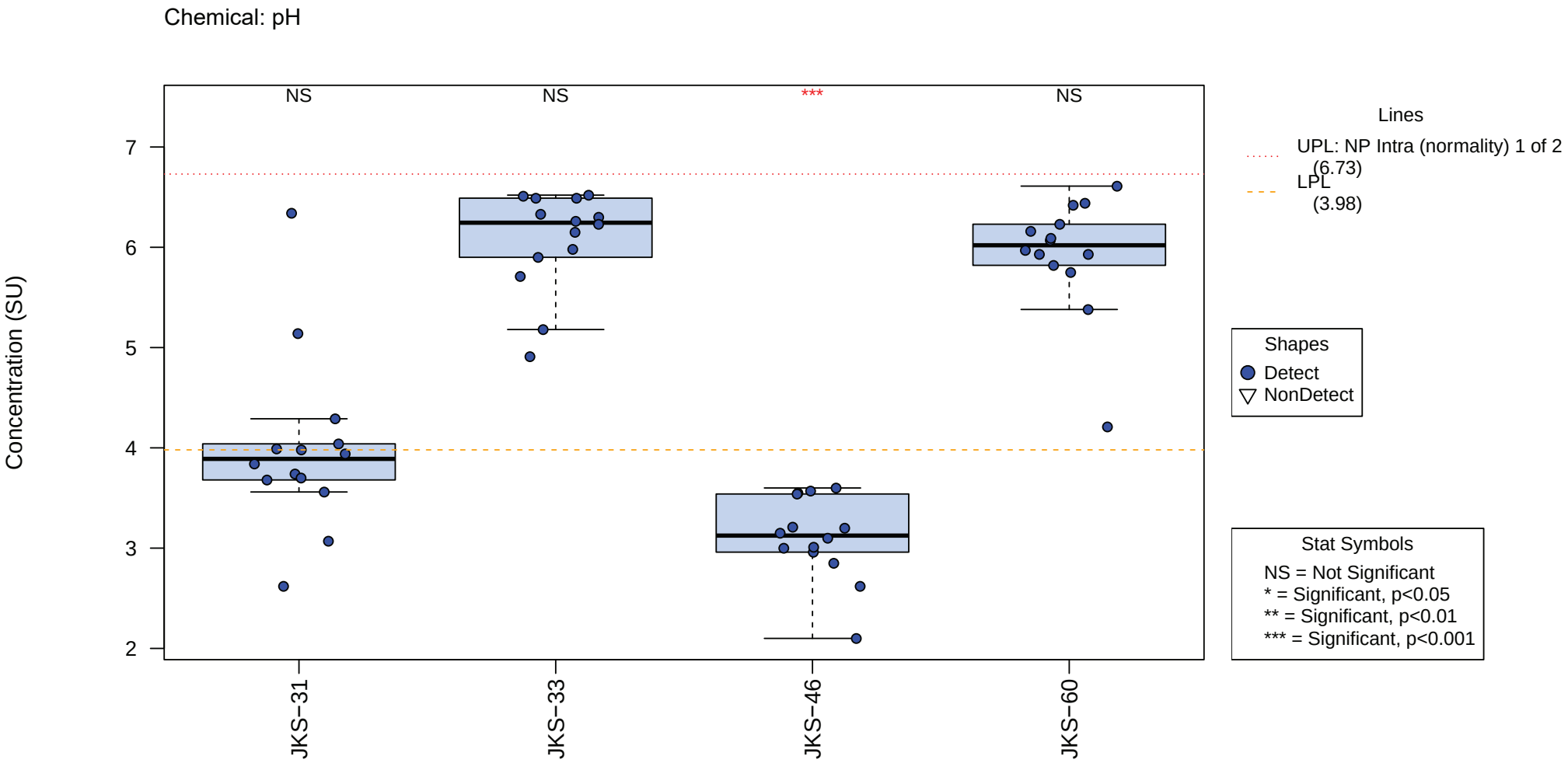

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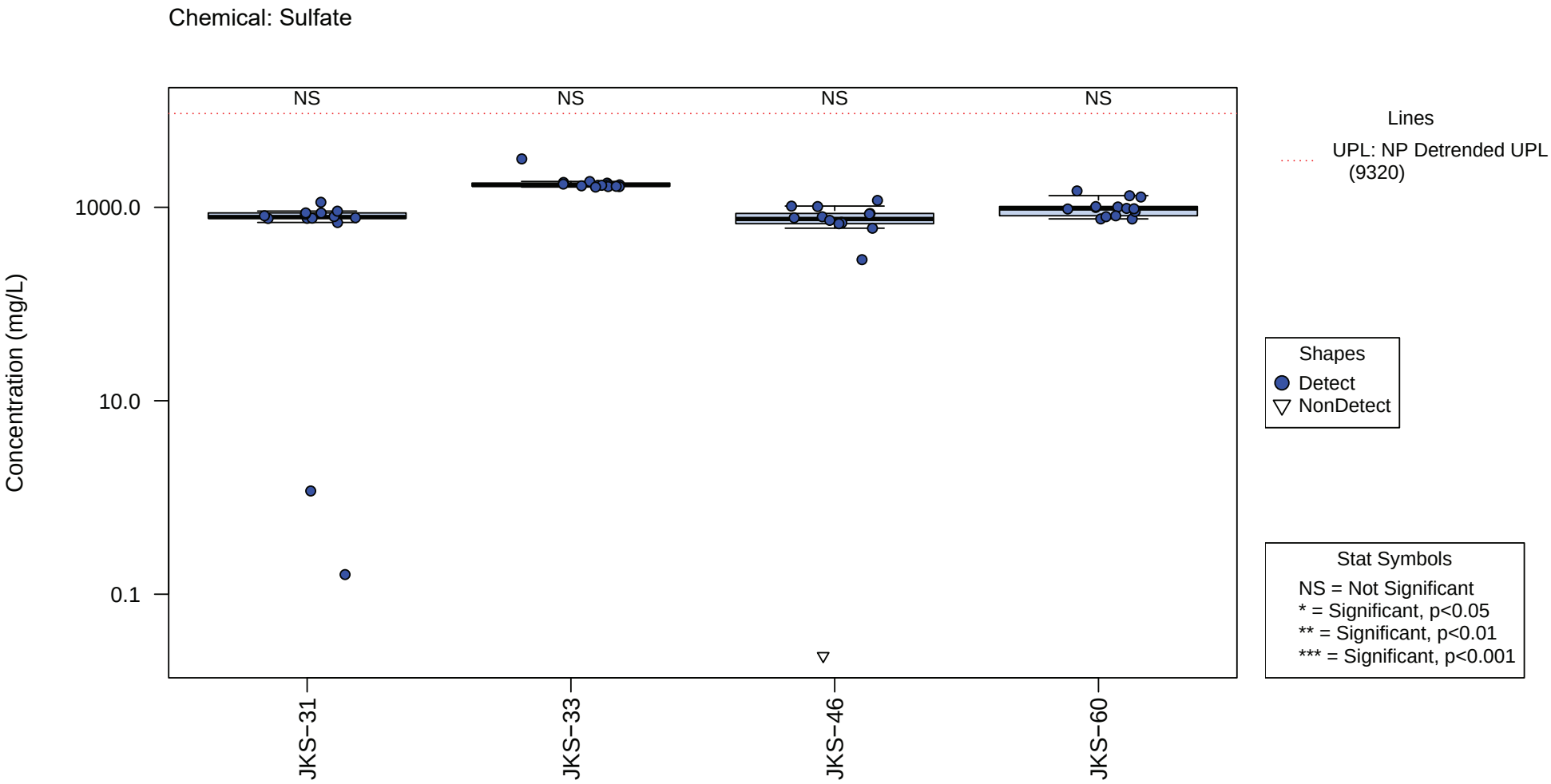

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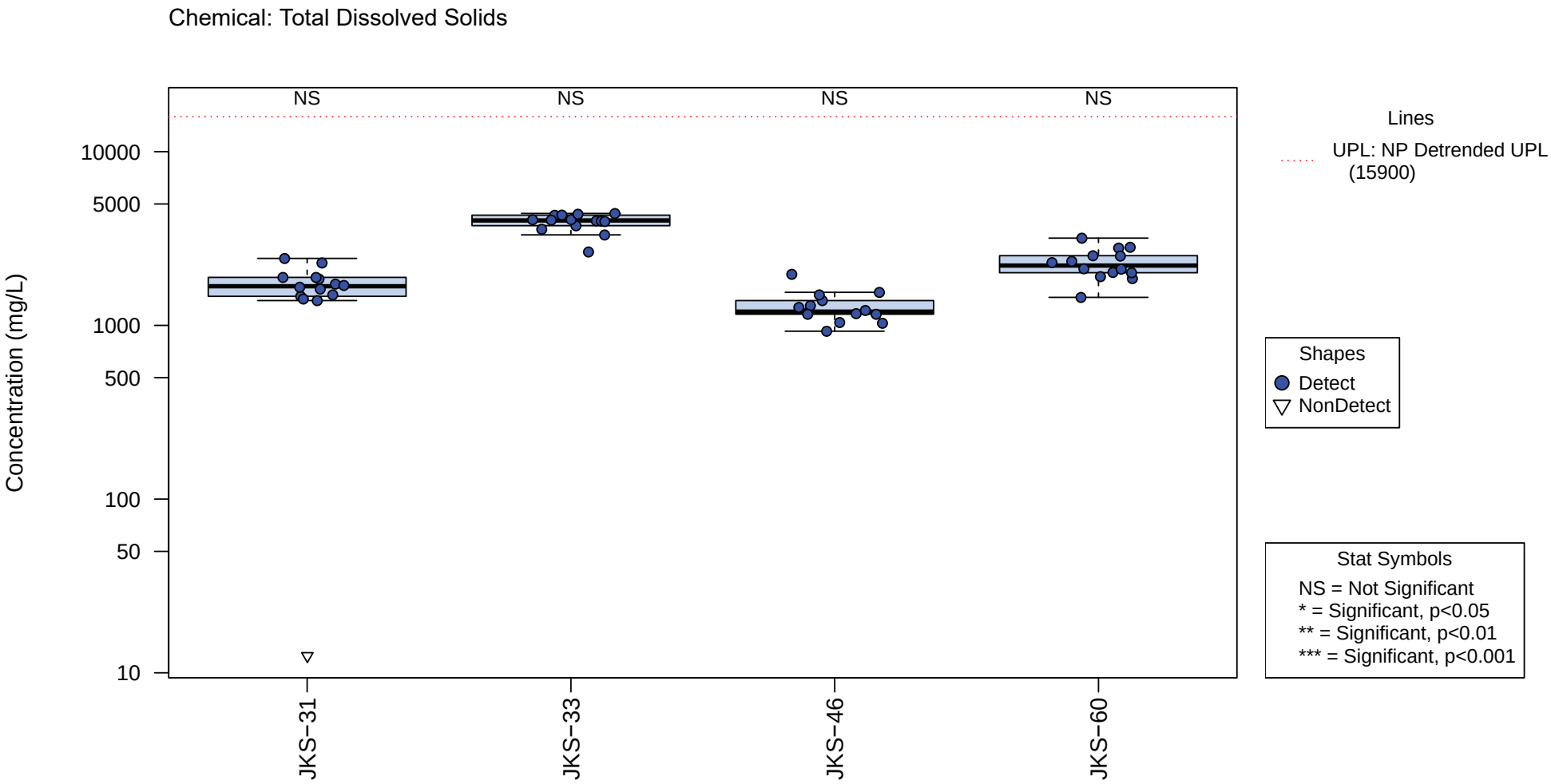

April 2020 Groundwater Sampling Event – Calaveras Power Station CCR Units

Appendix C

ERM

CityCentre Four
840 West Sam Houston Parkway
North, Suite 600
Houston, Texas 77024-3920

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

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September 25, 2020

Mr. Michael Malone
CPS Energy
145 Navarro Street
San Antonio, Texas 78205

Reference: Project No. 0503422\A10320

Subject: April 2020 Groundwater Sampling Event and August 2020 Resampling Event
Calaveras Power Station CCR Units
San Antonio, Texas

Dear Mr. Malone:

Introduction

Title 40, Code of Federal Regulations, Part 257 (40 CFR §257) (a.k.a. the 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* and *2019 Annual Groundwater Monitoring and Corrective Action Reports* for each CCR unit, the downgradient monitoring well results from the October 2017 and October 2018 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 evaluations of the April and August 2020 groundwater sample results indicated a potential SSI for a limited number of constituents from the EP, FAL, BAPs, and 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 a 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.

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Texas Board of Professional Geoscientist Firm 50036

To address the potential SSIs identified in the previous three *Annual Groundwater Monitoring and Corrective Action Reports*, CPS Energy prepared three *Written Demonstrations – Responses to Potential Statistically Significant Increases* (dated April 4, 2018; February 27, 2019; and April 27, 2020; respectively). Based on the evidence provided in the *Written 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 2020 was conducted on April 28 through April 29, 2020. 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. A resampling event of JKS-54 only was conducted on August 24, 2020.

For each CCR unit, the downgradient monitoring well results from the April and August 2020 sampling events were compared to the updated UPLs and LPLs recalculated in their respective *2019 Annual Groundwater Monitoring and Corrective Action Report*. The April and August 2020 groundwater sample results for the downgradient monitoring wells in each CCR unit are summarized in Attachment 1.

Although the evaluations of the April and August 2020 groundwater sample results indicate a potential SSI for a limited number of constituents, with the exception of sulfate in JKS-54 associated with the SRH Pond, 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 Demonstrations*. The evaluations of the April and August 2020 groundwater sample results with potential SSIs are summarized below.

EP – The constituents associated with potential SSIs include fluoride in JKS-36 and JKS-61; and pH in JKS-36 and JKS-62. As previously presented in the *Written Demonstrations*, the concentrations of fluoride and pH appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. The reported April 2020 concentrations were within the range of naturally occurring concentrations identified in the *Written Demonstrations*.

FAL – The constituent associated with a potential SSI is pH in JKS-31 and JKS-46. As previously presented in the *Written Demonstrations*, the concentrations of pH appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. The reported April 2020 concentrations were within the range of naturally occurring concentrations identified in the *Written Demonstrations*.

BAPs – The constituents associated with potential SSIs include boron in JKS-50R and JKS-56; and fluoride in JKS-52 and JKS-55. As previously presented in the *Written Demonstrations*, the concentrations of boron and fluoride appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. The reported April 2020 concentrations were within the range of naturally occurring concentrations identified in the *Written Demonstrations*.

SRH Pond – The constituents associated with potential SSIs include fluoride in JKS-52 and JKS-54; and sulfate in JKS-54. As previously noted in the *April 2019 Groundwater Sampling Report*, the concentrations of fluoride appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit and the reported April 2020 concentrations are within the range of naturally occurring concentrations identified in the *Annual Groundwater Monitoring and Corrective Action Reports*. Although a potential SSI of sulfate was not previously presented in the *Written Demonstrations*, the concentrations of sulfate in JKS-54 appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. While the concentration reported in the April 2020 sampling event (443 mg/L) was the highest concentration reported in JKS-54, the concentration reported in the August 2020 resampling event (425 mg/L) is within the range of concentrations reported in upgradient monitoring well JKS-51 over the previous three sampling events (405 to 439 mg/L).

Conclusions

Based on the April and August 2020 groundwater sample results and the evidence provided in one or all of the *Written 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 2020.

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

Sincerely,

Environmental Resources Management

Walter Zverina
Principal Consultant

ATTACHMENT 1 APRIL AND AUGUST 2020 GROUNDWATER SAMPLE RESULTS

September 2020
Project No. 0503422

April 2020 Groundwater Sample Results
CCR Unit: Evaporation Pond
CPS Energy Calaveras Power Station
San Antonio, TX

			CCR Unit	EP	EP	EP	EP
			Well Designation	Downgradient	Downgradient	Downgradient	Downgradient
			Well ID	JKS-36	JKS-61	JKS-61	JKS-62
			Sample Date	4/29/2020	4/29/2020	4/29/2020	4/29/2020
			Sample Type Code	N	N	FD	N
Constituent	Units	2019 LPL - EP	2019 UPL - EP				
Boron	mg/L	--	1.88	0.459	1.82	1.85	0.484
Calcium	mg/L	--	1,300	175	154	157	122
Chloride	mg/L	--	2,780	63.3	312	317	284
Fluoride	mg/L	--	0.382	1.18	0.494	0.549	0.331
pH, Field	SU	4.58	6.47	3.42	6.27	6.27	6.54
Sulfate	mg/L	--	2,110	189	604	608	190
Total dissolved solids	mg/L	--	6,660	1,790	1,870	1,870	1,100

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

April 2020 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	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020
			Sample Type Code	N	N	N	FD	N
Constituent	Units	2019 LPL - FAL	2019 UPL - FAL					
Boron	mg/L	--	4.29	0.429	1.18	0.864	0.806	0.325
Calcium	mg/L	--	583	171 J	573 J	143 J	133 J	530 J
Chloride	mg/L	--	841	272	756	17.9	19.2	168
Fluoride	mg/L	--	4.86	1.00	1.68	1.61 J	2.44 J	0.188
pH, Field	SU	3.98	6.73	3.70	6.30	3.10	3.10	6.61
Sulfate	mg/L	--	7,630	877	1,620	1,180	1,240	1,280
Total dissolved solids	mg/L	--	11,900	1,890	4,370	1,970	1,780	3,180

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

April 2020 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	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020
			Sample Type Code	N	N	N	FD	N	N
Constituent	Units	2019 LPL - BAP	2019 UPL - BAP						
Boron	mg/L	--	2.40	2.36	5.52	2.05	2.16	0.779	3.55
Calcium	mg/L	--	368	130 J	126 J	174 J	180 J	137 J	103 J
Chloride	mg/L	--	608	485	102	433	430	452	101
Fluoride	mg/L	--	0.847	0.051 JH	0.510	0.908	0.952	1.01	0.552
pH, Field	SU	5.48	7.31	6.89	6.65	6.83	6.83	6.81	6.72
Sulfate	mg/L	--	431	206	194	315	313	177	138
Total dissolved solids	mg/L	--	2,240	1,400	918	1,470	1,420	1,350	904

NOTES:

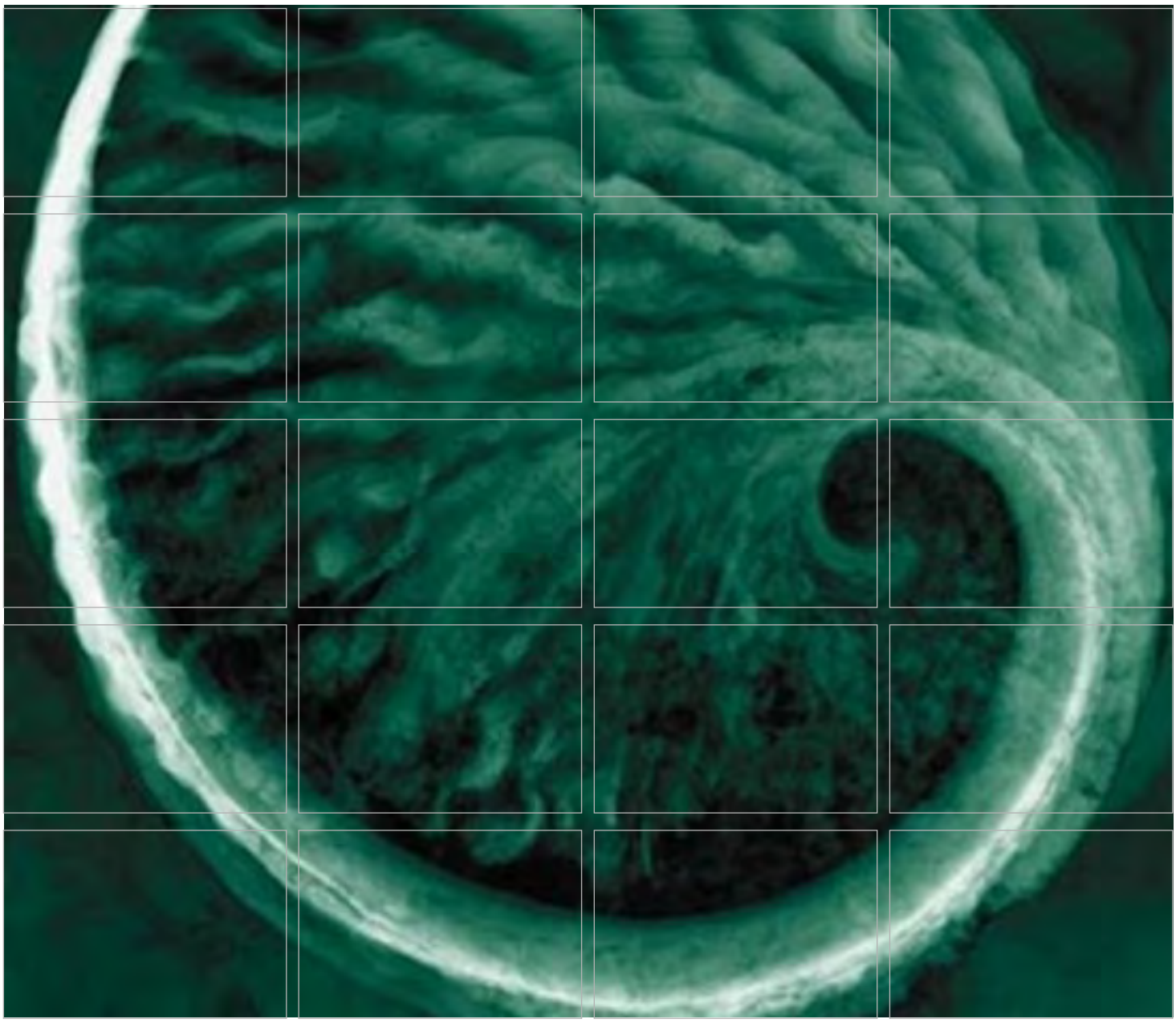
Shaded results either exceed of the Upper Prediction Limit (UPL) or are below the Lower Prediction Limit (LPL) for this CCR unit.
Sample Type Code: N - Normal; FD - Field Duplicate
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.

April and August 2020 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	SRH Pond
			Well Designation	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient
			Well ID	JKS-52	JKS-52	JKS-53	JKS-54	JKS-54
			Sample Date	4/28/2020	4/28/2020	4/28/2020	4/28/2020	8/24/2020
			Sample Type Code	N	FD	N	N	R
Constituent	Units	2019 LPL - SRH	2019 UPL - SRH					
Boron	mg/L	--	2.40	2.05	2.16	1.43	1.23	NA
Calcium	mg/L	--	357	174 J	180 J	114 J	118 J	NA
Chloride	mg/L	--	608	433	430	381	380	NA
Fluoride	mg/L	--	0.831	0.908	0.952	0.428	0.861	0.579
pH, Field	SU	5.48	7.31	6.83	6.83	6.67	6.76	NA
Sulfate	mg/L	--	421	315	313	244	443	425
Total dissolved solids	mg/L	--	2,180	1,470	1,420	1,160	1,570	NA

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; R - Resample
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
NA: Not analyzed for this constituent



Annual Groundwater Monitoring and Corrective Action Report

CPS Energy
Calaveras Power Station – Sludge Recycle Holding Pond
San Antonio, Texas

January 2021

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Calaveras Power Station – Sludge Recycle Holding Pond

Annual Groundwater Monitoring and Corrective Action Report

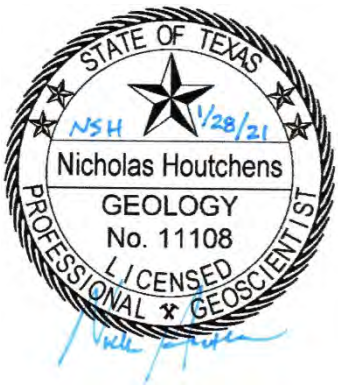
January 2021

Project No. 0503422
San Antonio, Texas

Jeffery L. Bauguss, P.E.
Partner-in-Charge

Walter Zverina
Project Manager

Karen Fletcher
Senior Scientist



Nicholas Houtchens, P.G.
Senior Geologist

Environmental Resources Management
206 East 9th Street, Suite 1700
Austin, TX 78701
T: 512-459-4700

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

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1. CURRENT STATUS SUMMARY

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

- At the start of the 2020 annual reporting period, the SRH Pond was operating under the detection monitoring program, as defined in §257.94;
- At the end of the 2020 annual reporting period, the SRH Pond 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 SRH Pond;
- A remedy was not required or selected pursuant to §257.97 during the 2020 annual reporting period; and
- No remedial activities were initiated or are ongoing pursuant to §257.98 during the 2020 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) (a.k.a. the CCR Rule). The Power Station is located in unincorporated Bexar County, Texas, approximately 13 miles southeast of San Antonio. Currently, CPS Energy operates three CCR units at the Power Station: Evaporation Pond, Fly Ash Landfill, and the Sludge Recycle Holding (SRH) Pond. This *Annual Groundwater Monitoring and Corrective Action Report* (Report) only addresses the SRH Pond.

This Report was produced by Environmental Resource Management (ERM), on behalf of CPS Energy, and summarizes the groundwater monitoring activities for the SRH Pond and provides a statistical summary of the findings for samples collected during the 2020 semi-annual monitoring events. Consistent with the requirements of the CCR Rule, this Report will be posted to the facility's operating record and notification will be made to the State of Texas. Additionally, this Report will be placed on the CPS Energy publically accessible internet site. Unless otherwise mentioned, the analyses in this Report follow the *Groundwater Sampling and Analysis Program* (SAP) (ERM, 2017) posted on the internet site. 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 SRH Pond is located east of the Power Station generating units and is adjacent to and immediately west of the Bottom Ash Ponds. The SRH Pond consists of two ponds separated by a dividing wall (oriented north and south) containing flue gas desulphurization scrubber sludge. The SRH Pond was constructed in 1992. The CCR unit location is shown on Figure 1.

3. PROGRAM STATUS

From December 2016 to 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.

The groundwater monitoring well network consists of two upgradient monitor wells (JKS-49 and JKS-51) and three downgradient monitor wells (JKS-52, JKS-53, and JKS-54). All monitoring wells are screened within the uppermost groundwater bearing unit (GWBU) in the vicinity of the SRH Ponds. The uppermost GWBU varies in thickness from approximately 9.5 to 21.5 feet thick and is comprised of clayey/silty sand to moderately-sorted sand. The uppermost GWBU is located below semi-confining units (i.e., clay, sandy clay, or silty clay), and above a sandstone bedrock unit.

The monitoring well locations are shown in Figure 1. No problems were encountered in the data collection or in well performance, and no action was required to resolve any issues. No new monitoring wells were installed or decommissioned after the certification of the well network.

3.1. GROUNDWATER FLOW RATE AND DIRECTION

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

Groundwater elevations collected during the monitoring events are summarized in Table 1. Groundwater elevations and the potentiometric surfaces for the April and October 2020 monitoring events are shown on Figure 2A and Figure 2B, respectively. As measured during the April 2020 monitoring event, groundwater in the vicinity of the SRH Pond appears to flow toward Calaveras Lake and the adjacent channel (south and southeast). The horizontal gradient is less than 0.001 feet/foot.

Groundwater elevations measured during the October 2020 monitoring event appear to display radial flow from Calaveras Lake and adjacent channel towards the SRH Pond (from the east and south), which is a change in groundwater flow direction not previously observed at the SRH Pond, including April 2020. Similar to observations made during the October 2019 monitoring event, JKS-49 was the lowest recorded potentiometric surface elevation. The horizontal gradient is approximately 0.002 feet/foot. Groundwater monitoring networks that exhibit a substantially flat gradient are more likely to experience differences in groundwater flow direction. With proximity to Calaveras Lake, the slightest lake level fluctuations may influence groundwater flow direction. The potentiometric surface elevations will continue to be monitored and a water level study will be initiated in 2021.

3.2. SAMPLING SUMMARY

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

The SRH Pond monitoring wells were sampled by CPS Energy using low flow sampling techniques during the monitoring events. No data gaps were identified during the 2020 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, located in San Antonio, Texas for analysis. 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. A summary of the data qualifiers are 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 the SAP, a prediction limit approach [40 CFR §257.93(f)] was used to identify potential impacts to groundwater. Tables and figures generated as part of the statistical analysis are provided in Appendix B. The steps outlined in the decision framework in the SAP include:

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

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 C.

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 test shows that:

- One Appendix III analyte [chloride] will follow interwell analysis, with no significant differences present in upgradient data; and
- The remaining six Appendix III analytes [boron, calcium, fluoride, pH, sulfate, and total dissolved solids (TDS)] will follow intrawell analysis, with significant differences present in upgradient data.

Interwell analytes will use a pooled upgradient dataset for subsequent report sections. Conversely, intrawell analytes will have each individual upgradient dataset used for subsequent report sections.

4.2. ESTABLISHMENT OF UPGRADIENT DATASET

When evaluating the concentrations of analytes in groundwater, USEPA Unified 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 SRH Pond (Appendix B, Table 2). The descriptive statistics highlight a number of relevant characteristics about the upgradient datasets including:

- There are a total of 13 well-analyte combinations for the upgradient dataset;
- 13 well-analyte combinations have detection rates greater than or equal to 50 percent;
- 12 well-analyte combinations have 100 percent detects;
- 11 well-analyte combinations follow a normal distribution (using Shapiro-Wilks Normality Test); and
- Two well-analyte combinations have no discernible distribution.

4.2.2. Outlier Determination

Both statistical and visual outlier tests were performed on the upgradient datasets. Data points identified as both a statistical and visual outlier (Appendix B, Table 3 and Appendix B, Figure 2) were reviewed before they were excluded from the dataset. A total of four potential outliers were initially flagged from the upgradient datasets. However, these values were consistent with seasonal fluctuations and concentrations detected in other upgradient wells or in historical groundwater sampling results. No analytical or sampling issues were identified during data

review; therefore, the four values were considered valid and were retained for upper prediction limit (UPL) calculations.

4.2.3. Check for Temporal Stability

A trend test was performed for all values in the upgradient wells that had 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 following summarize the results of the trend analysis:

- There are a total of 13 well-analyte combinations in the upgradient dataset; and
- 13 well-analyte combinations meet the data requirements of the trend test of which:
    - One well-analyte combinations had an increasing trend;
    - One well-analyte combinations had a decreasing trend; and
    - 11 well-analyte combinations had no trend (i.e., concentrations were stable over time).

4.3. CALCULATION OF PREDICTION LIMITS

A multi-part assessment of the monitoring wells was performed to determine what type of UPL to calculate as a compliance point. A decision framework was applied for each upgradient well based on inter/intrawell analysis, data availability, and presence of temporal trends.

A total of two well-analyte combinations were found to have either increasing or decreasing trends. For these well-analyte combinations, a bootstrapped UPL calculated around a Theil Sen trend was used to derive a more accurate UPL. The remaining 11 well-analyte combinations were found to have no 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 October 2020 sampling results in the downgradient wells. A final lower prediction limit (LPL) was also selected for pH. For the one analyte following interwell analysis, the upgradient dataset was pooled prior to UPL calculations, resulting in a single UPL value per analyte. For the six analytes following 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 calculations are provided in Appendix B, Table 5.

Final UPL and LPL Values

Analysis Type	Analyte	LPL	UPL	Unit
Intrawell	Boron	--	2.64	mg/L
Intrawell	Calcium	--	377	mg/L
Interwell	Chloride	--	608	mg/L
Intrawell	Fluoride	--	0.89	mg/L
Intrawell	pH	5.48	7.31	SU
Intrawell	Sulfate	--	452	mg/L
Intrawell	TDS	--	2,320	mg/L

4.4. CONCLUSIONS

The downgradient samples collected during the October 2020 monitoring event were used for compliance comparisons. All downgradient wells were less than the UPLs and greater than the LPLs for pH.

Additionally, each downgradient well-analyte pair had a Wilcoxon Rank Sum test comparing if their median is greater than the UPL or less than the LPL for pH. This nonparametric, rank-based test was used as an additional line of evidence for downgradient well compliance. Specific well-analyte pairs are of interest if: (1) there is a recent exceedance of the UPL, but historic concentrations place the median less than the UPL, or (2) there is not a recent exceedance of the UPL, but historic concentrations place the median greater than the UPL. All downgradient wells had medians less than the UPLs and greater than the LPLs for pH. Full downgradient results are provided in Appendix B, Table 6, with boxplots in Appendix B, Figure 4.

5. RECOMMENDATIONS

Currently, there are no plans to transition from detection monitoring to assessment monitoring.

6. REFERENCES

ERM, 2017. *Groundwater Sampling and Analysis Program.*

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
SRH Pond

		JKS-49 Upgradient		JKS-51 Upgradient		JKS-52 Downgradient		JKS-53 Downgradient		JKS-54 Downgradient	
		TOC Elevation	498.63	TOC Elevation	496.92	TOC Elevation	493.15	TOC Elevation	494.74	TOC Elevation	496.40
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)	Depth to Water (feet btoc)	Water Level (msl)
1	12/6/16 to 12/8/16	8.81	489.82	10.76	486.16	7.53	485.62	7.70	487.04	10.19	486.21
2	2/21/17 to 2/23/17	8.56	490.07	10.80	486.12	7.43	485.72	8.52	486.22	10.48	485.92
3	3/28/17 to 3/30/17	8.90	489.73	10.59	486.33	7.33	485.82	8.95	485.79	10.64	485.76
4	5/2/17 to 5/4/17	8.85	489.78	10.56	486.36	7.35	485.80	8.74	486.00	10.64	485.76
5	6/20/17 to 6/21/17	8.75	489.88	10.56	486.36	7.46	485.69	8.47	486.27	10.71	485.69
6	7/25/17 to 7/26/17	8.46	490.17	10.68	486.24	7.50	485.65	8.85	485.89	10.85	485.55
7	8/29/17 to 8/30/17	7.21	491.42	10.48	486.44	7.40	485.75	8.55	486.19	9.50	486.90
8	10/10/17 to 10/11/17	11.17	487.46	10.98	485.94	7.53	485.62	9.21	485.53	11.17	485.23
9	4/4/18 to 4/5/18	9.00	489.63	10.93	485.99	8.48	484.67	8.90	485.84	10.76	485.64
10	10/30/18 to 10/31/18	6.88	491.75	10.45	486.47	8.33	484.82	8.40	486.34	10.55	485.85
11	4/9/19 to 4/10/19	12.52	486.11	11.02	485.90	7.65	485.50	8.96	485.78	10.75	485.65
12	10/22/19 to 10/23/19	14.84	483.79	12.00	484.92	9.40	483.75	9.91	484.83	11.47	484.93
13	4/28/20 to 4/29/20	13.58	485.05	11.79	485.13	8.20	484.95	9.75	484.99	11.33	485.07
14	10/20/20 to 10/21/20	14.42	484.21	12.11	484.81	8.07	485.08	9.73	485.01	11.47	484.93

NOTES:
btoc = below top of casing
msl = mean sea level

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

CCR Unit	Well ID	Well Function	Number of Samples Collected in 2016 - 2020	2016 - 2020 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	10/20/20 to 10/21/20	
SRH Pond	JKS-49	Upgradient Monitoring	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection
	JKS-51	Upgradient Monitoring	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection
	JKS-52	Downgradient Monitoring	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection
	JKS-53	Downgradient Monitoring	14	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Detection
	JKS-54	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
SRH Pond

		JKS-49 Upgradient													
	Sample Date	**12/7/16**	**2/22/17**	**3/28/17**	**5/3/17**	**6/20/17**	**7/25/17**	**8/29/17**	**10/10/17**	**4/4/18**	**10/30/18**	**4/9/19**	**10/22/19**	**4/28/20**	**10/21/20**
	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**
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**	**April 2020**	**Oct 2020**
Appendix III - Detection Monitoring															
Boron	mg/L	3.24	3.28	3.28	3.03 X	3.04 J	2.76	2.85	2.87	2.71	2.70	2.05	2.58	2.47	2.81
Calcium	mg/L	130	146	173	113	127	120	145	147	135	117 D	154 D	127 D	114 J	132
Chloride	mg/L	295 D	383 D	372 D	326	414 D	448 D	459 D	424	446 D	408	449	429	452	435
Fluoride	mg/L	0.715	0.643 JH	0.665 JH	0.809	0.627 JH	0.617 JH	0.525	0.712	0.697	0.719	0.749	0.793	0.894	0.656
Sulfate	mg/L	211 D	232 D	234 D	194	218 D	227	265 D	219 X	237	237	240	205	217	193
pH - Field Collected	SU	7.19	7.12	7.12	7.02	7.06	6.16	7.05	6.89	7.12	7.12	7.31	6.43	7.15	7.14
Total dissolved solids	mg/L	1250	1240	1190	1100	1450	1440	1490	1730	1310	1210	1290	1380	1240	1380
Appendix IV - Assessment Monitoring															
Antimony	mg/L	0.00120 U	0.000240 U	0.000240 U	0.00173 J	0.00120 U	0.000240 U	0.000240 U	0.000240 U	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00123 U	0.000676 J	0.000729 J	0.00123 U	0.00123 U	0.000544 J	0.000538 J	0.000478 J	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.0607	0.0575	0.0503	0.0554	0.0783	0.0721	0.0788	0.0735	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000654 U	0.000131 U	0.000131 U	0.000654 U	0.000654 U	0.000131 U	0.000131 U	0.000131 U	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.000734 U	0.000147 U	0.000147 U	0.000734 U	0.000734 U	0.000147 U	0.000147 U	0.000147 U	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.00262 U	0.000859 J	0.000572 J	0.00262 U	0.00262 U	0.000963 J	0.000997 J	0.00113 J	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.00102 J	0.00109 J	0.00124 J	0.00155 J	0.00133 J	0.00153 J	0.00155 J	0.00146 J	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	0.715	0.643 JH	0.665 JH	0.809	0.627 JH	0.617 JH	0.525	0.712	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.000758 U	0.000152 U	0.000152 U	0.000758 U	0.000758 U	0.000155 J	0.000152 U	0.000152 U	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.000476 U	0.000476 U	0.00238 U	0.0137 J	0.0341	0.0295	0.0427	0.0252	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.0000263 U	0.0000263 U	0.0000263 U	0.0000690 J	0.0000263 U	0.0000490 J	0.0000263 U	0.0000263 U	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.00779 J	0.00846	0.00875	0.0106	0.00908 J	0.00938	0.0107	0.0111	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.00992 J	0.00597	0.00479	0.00521 J	0.00370 J	0.00235	0.00188 J	0.00141 J	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.00166 U	0.000332 U	0.000332 U	0.00166 U	0.00166 U	0.000332 U	0.000332 U	0.000332 U	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	0.198 ± 0.197	0.615 ± 0.272	0.747 ± 0.323	0.195 ± 0.167	0.294 ± 0.192	0.241 ± 0.193	0.159 ± 0.191	0.746 ± 0.274	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	2.1 ± 0.907	-1.37 ± 1.37	0.854 ± 0.724	1.08 ± 1.72	2.23 ± 0.949	0.658 ± 0.636	0.812 ± 0.604	1.43 ± 0.898	NR	NR	NR	NR	NR	NR

NOTES:
mg/L: Milligrams per Liter.
SU: Standard Units.
pCi/L: Picocuries per Liter.
-- : Laboratory did not analyze sample for indicated constituent.
D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
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
SRH Pond

		JKS-51 Upgradient													
	Sample Date	12/8/16	2/22/17	3/28/17	5/3/17	6/21/17	7/25/17	8/29/17	10/10/17	4/4/18	10/30/18	4/9/19	10/22/19	4/28/20	10/20/20
	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
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**	**April 2020**	**Oct 2020**
Appendix III - Detection Monitoring															
Boron	mg/L	0.512	0.517	0.473	0.565	0.512	0.525	0.453	0.509	0.465	0.347	0.489	0.648	0.627	0.668
Calcium	mg/L	267	292	322	266	261 X	232	236	256	246	149 D	328	336 D	334 J	298
Chloride	mg/L	403 D	331 D	414 D	447	424 D	455 D	384 D	375	395 D	301	559	574 D	555	493
Fluoride	mg/L	0.247	0.341 JH	0.415 JH	0.534	0.354	0.391	0.0960 U	0.407 JH	0.305 J	0.291 J	0.329 J	0.405 J	0.470	0.018 U
Sulfate	mg/L	293 D	330 D	348 D	359	342 D	330 D	314 D	302	354 D	260	428	405 D	439	376
pH - Field Collected	SU	6.59	6.51	6.48	6.56	6.40	5.48	6.38	6.20	6.44	6.70	6.66	5.73	6.43	6.47
Total dissolved solids	mg/L	1650	1650	1490	1980	1530	1580	1390	1650	1320	916	1890	2150	2010	1930
Appendix IV - Assessment Monitoring															
Antimony	mg/L	0.00120 U	0.000240 U	0.000240 U	0.00120 U	0.000953 J	0.000240 U	0.000240 U	0.000240 U	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00123 U	0.000412 J	0.000390 J	0.00123 U	0.000392 J	0.000344 J	0.000395 J	0.000418 J	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.0655	0.0563	0.0517	0.0512	0.0534	0.0520	0.0520	0.0564	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000654 U	0.000131 U	0.000131 U	0.000654 U	0.000212 J	0.000131 U	0.000131 U	0.000131 U	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
Chromium	mg/L	0.00262 U	0.000941 J	0.000525 U	0.00262 U	0.000657 J	0.000874 J	0.00113 J	0.00133 J	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.000350 U	0.0000770 J	0.0000920 J	0.000350 U	0.000124 J	0.0000940 J	0.0000800 J	0.000108 J	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	0.247	0.341 JH	0.415 JH	0.534	0.354	0.391	0.0960 U	0.407 JH	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
Lithium	mg/L	0.000476 U	0.000476 U	0.00238 U	0.0322	0.0874	0.0790	0.0958 JX	0.0718	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	0.000199 J	0.0000263 U	0.0000263 U	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.00128 U	0.000255 U	0.000255 U	0.00128 U	0.000255 U	0.000255 U	0.000255 U	0.000255 U	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.00227 U	0.000454 U	0.000454 U	0.00227 U	0.000454 U	0.000454 U	0.000454 U	0.000454 U	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
Radium-226	pCi/L	1.09 ± 0.376	0.104 ± 0.122	0.618 ± 0.247	0.197 ± 0.145	0.328 ± 0.195	0.0847 ± 0.186	4.83 ± 0.763	0.682 ± 0.309	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	0.312 ± 0.688	1.09 ± 1.37	2.32 ± 1.45	-1.26 ± 1.37	-0.799 ± 0.928	1.57 ± 0.786	0.762 ± 0.706	0.963 ± 0.954	NR	NR	NR	NR	NR	NR

NOTES:
mg/L: Milligrams per Liter.
SU: Standard Units.
pCi/L: Picocuries per Liter.
-- : Laboratory did not analyze sample for indicated constituent.
D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
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
SRH Pond

		JKS-52 Downgradient													
	Sample Date	12/7/16	2/21/17	3/28/17	5/2/17	6/21/17	7/25/17	8/29/17	10/10/17	4/4/18	10/30/18	4/9/19	10/22/19	4/28/20	10/21/20
	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
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**	**April 2020**	**Oct 2020**
Appendix III - Detection Monitoring															
Boron	mg/L	1.66	2.11	1.63	1.51	1.33	1.43	1.46	1.71 X	1.95	1.54	1.46 X	1.65	2.05	2.21
Calcium	mg/L	169	181	189	--	145	140	162	168	175	153 D	195 DX	171 D	174 J	199
Chloride	mg/L	331 D	377 D	323 DX	320	326 D	343 D	417 D	355	360 D	326	336	320	433	408
Fluoride	mg/L	0.796	0.665	0.718 JH	0.915 JH	0.705	0.996 JH	0.0960 U	0.740	0.720	0.710	0.831	0.808	0.908	0.659
Sulfate	mg/L	277 D	318 D	299 DX	290	287 D	292 D	171 D	289	278 D	292	268	288 D	315	282
pH - Field Collected	SU	7.01	6.47	6.91	6.94	6.87	5.87	6.81	6.63	6.79	6.76	6.91	6.00	6.83	6.78
Total dissolved solids	mg/L	1290	1380	1100	1250	1280	1250	1250	1220	1240	1210	1170	1270	1470	1430
Appendix IV - Assessment Monitoring															
Antimony	mg/L	0.00120 U	0.000240 U	0.000240 U	0.000240 U	0.000240 U	0.000240 U	0.000240 U	0.000240 U	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00123 U	0.000565 J	0.000398 J	0.000425 J	0.000427 J	0.000392 J	0.000412 J	0.000448 J	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.0646	0.0583	0.0519	0.0483	0.0527	0.0558	0.0565	0.0616	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000654 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U	0.000153 J	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.000734 U	0.000147 U	0.000147 U	0.000147 U	0.000147 U	0.000147 U	0.000147 U	0.000147 U	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.00262 U	0.000525 U	0.000525 U	0.000525 U	0.000841 J	0.000860 J	0.00123 J	0.00108 J	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.00188 J	0.00233	0.00112 J	0.00119 J	0.00211	0.00183 J	0.00159 J	0.00189 J	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	0.796	0.665	0.718 JH	0.915 JH	0.705	0.996 JH	0.0960 U	0.740	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.000758 U	0.000152 U	0.000152 U	0.000152 U	0.000292 J	0.000152 U	0.000152 U	0.000163 J	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.000476 U	0.0471	0.000476 U	--	0.0616	0.0605	0.0827	0.0588	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.0000263 U	0.000234	0.0000263 U	0.0000263 U	0.0000263 U	0.0000810 J	0.0000263 U	0.0000263 UX	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.00128 U	0.00128 J	0.00115 J	0.00102 J	0.000911 J	0.000865 J	0.000843 J	0.000914 J	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.00227 U	0.000454 U	0.000454 U	0.000454 U	0.000454 U	0.000454 U	0.000454 U	0.000454 U	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.00166 U	0.000332 U	0.000332 U	0.000332 U	0.000332 U	0.000332 U	0.000332 U	0.000332 U	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	1.71 ± 0.465	0.608 ± 0.289	0.296 ± 0.169	0 ± 0.150	0.435 ± 0.241	0.449 ± 0.196	0.194 ± 0.194	0.704 ± 0.319	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	2.65 ± 1.12	0.744 ± 0.833	0.0645 ± 0.649	0.53 ± 1.10	0.928 ± 0.784	1.16 ± 0.867	0.716 ± 0.767	1.54 ± 1.22	NR	NR	NR	NR	NR	NR

NOTES:
mg/L: Milligrams per Liter.
SU: Standard Units.
pCi/L: Picocuries per Liter.
-- : Laboratory did not analyze sample for indicated constituent.
D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
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
SRH Pond

		JKS-53 Downgradient													
	Sample Date	12/8/16	2/23/17	3/29/17	5/2/17	6/21/17	7/26/17	8/30/17	10/11/17	4/4/18	10/30/18	4/9/19	10/22/19	4/28/20	10/20/20
	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
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	April 2020	Oct 2020
Appendix III - Detection Monitoring															
Boron	mg/L	1.50	1.38	1.55	1.54	1.47	1.45	1.36	1.45	1.60	1.61	1.42	1.36	1.43	1.47
Calcium	mg/L	134	105	156	NR	94.1	97.0	99.0	113	113	111 D	116	123 D	114 J	117
Chloride	mg/L	383 D	336 D	315 D	322	335 D	329 X	341	313	361	350	354	342	381	359
Fluoride	mg/L	0.230	0.377	0.408	0.547 JH	0.339	0.385 J	0.412	0.0360 U	0.392 J	0.265 J	0.270 J	0.352 J	0.428	0.018 U
Sulfate	mg/L	283 D	267 D	238 D	241	236 D	234 X	227	214	249	236	224	213	244	224
pH - Field Collected	SU	6.80	6.63	6.54	6.56	6.67	6.69	6.62	6.50	6.67	6.65	6.60	5.60	6.67	6.60
Total dissolved solids	mg/L	1390	1250	1160	1180	1150	1220	1150	1140	1160	1140	1150	1250	1160	1320
Appendix IV - Assessment Monitoring															
Antimony	mg/L	0.00120 U	0.000240 U	0.000240 U	0.000240 U	0.000240 U	0.000240 U	0.000240 U	0.000240 U	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00123 U	0.000284 J	0.000266 J	0.000274 J	0.000276 J	0.000246 U	0.000246 U	0.000246 U	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.0692	0.0633	0.0633	0.0623	0.0597	0.0638	0.0541	0.0617	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000654 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U	0.000131 U	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.000734 U	0.000147 U	0.000147 U	0.000147 U	0.000147 U	0.000147 U	0.000147 U	0.000147 U	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.00262 U	0.000701 J	0.000525 U	0.000525 U	0.000525 U	0.000557 J	0.000906 J	0.000525 U	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.000356 J	0.000140 J	0.000135 J	0.000165 J	0.000137 J	0.000150 J	0.000163 J	0.0000699 U	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	0.230	0.377	0.408	0.547 JH	0.339	0.385 J	0.412	0.0360 U	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.000758 U	0.000152 U	0.000152 U	0.000152 U	0.000152 U	0.000152 U	0.000152 U	0.000152 U	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.0279	0.0816	0.000476 U	NR	0.0931	0.104	0.125	0.109	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.0000263 U	0.0000780 J	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	0.0000470 JX	0.0000263 U	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.00128 U	0.000290 J	0.000255 U	0.000255 U	0.000255 U	0.000255 U	0.000255 U	0.000255 U	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.00227 U	0.000454 U	0.000454 U	0.000454 U	0.000454 U	0.000454 U	0.000454 U	0.000454 U	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.00166 U	0.000332 U	0.000332 U	0.000332 U	0.000332 U	0.000332 U	0.000332 U	0.000332 U	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	0.306 ± 0.261	0.909 ± 0.363	0.117 ± 0.211 U	0.519 ± 0.221	0.558 ± 0.232	0.385 ± 0.244	2.76 ± 0.582	0.451 ± 0.270	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	1.09 ± 1.24	2.33 ± 1.13	1.81 ± 1.61	0.906 ± 1.02	-0.0622 ± 0.583	1.9 ± 1.24	1.44 ± 0.713	0.919 ± 0.853	NR	NR	NR	NR	NR	NR

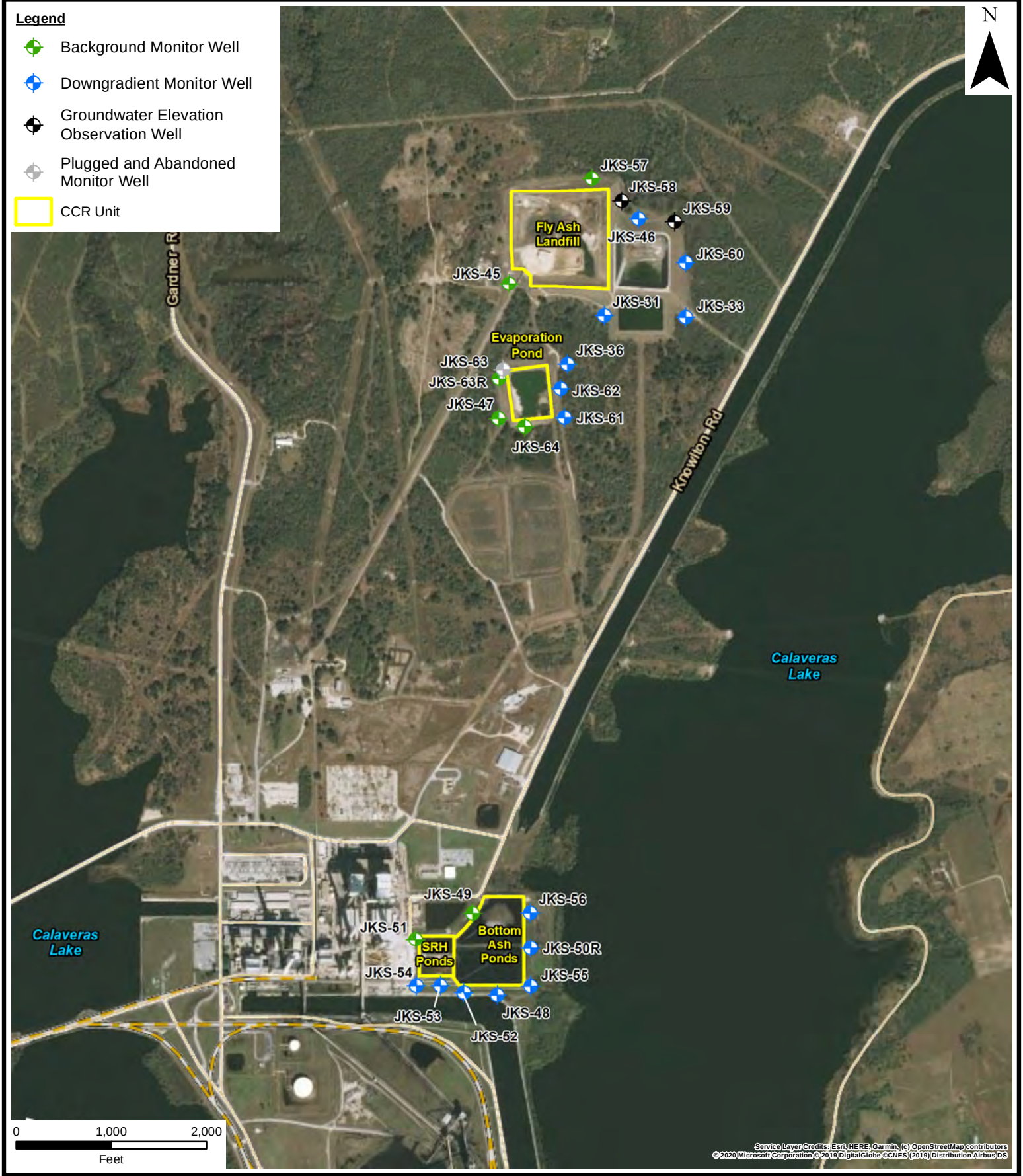
NOTES:
mg/L: Milligrams per Liter.
SU: Standard Units.
pCi/L: Picocuries per Liter.
-- : Laboratory did not analyze sample for indicated constituent.
D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
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
SRH Pond

		JKS-54 Downgradient													
	Sample Date	12/8/16	2/23/17	3/28/17	5/2/17	6/21/17	7/26/17	8/30/17	10/11/17	4/5/18	10/30/18	4/9/19	10/22/19	4/28/20	10/20/20
	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
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**	**April 2020**	**Oct 2020**
Appendix III - Detection Monitoring															
Boron	mg/L	1.24	1.16	1.35	1.26	1.14	1.26	1.16	1.28	1.26	1.30	1.38	1.50	1.23	1.31
Calcium	mg/L	114	106	160	--	103	102	95.8	113	111	98.2 D	117	117 D	118 J	129
Chloride	mg/L	345 D	350 D	353 D	344	355 D	354 D	339 D	328	382	356	385	368	380	383
Fluoride	mg/L	0.718	0.731	0.655 JH	0.850 JH	0.623	0.728	0.0960 U	0.661	0.742	0.643	0.711	0.773	0.861	0.455
Sulfate	mg/L	308 D	312 D	315 D	312	304 D	305 D	298 D	287	309	283	309	341 D	443	398
pH - Field Collected	SU	6.98	6.78	6.92	6.89	6.88	6.91	6.79	6.69	6.86	6.85	6.75	5.60	6.76	6.74
Total dissolved solids	mg/L	1370	1430	1310	1310	1410	1320	1360	1500	1230	1240	1470	1470	1570	1530
Appendix IV - Assessment Monitoring															
Antimony	mg/L	0.00120 U	0.000240 U	0.000240 U	0.000240 U	0.000240 U	0.000240 U	0.000240 U	0.000240 U	NR	NR	NR	NR	NR	NR
Arsenic	mg/L	0.00123 U	0.000369 J	0.000898 J	0.000351 J	0.000354 J	0.000484 J	0.000324 J	0.000246 U	NR	NR	NR	NR	NR	NR
Barium	mg/L	0.0631	0.0564	0.0611	0.0537	0.0543	0.0593	0.0471	0.0558	NR	NR	NR	NR	NR	NR
Beryllium	mg/L	0.000654 U	0.000131 U	0.000131 U	0.000131 U	0.000162 J	0.000131 U	0.000131 U	0.000131 U	NR	NR	NR	NR	NR	NR
Cadmium	mg/L	0.000734 U	0.000147 U	0.000147 U	0.000147 U	0.000147 U	0.000147 U	0.000147 U	0.000147 U	NR	NR	NR	NR	NR	NR
Chromium	mg/L	0.00262 U	0.000657 J	0.00186 J	0.000525 U	0.000525 U	0.000693 J	0.000765 J	0.000525 U	NR	NR	NR	NR	NR	NR
Cobalt	mg/L	0.000420 J	0.000212 J	0.00199 J	0.000253 J	0.000260 J	0.000532 J	0.000334 J	0.0000699 U	NR	NR	NR	NR	NR	NR
Fluoride	mg/L	0.718	0.731	0.655 JH	0.850 JH	0.623	0.728	0.0960 U	0.661	NR	NR	NR	NR	NR	NR
Lead	mg/L	0.000758 U	0.000152 U	0.000862 J	0.000152 U	0.000152 U	0.000241 J	0.000152 U	0.000152 U	NR	NR	NR	NR	NR	NR
Lithium	mg/L	0.000476 U	0.0452	0.00238 U	--	0.0595	0.0599	0.0712	0.0608	NR	NR	NR	NR	NR	NR
Mercury	mg/L	0.0000263 U	0.0000620 J	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	0.0000263 U	NR	NR	NR	NR	NR	NR
Molybdenum	mg/L	0.00128 U	0.000447 J	0.000367 J	0.000377 J	0.000342 J	0.000352 J	0.000260 J	0.000255 U	NR	NR	NR	NR	NR	NR
Selenium	mg/L	0.00227 U	0.000454 U	0.000454 U	0.000454 U	0.000454 U	0.000454 U	0.000454 U	0.000454 U	NR	NR	NR	NR	NR	NR
Thallium	mg/L	0.00166 U	0.000332 U	0.000332 U	0.000332 U	0.000332 U	0.000332 U	0.000332 U	0.000332 U	NR	NR	NR	NR	NR	NR
Radium-226	pCi/L	0.88 ± 0.339	0.878 ± 0.358	0.546 ± 0.213	0.217 ± 0.217	0.433 ± 0.249	0.313 ± 0.254	0.926 ± 0.324	0.42 ± 0.205	NR	NR	NR	NR	NR	NR
Radium-228	pCi/L	1.12 ± 1.11	1.94 ± 1.01	0.429 ± 0.781	0.574 ± 1.41	0.451 ± 0.660	0.766 ± 1.29	1.48 ± 0.968	1.17 ± 0.827	NR	NR	NR	NR	NR	NR

NOTES:
mg/L: Milligrams per Liter.
SU: Standard Units.
pCi/L: Picocuries per Liter.
-- : Laboratory did not analyze sample for indicated constituent.
D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
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:	1/17/2020	SCALE:	AS SHOWN	REVISION:	0

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

ERM

Environmental Resources Management

DESIGN:	NH	DRAWN:	LSC	CHKD.:	WZ
DATE:	1/19/2021	SCALE:	AS SHOWN	REVISION:	2

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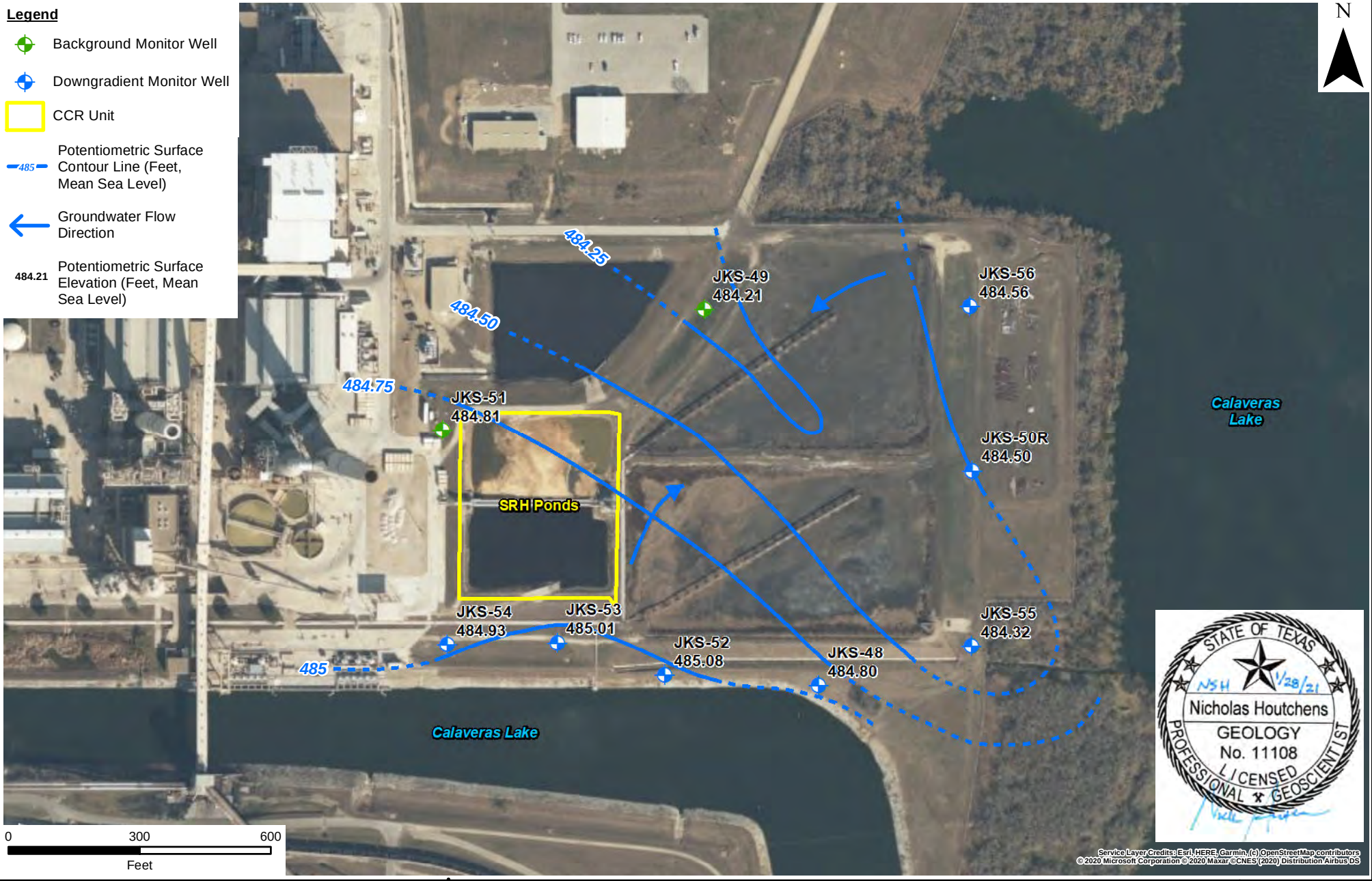
FIGURE 2A
POTENTIOMETRIC SURFACE MAP - APRIL 2020
SRH Pond CCR Unit
CPS Energy - Calaveras Power Station
San Antonio, Texas

ERM



Environmental Resources Management

DESIGN:	NH	DRAWN:	LSC	CHKD.:	WZ
DATE:	1/19/2021	SCALE:	AS SHOWN	REVISION:	1

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FIGURE 2B
POTENTIOMETRIC SURFACE MAP - OCTOBER 2020
SRH Pond CCR Unit
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
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.

APPENDIX B - TABLE 2
Descriptive Statistics for Upgradient Wells
Calaveras Power Station
SRH Pond

Analyte	Well	Units	N	Num Detects	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	0.119723	Normal
Boron	JKS-51	mg/L	14	14	100.00%			0.347	0.512	0.522	0.668	0.0844	0.16163289	Normal
Calcium	JKS-49	mg/L	14	14	100.00%			113	131	134	173	17.1	0.127299	Normal
Calcium	JKS-51	mg/L	14	14	100.00%			149	266	273	336	51	0.18665915	Normal
Chloride	Pooled	mg/L	28	28	100.00%			295	424	423	574	68.9	0.16275852	Normal
Fluoride	JKS-49	mg/L	14	14	100.00%			0.525	0.704	0.702	0.894	0.0922	0.1314425	Normal
Fluoride	JKS-51	mg/L	14	12	85.71%	0.009	0.048	0.247	0.348	0.325	0.534	0.146	0.44841955	Normal
pH	JKS-49	SU	14	14	100.00%			6.16	7.12	6.99	7.31	0.314	0.044881	NDD
pH	JKS-51	SU	14	14	100.00%			5.48	6.46	6.36	6.7	0.346	0.05443283	NDD
Sulfate	JKS-49	mg/L	14	14	100.00%			193	223	224	265	19.5	0.08726818	Normal
Sulfate	JKS-51	mg/L	14	14	100.00%			260	345	349	439	50.8	0.14583131	Normal
Total dissolved solids	JKS-49	mg/L	14	14	100.00%			1100	1300	1340	1730	159	0.11894501	Normal
Total dissolved solids	JKS-51	mg/L	14	14	100.00%			916	1650	1650	2150	326	0.19748063	Normal

NOTES:

Non-detects were substituted with a value of half the detection limit for calculation
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
NDD: No Discernible Distribution

APPENDIX B - TABLE 3
Potential Outliers in Upgradient Wells
Calaveras Power Station
SRH 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
JKS-51	JKS-51004	10/22/2019	Boron	mg/L	TRUE	0.648	Intrawell	Normal		X					
JKS-51	JKS-51-20200428-CCR	4/28/2020	Boron	mg/L	TRUE	0.627	Intrawell	Normal		X			X		
JKS-51	JKS51620699-001	4/10/2019	Chloride	mg/L	TRUE	559	Interwell	Normal		X			X		
JKS-51	JKS-51-20200428-CCR	4/28/2020	Chloride	mg/L	TRUE	555	Interwell	Normal		X			X		
JKS-49	JKS-49-WG-20170725	7/25/2017	pH	SU	TRUE	6.16	Intrawell	NDD	X	X	X	X	X	X	0
JKS-49	JKS-49-WG-20171010	10/10/2017	pH	SU	TRUE	6.89	Intrawell	NDD		X			X		
JKS-49	JKS-49-WG-20191022-02	10/22/2019	pH	SU	TRUE	6.43	Intrawell	NDD	X	X	X	X	X	X	0
JKS-51	JKS-51-WG-20170725	7/25/2017	pH	SU	TRUE	5.48	Intrawell	NDD	X	X	X	X	X	X	0
JKS-51	JKS-51-WG-20171010	10/10/2017	pH	SU	TRUE	6.2	Intrawell	NDD		X			X		
JKS-51	JKS-51-WG-20191022-02	10/22/2019	pH	SU	TRUE	5.73	Intrawell	NDD	X	X	X	X	X	X	0

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 plo
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 outlie
[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 performec
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 hydrogeologis

APPENDIX B - TABLE 4
Mann Kendall Test for Trends in Upgradient Wells
Calaveras Power Station
SRH Pond

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 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 (a=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
SRH Pond

Analyte	UPL Type	Trend	Well	N	Num Detects	Percent Detects	LPL	UPL	Units	ND Adjustment	Transformation	Alpha	Method	Final LPL	Final UPL
Boron	Intrawell	Decreasing Trend	JKS-49	14	14	100%		2.64	mg/L	None	No	0.0025	NP Detrended UPL		X
Boron	Intrawell	Stable, No Trend	JKS-51	14	14	100%		0.694	mg/L	None	No	0.0025	Param Intra 1 of 2		
Calcium	Intrawell	Stable, No Trend	JKS-49	14	14	100%		169	mg/L	None	No	0.0025	Param Intra 1 of 2		
Calcium	Intrawell	Stable, No Trend	JKS-51	14	14	100%		377	mg/L	None	No	0.0025	Param Intra 1 of 2		X
Chloride	Interwell	Increasing Trend	JKS-49, JKS-51	28	28	100%		608	mg/L	None	No	0.0025	NP Detrended UPL		X
Fluoride	Intrawell	Stable, No Trend	JKS-49	14	14	100%		0.89	mg/L	None	No	0.0025	Param Intra 1 of 2		X
Fluoride	Intrawell	Stable, No Trend	JKS-51	14	12	86%		0.622	mg/L	None	No	0.0025	Param Intra 1 of 2		
pH	Intrawell	Stable, No Trend	JKS-49	14	14	100%	6.16	7.31	SU	None	No	0.0172	NP Intra (normality) 1 of 2		X
pH	Intrawell	Stable, No Trend	JKS-51	14	14	100%	5.48	6.7	SU	None	No	0.0172	NP Intra (normality) 1 of 2	X	
Sulfate	Intrawell	Stable, No Trend	JKS-49	14	14	100%		263	mg/L	None	No	0.0025	Param Intra 1 of 2		
Sulfate	Intrawell	Stable, No Trend	JKS-51	14	14	100%		452	mg/L	None	No	0.0025	Param Intra 1 of 2		X
Total dissolved solids	Intrawell	Stable, No Trend	JKS-49	14	14	100%		1660	mg/L	None	No	0.0025	Param Intra 1 of 2		
Total dissolved solids	Intrawell	Stable, No Trend	JKS-51	14	14	100%		2320	mg/L	None	No	0.0025	Param Intra 1 of 2		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.

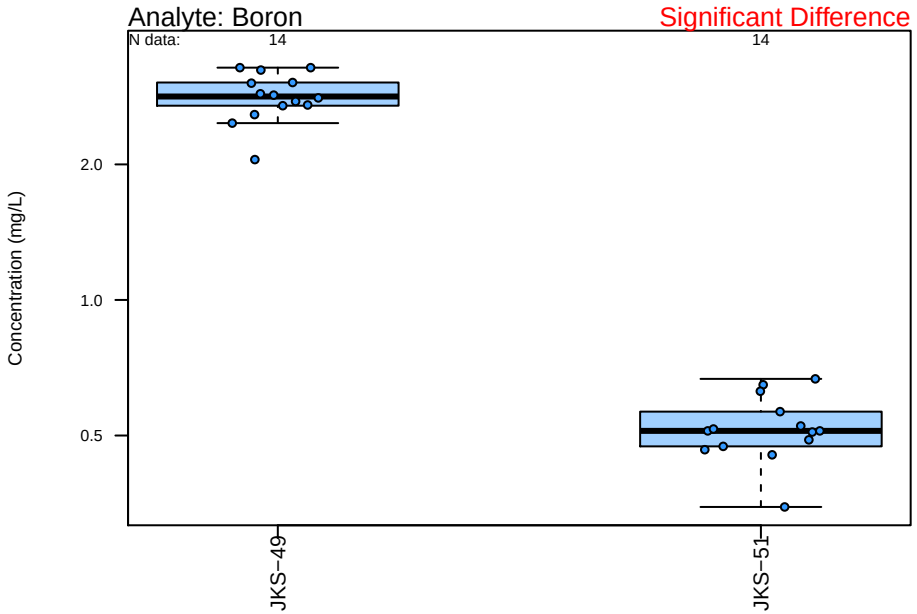
APPENDIX B - TABLE 6
Comparisons of Downgradient Wells to UPLs
Calaveras Power Station
SRH Pond

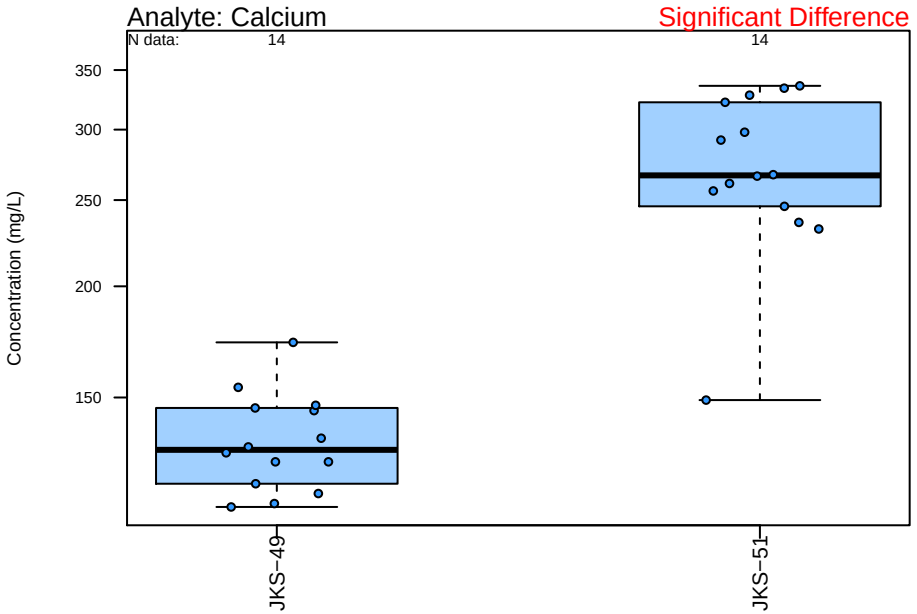
Analyte	Well	LPL	UPL	Units	Recent Date	Observation	Qualifier	Obs > UPL	Mann Kendall p-value	Mann Kendall tau	WRS p-value	WRS Conclusion	Exceed Median	Overall Conclusion
Boron	JKS-52		2.64	mg/L	10/21/2020	2.21					1	NS		No Exceedance
Boron	JKS-53		2.64	mg/L	10/20/2020	1.47					1	NS		No Exceedance
Boron	JKS-54		2.64	mg/L	10/20/2020	1.31					1	NS		No Exceedance
Calcium	JKS-52		377	mg/L	10/21/2020	199					1	NS		No Exceedance
Calcium	JKS-53		377	mg/L	10/20/2020	117					0.999	NS		No Exceedance
Calcium	JKS-54		377	mg/L	10/20/2020	129					0.999	NS		No Exceedance
Chloride	JKS-52		608	mg/L	10/21/2020	408					1	NS		No Exceedance
Chloride	JKS-53		608	mg/L	10/20/2020	359					1	NS		No Exceedance
Chloride	JKS-54		608	mg/L	10/20/2020	383					1	NS		No Exceedance
Fluoride	JKS-52		0.89	mg/L	10/21/2020	0.659					0.998	NS		No Exceedance
Fluoride	JKS-53		0.89	mg/L	10/20/2020	0.009	ND				1	NS		No Exceedance
Fluoride	JKS-54		0.89	mg/L	10/20/2020	0.455					1	NS		No Exceedance
pH	JKS-52	5.48	7.31	SU	10/21/2020	6.78					1	NS		No Exceedance
pH	JKS-53	5.48	7.31	SU	10/20/2020	6.6					1	NS		No Exceedance
pH	JKS-54	5.48	7.31	SU	10/20/2020	6.74					1	NS		No Exceedance
Sulfate	JKS-52		452	mg/L	10/21/2020	282					1	NS		No Exceedance
Sulfate	JKS-53		452	mg/L	10/20/2020	224					1	NS		No Exceedance
Sulfate	JKS-54		452	mg/L	10/20/2020	398					1	NS		No Exceedance
Total dissolved solids	JKS-52		2320	mg/L	10/21/2020	1430					1	NS		No Exceedance
Total dissolved solids	JKS-53		2320	mg/L	10/20/2020	1320					1	NS		No Exceedance
Total dissolved solids	JKS-54		2320	mg/L	10/20/2020	1530					1	NS		No Exceedance

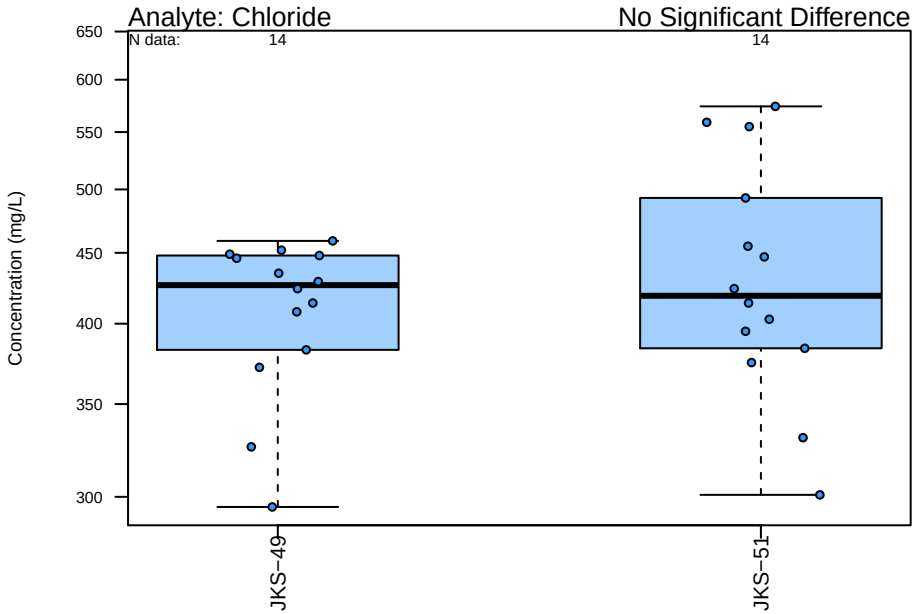
NOTES:

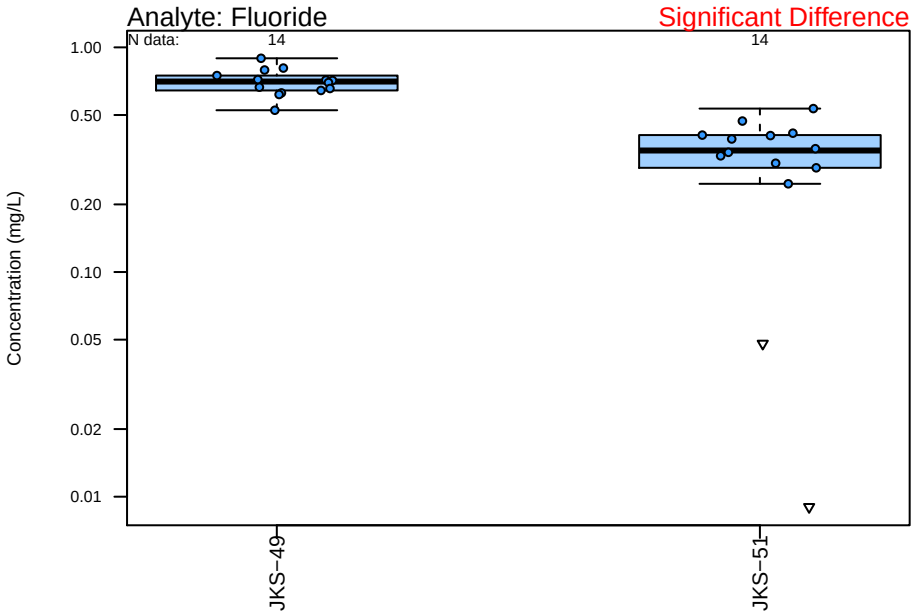
Non-detects were substituted with a value of zero for trend calculation
UPL: Upper Prediction Limit
ND: Not detected
SU: Standard units
tau: Kendall's tau statistic
Obs > UPL: Exceed 'X' indicates that the most recent observed value is higher than the UPL (or out of range of the LPL and UPL in the case of pH
Obs > UPL: Exceed 'X0' indicates that the two most recent values are higher than the UPL, but the upgradient well is 100% ND
Obs > UPL: 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 201
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: SRH Pond
Boxplots of Upgradient Wells

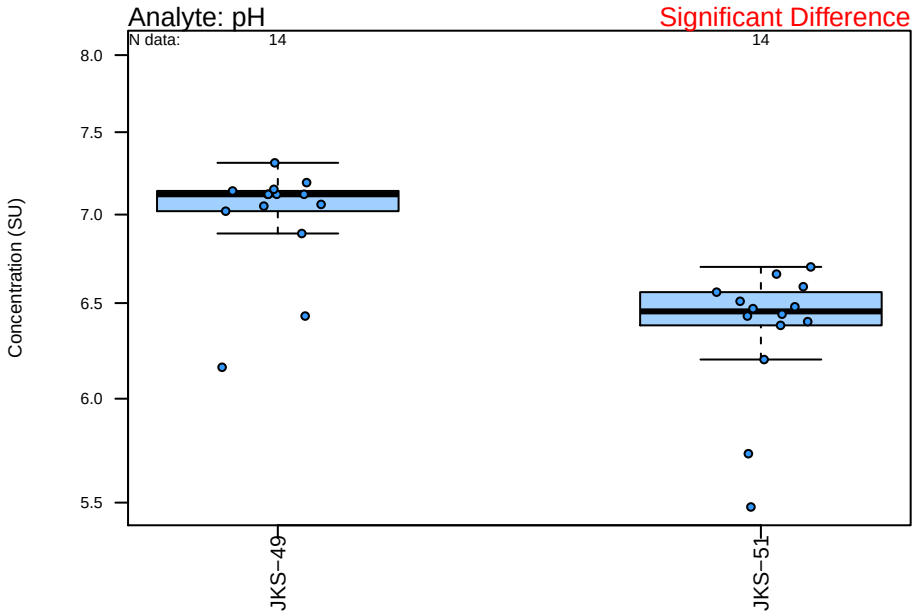


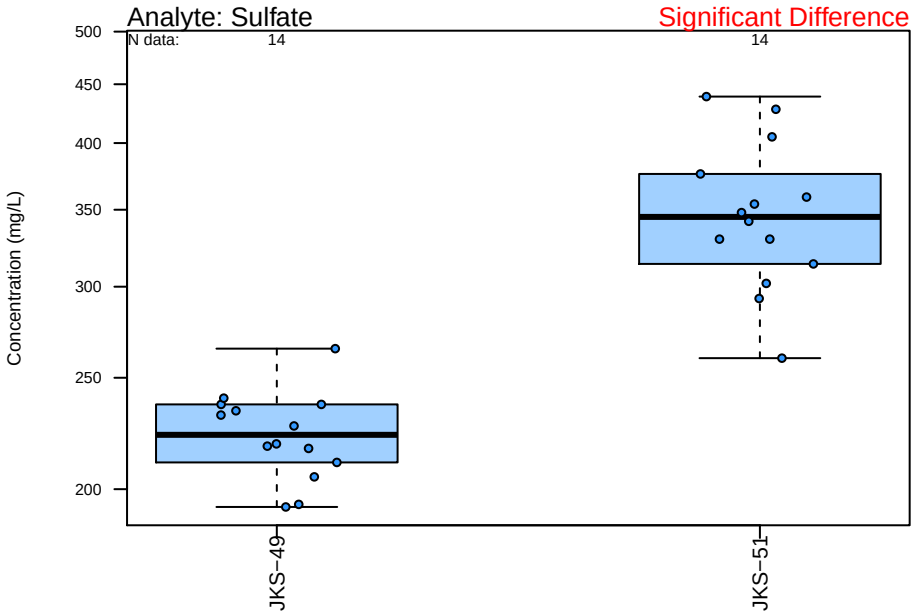


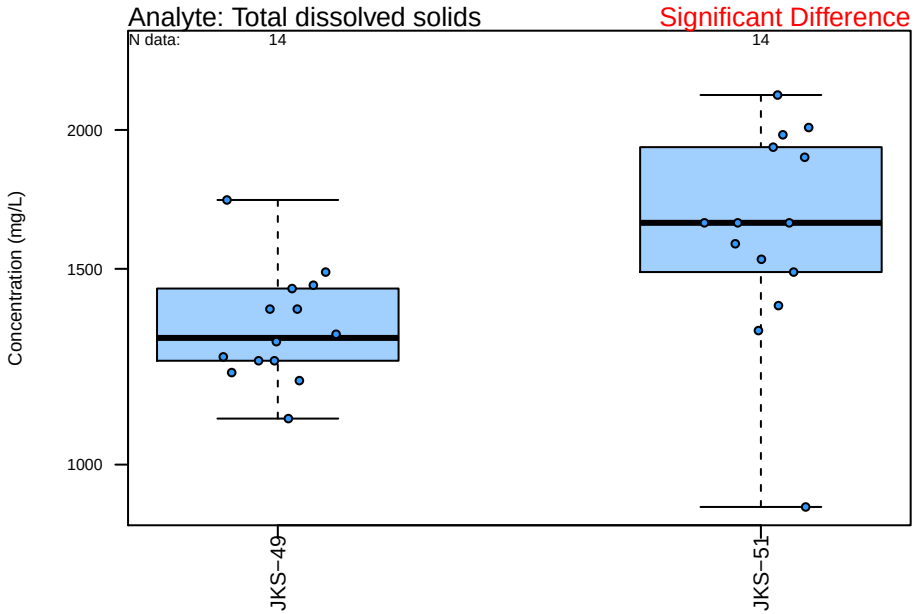




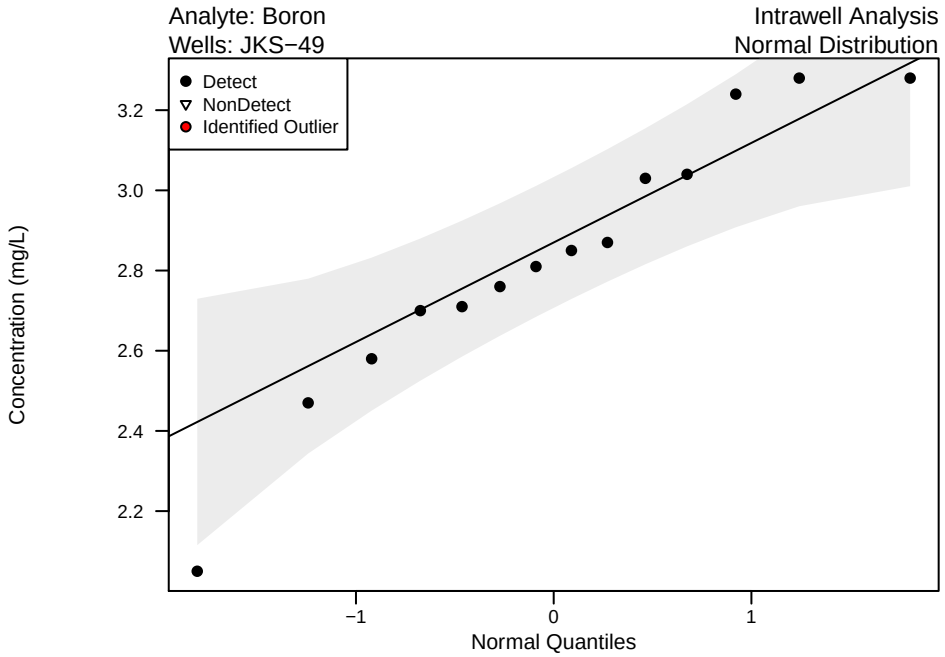
Appendix B − Figure 1
Unit: SRH Pond
Boxplots of Upgradient Wells







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



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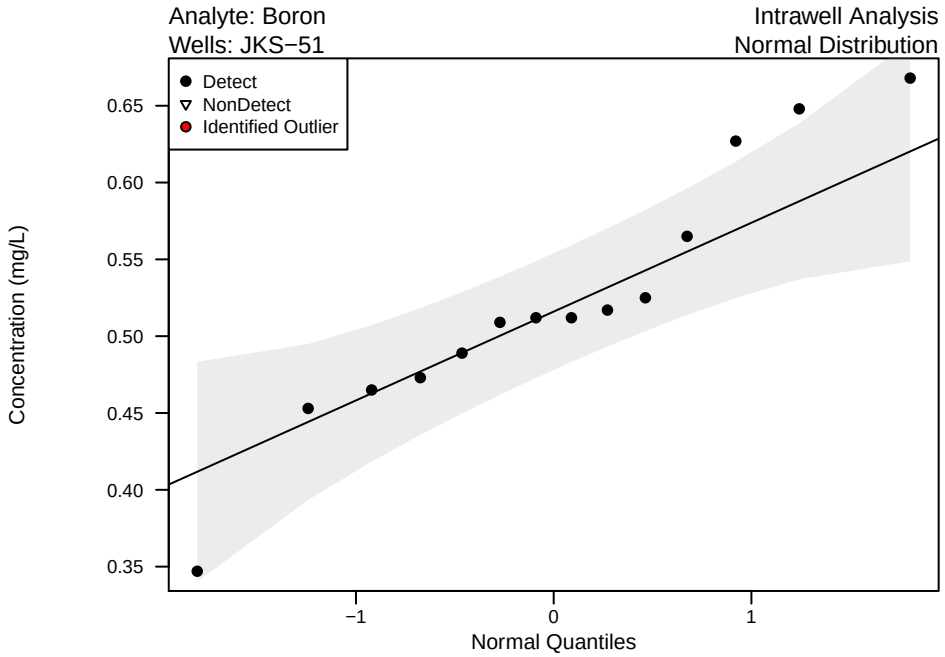

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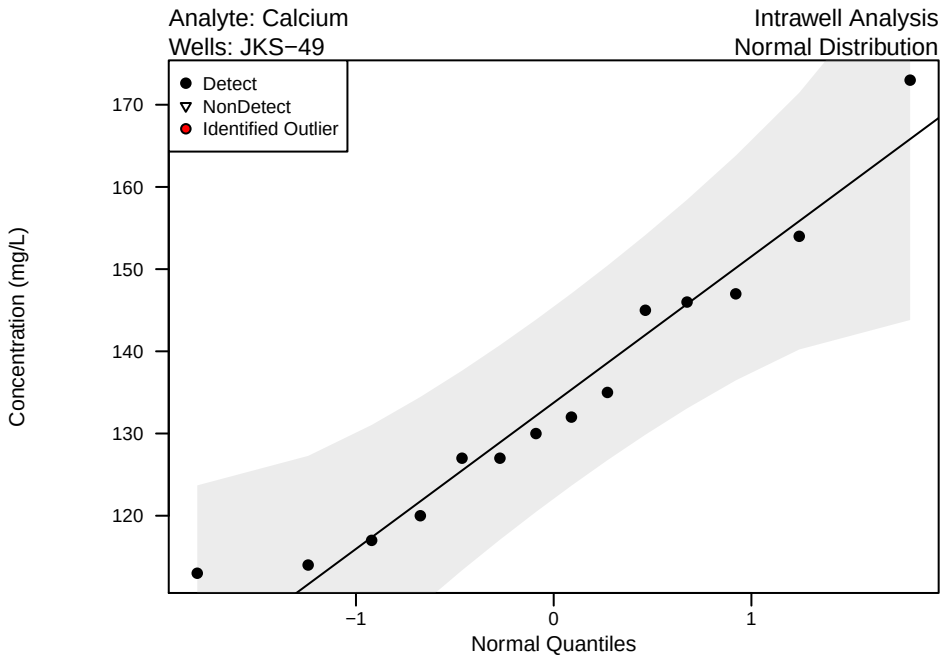
Appendix B − Figure 2
Unit: SRH Pond
QQ Plots of Upgradient Wells



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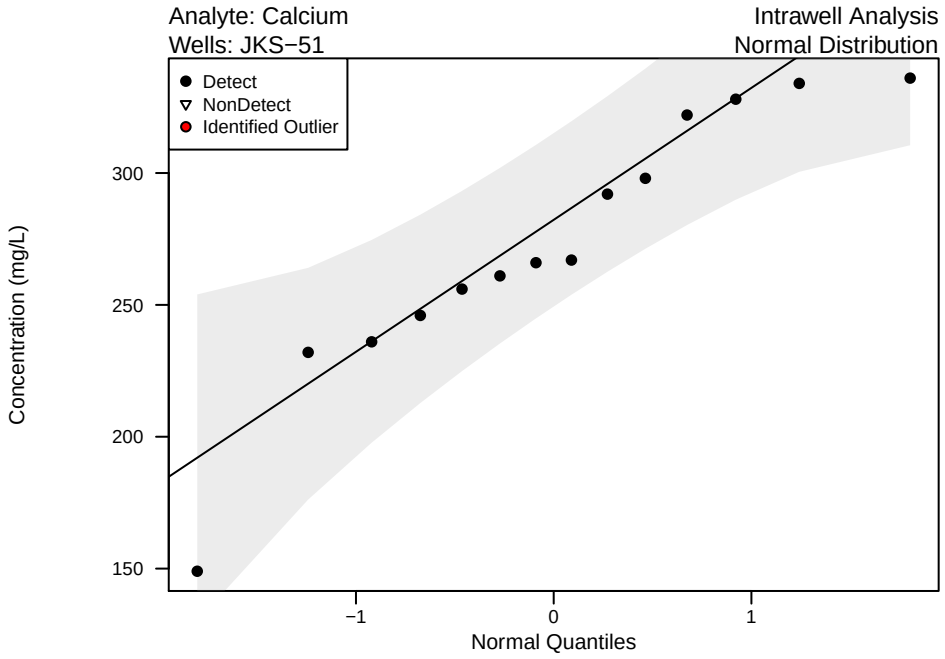

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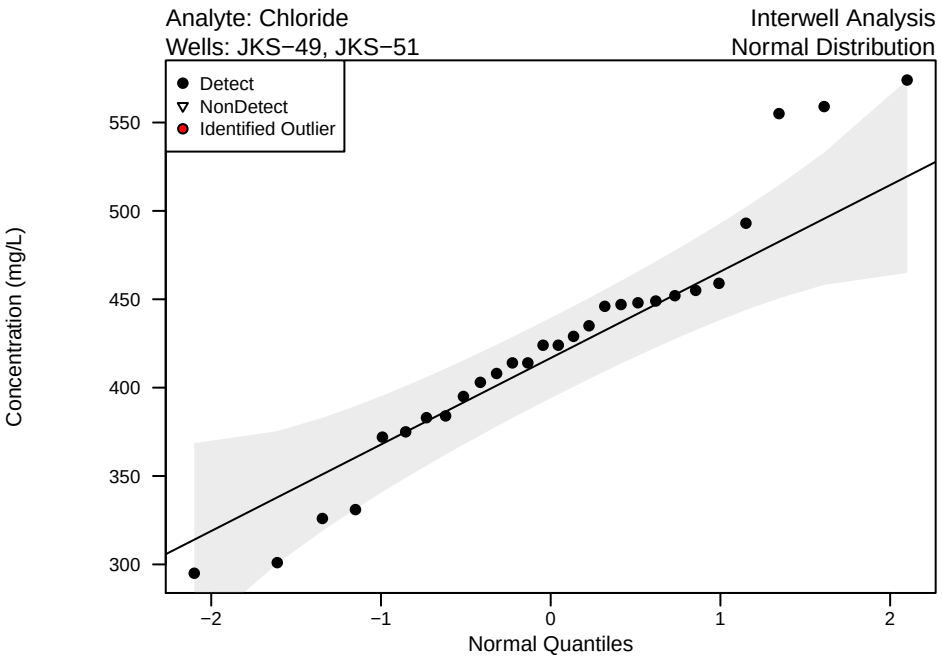
Appendix B − Figure 2
Unit: SRH Pond
QQ Plots of Upgradient Wells



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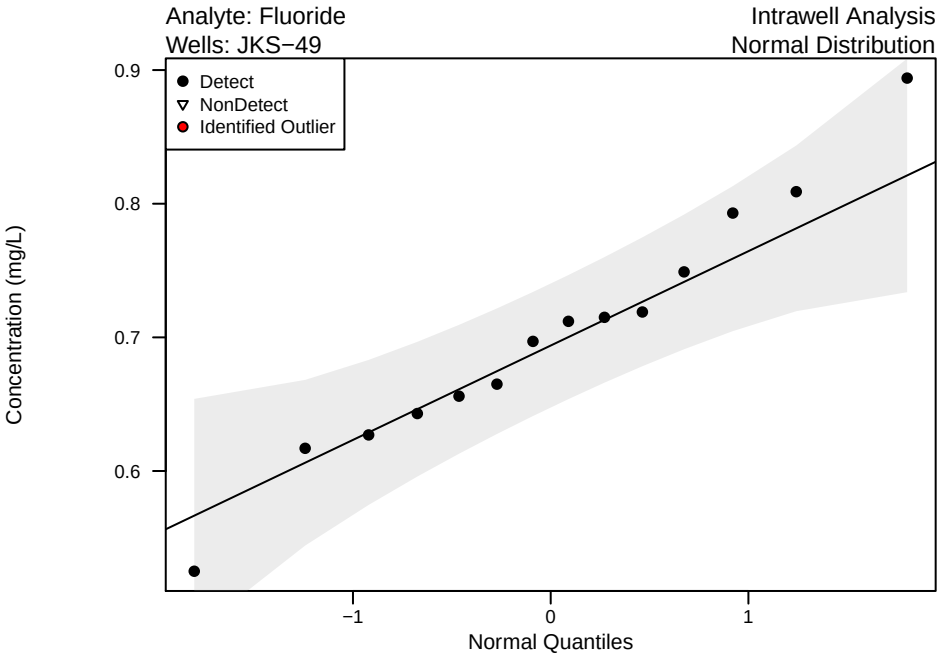

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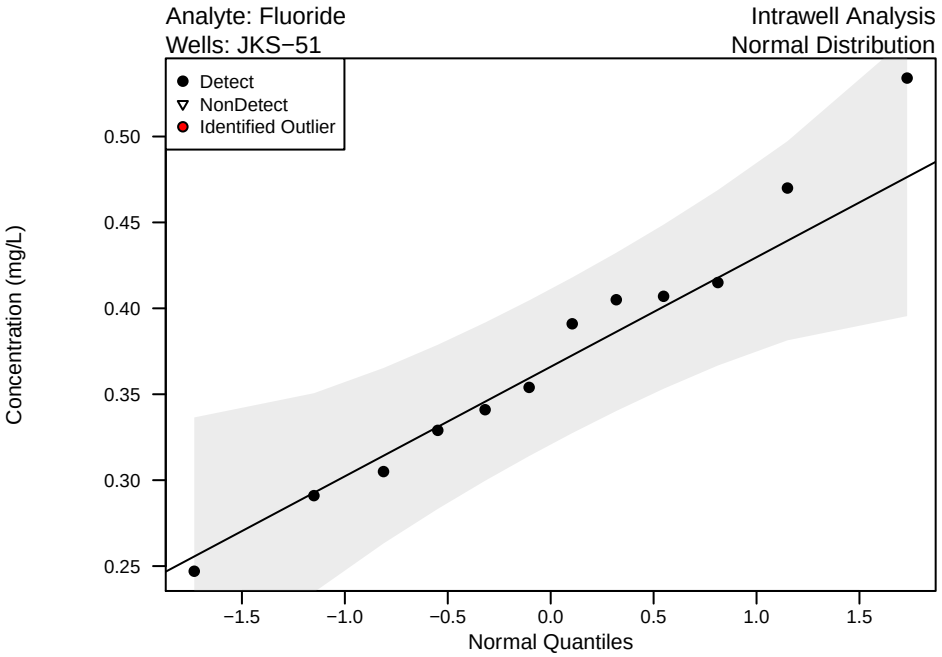
Appendix B − Figure 2
Unit: SRH Pond
QQ Plots of Upgradient Wells



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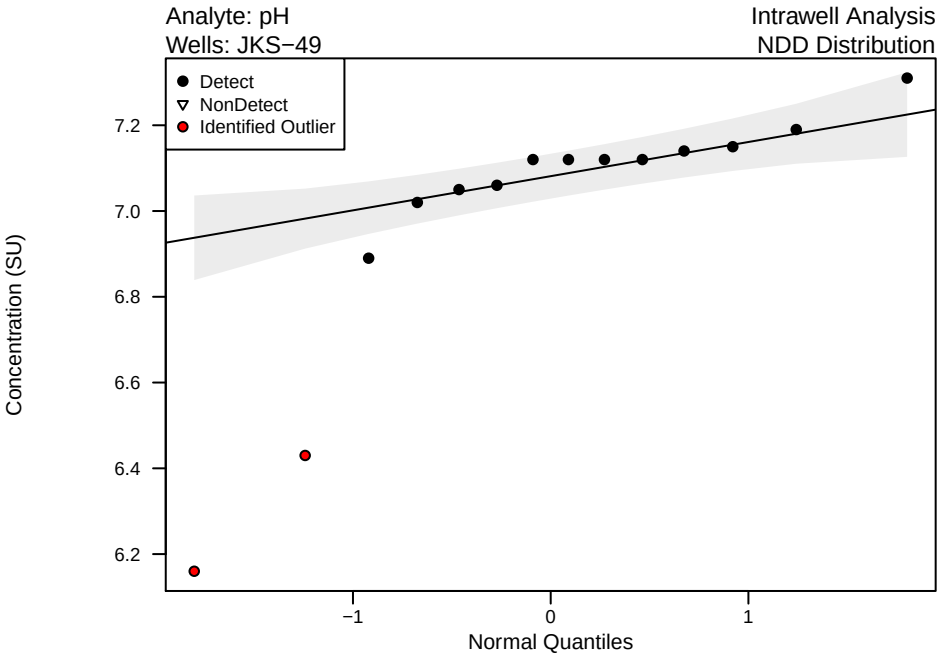
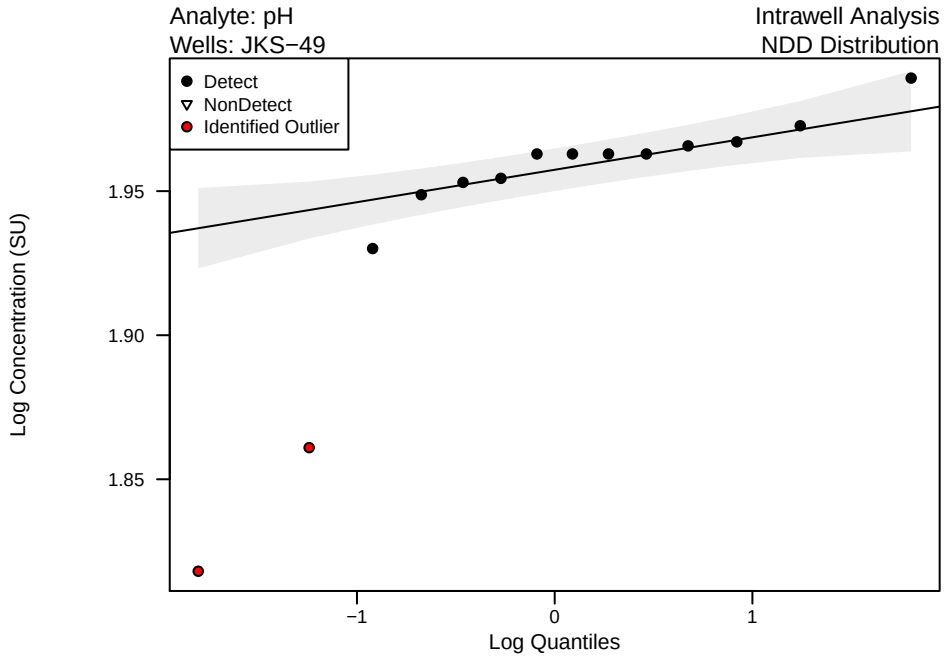
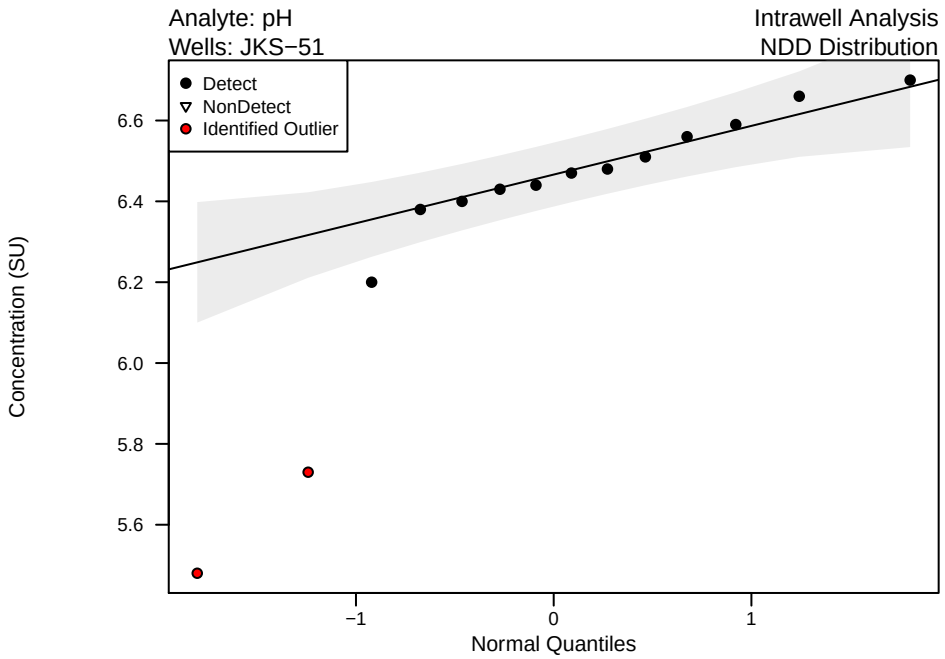
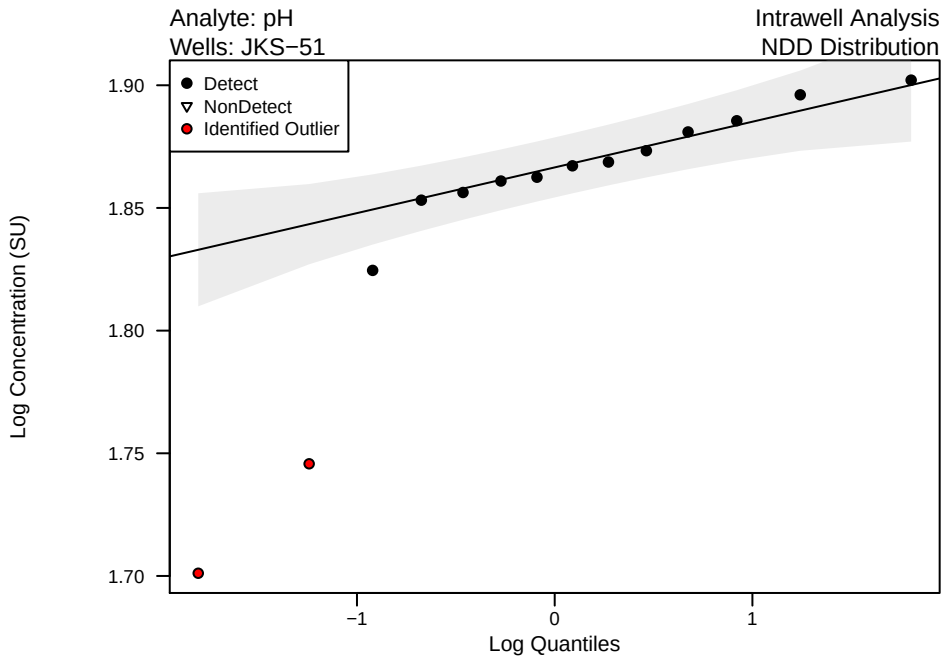
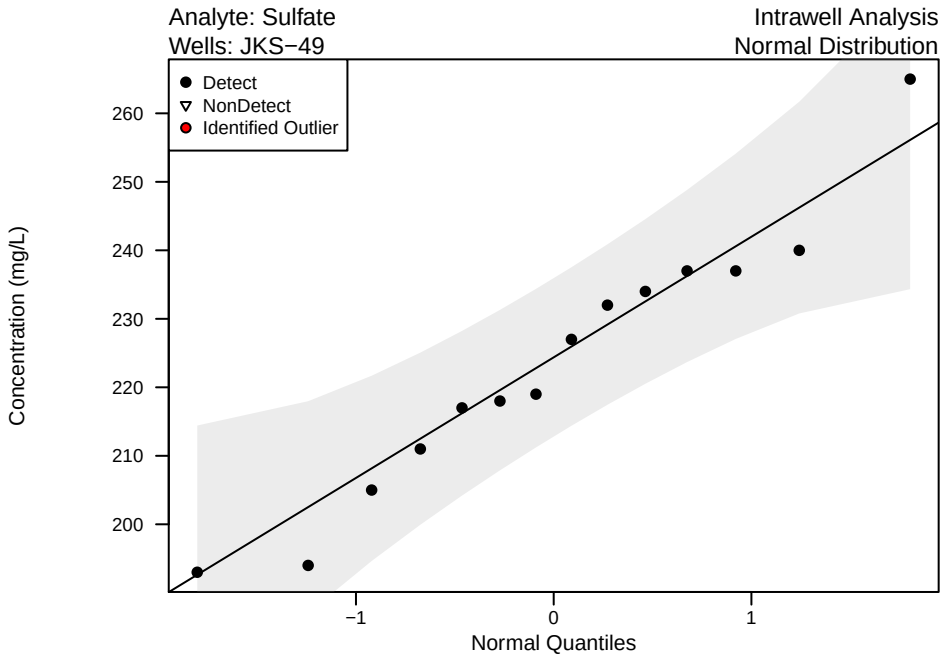




Appendix B − Figure 2
Unit: SRH Pond
QQ Plots of Upgradient Wells







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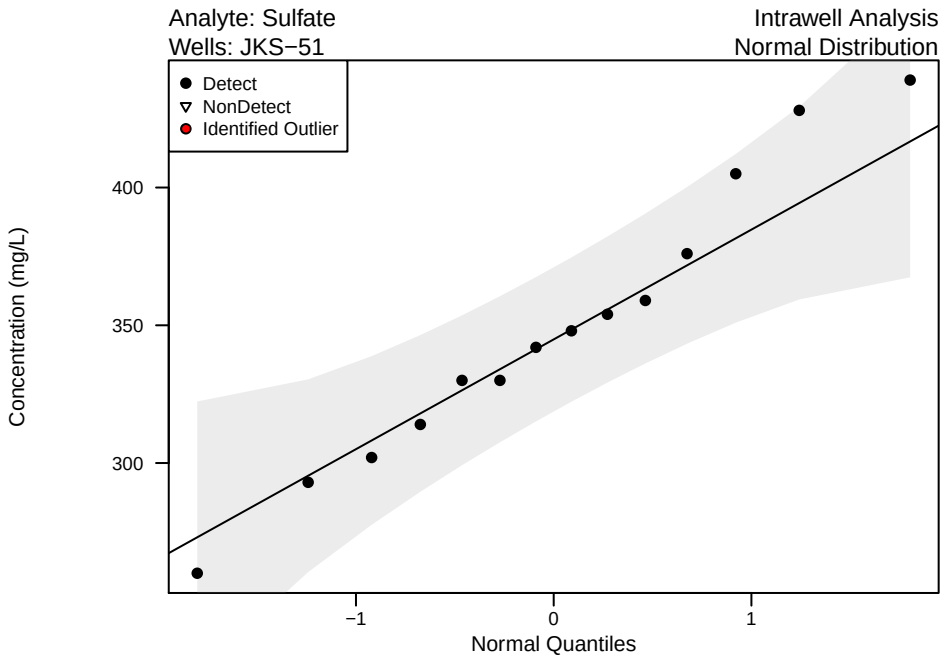
Appendix B − Figure 2
Unit: SRH Pond
QQ Plots of Upgradient Wells



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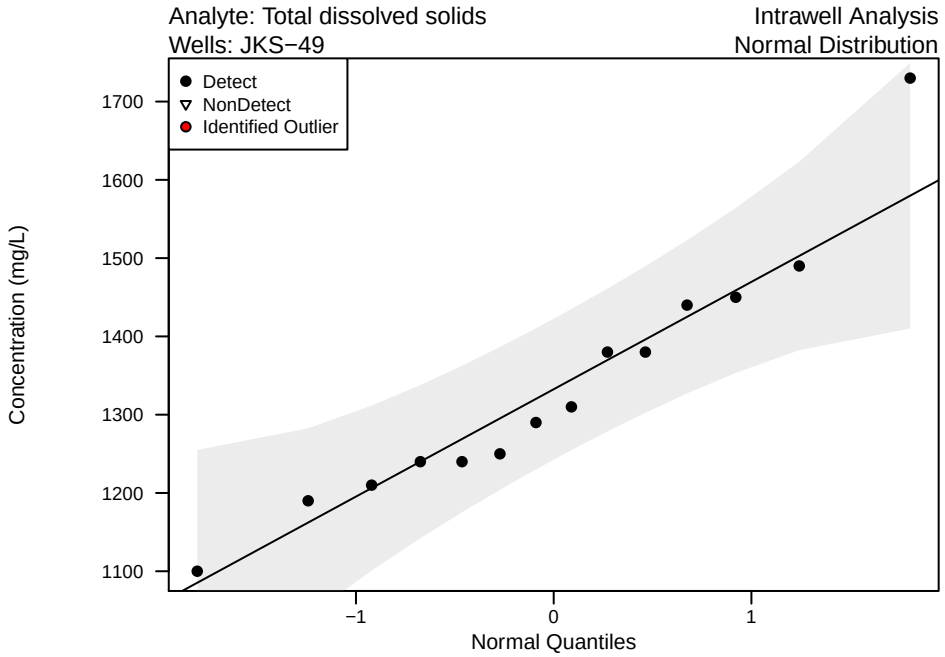

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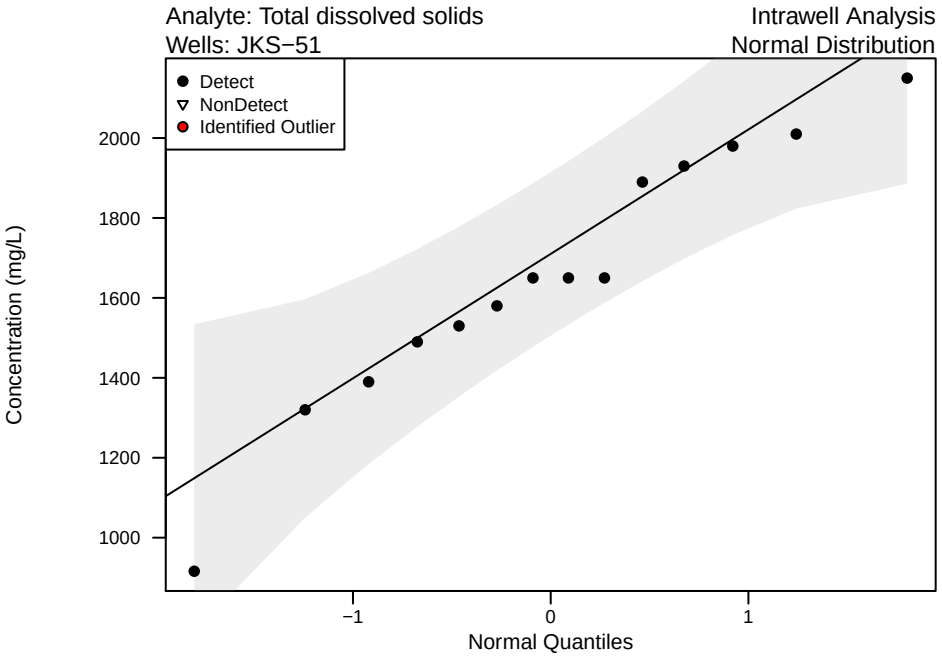
Appendix B − Figure 2
Unit: SRH Pond
QQ Plots of Upgradient Wells



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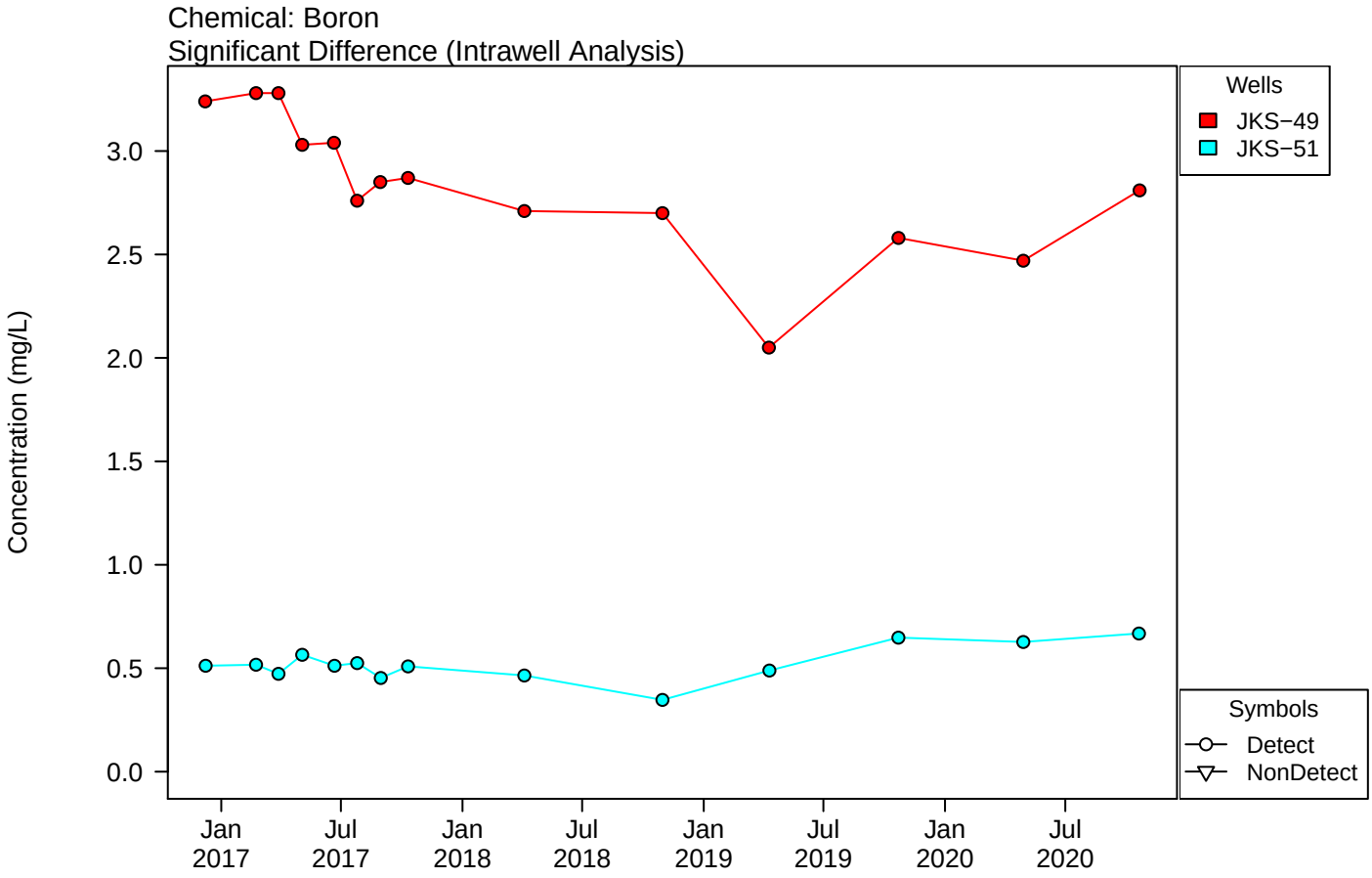
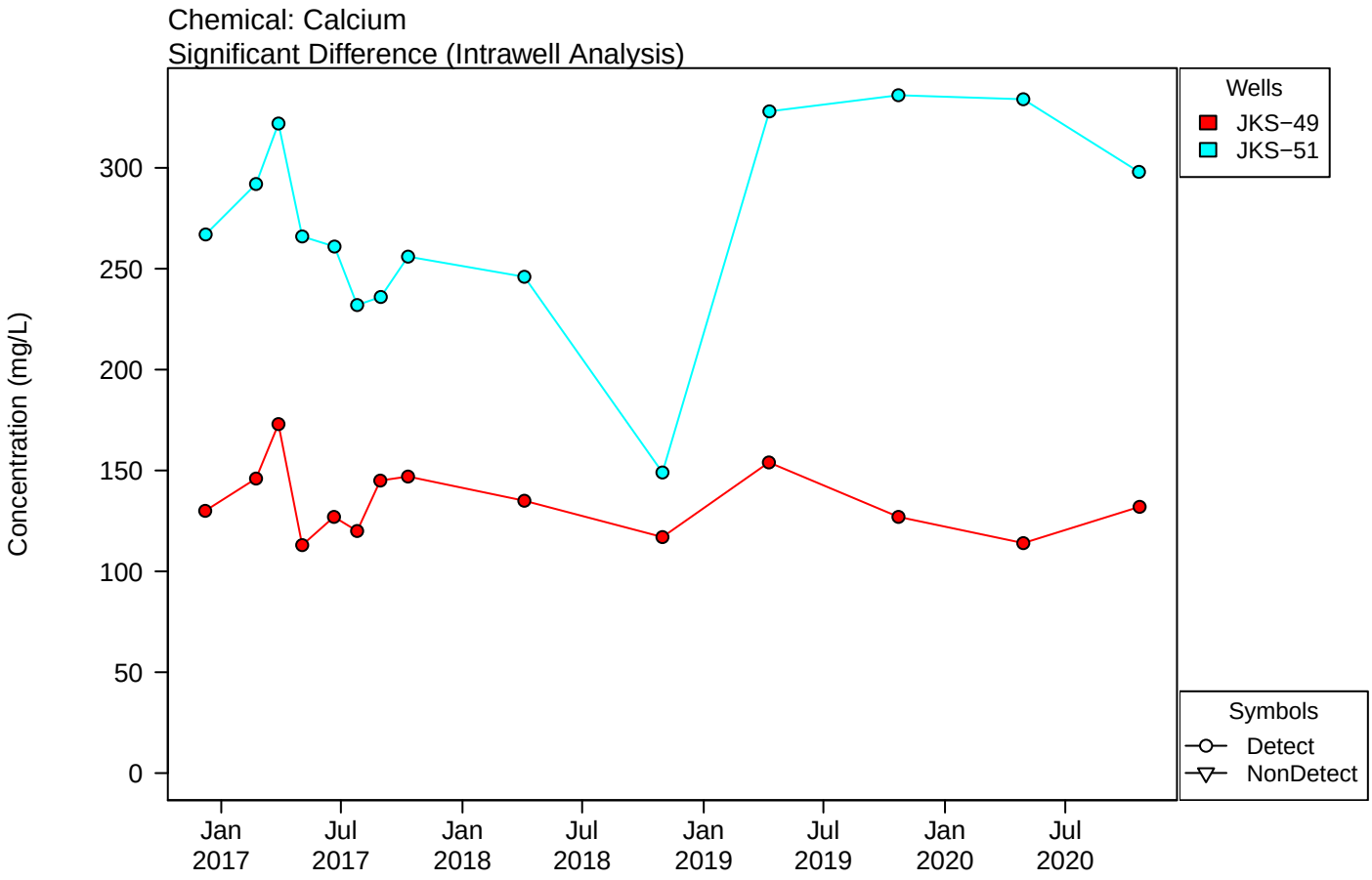
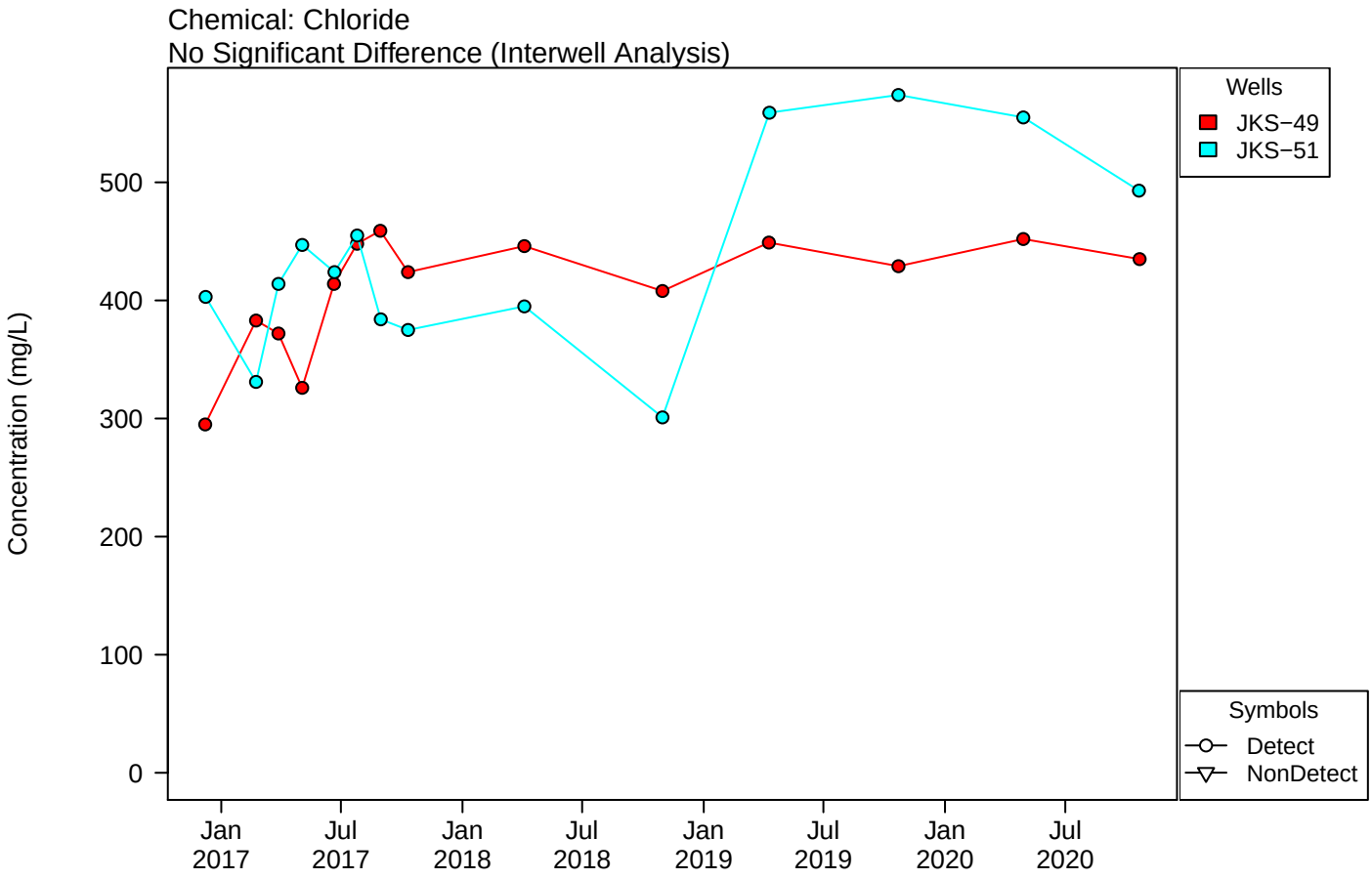
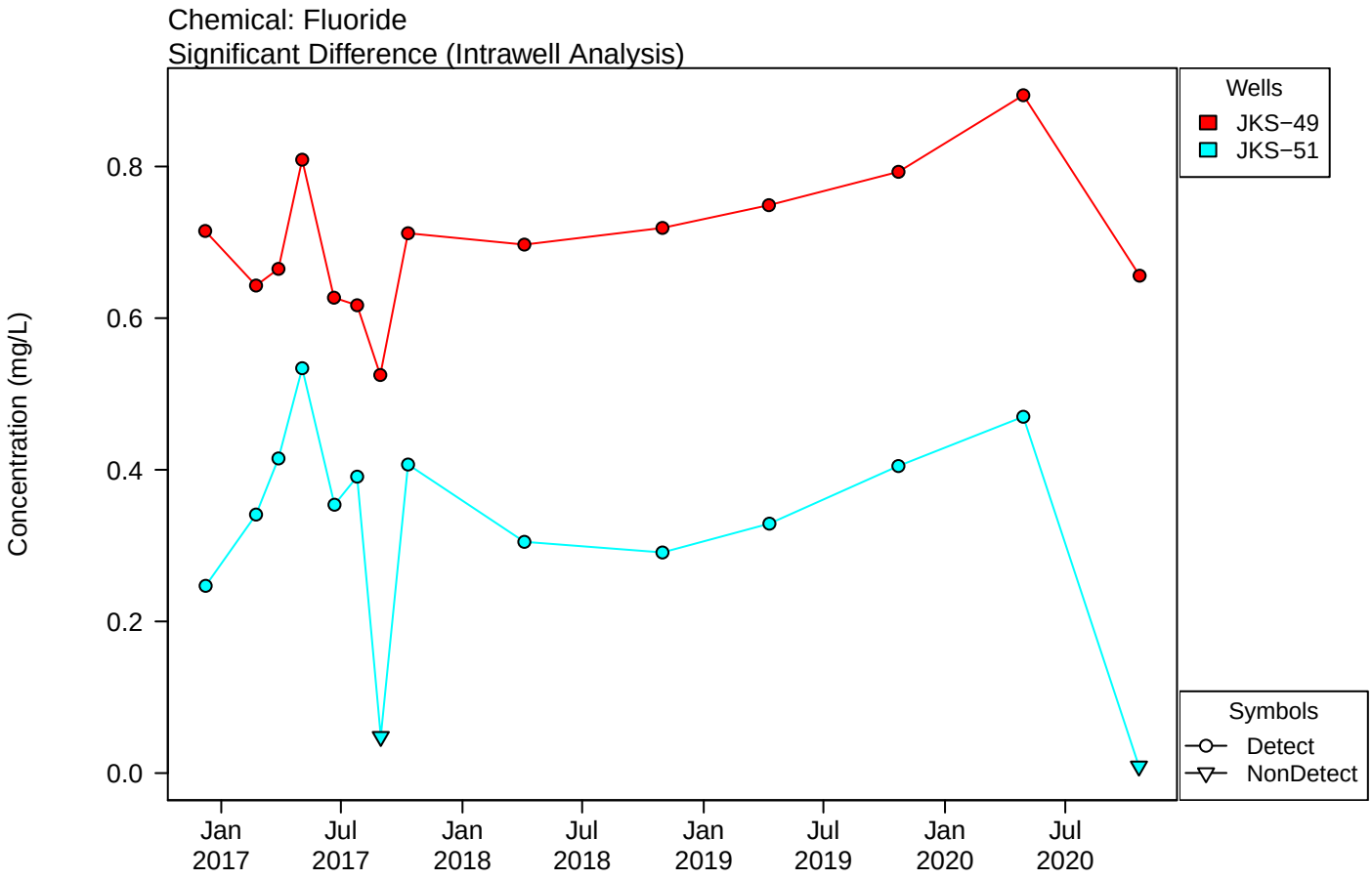
Appendix B − Figure 3
Unit: SRH Pond
Timeseries of Upgradient Wells



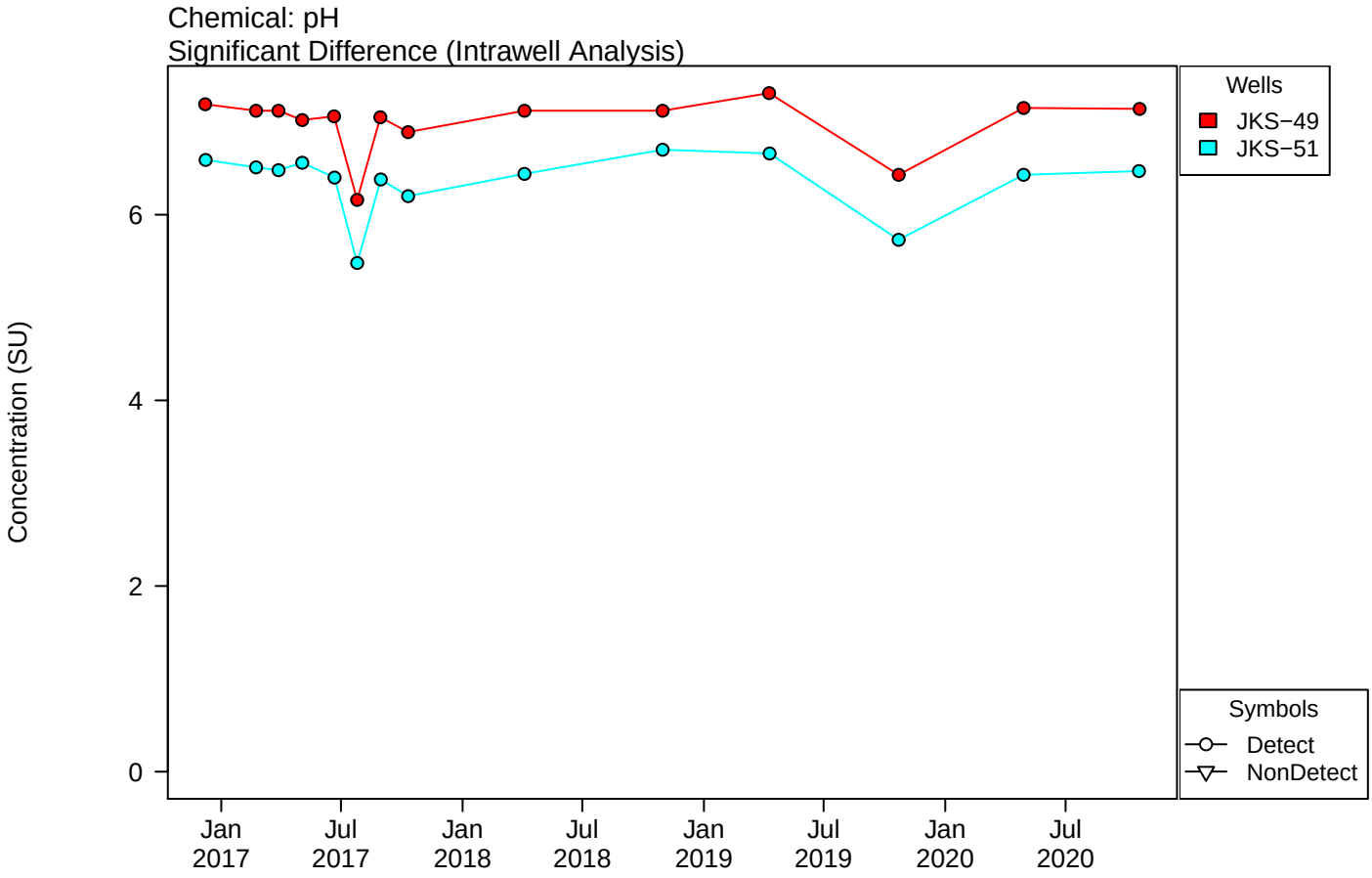


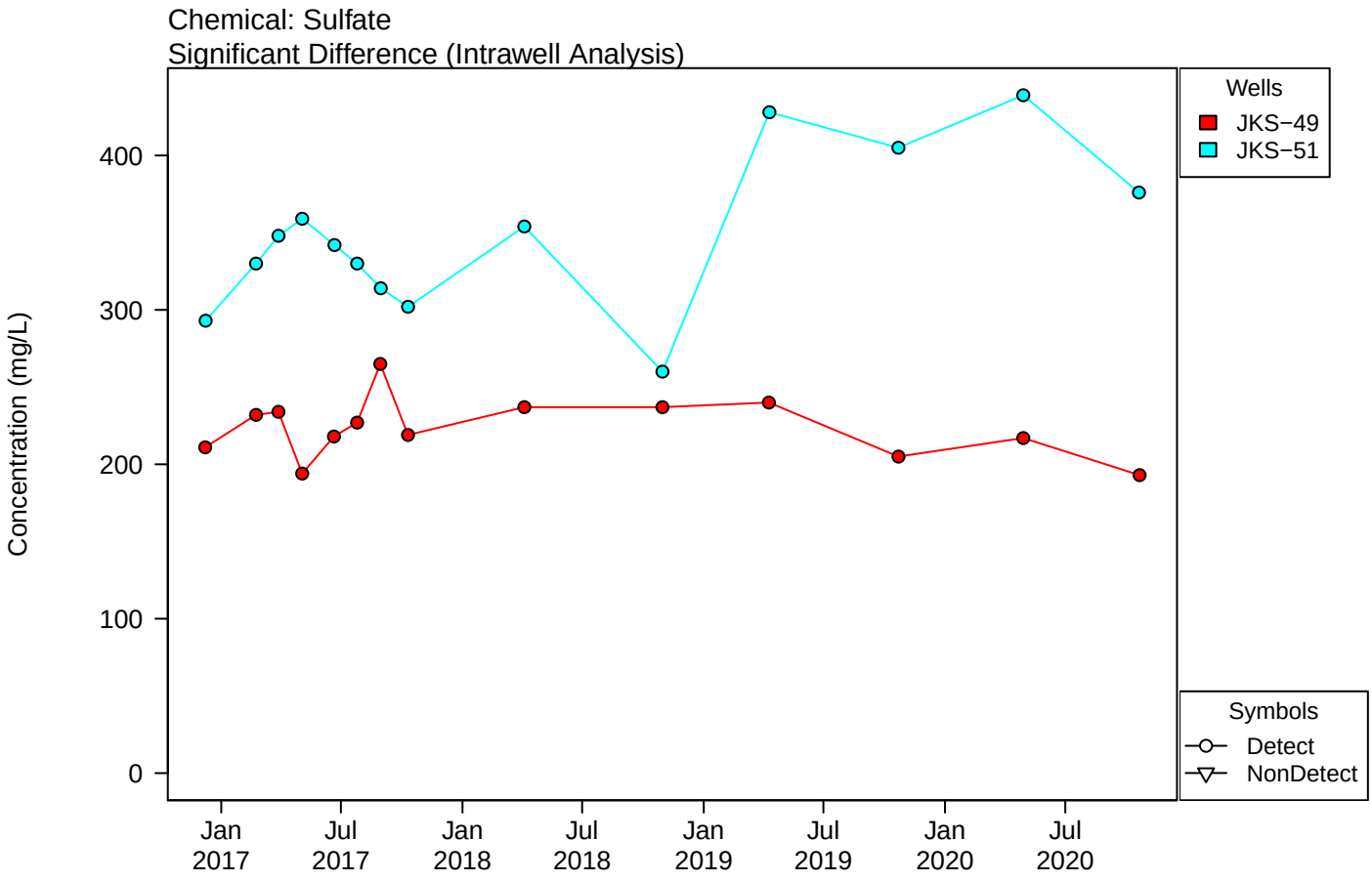
Appendix B − Figure 3
Unit: SRH Pond
Timeseries of Upgradient Wells



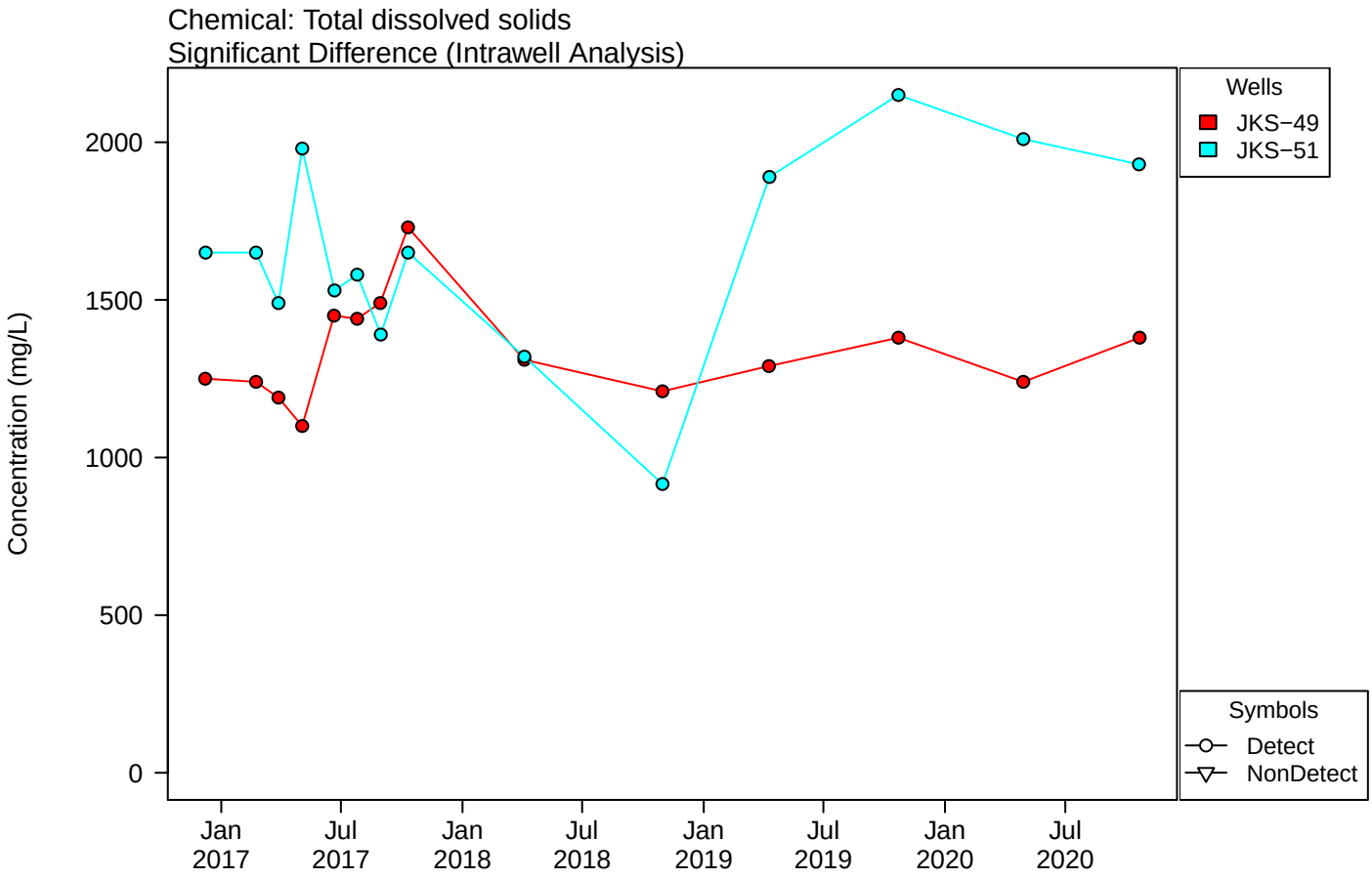


Appendix B − Figure 3
Unit: SRH Pond
Timeseries of Upgradient Wells

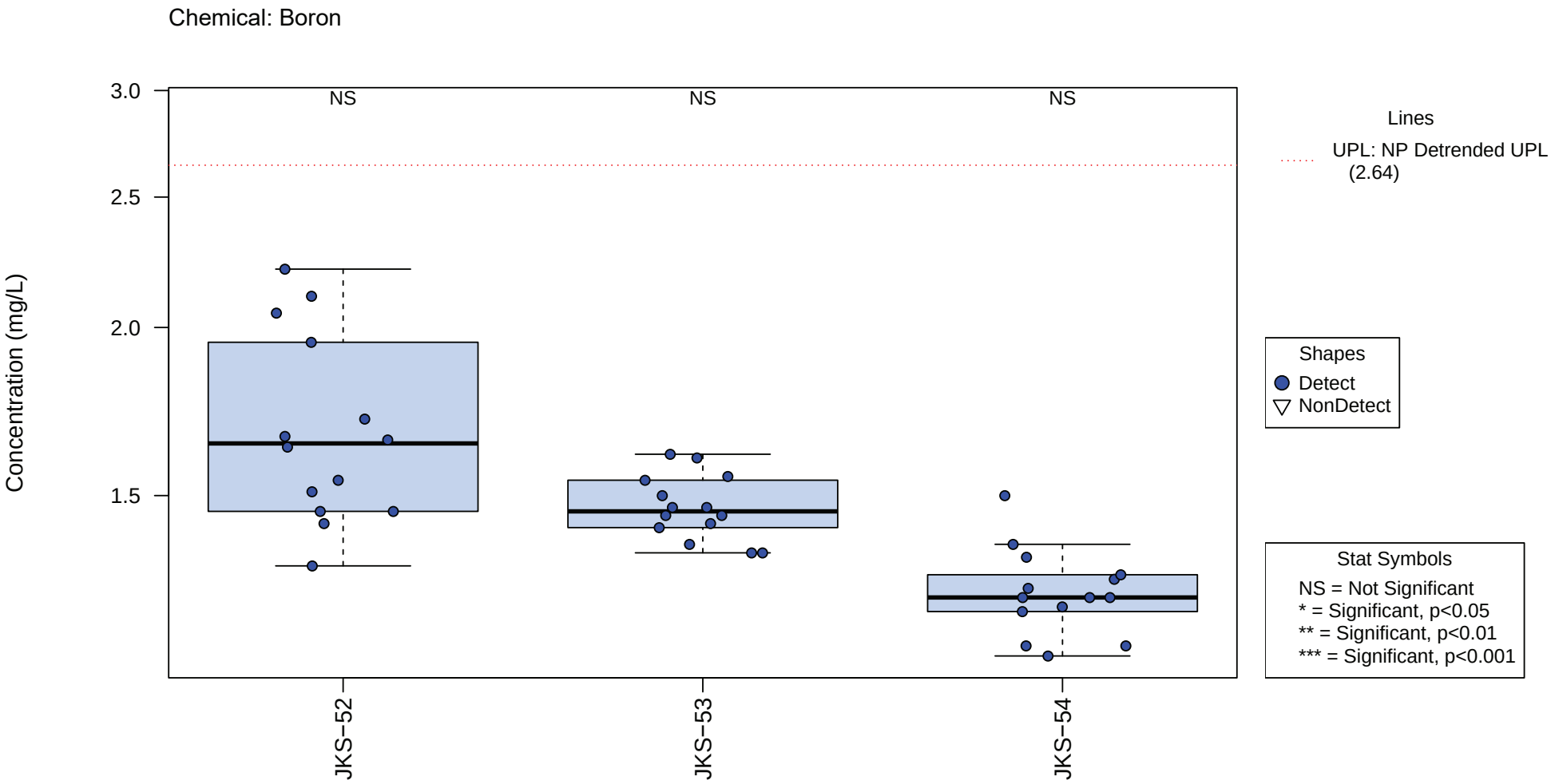




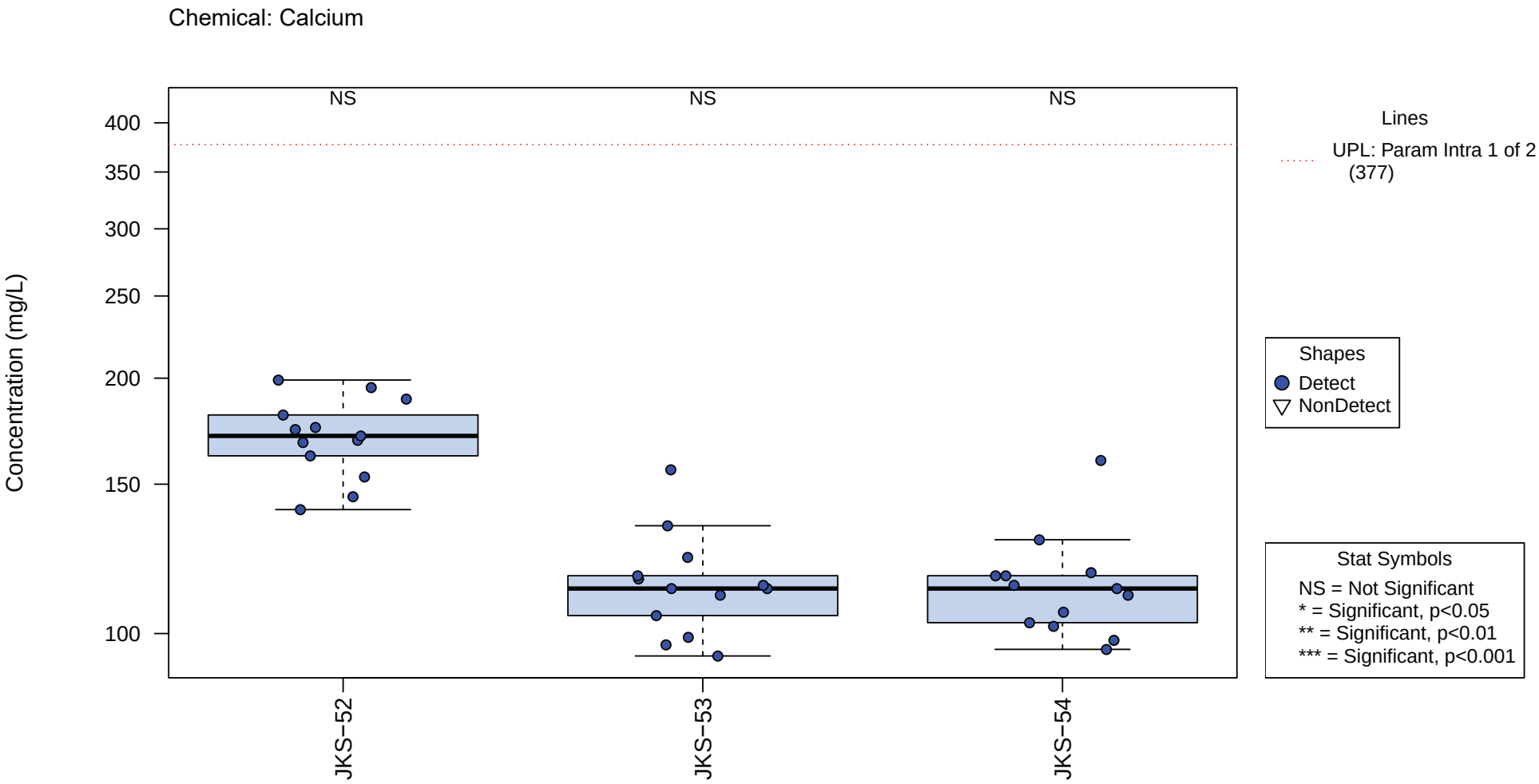
Appendix B − Figure 3
Unit: SRH Pond
Timeseries of Upgradient Wells



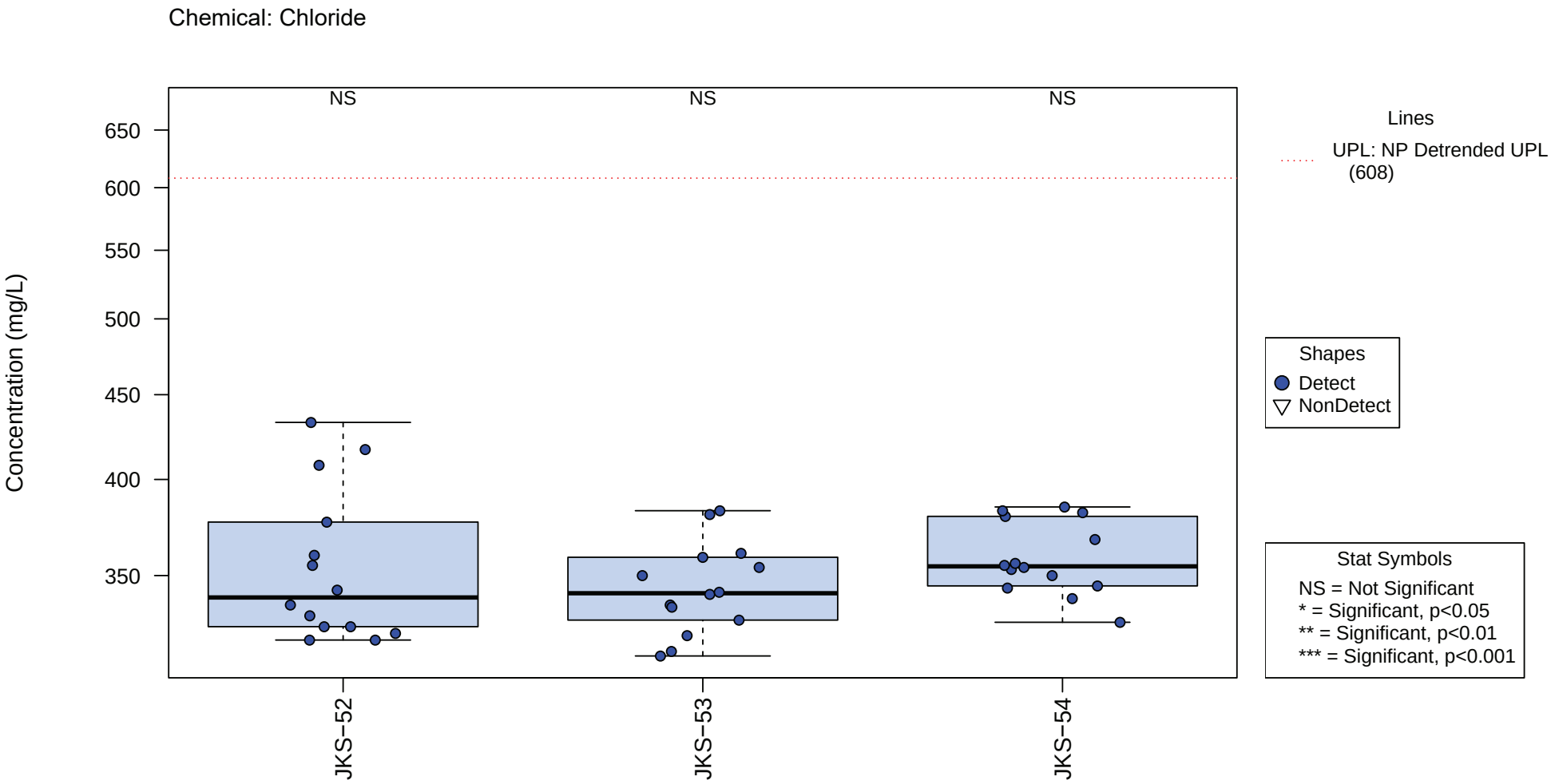
Appendix B - Figure 4
Unit: SRH Pond
Boxplots of Downgradient Wells



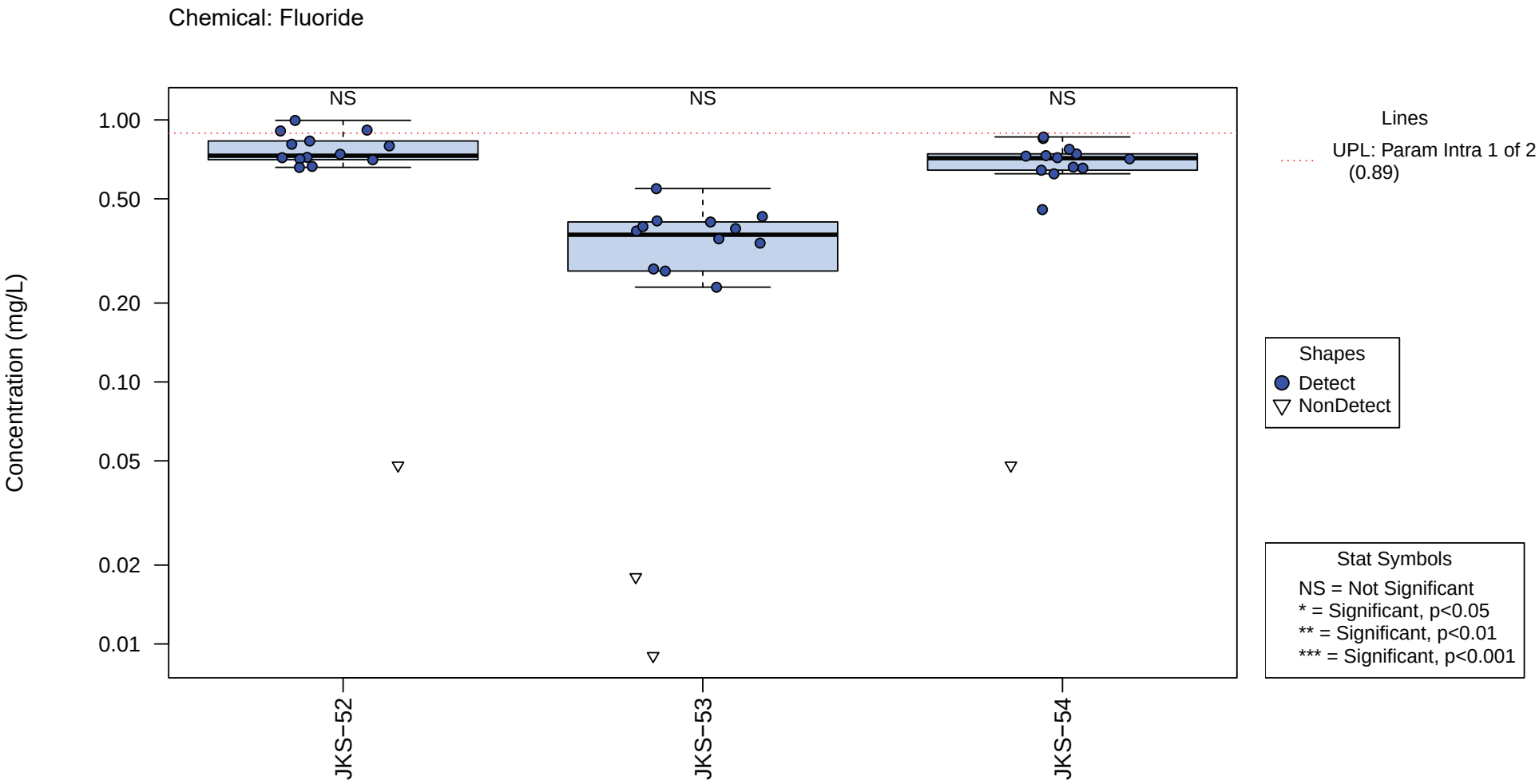
Appendix B - Figure 4
Unit: SRH Pond
Boxplots of Downgradient Wells



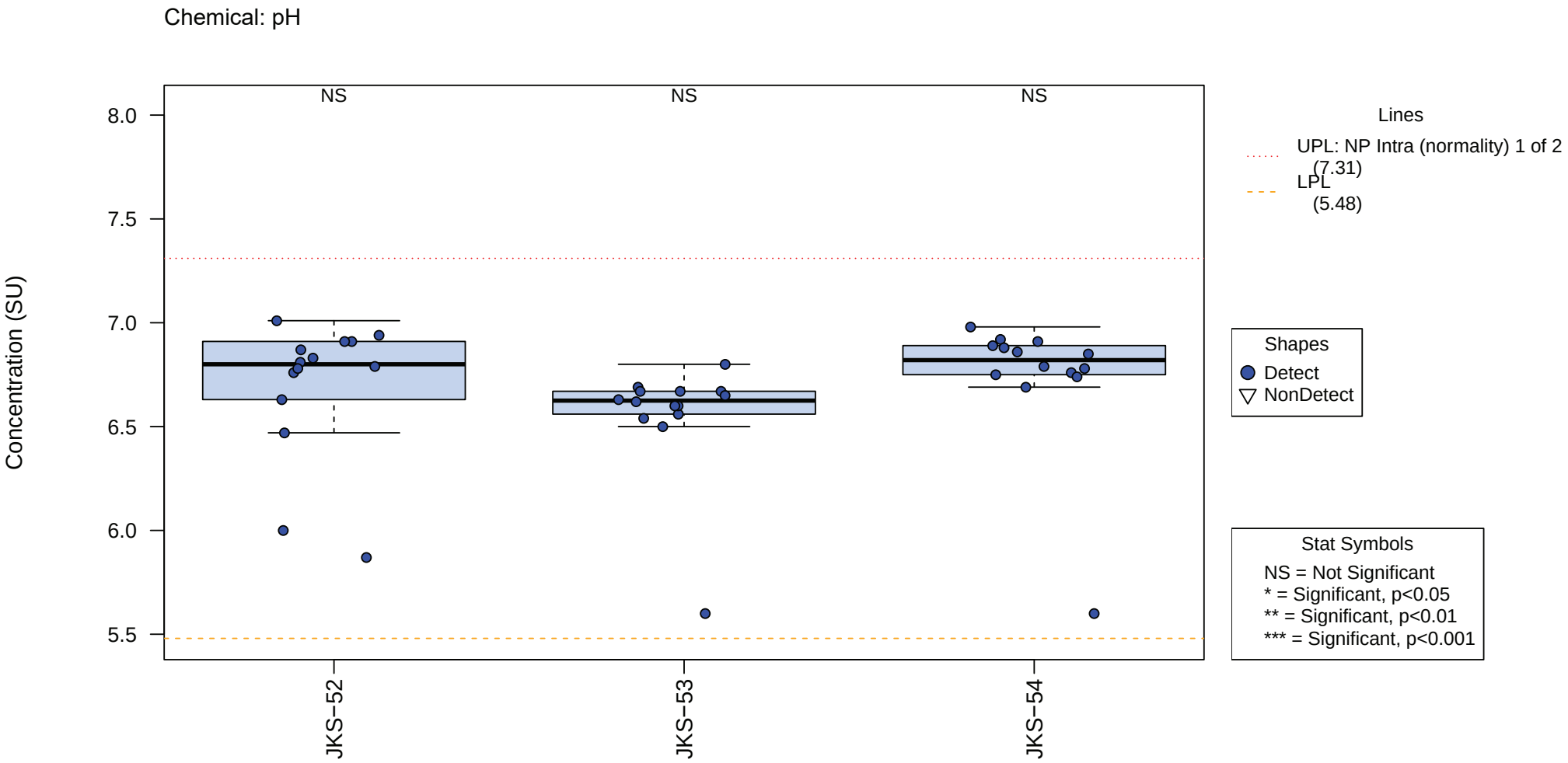
Appendix B - Figure 4
Unit: SRH Pond
Boxplots of Downgradient Wells



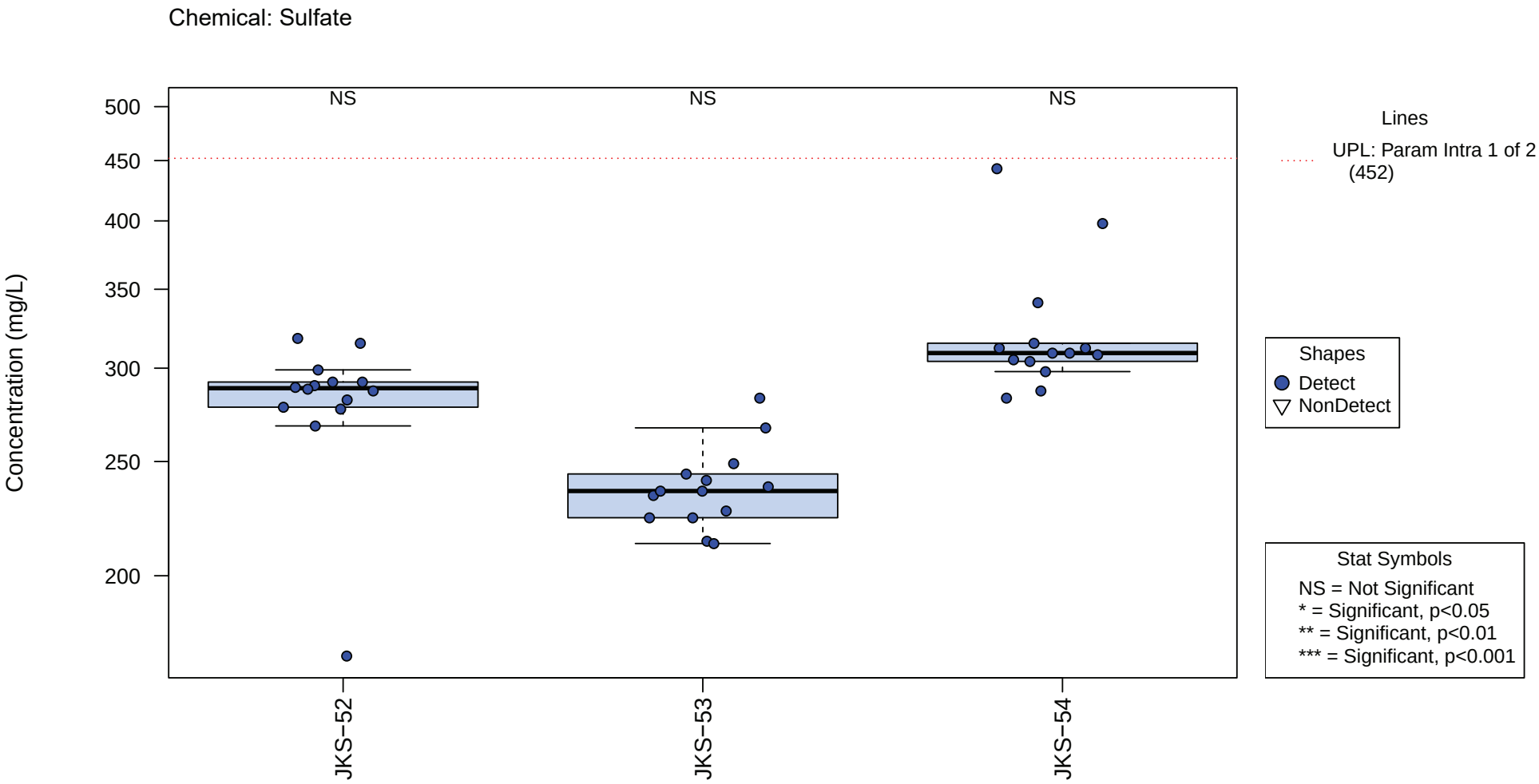
Appendix B - Figure 4
Unit: SRH Pond
Boxplots of Downgradient Wells



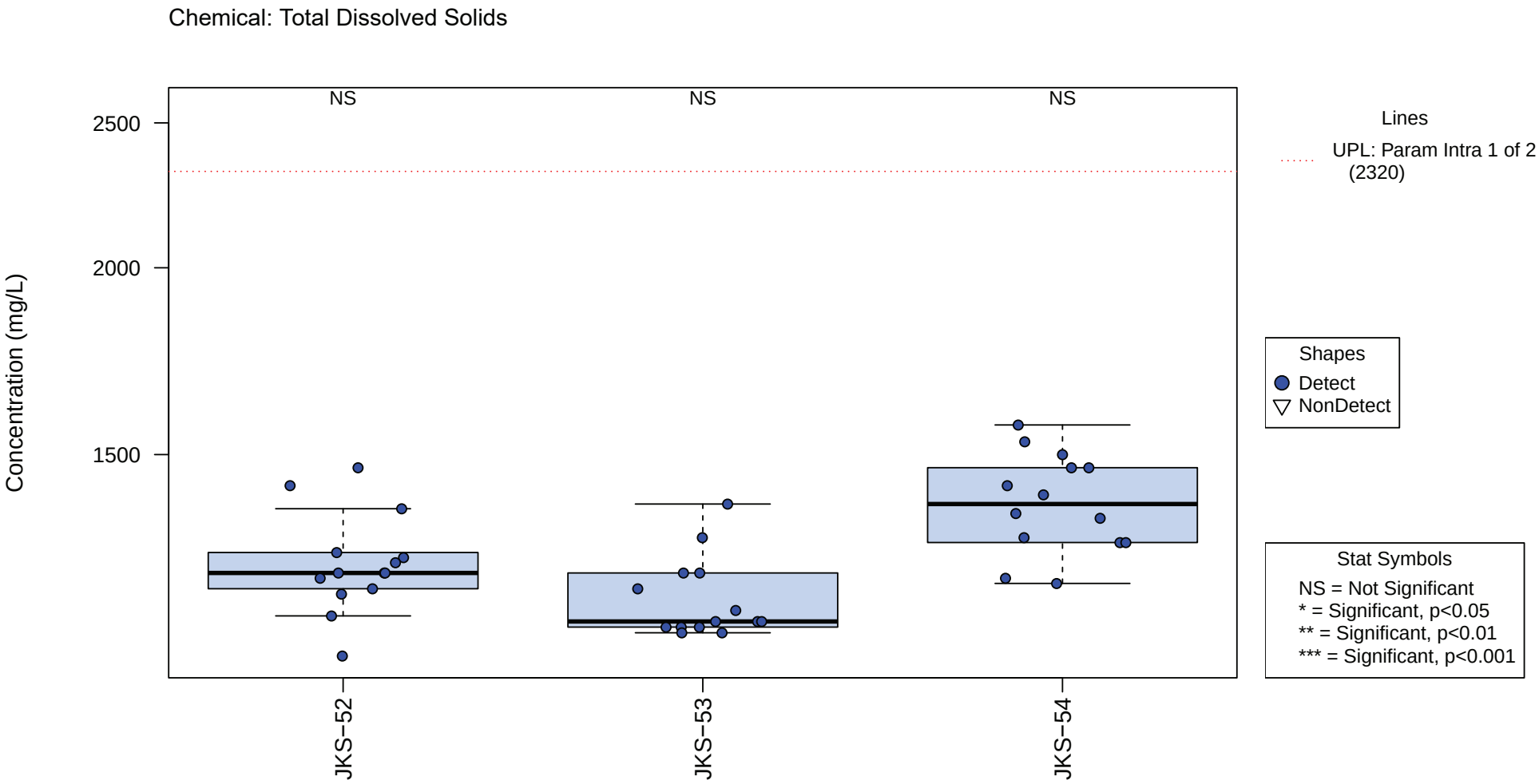
Appendix B - Figure 4
Unit: SRH Pond
Boxplots of Downgradient Wells



Appendix B - Figure 4
Unit: SRH Pond
Boxplots of Downgradient Wells



Appendix B - Figure 4
Unit: SRH Pond
Boxplots of Downgradient Wells



April 2020 Groundwater Sampling Event – Calaveras Power Station CCR Units

Appendix C

ERM

CityCentre Four
840 West Sam Houston Parkway
North, Suite 600
Houston, Texas 77024-3920

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

www.erm.com

September 25, 2020

Mr. Michael Malone
CPS Energy
145 Navarro Street
San Antonio, Texas 78205

Reference: Project No. 0503422\A10320

Subject: April 2020 Groundwater Sampling Event and August 2020 Resampling Event
Calaveras Power Station CCR Units
San Antonio, Texas

Dear Mr. Malone:

Introduction

Title 40, Code of Federal Regulations, Part 257 (40 CFR §257) (a.k.a. the 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* and *2019 Annual Groundwater Monitoring and Corrective Action Reports* for each CCR unit, the downgradient monitoring well results from the October 2017 and October 2018 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 evaluations of the April and August 2020 groundwater sample results indicated a potential SSI for a limited number of constituents from the EP, FAL, BAPs, and 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 a 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.

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To address the potential SSIs identified in the previous three *Annual Groundwater Monitoring and Corrective Action Reports*, CPS Energy prepared three *Written Demonstrations – Responses to Potential Statistically Significant Increases* (dated April 4, 2018; February 27, 2019; and April 27, 2020; respectively). Based on the evidence provided in the *Written 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 2020 was conducted on April 28 through April 29, 2020. 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. A resampling event of JKS-54 only was conducted on August 24, 2020.

For each CCR unit, the downgradient monitoring well results from the April and August 2020 sampling events were compared to the updated UPLs and LPLs recalculated in their respective *2019 Annual Groundwater Monitoring and Corrective Action Report*. The April and August 2020 groundwater sample results for the downgradient monitoring wells in each CCR unit are summarized in Attachment 1.

Although the evaluations of the April and August 2020 groundwater sample results indicate a potential SSI for a limited number of constituents, with the exception of sulfate in JKS-54 associated with the SRH Pond, 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 Demonstrations*. The evaluations of the April and August 2020 groundwater sample results with potential SSIs are summarized below.

EP – The constituents associated with potential SSIs include fluoride in JKS-36 and JKS-61; and pH in JKS-36 and JKS-62. As previously presented in the *Written Demonstrations*, the concentrations of fluoride and pH appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. The reported April 2020 concentrations were within the range of naturally occurring concentrations identified in the *Written Demonstrations*.

FAL – The constituent associated with a potential SSI is pH in JKS-31 and JKS-46. As previously presented in the *Written Demonstrations*, the concentrations of pH appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. The reported April 2020 concentrations were within the range of naturally occurring concentrations identified in the *Written Demonstrations*.

BAPs – The constituents associated with potential SSIs include boron in JKS-50R and JKS-56; and fluoride in JKS-52 and JKS-55. As previously presented in the *Written Demonstrations*, the concentrations of boron and fluoride appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. The reported April 2020 concentrations were within the range of naturally occurring concentrations identified in the *Written Demonstrations*.

SRH Pond – The constituents associated with potential SSIs include fluoride in JKS-52 and JKS-54; and sulfate in JKS-54. As previously noted in the *April 2019 Groundwater Sampling Report*, the concentrations of fluoride appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit and the reported April 2020 concentrations are within the range of naturally occurring concentrations identified in the *Annual Groundwater Monitoring and Corrective Action Reports*. Although a potential SSI of sulfate was not previously presented in the *Written Demonstrations*, the concentrations of sulfate in JKS-54 appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. While the concentration reported in the April 2020 sampling event (443 mg/L) was the highest concentration reported in JKS-54, the concentration reported in the August 2020 resampling event (425 mg/L) is within the range of concentrations reported in upgradient monitoring well JKS-51 over the previous three sampling events (405 to 439 mg/L).

Conclusions

Based on the April and August 2020 groundwater sample results and the evidence provided in one or all of the *Written 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 2020.

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

Sincerely,

Environmental Resources Management

Walter Zverina
Principal Consultant

ATTACHMENT 1 APRIL AND AUGUST 2020 GROUNDWATER SAMPLE RESULTS

September 2020
Project No. 0503422

April 2020 Groundwater Sample Results
CCR Unit: Evaporation Pond
CPS Energy Calaveras Power Station
San Antonio, TX

			CCR Unit	EP	EP	EP	EP
			Well Designation	Downgradient	Downgradient	Downgradient	Downgradient
			Well ID	JKS-36	JKS-61	JKS-61	JKS-62
			Sample Date	4/29/2020	4/29/2020	4/29/2020	4/29/2020
			Sample Type Code	N	N	FD	N
Constituent	Units	2019 LPL - EP	2019 UPL - EP				
Boron	mg/L	--	1.88	0.459	1.82	1.85	0.484
Calcium	mg/L	--	1,300	175	154	157	122
Chloride	mg/L	--	2,780	63.3	312	317	284
Fluoride	mg/L	--	0.382	1.18	0.494	0.549	0.331
pH, Field	SU	4.58	6.47	3.42	6.27	6.27	6.54
Sulfate	mg/L	--	2,110	189	604	608	190
Total dissolved solids	mg/L	--	6,660	1,790	1,870	1,870	1,100

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

April 2020 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	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020
			Sample Type Code	N	N	N	FD	N
Constituent	Units	2019 LPL - FAL	2019 UPL - FAL					
Boron	mg/L	--	4.29	0.429	1.18	0.864	0.806	0.325
Calcium	mg/L	--	583	171 J	573 J	143 J	133 J	530 J
Chloride	mg/L	--	841	272	756	17.9	19.2	168
Fluoride	mg/L	--	4.86	1.00	1.68	1.61 J	2.44 J	0.188
pH, Field	SU	3.98	6.73	3.70	6.30	3.10	3.10	6.61
Sulfate	mg/L	--	7,630	877	1,620	1,180	1,240	1,280
Total dissolved solids	mg/L	--	11,900	1,890	4,370	1,970	1,780	3,180

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

April 2020 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	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020
			Sample Type Code	N	N	N	FD	N	N
Constituent	Units	2019 LPL - BAP	2019 UPL - BAP						
Boron	mg/L	--	2.40	2.36	5.52	2.05	2.16	0.779	3.55
Calcium	mg/L	--	368	130 J	126 J	174 J	180 J	137 J	103 J
Chloride	mg/L	--	608	485	102	433	430	452	101
Fluoride	mg/L	--	0.847	0.051 JH	0.510	0.908	0.952	1.01	0.552
pH, Field	SU	5.48	7.31	6.89	6.65	6.83	6.83	6.81	6.72
Sulfate	mg/L	--	431	206	194	315	313	177	138
Total dissolved solids	mg/L	--	2,240	1,400	918	1,470	1,420	1,350	904

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
H: Bias in sample result likely to be high.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.

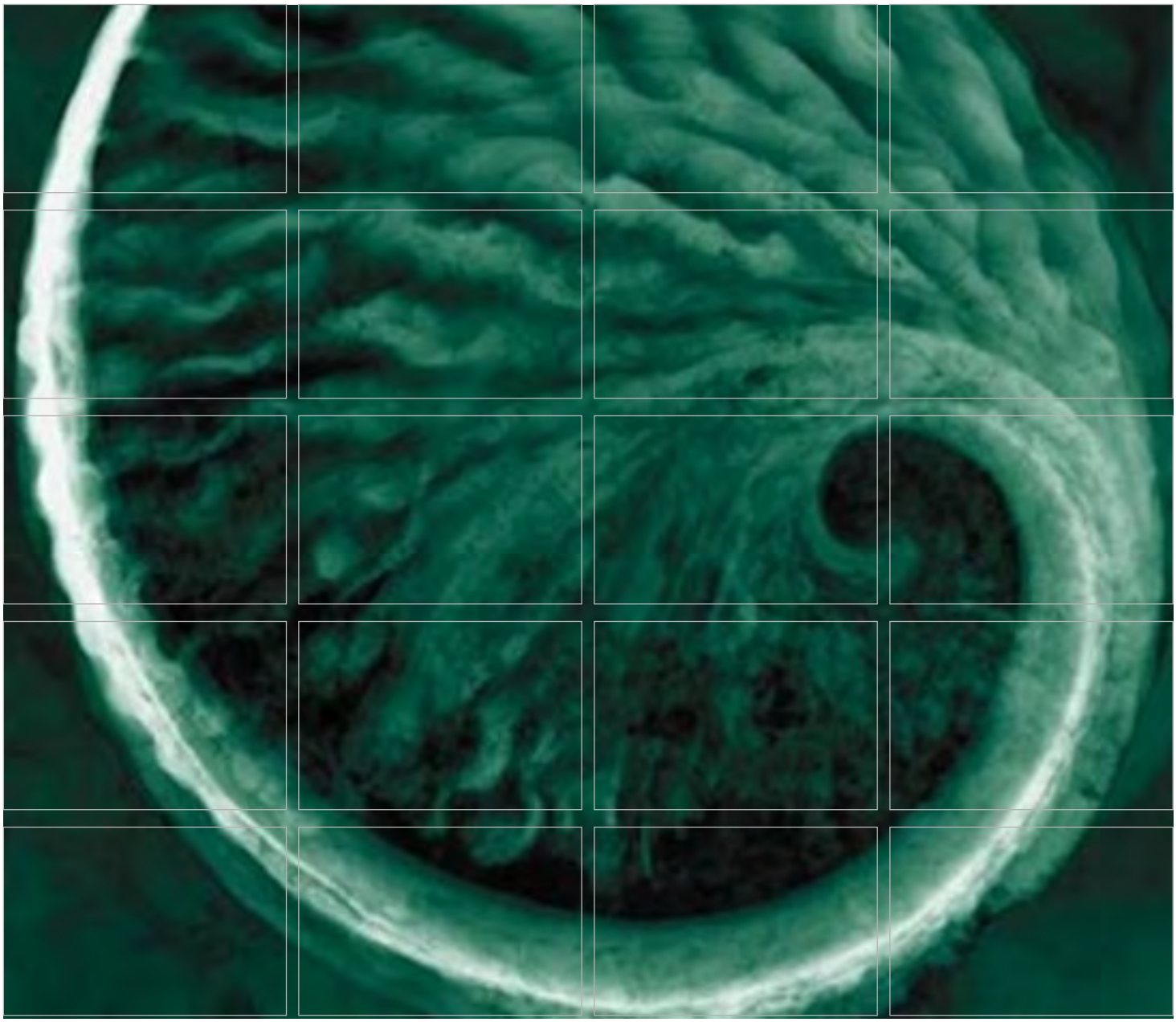
April and August 2020 Groundwater Sample Results
CCR Unit: SRH Pond
CPS Energy Calaveras Power Station
San Antonio, TX

			CCR Unit	SRH Pond	SRH Pond	SRH Pond	SRH Pond	SRH Pond
			Well Designation	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient
			Well ID	JKS-52	JKS-52	JKS-53	JKS-54	JKS-54
			Sample Date	4/28/2020	4/28/2020	4/28/2020	4/28/2020	8/24/2020
			Sample Type Code	N	FD	N	N	R
Constituent	Units	2019 LPL - SRH	2019 UPL - SRH					
Boron	mg/L	--	2.40	2.05	2.16	1.43	1.23	NA
Calcium	mg/L	--	357	174 J	180 J	114 J	118 J	NA
Chloride	mg/L	--	608	433	430	381	380	NA
Fluoride	mg/L	--	0.831	0.908	0.952	0.428	0.861	0.579
pH, Field	SU	5.48	7.31	6.83	6.83	6.67	6.76	NA
Sulfate	mg/L	--	421	315	313	244	443	425
Total dissolved solids	mg/L	--	2,180	1,470	1,420	1,160	1,570	NA

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; R - Resample
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
NA: Not analyzed for this constituent

Attachment 17 Groundwater Monitoring System



Groundwater Monitoring System

CPS Energy Calaveras Power Station
San Antonio, TX

October 2017

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Groundwater Monitoring System

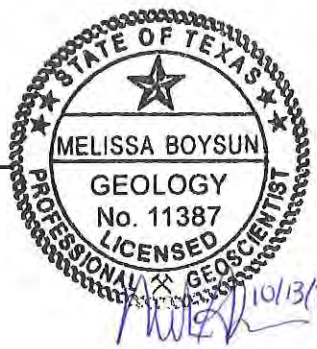
October 2017

Project No. 0366643

Jeffery L. Bauguss, P.E.
Partner-in-Charge

Walter Zverina
Senior Consultant / Project Manager

Melissa Boysun, P.G.
Project Geologist



10/13/2017

Environmental Resources Management
206 East 9th Street, Suite 1700
Austin, TX 78701
T: 512-459-4700
F: 512-597-8368

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

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1.0 INTRODUCTION

On behalf of CPS Energy, Environmental Resource Management Southwest, Inc. (ERM) conducted a characterization of the subsurface hydrogeology around existing Coal Combustible Residuals (CCR) Units associated with the Calaveras Power Station located southeast of San Antonio, in Bexar County, Texas. The hydrogeologic investigation was conducted to obtain site-specific technical data necessary to assess compliance with Title 40, Code of Federal Regulations, Part 257 (40 CFR Part 257) (a/k/a the "CCR Rule").

2.0 BACKGROUND

2.1 SITE DESCRIPTION

CPS Energy owns and operates the Calaveras Power Station located southeast of San Antonio in Bexar County, Texas. Within this power station, two plants are coal fired plants (JT Deely Power Plant and JK Spruce Power Plant) that generate CCR that are subject to the CCR Rule. A general site location map is provided as **Figure 1**.

2.2 USEPA CCR RULE

The USEPA published rules for the management of CCR generated from electric utilities. The CCR Rule specifies requirements for active and inactive surface impoundments and active piles and landfills that manage CCR.

CPS Energy has identified five onsite CCR Units:

1. Fly Ash Landfill;
2. Evaporation Pond;
3. Sludge Recycle Holding (SRH) Pond;
4. North Bottom Ash Pond (BAP); and
5. South BAP.

For the purposes of this investigation, the Fly Ash Landfill and the Evaporation Pond are termed the Northern CCR Units and the SRH Pond and BAPs are termed the Southern CCR Units.

This report presents site-specific data obtained by ERM that is intended to address the following CCR Rule requirements in the vicinity of the CCR Units:

> ***40 CFR §257.91 Groundwater monitoring systems.***
> *"(a) Performance standard. The owner or operator of a CCR unit must install a groundwater monitoring system that consists of a sufficient number of wells, installed at appropriate locations and depths, to yield groundwater samples from the uppermost aquifer…"*
> *"(b) The number, spacing, and depths of monitoring systems shall be determined based upon site-specific technical information …"*

3.0 SCOPE AND OBJECTIVES

ERM conducted a phased investigation of the hydrogeology at the Calaveras Power Station (the final phase of which was contemporaneous with installation of the groundwater monitoring system) to identify the uppermost groundwater-bearing unit (i.e., aquifer, as described by the CCR Rule) and characterize the subsurface hydrogeology near the CCR Units which are subject to the CCR Rule. Specifically, the hydrogeologic investigation included:

Initial Evaluation

1. Measure groundwater elevations from existing monitor wells located in the vicinity of the Fly Ash Landfill and Evaporation Pond to evaluate preliminary groundwater flow direction;
2. Inspect existing wells located in the vicinity of the Fly Ash Landfill and Evaporation Pond for potential future use in CCR monitor well networks; and
3. Evaluate placement and construction requirements for future well installation activities to take place during Phase I activities.

Phase I: Hydrogeological Investigation

1. Advance soil borings to obtain lithologic and stratigraphic information about the underlying soil and the underlying groundwater-bearing unit;
2. Install monitor wells and measuring groundwater elevations to determine the apparent groundwater flow direction; and
3. Collect geotechnical information to assess the confining and/or semi-confining units above and below the uppermost groundwater-bearing unit.

Phase II: Hydrogeological Investigation and Installation of Groundwater Monitor Well Network

1. Confirm and further characterize the hydrogeologic information obtained during the Phase I hydrogeologic investigation in the vicinity of the Northern and Southern CCR Units;

2. Confirm the extent of the lower confining unit in the vicinity of the Northern CCR Units and the presence/extent of the semi-confining unit in the vicinity of the Southern CCR Units;
3. Measure additional site-wide groundwater flow direction data at each CCR Unit; and
4. Complete installation of groundwater monitor well networks at the Fly Ash Landfill, Evaporation Pond, and Southern CCR Units.

4.0 METHODOLOGY

4.1 INITIAL EVALUATION

An initial evaluation was conducted which included 1) collecting water level measurements to determine the depth to water and groundwater flow direction in proximity to the Northern CCR units; 2) inspecting selected wells to determine their viability/usability in a future groundwater monitoring network; and 3) evaluating the placement of the monitor well filter packs and screens relative to encountered groundwater-bearing zones.

The water levels in seven existing monitor wells in proximity to the Northern CCR units would suggest that the wells are screened in the same groundwater-bearing unit. As there is no detailed lithologic/hydrogeologic information from the previous well installations, it is unclear whether these water levels indicate confined or semi-confined conditions, or if there is a shallow water bearing unit that is not currently being monitored.

Three existing monitor wells (JKS-31, JKS-33, and JKS-36) were identified as potentially viable/useable in a future groundwater monitoring network (**Figure 2**). The screen lengths in all three monitor wells were 10 feet, which is an industry recognized standard length. The filter pack length in JKS-31 and JKS-33 is approximately 10 to 12 feet in length, which is consistent with industry standards. The filter pack in JKS-36 is reported to be approximately 45 to 50 feet in length.

4.2 HYDROGEOLOGIC INVESTIGATION

4.2.1 Soil Boring Installation and Monitor Well Completions

Prior to initiating any subsurface disturbance activities, proposed boring locations were evaluated for the presence of any features (i.e., buried utilities/piping) in the subsurface. This subsurface clearance process included:

1. A review of available site drawings showing the location of buried utilities;
2. A site-walk of each boring location with CPS personal knowledgeable of known and potential subsurface assets;

3. Geophysical clearance using a third party line locator. Geophysical clearance was performed by Ground Penetrating Radar Systems, Inc. on February 29, 2016 and on August 24, 2016; and
4. Manual clearance of each boring location to visually confirm that no subsurface utilities were present by using a high-pressure water sprayer and an air vacuum (hydro-excavation) to remove soil to a depth of 5 feet below ground surface (bgs). Hydro-excavation activities were conducted by Best Drilling Services, Inc. on March 1, 2016 and August 29 – September 2, 2016.

ERM subcontracted Strata Core Services, LLC (Strata Core) to advance soil borings and install groundwater monitor wells using a hollow-stem auger (HSA) drill rig. Drilling and well installation were completed by Strata Core under the supervision of an ERM geologist from April 4-8, 2016 and September 1-12, 2016. An ERM geologist visually classified the stratigraphic column at each soil boring location. ERM boring logs, based on visual field-classification of geologic materials, are provided in **Appendix A**.

Phase I - April 2016

The investigation included the advancement of three (3) soil borings within a 100- to 200-foot distance from the Northern CCR Units and the advancement of four (4) soil borings within a 100-to 200-foot distance from the Southern CCR Units (**Figure 2**). The seven (7) soil borings were installed to address the lack of lithologic/hydrogeologic information in the vicinity of the Northern and Southern CCR Units.

Around the Northern CCR Units, three soil borings (JKS-45, JKS-46, and JKS-47) were initially advanced to depths corresponding to water levels measured in existing monitor wells during the initial evaluation in August 2015 (approximately 25 to 35 feet bgs). Groundwater was encountered in JKS-46 and JKS-47 at similar depths; however, groundwater was encountered in JKS-45 at a deeper depth (approximately 45 feet bgs). At the initial soil boring in the northern area (JKS-45), the top of the uppermost aquifer and an underlying confining/semi-confining unit were identified, then a monitor well was installed. In subsequent soil borings, a monitor well was installed once the top of the uppermost aquifer was identified.

Around the Southern CCR Units, four soil borings (JKS-48, JKS-49, JKS-50, and JKS-51) were advanced until a groundwater-bearing unit was encountered. An underlying confining/semi-confining unit was not encountered in the southern area. Each soil boring was terminated when bedrock was encountered.

Phase II - September 2016

The investigation included the advancement of eight (8) soil borings within a 100- to 200-foot distance from the Northern CCR Units and the advancement of six (6) soil borings within a 100-to 200-foot distance from the Southern CCR Units (**Figure 2**). The fourteen (14) additional soil borings were installed to confirm

and further characterize the lithologic/hydrogeologic information obtained during Phase I of the hydrogeologic investigation, and to complete the monitoring well networks in the Northern and Southern CCR Units.

Around the Northern CCR Units, eight soil borings (JKS-57, JKS-58, JKS-59, JKS-60, JKS-61, JKS-62, JKS-63, JKS-64) were initially advanced to depths corresponding to water levels measured in existing monitor wells during an August 2016 groundwater gauging event (approximately 15-30 feet bgs for the Fly Ash Landfill, and approximately 25-30 feet bgs for the Evaporation Pond). Groundwater was encountered at similar depths in all borings, with the exception of JKS-57 where groundwater was not initially observed during well installation, and JKS-63 where groundwater was encountered at 38 feet bgs (due to its higher topographic elevation). After JKS-57 was allowed to equilibrate, groundwater was observed at a similar depth as the other monitor wells.

Around the Southern CCR Units, six soil borings (JKS-50R, JKS-52, JKS-53, JKS-54, JKS-55, JKS-56) were initially advanced to depths corresponding either to where bedrock was encountered during Phase I activities (15-30 feet bgs) or the presence of groundwater. JKS-50, installed during the initial investigation, was plugged and abandoned and JKS-50R was re-installed in its place.

Well Construction

Monitor wells were constructed of 2-inch diameter PVC casing with 0.010-inch slotted well-screen. Screen lengths were installed based on the thickness of the encountered groundwater-bearing unit, and ranged from 7.5 feet to 15 feet during Phase I of the hydrogeologic investigation and 10 feet to 20 feet during Phase II. The borehole annulus around the well screen was backfilled one to two feet above the top of the well-screen with 20/40 silica sand filter pack, and the remaining borehole annulus was backfilled with 3/8-inch bentonite pellets up to the ground surface. Soil boring logs, well completion logs, and state well reports are provided in **Appendix A**.

Phase I and Phase II wells were completed with a concrete pad at ground surface. With the exception of JKS-52, all wells were completed above ground surface with a protective steel casing, extending several feet above grade. JKS-52, which was drilled in the middle of a berm roadway, was completed as flush mount well in a sub-grade steel vault.

4.2.2 Geotechnical Testing

Once an underlying confining/semi-confining unit had been encountered in the northern and Southern CCR Units, undisturbed samples were collected by advancing Shelby tubes into the underlying units (i.e., clay and clayey units) to document the bulk density, hydraulic conductivity, specific gravity, Atterberg limits, and grain size distribution of the materials in these units. The geotechnical results will aid in the evaluation of whether these confining/semi-confining units can affect the downward vertical migration of CCR. In addition, grab samples were collected from representative materials overlying the

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 vicinity of the Northern CCR Units, the top of casing and ground surface of three monitor wells (JKS-31, JKS-33, and JKS-36) within the existing groundwater monitoring network were surveyed. In addition, the top of casing and ground surface elevations of the 21 newly installed monitor wells were surveyed by a land surveyor. Monitor well survey data are summarized in **Table 2**.

5.0 INVESTIGATION RESULTS

5.1 SITE-WIDE GEOLOGY

According to the Bureau of Economic Geology (BEG) Geologic Atlas of Texas San Antonio Sheet[1], the geology in the area of Calaveras Power Station consists of the Carizzo Sand and the Wilcox Group. According to the United States Geological Survey, the Carizzo Sand consists of medium to coarse grained sandstone, with finer grained material towards the top of the formation[2]. The Wilcox Group consists mostly of mudstone, with various amounts of sandstone, lignite, ironstone concretions, and is glauconitic[3]. The surface topography of Calaveras Power Station slopes in multiple directions towards Calaveras Lake. Generally, the topography in the northern and southern area slopes towards the southeast.

ERM constructed cross sections of the subsurface lithology/stratigraphy in the vicinities of the Northern CCR Units and the Southern CCR Units using data from the newly installed borings (**Appendix A**). Cross section transects are shown in **Figure 3**.

- Cross section A-A′ (**Figure 4A**), B-B′ (**Figure 4B**), and C-C′ (**Figure 4C**) reflect subsurface lithology/stratigraphy in the vicinity of the Northern CCR Units; and
- Cross section D-D′ (**Figure 4D**), E-E′ (**Figure 4E**), and F-F′ (**Figure 4F**) reflect subsurface lithology/stratigraphy in the vicinity of the Southern CCR Units.

---

[1] Bureau of Economic Geology. 1974, revised 1982. *Geologic Atlas of Texas, San Antonio Sheet.* Bureau of Economic Geology, University of Texas at Austin.

[2] Eargle, D.H. 1968. *Nomenclature of Formations of Claiborne Group, Middle Eocene, Coastal Plain of Texas*. U.S. Geological Survey Bulletin 1251-D.

[3] United States Geological Survey. 2016. *Wilcox Group, undivided*. U.S. Geological Survey Mineral Resources On-line Spatial Data. July 25, 2016. http://mrdata.usgs.gov/geology/state/sgmc-unit.php?unit=TXEOPNwi;0.

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 southwest corner of the Evaporation Pond, and thins towards the northwest (northwest of the Fly Ash Landfill). The lower confining unit (generally observed at a depth between approximately 471 feet to 478 feet above mean sea level) was not observed at monitor wells JKS-47 and JKS-60 (drilled to depths of 462 feet and 466 feet above mean sea level, respectively). This possibly suggests the presence of erosional channels or gradational changes in lithology between JKS-45 and JKS-47, and JKS-46 and JKS-60. Interbedded sands and clays were observed within both the unconsolidated material and ground water bearing unit in monitor wells JKS-57, JKS-58, and JKS-61 through JKS-64. A high plasticity clay interval was observed above the groundwater-bearing unit at monitor well JKS-45, but appears to be discontinuous as it was not encountered during the installation of any other monitor wells in the vicinity of the Northern CCR Units.

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-45, JKS-58, JKS-62, and JKS-64. The laboratory USCS results classify the high plasticity clay unit (above the groundwater-bearing unit) and the lower confining unit as fat clay (CH). Sandy lean clay (CL) and clayey sand (SC) USCS results from JKS-58 and JKS-62, respectively, suggest that the contact between the groundwater bearing unit and lower confining unit is gradational in some areas. The laboratory USCS results classify the groundwater-bearing unit from a silty sand (SM) at JKS-45 to a clayey sand (SC) at JKS-64. Hydraulic conductivities from cohesive samples collected from the lower confining unit were reported on the order of 10^{-7} to 10^{-8} centimeters per second (cm/sec), which is within the range of values for clay[4]. A summary of the geotechnical testing results is provided in **Table 1**. HTS laboratory test results are provided in **Appendix B**.

5.1.2 *Southern CCR Units*

The stratigraphic sequence is generally characterized by approximately 6 feet to 18 feet of unconsolidated material (sands, silts, and low to medium plasticity clays), underlain by clayey/silty sand to moderately-sorted sand (groundwater-bearing unit) approximately 9.5 to 21.5 feet thick, underlain by bedrock (sandstone). Discontinuous silts and interbedded clay material were observed within the groundwater-bearing unit in monitor wells JKS-48, JKS-49, and JKS-51 through JKS-55.

[4] Freeze, R. A., and J. A. Cherry. 1979. *Groundwater*. Prentice-Hall, Inc. Englewood Cliffs, N.J.

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^{-6} to 10^{-8} (cm/sec). A summary of the geotechnical testing results is provided in **Table 1**. HTS laboratory test results are provided in **Appendix B**.

5.2 SITE-WIDE HYDROGEOLOGY

Based on water level measurements collected on December 6, 2016, ERM constructed potentiometric surface maps in the vicinities of the Northern CCR Units and the Southern CCR Units (**Figures 5A** and **5B**). In addition, based on water level measurements and stratigraphic information collected during the advancement of the soil borings, ERM has provided an interpretation of the confining nature of the underlying stratigraphy.

5.2.1 Northern CCR Units

Groundwater in the vicinity of the Fly Ash Landfill and the Evaporation Pond appears to flow towards Lake Calaveras (southeast to east). Groundwater elevation data is summarized in **Table 2**.

The groundwater-bearing unit in the vicinity of the Northern CCR Units appears to exhibit unconfined conditions based on the potentiometric surface of groundwater in relation to the first encountered water during drilling and the lack of continuous confining units (i.e., clay, sandy clay, or silty clay). As shown on Cross Sections A-A′ through C-C′ (**Figure 4A** through **4C**) and indicated on the boring logs, the potentiometric surface is within approximately three feet of the first water encountered during drilling, and no continuous confining units are observed. The minimal change in elevation and the stratigraphic information indicates that a significant, laterally continuous confining layer is not present above the groundwater-bearing unit in the northern area. However, a laterally continuous lower confining unit was observed in multiple borings below the groundwater bearing unit.

5.2.2 Southern CCR Units

The groundwater flow in the vicinity of the Southern CCR Units is radial toward the lake and adjacent channel and away from a groundwater high represented by the water level elevation measured in JKS-49. Groundwater elevation data is summarized in **Table 2**.

The groundwater-bearing unit in the vicinity of the Southern CCR Units appears to exhibit semi-confined conditions with confining units (i.e., clay, sandy clay, or silty clay) present in all the wells except JKS-49 and JKS-56. As shown on Cross Sections D-D′ through F-F′ (**Figure 4D** through **4F**) and indicated on the boring logs, the potentiometric surface is within approximately 4 feet to 11 feet of where water was first encountered during drilling for all wells except JKS-56, indicative

of groundwater under hydraulic head pressure with semi-confined conditions. JKS-56 appears to demonstrate unconfined conditions, due to the approximately 0.5 foot difference between the first encountered water during drilling and the potentiometric surface. As shown on Cross Section D-D' and E-E' (**Figures 4D** and **4E**, respectively), and indicated on the boring logs, there is a bedrock unit underlying the groundwater-bearing unit in the southern area.

Three surface water elevations were measured on Calaveras Lake in April 2016 to understand the potentiometric relationship of the lake water levels and the groundwater elevations in the Southern CCR Units monitor wells. In general, lake surface water elevations are comparable to groundwater elevations measured within the monitor well closest to the lake. Surface water elevation data is also summarized in **Table 2.**

6.0 CCR UNIT MONITOR WELL NETWORKS

According to the CCR Rule, the groundwater monitoring system requires that wells be installed both upgradient from each CCR Unit (to establish background concentrations of the constituents listed in Appendix III and IV of the CCR Rule), and downgradient from each CCR Unit to detect potential releases. Due to the horizontal distance between the Fly Ash Landfill and the Evaporation Pond, and the differing groundwater flow directions, the two Northern CCR Units require separate monitor well networks. Even though the SRH Pond and the BAPs are in close proximity, two separate monitor well networks will be used to monitor the groundwater in the vicinity of these two Southern CCR Units. ERM developed the monitor well networks utilizing one to three upgradient wells and at least three or more downgradient wells.

The locations for groundwater monitor well networks at the Northern and Southern CCR Units are shown in **Figure 2**, and the respective well functions are as follows:

Fly Ash Landfill Monitor Well Network

Well ID	Well Function	Comment
JKS-45	*Background Monitoring*	*Collect sample and measure water elevation*
JKS-57	*Background Monitoring*	*Collect sample and measure water elevation*
JKS-31	*Downgradient Monitoring*	*Collect sample and measure water elevation*
JKS-33	*Downgradient Monitoring*	*Collect sample and measure water elevation*
JKS-46	*Downgradient Monitoring*	*Collect sample and measure water elevation*
JKS-60	*Downgradient Monitoring*	*Collect sample and measure water elevation*
JKS-58	*Groundwater Observation*	*Measure water elevation only*
JKS-59	*Groundwater Observation*	*Measure water elevation only*

Evaporation Pond Monitor Well Network

Well ID	Well Function	Comment
JKS-47	*Background Monitoring*	*Collect sample and measure water elevation*
JKS-63	*Background Monitoring*	*Collect sample and measure water elevation*
JKS-64	*Background Monitoring*	*Collect sample and measure water elevation*
JKS-36	*Downgradient Monitoring*	*Collect sample and measure water elevation*
JKS-61	*Downgradient Monitoring*	*Collect sample and measure water elevation*
JKS-62	*Downgradient Monitoring*	*Collect sample and measure water elevation*

SRH Pond Monitor Well Network

Well ID	Well Function	Comment
JKS-51	*Background Monitoring*	*Collect sample and measure water elevation*
JKS-52	*Downgradient Monitoring*	*Collect sample and measure water elevation*
JKS-53	*Downgradient Monitoring*	*Collect sample and measure water elevation*
JKS-54	*Downgradient Monitoring*	*Collect sample and measure water elevation*

BAPs Monitor Well Network

Well ID	Well Function	Comment
JKS-49	*Background Monitoring*	*Collect sample and measure water elevation*
JKS-48	*Downgradient Monitoring*	*Collect sample and measure water elevation*
JKS-50R	*Downgradient Monitoring*	*Collect sample and measure water elevation*
JKS-52	*Downgradient Monitoring*	*Collect sample and measure water elevation*
JKS-55	*Downgradient Monitoring*	*Collect sample and measure water elevation*
JKS-56	*Downgradient Monitoring*	*Collect sample and measure water elevation*

7.0 CONCLUSIONS

1. The groundwater flow in the vicinity of the Fly Ash Landfill and Evaporation Pond is generally to the southeast to east, towards the lake.
2. The groundwater-bearing unit in the vicinity of the Northern CCR Units appears to exhibit unconfined conditions and is underlain by a lower confining unit.
3. The groundwater flow in the vicinity of the Southern CCR Units is radial toward the lake and adjacent channel.
4. The groundwater-bearing unit in the vicinity of the Southern CCR Units appears to exhibit semi-confined conditions and is underlain by bedrock (sandstone).
5. Lake surface water elevations are comparable to groundwater elevations measured within the monitor well closest to the lake and channel.

6. The following groundwater monitoring systems, installed for each CCR Unit at the Calaveras Power Station, meets the groundwater monitoring system requirements specified in the CCR Rule:
    - Fly Ash Landfill Unit: 2 background wells; 4 downgradient wells; 2 observation wells
    - Evaporation Pond Unit: 3 background wells; 3 downgradient wells
    - SRH Pond: 1 background well; 3 downgradient wells
    - BAPs: 1 background well; 5 downgradient wells
7. Certification from a qualified professional engineer stating that the groundwater monitoring system has been designed and constructed to meet the requirements of 40 C.F.R. Part 257.91 is provided in **Appendix C**.

Tables

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

TABLE 1

Geotechnical Testing Results Summary

CPS Energy
Calaveras Power Station

Well ID	Depth (feet bgs)	USCS Description	Moisture (%)	Density (pcf)	Atterberg Liquid Limit (%)	Atterberg Plastic Limit (%)	Atterberg Plastic Index (%)	Particle Size	Hydraulic Conductivity (cm/sec)	Specific Gravity
		ASTM D2487	*ASTM D2216*	*ASTM D2937*	*ASTM D4318*	*ASTM D4318*	*ASTM D4318*	*ASTM D421/D422*	*ASTM D5084*	*ASTM D854*
JKS-45	28-30	Fat Clay (CH)	24.3	--	61	22	39	91.6	-	-
JKS-45	36-38	Fat Clay (CH)	19.0	--	67	24	43	90.5	-	-
JKS-45	50-52	Silty Sand (SM)	18.0	--	Non Plastic	Non Plastic	Non Plastic	12.6	-	-
JKS-45	55-57	Fat Clay (CH)	27.9	--	75	28	47	97.0	-	-
JKS-45	60-62	Fat Clay (CH)	22.6	120.9	75	26	49	86.4	1.82E-08	2.696
JKS-48	10-12.5	Clayey Sand (SC)	20.5	--	35	16	19	44.6	-	-
JKS-48	15-16.5	Sandy Lean Clay (CL)	19.1	--	48	19	29	58.9	-	-
JKS-48	19-20	Clayey Sand (SC)	25.2	--	26	16	10	48.7	-	-
JKS-53	10-12.5	Clayey Sand (SC)	24.2	101.8	30	14	16	35.9	5.34E-06	2.68
JKS-53	12.5-15	Clayey Sand (SC)	23.6	97.1	29	15	14	48.8	4.13E-08	2.68
JKS-53	20-21	Clayey Sand (SC)	29.5	--	27	14	13	37.6	--	--
JKS-54	13-14	Silty Clayey Sand (SC-SM)	25.5	--	22	15	7	33.5	--	--
JKS-58	26-27	Sandy Lean Clay (CL)	22.7	--	38	18	20	50.9	--	--
JKS-58	30-32.5	Fat Clay (CH)	20.3	100.0	57	20	37	89.1	1.53E-07	2.72
JKS-62	35-37	Clayey Sand (SC)	18.4	93.8	38	17	21	32.3	6.63E-07	2.68
JKS-64	20-30	Clayey Sand (SC)	28.6	--	29	14	15	30.1	--	--

NOTES:

feet bgs = feet below ground surface
USCS = Unified Soil Classification System
pcf = pounds per cubic foot
cm/sec = centimeters per second
-- = Not analyzed for this parameter
All analyses performed by HTS, Inc. Consultants.

TABLE 2

Well Survey and Water Levels Summary
CPS Energy
Calaveras Power Station

Monitor Well Survey Data						Groundwater Elevation									
Well ID	Northing (US Survey Feet)	Easting (US Survey Feet)	TOC Elevation (feet MSL)	Ground Surface Elevation (feet MSL)	Casing Height (feet)	05/31/16		08/03/16		09/21/16		10/28/16		12/06/16	
						DTW (feet BTOC)	GWE (feet MSL)	DTW (feet BTOC)	GWE (feet MSL)	DTW (feet BTOC)	GWE (feet MSL)	DTW (feet BTOC)	GWE (feet MSL)	DTW (feet BTOC)	GWE (feet MSL)
Fly Ash Landfill															
JKS-31	13666796.23	2187611.68	507.45	505.27	2.18	27.25	480.20	27.53	479.92	26.89	480.56	27.60	479.85	27.01	480.44
JKS-33	13666778.96	2188466.98	498.71	497.77	0.94	--	--	--	--	--	--	--	--	18.03	480.68
JKS-45	13667132.78	2186615.40	531.46	528.31	3.15	47.19	484.27	47.15	484.31	47.01	484.45	47.07	484.39	46.83	484.63
JKS-46	13667810.11	2187972.31	499.08	495.75	3.33	19.38	479.70	17.87	481.21	17.55	481.53	18.51	480.57	17.61	481.47
JKS-57	13668235.72	2187486.38	506.91	503.83	3.08	--	--	--	--	20.07	486.84	20.71	486.20	19.89	487.02
JKS-58	13667994.99	2187797.39	504.45	500.94	3.51	--	--	--	--	21.09	483.36	19.41	485.04	18.85	485.60
JKS-59	13667779.88	2188352.07	496.45	493.53	2.92	--	--	--	--	15.49	480.96	16.84	479.61	15.67	480.78
JKS-60	13667357.02	2188465.44	495.70	492.68	3.02	--	--	--	--	17.40	478.30	17.57	478.13	17.15	478.55
Evaporation Pond															
JKS-36	13666288.91	2187227.29	508.41	506.95	1.46	26.38	482.03	26.45	481.96	26.24	482.17	26.46	481.95	25.99	482.42
JKS-47	13665709.79	2186503.87	513.63	510.28	3.35	31.37	482.26	30.39	483.24	31.16	482.47	31.24	482.39	30.98	482.65
JKS-61	13665721.04	2187196.65	505.51	502.52	2.99	--	--	--	--	24.46	481.05	24.30	481.21	23.95	481.56
JKS-62	13666020.13	2187153.88	509.84	506.71	3.13	--	--	--	--	28.90	480.94	28.90	480.94	28.63	481.21
JKS-63	13666230.86	2186553.38	526.86	523.55	3.31	--	--	--	--	44.70	482.16	44.75	482.11	44.45	482.41
JKS-64	13665627.14	2186778.76	507.84	504.38	3.46	--	--	--	--	25.06	482.78	25.12	482.72	24.98	482.86
SRH Pond															
JKS-51	13660243.53	2185630.39	496.92	494.04	2.88	10.56	486.36	11.04	485.88	10.61	486.31	11.16	485.76	10.76	486.16
JKS-52	13659683.26	2186139.05	493.15	493.56	-0.41	--	--	--	--	7.30	485.85	7.64	485.51	7.53	485.62
JKS-53	13659757.34	2185892.80	494.74	491.33	3.41	--	--	--	--	8.50	486.24	8.91	485.83	7.70	487.04
JKS-54	13659753.34	2185641.96	496.40	492.69	3.71	--	--	--	--	10.79	485.61	11.28	485.12	10.19	486.21
Bottom Ash Ponds															
JKS-48	13659658.78	2186490.78	497.19	493.71	3.48	11.28	485.91	11.69	485.50	11.70	485.49	12.22	484.97	11.47	485.72
JKS-49	13660519.40	2186229.15	498.63	495.17	3.46	9.32	489.31	12.37	486.26	11.61	487.02	12.60	486.03	8.81	489.82
JKS-50	13660122.87	2186836.72	498.20	494.87	3.33	11.76	486.44	DRY	DRY	P&A	--	P&A	--	P&A	--
JKS-50R	13660149.90	2186841.92	498.48	494.96	3.52	--	--	--	--	12.67	485.81	13.61	484.87	12.50	485.98
JKS-55	13659749.75	2186840.46	493.81	490.13	3.68	--	--	--	--	8.36	485.45	9.10	484.71	8.15	485.66
JKS-56	13660382.47	2186847.61	496.66	493.07	3.59	--	--	--	--	11.20	485.46	11.87	484.79	11.12	485.54

Surface Water Location	Northing (US Survey Feet)	Easting (US Survey Feet)	Surface Water Elevation (feet MSL)
SWA-1 *(Southeast of JKS-48)*	13659530.02	2186591.55	484.97
SWA-2 *(West of JKS-48)*	13659654.68	2185974.38	485.08
SWB-1 *(East-Northeast of JKS-49)*	13660737.32	2186922.00	484.91

NOTES:
TOC = top of casing
feet MSL = feet above mean sea level
feet BTOC = feet below top of casing
DTW = depth to water
GWE = groundwater elevation
P&A = JKS-50 was plugged and abandoned on 09/09/16
Surface water survey elevations collected on 5/31/16.
Surveying performed by Pape-Dawson Engineers, Inc. using NAD 83 State Plane Coordinates 4204 Texas South Central (NAVD88 computed using GEOID 03).

Figures

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

Environmental Resources Management

DESIGN:	NH	DRAWN:	EFC	CHKD.:	WZ
DATE:	7/25/2016	SCALE:	AS SHOWN	REVISION:	1
W.O.NO.:	K:\GIS\CPS\Calaveras\MXD\0337367_CPSCalaveras_SiteLoc.mxd				

FIGURE 1
GENERAL SITE LOCATION MAP

CPS Energy - Calaveras Power Station
San Antonio, Texas

ERM

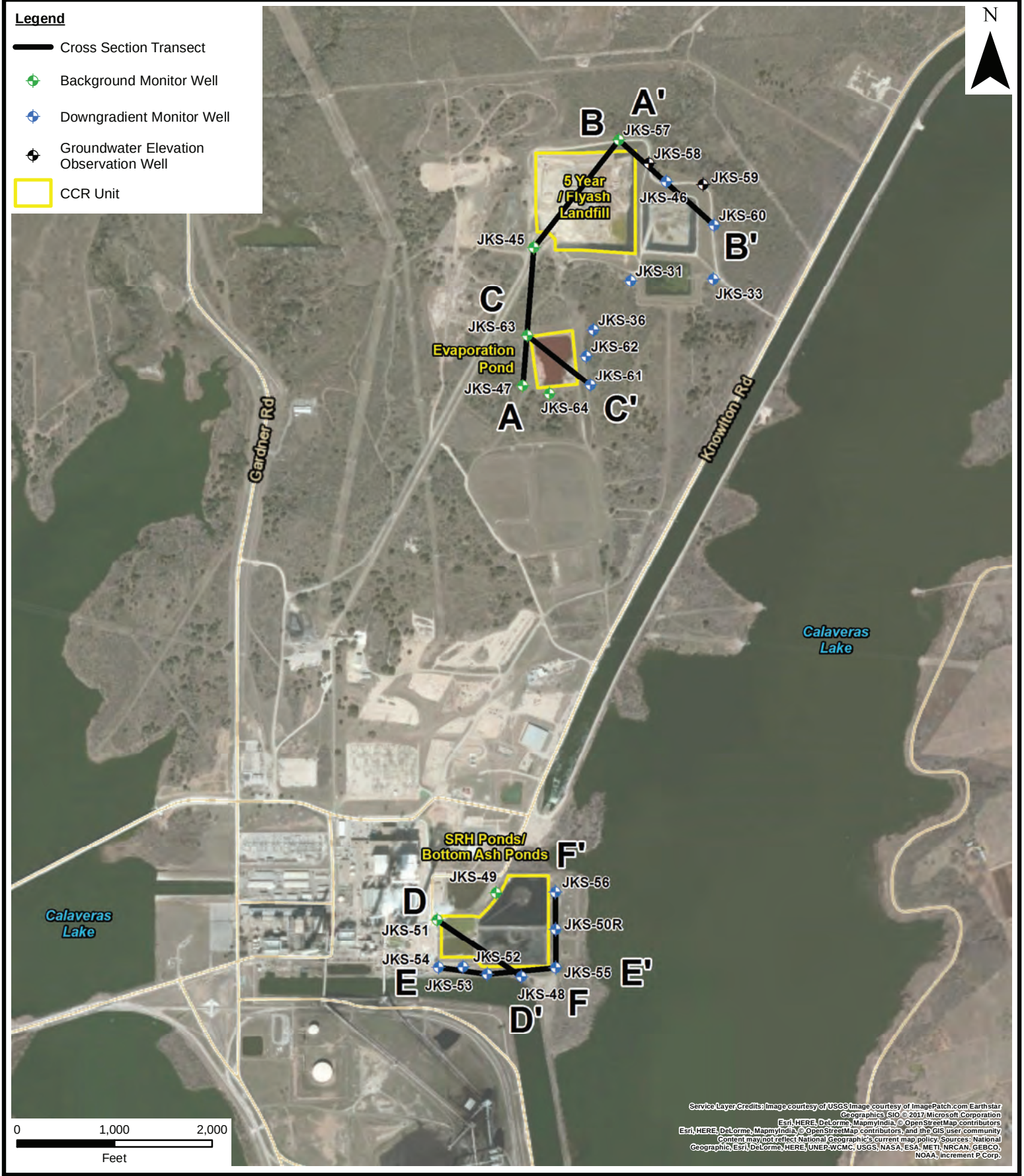
Environmental Resources Management

DESIGN:	NH	DRAWN:	EFC	CHKD.:	WZ
DATE:	1/12/2017	SCALE:	AS SHOWN	REVISION:	0
W.O.NO.:	P:\Projects\0366643 CPS Energy Calaveras CCR Well Network.WZ\GIS\MXD\HydroInv\CPSCalv_WellsLocs.mxd				

FIGURE 2
CCR WELL NETWORK LOCATION MAP

CPS Energy - Calaveras Power Station
San Antonio, Texas

ERM



Environmental Resources Management

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DATE:	1/4/2017	SCALE:	AS SHOWN	REVISION:	0
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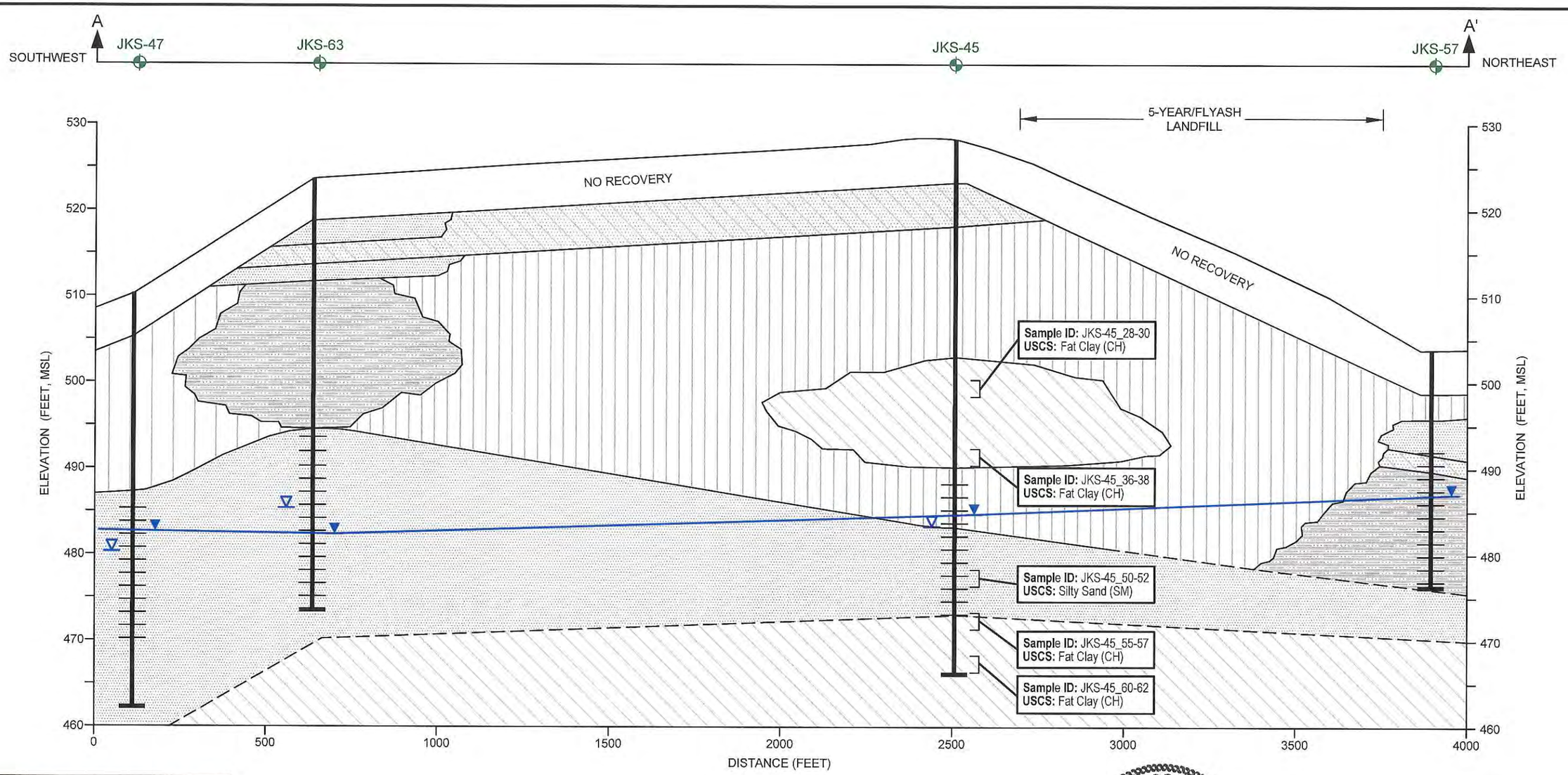
FIGURE 3
STRATIGRAPHIC CROSS SECTION TRANSECT MAP

CPS Energy - Calaveras Power Station
San Antonio, Texas

ERM



LEGEND

- SAND, SILTY SAND, AND/OR CLAYEY SAND
- SILT, SANDY SILT, AND/OR CLAYEY SILT
- LOW TO MEDIUM PLASTICITY CLAY, SANDY CLAY, AND/OR SILTY CLAY
- HIGH PLASTICITY CLAY
- INTERBEDDED SAND, AND CLAY

- POTENTIOMETRIC SURFACE (MEASURED DECEMBER 6, 2016)
- INITIAL GROUNDWATER LEVEL ENCOUNTERED DURING WELL INSTALLATION

SOIL TEST DATA KEY

Sample ID
USCS Soil Classification

- MONITOR WELL (SCREENED INTERVAL DASHED)
- BACKGROUND MONITOR WELL

STATE OF TEXAS
MELISSA BOYSUN
GEOLOGY
No. 11387
LICENSED
PROFESSIONAL GEOSCIENTIST
10/13/2017

VERTICAL 10' 0
HORIZONTAL 300'

Notes:
1. Approximate ground surface elevation interpolated from surveyed elevations.
2. Aerial Source: ESRI.

Environmental Resources Management

Figure 4A
Stratigraphic Cross Section A-A'

CPS Energy - Calaveras Power Station
San Antonio, Texas

DESIGN: NH	DRAWN: RLM	CHKD.:
DATE: 1/10/2017	SCALE: AS SHOWN	REV.:

W.O.NO.: T:\DWG\AutoCAD\dwg\0366643\0366643_xsecs_v4.dwg, 1/10/2017 4:54:14 PM

ERM-Southwest, Inc. TX PE Firm No. 2393

SOUTHWEST B JKS-57 JKS-46 JKS-60 B' NORTHEAST

5-YEAR/ FLYASH LANDFILL

NO RECOVERY

NO RECOVERY

ELEVATION (FEET, MSL)

505 500 495 490 485 480 475 470 465

0 200 400 600 800 1000 1200 1400 1600

DISTANCE (FEET)

LEGEND

- SAND, SILTY SAND, AND/OR CLAYEY SAND
- SILT, SANDY SILT, AND/OR CLAYEY SILT
- LOW TO MEDIUM PLASTICITY CLAY, SANDY CLAY, AND/OR SILTY CLAY
- HIGH PLASTICITY CLAY
- INTERBEDDED SAND, AND CLAY
- POTENTIOMETRIC SURFACE (MEASURED DECEMBER 6, 2016)
- INITIAL GROUNDWATER LEVEL ENCOUNTERED DURING WELL INSTALLATION
- MONITOR WELL (SCREENED INTERVAL DASHED)
- DOWNGRADIENT MONITOR WELL
- BACKGROUND MONITOR WELL

STATE OF TEXAS
MELISSA BOYSUN
GEOLOGY
No. 11387
LICENSED
PROFESSIONAL GEOSCIENTIST
10/13/2017

VERTICAL 5' 0 HORIZONTAL 100'

Notes:
1. Approximate ground surface elevation interpolated from surveyed elevations.
2. Aerial Source: ESRI.

Environmental Resources Management

Figure 4B
Stratigraphic Cross Section B-B'

CPS Energy - Calaveras Power Station
San Antonio, Texas

DESIGN: NH	DRAWN: RLM	CHKD.:
DATE: 1/10/2017	SCALE: AS SHOWN	REV.:

W.O.NO.: T:\DWG\AutoCAD\dwg\0366643\0366643_xsecs_v4.dwg, 1/10/2017 4:54:16 PM

ERM-Southwest, Inc. TX PE Firm No. 2393

SOUTHWEST C JKS-63 JKS-61 C' NORTHEAST

EVAPORATION POND

NO RECOVERY

ELEVATION (FEET, MSL)

525 520 515 510 505 500 495 490 485 480 475 470 465

0 100 200 300 400 500 600 700 800 900 1000

DISTANCE (FEET)

LEGEND

- SAND, SILTY SAND, AND/OR CLAYEY SAND
- SILT, SANDY SILT, AND/OR CLAYEY SILT
- LOW TO MEDIUM PLASTICITY CLAY, SANDY CLAY, AND/OR SILTY CLAY
- HIGH PLASTICITY CLAY
- INTERBEDDED SAND, AND CLAY
- POTENTIOMETRIC SURFACE (MEASURED DECEMBER 6, 2016)
- INITIAL GROUNDWATER LEVEL ENCOUNTERED DURING WELL INSTALLATION
- MONITOR WELL (SCREENED INTERVAL DASHED)
- DOWNGRADIENT MONITOR WELL
- BACKGROUND MONITOR WELL

STATE OF TEXAS
MELISSA BOYSUN
GEOLOGY
No. 11387
LICENSED
PROFESSIONAL GEOSCIENTIST
10/13/2017

10' VERTICAL
0 100' HORIZONTAL

Notes:
1. Approximate ground surface elevation interpolated from surveyed elevations.
2. Aerial Source: ESRI.

Environmental Resources Management

Figure 4C
Stratigraphic Cross Section C-C'

CPS Energy - Calaveras Power Station
San Antonio, Texas

DESIGN: NH	DRAWN: RLM	CHKD.:
DATE: 1/10/2017	SCALE: AS SHOWN	REV.:

W.O.NO.: T:\DWG\AutoCAD\dwg\0366643\0366643_xsecs_v4.dwg, 1/10/2017 4:54:17 PM

ERM

ERM-Southwest, Inc. TX PE Firm No. 2393

D NORTHWEST — JKS-51 — JKS-48 — SOUTHEAST D'

SRH PONDS — SOUTH BOTTOM ASH POND

NO RECOVERY

Sample ID: JKS-48_10-12.5
USCS: Clayey Sand (SC)

Sample ID: JKS-48_15-16.5
USCS: Sandy Lean Clay (CL)

Sample ID: JKS-48_19-20
USCS: Clayey Sand (SC)

ELEVATION (FEET, MSL)

495 490 485 480 475 470 465

0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300

DISTANCE (FEET)

LEGEND

- SAND, SILTY SAND, AND/OR CLAYEY SAND
- SILT, SANDY SILT, AND/OR CLAYEY SILT
- LOW TO MEDIUM PLASTICITY CLAY, SANDY CLAY, AND/OR SILTY CLAY
- INTERBEDDED SAND, SILT, AND CLAY
- BEDROCK (SANDSTONE)

- POTENTIOMETRIC SURFACE (MEASURED DECEMBER 6, 2016)
- INITIAL GROUNDWATER LEVEL ENCOUNTERED DURING WELL INSTALLATION

SOIL TEST DATA KEY

Sample ID
USCS Soil Classification

- MONITOR WELL (SCREENED INTERVAL DASHED)
- DOWNGRADIENT MONITOR WELL
- BACKGROUND MONITOR WELL

STATE OF TEXAS
MELISSA BOYSUN
GEOLOGY
No. 11387
LICENSED
PROFESSIONAL GEOSCIENTIST

10/13/2017

VERTICAL 5' 0 100' HORIZONTAL

Notes:
1. Approximate ground surface elevation interpolated from surveyed elevations.
2. Aerial Source: ESRI.

Environmental Resources Management

Figure 4D
Stratigraphic Cross Section D-D'

CPS Energy - Calaveras Power Station
San Antonio, Texas

DESIGN: NH	DRAWN: RLM	CHKD.: WZ
DATE: 1/10/2017	SCALE: AS SHOWN	REV.: 1

W.O.NO.: T:\DWG\AutoCAD\dwg\0366643\0366643_xsecs_v4.dwg, 1/10/2017 4:54:18 PM

ERM

E

SOUTHWEST

JKS-54

JKS-53

JKS-52

JKS-55

E'

NORTHEAST

NO RECOVERY

NO RECOVERY

Sample ID: JKS-54_13-14
USCS: Silty Clayey Sand (SC-SM)

Sample ID: JKS-53_10-12.5
USCS: Clayey Sand (SC)

Sample ID: JKS-53_12.5-15
USCS: Clayey Sand (SC)

Sample ID: JKS-53_20-21
USCS: Clayey Sand (SC)

ELEVATION (FEET, MSL)

495
490
485
480
475
470
465
460

0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300

DISTANCE (FEET)

LEGEND

- SAND, SILTY SAND, AND/OR CLAYEY SAND
- SILT, SANDY SILT, AND/OR CLAYEY SILT
- LOW TO MEDIUM PLASTICITY CLAY, SANDY CLAY, AND/OR SILTY CLAY
- INTERBEDDED SAND, SILT, AND CLAY
- BEDROCK (SANDSTONE)

- POTENTIOMETRIC SURFACE (MEASURED DECEMBER 6, 2016)
- INITIAL GROUNDWATER LEVEL ENCOUNTERED DURING WELL INSTALLATION

SOIL TEST DATA KEY

Sample ID
USCS Soil Classification

- MONITOR WELL (SCREENED INTERVAL DASHED)
- DOWNGRADIENT MONITOR WELL

STATE OF TEXAS
MELISSA BOYSUN
GEOLOGY
No. 11387
LICENSED
PROFESSIONAL GEOSCIENTIST

10/13/2017

VERTICAL 5'
HORIZONTAL 0 100'

Notes:
1. Approximate ground surface elevation interpolated from surveyed elevations.
2. Aerial Source: ESRI.

Environmental Resources Management

Figure 4E
Stratigraphic Cross Section E-E'

CPS Energy - Calaveras Power Station
San Antonio, Texas

DESIGN: NH	DRAWN: RLM	CHKD.: WZ
DATE: 2/16/2017	SCALE: AS SHOWN	REV.: 1

W.O.NO.: T:\DWG\AutoCAD\dwg\0366643\0366643_xsecs_v4.dwg, 2/16/2017 4:12:06 PM

ERM

ERM-Southwest, Inc. TX PE Firm No. 2393

F

SOUTH

JKS-55

JKS-50R

JKS-56

F'

NORTH

NO RECOVERY

NO RECOVERY

ELEVATION (FEET, MSL)

495
490
485
480
475
470
465

0
100
200
300
400
500
600
700

DISTANCE (FEET)

LEGEND

- SAND, SILTY SAND, AND/OR CLAYEY SAND
- SILT, SANDY SILT, AND/OR CLAYEY SILT
- LOW TO MEDIUM PLASTICITY CLAY, SANDY CLAY, AND/OR SILTY CLAY
- INTERBEDDED SAND, AND CLAY
- BEDROCK (SANDSTONE)
- POTENTIOMETRIC SURFACE (MEASURED DECEMBER 6, 2016)
- INITIAL GROUNDWATER LEVEL ENCOUNTERED DURING WELL INSTALLATION
- MONITOR WELL (SCREENED INTERVAL DASHED)
- DOWNGRADIENT MONITOR WELL

STATE OF TEXAS
MELISSA BOYSUN
GEOLOGY
No. 11387
LICENSED
PROFESSIONAL GEOSCIENTIST

1/10/2017

5'
VERTICAL
0
100'
HORIZONTAL

Notes:
1. Approximate ground surface elevation interpolated from surveyed elevations.
2. Aerial Source: ESRI.

Environmental Resources Management

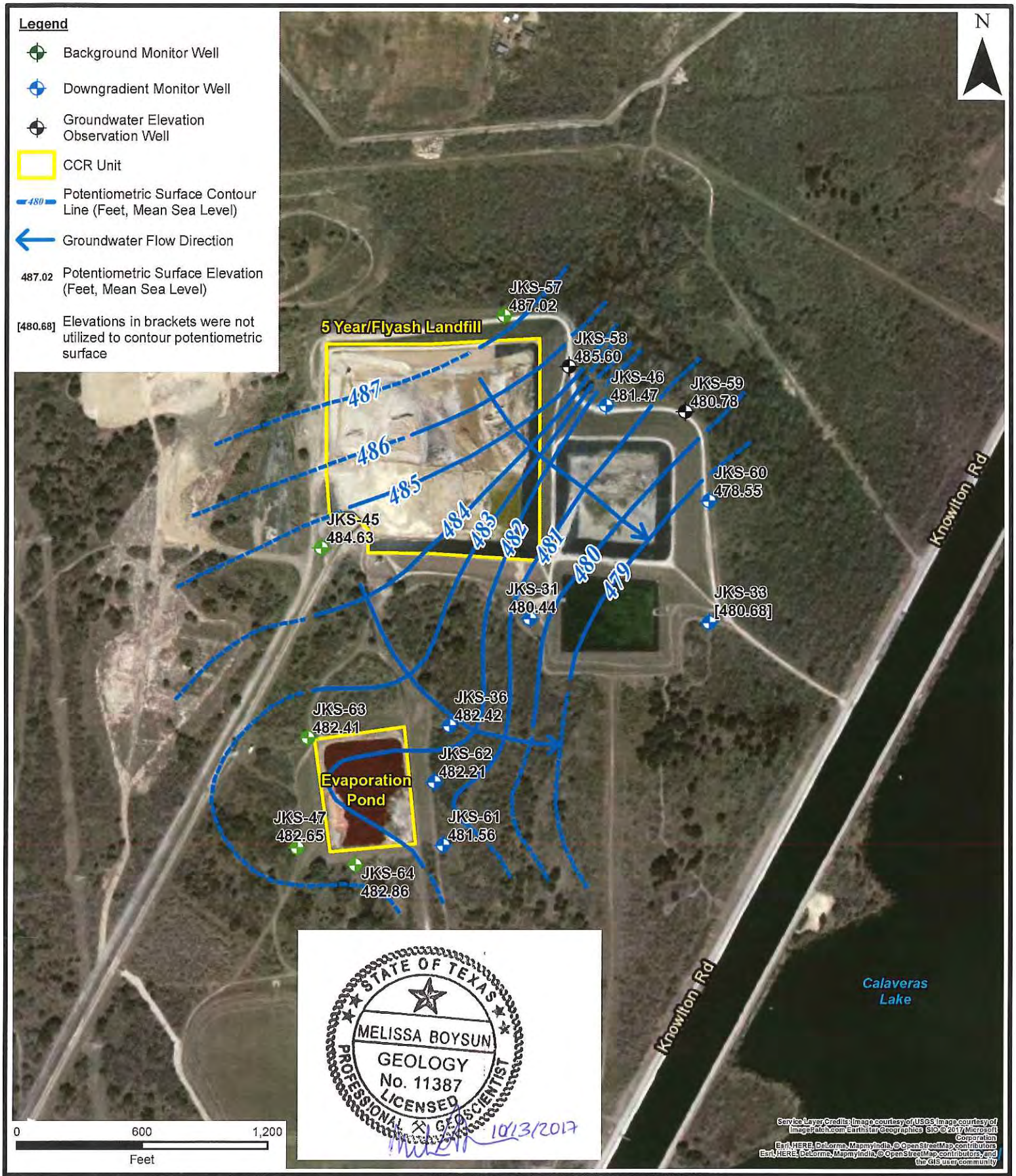
Figure 4F
Stratigraphic Cross Section F-F'

CPS Energy - Calaveras Power Station
San Antonio, Texas

DESIGN: NH	DRAWN: EFC	CHKD.: WZ
DATE: 1/10/2017	SCALE: AS SHOWN	REV.: 1

W.O.NO.: T:\DWG\AutoCAD\dwg\0366643\0366643_xsecs_v4.dwg, 1/10/2017 4:54:21 PM

ERM



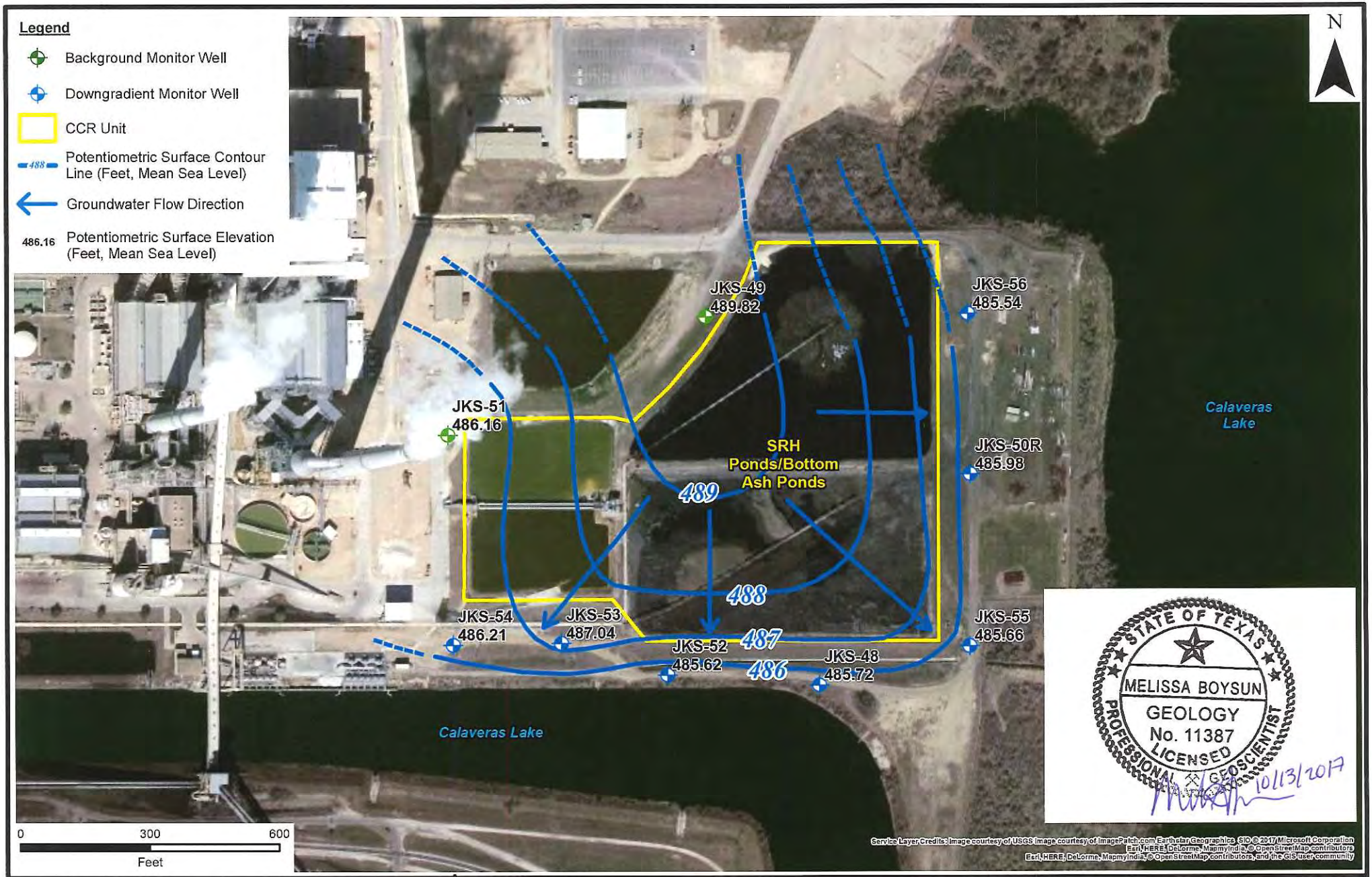
Environmental Resources Management

DESIGN:	NH/AH	DRAWN:	EFC	CHKD.:	WZ
DATE:	2/28/2017	SCALE:	AS SHOWN	REVISION:	1
W.O.NO.:	P:\Projects\0366643 CPS Energy Calaveras CCR Well Network.WZ\GIS\MXD\HydroInv CPSCalv_pmapN_6dec2016.mxd				

FIGURE 5A
POTENTIOMETRIC SURFACE MAP - DECEMBER 6, 2016
NORTHERN CCR UNITS

CPS Energy - Calaveras Power Station
San Antonio, Texas

ERM



Environmental Resources Management

DESIGN:	NH/AH	DRAWN:	EFC	CHKD.:	WZ
DATE:	1/10/2017	SCALE:	AS SHOWN	REVISION:	1
W.O.NO.:	P:\Projects\0366843 CPS Energy Calaveras CCR Well Network.WZ\GIS\MXD\HydroInv CPSCalv_pmapS_6dec2016.mxd				

FIGURE 5B
POTENTIOMETRIC SURFACE MAP -
DECEMBER 6, 2016
SOUTHERN CCR UNITS

CPS Energy - Calaveras Power Station
San Antonio, Texas

ERM

Soil Boring Logs, Well Completion Logs, and State Well Reports

Appendix A

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

ERM Environmental Resources Management

JKS-45
DRILLING LOG

Proj. No. 0337367 Boring/Well ID JKS-45 Date Drilled 2016-04-04

Project Groundwater Investigation Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 62.00 ' Boring Diam. 8.25 "

N. Coord. 13667132.78' E. Coord. 2186615.40' Surface Elevation 528.31 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 40.00 ' Sump Length 0 '

Top of Casing Elevation 531.46 ' Stickup 3.15 '

Depth to Water: 1. Ft. btoc 47.19 (2016-05-31) 2. Ft. _____ (_____)

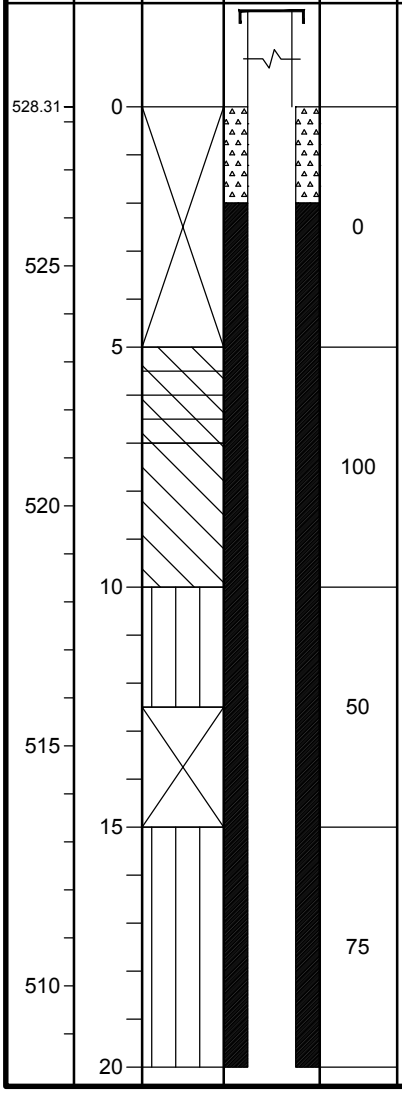
Drilling Company Strata Core Services, LLC Driller Joseph Ray

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.



Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
	0-5	NO RECOVERY: Previously excavated by hydrovac truck.
	5-7	SILTY CLAY: Brown; dry to damp; medium stiff; medium plasticity; some white calcareous concretions present. At 5.5' bgs: Slight orange mottling. At 6' bgs: White silt lens.
	7-10	CLAY: Grey; dry to damp; stiff; medium to high plasticity; minor silt content at depth; white calcareous concretions throughout. At 7.5' bgs: Orange mottling. At 9' bgs: Yellowish orange silt lens.
	10-12.5	SILT: Alternating light grey and yellowish brown, stratified with orange, yellow, and red; damp; loose; non-plastic.
	12.5-15	NO RECOVERY.
	15-22	SILT: Brownish light grey; damp; loose to medium dense; non-plastic; some yellow stringers. At 16' bgs: Alternating pinkish brown stratifications (2" thick). At 16.5' bgs: Orange band (2" thick). At 17.5' bgs: Orange band (1" thick). At 19' bgs: Light grey and pinkish brown laminations; minor clay content; occasional orange silt stringers.

ERM Environmental Resources Management

JKS-45 DRILLING LOG

Proj. No. 0337367 Boring/Well ID JKS-45 Date Drilled 2016-04-04

Project Groundwater Investigation Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 62.00 ' Boring Diam. 8.25 "

N. Coord. 13667132.78' E. Coord. 2186615.40' Surface Elevation 528.31 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 40.00 ' Sump Length 0 '

Top of Casing Elevation 531.46 ' Stickup 3.15 '

Depth to Water: 1. Ft. btoc 47.19 (2016-05-31) 2. Ft. _____ (_____)

Drilling Company Strata Core Services, LLC Driller Joseph Ray

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
505	20			75		22-25	CLAYEY SILT: Pinkish brown laminated with light grey; dry to damp; medium dense to dense; slight plasticity; trace yellow and orange silt stringers.
	25					25-34.5	SILTY CLAY: Dark reddish brown; dry to damp; medium stiff; low plasticity; fractures along planar surfaces.
				100	JKS-45_28-30 □□□□□ Fat Clay (CH) □L□ 61 / 22 / 39 □□□□□□□□□□ 91.6		At 25.5' bgs: Light grey silt lens (2" thick). At 28' bgs: Light grey silt stringers; yellow silt stringers and minor gypsum crystals from 28' to 30' bgs. Non-cohesive grab sample collected from 28'-30' bgs.
500	30						
				100			At 31.5' bgs: Dry; yellow silt stringers; abundant yellowish orange silt stringers to 32' bgs. At 33.5' bgs: Trace gypsum crystals.
495	35					34.5-35	SILT: Dark pinkish brown laminated with greyish brown; dry; dense; non-plastic; some clay content.
						35-36	SILTY CLAY: Very dark reddish brown; damp to moist; medium stiff; low plasticity; trace yellow silt; minor gypsum crystals; brownish black band (2" thick) at 35' bgs.
				100	JKS-45_36-38 □□□□□ Fat Clay (CH) □L□ 67 / 24 / 43 □□□□□□□□□□ 90.5	36-38	CLAY: Pinkish grey; dry; very stiff to hard; very high plasticity (fat). Non-cohesive grab sample collected from 36'-38' bgs. At 36.5' bgs: Yellow and orange silt stringers to 37.5' bgs.
490						38-43	SILT: Orangish brown; dry to damp; medium dense to dense; slight plasticity; slight clay content.
	40						

ERM Environmental Resources Management

JKS-45 DRILLING LOG

Proj. No. 0337367 Boring/Well ID JKS-45 Date Drilled 2016-04-04

Project Groundwater Investigation Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 62.00 ' Boring Diam. 8.25 "

N. Coord. 13667132.78' E. Coord. 2186615.40' Surface Elevation 528.31 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 40.00 ' Sump Length 0 '

Top of Casing Elevation 531.46 ' Stickup 3.15 '

Depth to Water: 1. Ft. btoc 47.19 (2016-05-31) 2. Ft. _____ (_____)

Drilling Company Strata Core Services, LLC Driller Joseph Ray

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
	40						At 38.75' bgs: Brownish black band (1.5" thick). At 39.25' bgs: Yellow silt stringers. At 39.5' bgs: Color change to brownish grey; very dense; increased clay content. At 40' bgs: Yellow and orange silt stringers to 43' bgs; some compacted silt pieces to 43' bgs.
485				80		43-45	CLAYEY SILT: Dark reddish brown; damp; medium dense; slight plasticity; orange silt stringers throughout.
	45					45-55	At 44.5' bgs: Trace fine-grained sand content. SAND: Light grey to grey stratified with yellow, orange and red; wet to saturated; fine-grained to medium grained with depth; sub-rounded; well sorted; loose; non-plastic; minor clay lenses (1/16" to 1/8" thick).
480				50			At 48' bgs: Color change to orangish brown with orange laminations; no clay content.
	50				JKS-45_50-52 Silty Sand (SM) L Non-plastic 12.6		At 49.5' bgs: Intermixed red color to 50' bgs. At 50' bgs: Color change to pinkish brown. Non-cohesive grab sample collected from 50'-52' bgs.
475				50			
	55				JKS-45_55-57 Fat Clay (CH) L 75 / 28 / 47 97	55-62	At 54.5' bgs: Brownish orange band (2" thick). CLAY: Dark grey; damp; stiff to very stiff; very high plasticity (fat); occasional light grey silt stringers; fractures along silt stringers. Non-cohesive sample collected from 55'-57' bgs.
470				100			
	60						

ERM Environmental Resources Management

JKS-45
DRILLING LOG

Proj. No. 0337367 Boring/Well ID JKS-45 Date Drilled 2016-04-04

Project Groundwater Investigation Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 62.00 ' Boring Diam. 8.25 "

N. Coord. 13667132.78' E. Coord. 2186615.40' Surface Elevation 528.31 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 40.00 ' Sump Length 0 '

Top of Casing Elevation 531.46 ' Stickup 3.15 '

Depth to Water: 1. Ft. btoc 47.19 (2016-05-31) 2. Ft. _____ (_____)

Drilling Company Strata Core Services, LLC Driller Joseph Ray

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
465	60			100	JKS-45_60-62 Fat Clay (CH) L 75 / 26 / 49 86.4 1.82×10^{-8}		Cohesive sample (Shelby tube) collected from 60'-62' bgs. Boring terminated at 62' bgs.
460	65						
455	70						
450	75						
	80						

ERM Environmental Resources Management

JKS-46
DRILLING LOG

Proj. No. 0337367 Boring/Well ID JKS-46 Date Drilled 2016-04-05

Project Groundwater Investigation Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 30.00 ' Boring Diam. 8.25 "

N. Coord. 13667810.11' E. Coord. 2187972.31' Surface Elevation 495.75 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Sump Length 0 '

Top of Casing Elevation 499.08 ' Stickup 3.33 '

Depth to Water: 1. Ft. btoc 19.38 (2016-05-31) 2. Ft. _____ (_____)

Drilling Company Strata Core Services, LLC Driller Joseph Ray

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
495.75	0				No Samples Collected	0-5	NO RECOVERY: Previously excavated by hydrovac truck.
495				0			
	5					5-8	CLAYEY SAND: Reddish orange; damp to moist; fine-grained; sub-round; well-sorted; medium dense; slight to low plasticity; some silt content.
490				100			At 7.5' bgs: Dense grey clay lenses (1/2" thick).
						8-10	SANDY CLAY: Reddish orange; medium stiff; slight to low plasticity; minor silt content; dense grey clay lenses (1/2" thick); yellow and yellowish orange silt stringers. At 9.5' bgs: Increased silt content.
	10					10-11	CLAY: Grey; dry; stiff; medium plasticity; minor silt content; fractures along tan silt to fine-grained sand stringers.
485						11-15	SAND: Tan; damp; fine-grained; sub-round, well sorted; loose; non-plastic.
				75			At 13' bgs: Striated with pink and orange.
							At 14' bgs: Color change to reddish orange; some silt content; occasional clay lenses.
	15					15-19.5	At 14.75' bgs: Orange silt lens. SILT: Red with orange; damp to dry; loose; slight plasticity. At 15.5' bgs: Color change to grey. At 15.75' bgs: Color change to red. At 16' bgs: Color change to tan with yellow; fractures along planar surfaces. At 17' bgs: Moist.
480				85			At 18.75' bgs: Color change to red and orange.
	20					19.5-25	SAND: Tan; moist; fine-grained, coarsens with depth; sub-round; well sorted; loose; non-plastic; minor silt and trace clay; orange and yellow silt stringers.

ERM Environmental Resources Management

JKS-46
DRILLING LOG

Proj. No. 0337367 Boring/Well ID JKS-46 Date Drilled 2016-04-05

Project Groundwater Investigation Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 30.00 ' Boring Diam. 8.25 "

N. Coord. 13667810.11' E. Coord. 2187972.31' Surface Elevation 495.75 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Sump Length 0 '

Top of Casing Elevation 499.08 ' Stickup 3.33 '

Depth to Water: 1. Ft. btoc 19.38 (2016-05-31) 2. Ft. _____ (_____)

Drilling Company Strata Core Services, LLC Driller Joseph Ray

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
475	20				No Samples Collected		At 20' bgs: Color change to brownish tan with orange band (2" thick) at 20.25' bgs. At 21.5' bgs: Color change to tannish grey with yellowish orange band (2" thick). At 22.5' bgs: Color change to tan stratified with pinkish orange and orange.
				75			
470	25					25-30	CLAY: Dark greyish brown; damp to dry; very stiff; high to very high plasticity (fat); fractures along planar surfaces; Light grey and yellowish orange silt lenses throughout.
				100			
465	30						At 29.75' bgs: Dark grey silt lenses; some very small gypsum crystals. Boring terminated at 30' bgs.
	35						
460							
	40						

ERM Environmental Resources Management

JKS-47
DRILLING LOG

Proj. No. 0337367 Boring/Well ID JKS-47 Date Drilled 2016-04-05

Project Groundwater Investigation Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 48.00 ' Boring Diam. 8.25 "

N. Coord. 13665709.79' E. Coord. 2186503.87' Surface Elevation 510.28 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 25.00 ' Sump Length 0 '

Top of Casing Elevation 513.63 ' Stickup 3.35 '

Depth to Water: 1. Ft. btoc 31.37 (2016-05-31) 2. Ft. _____ (_____)

Drilling Company Strata Core Services, LLC Driller Joseph Ray

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
510.28	0			0	No Samples Collected	0-5	NO RECOVERY: Previously excavated by hydrovac truck.
510							
505	5			50		5-9.5	CLAYEY SILT: Pinkish brown with grey; damp to moist; loose; slight to low plasticity; occasional yellow and orange silt lenses. At 5.5' bgs: Clay lens (2" thick).
							At 9.25' bgs: Clay lens (2" thick).
500	10			90		9.5-20	SILT: Light grey; damp; medium dense; slight plasticity; minor clay content, decreases with depth; abundant yellow and orange silt stringers; fractures along planar surfaces. At 10' bgs: Striated with pinkish brown to 12' bgs.
							At 12.5' bgs: No clay content. At 13' bgs: Color change to tan; dry; yellow and orange silt stringers.
495	15			50			
	20						

ERM Environmental Resources Management

JKS-47
DRILLING LOG

Proj. No. 0337367 Boring/Well ID JKS-47 Date Drilled 2016-04-05

Project Groundwater Investigation Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 48.00 ' Boring Diam. 8.25 "

N. Coord. 13665709.79' E. Coord. 2186503.87' Surface Elevation 510.28 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 25.00 ' Sump Length 0 '

Top of Casing Elevation 513.63 ' Stickup 3.35 '

Depth to Water: 1. Ft. btoc 31.37 (2016-05-31) 2. Ft. _____ (_____)

Drilling Company Strata Core Services, LLC Driller Joseph Ray

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
490	20			75	No Samples Collected	20-23	At 20' bgs: Whitish tan striated with yellow; minor fine-grained sand content. SANDY SILT: Whitish tan; dry; loose; non-plastic; occasional yellow and orange silt stringers, occurrence increases with depth.
485	25			50		23-48	SAND: Whitish tan; dry to moist with depth; fine-grained; sub-round; well sorted; minor yellow and orange silt stringers; thin clay pinkish brown to brown clay laminations to 23.25' bgs. At 25' bgs: Color change to tannish brown; very moist.
480	30			100			At 30' bgs: Saturated; Orange band (1" thick) at 30.25' bgs.
475	35			50			At 34' bgs: Orange striations to 35' bgs. At 35' bgs: Trace orange silt stringers.
	40						

ERM Environmental Resources Management

JKS-47
DRILLING LOG

Proj. No. 0337367 Boring/Well ID JKS-47 Date Drilled 2016-04-05

Project Groundwater Investigation Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 48.00 ' Boring Diam. 8.25 "

N. Coord. 13665709.79' E. Coord. 2186503.87' Surface Elevation 510.28 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 25.00 ' Sump Length 0 '

Top of Casing Elevation 513.63 ' Stickup 3.35 '

Depth to Water: 1. Ft. btoc 31.37 (2016-05-31) 2. Ft. _____ (_____)

Drilling Company Strata Core Services, LLC Driller Joseph Ray

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
470	40				No Samples Collected		At 40' bgs: Clayey sand lens (2" thick). At 40.5' bgs: Occasional pinkish brown silt stringers to 41' bgs. At 14.5' bgs: Abundant yellowish orange silt stringers to 42.5' bgs.
				75			At 41.5' bgs: Orange and brown laminated silt stringers to 43' bgs.
465	45						At 44' bgs: Medium-grained; no silt content.
				100			At 46' bgs: Orangish brown silt layer (1/2" thick). At 46.5' bgs: Color change to greyish tan; fine to medium-grained with decreasing grain size with depth.
460	50						Boring terminated at 48' bgs.
455	55						
	60						

ERM Environmental Resources Management

JKS-48 DRILLING LOG

Proj. No. 0337367 Boring/Well ID JKS-48 Date Drilled 2016-04-06

Project Groundwater Investigation Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 30.00 ' Boring Diam. 8.25 "

N. Coord. 13659658.78' E. Coord. 2186490.78' Surface Elevation 493.71 ' Ft MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 18.50 ' Sump Length 0 '

Top of Casing Elevation 497.19 ' Stickup 3.48 '

Depth to Water: 1. Ft. btoc 11.28 (2016-05-31) 2. Ft. _____ (_____)

Drilling Company Strata Core Services, LLC Driller Joseph Ray

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
493.71	0			0		0-5	NO RECOVERY: Previously excavated by hydrovac truck.
490	5			100		5-6	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.
						6-6.5	SILTY CLAY: Orangish brown heavily mottled with grey and orange; damp; stiff; medium plasticity; occasional grey and orange silt stringers.
						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.
485	10			75	JKS-48_10-12.5 **USCS:** Clayey Sand (SC) **AL:** 35 / 16 / 19 **-200 Sieve:** 44.6	7.5-12.5	CLAYEY SILT: Brown; damp to moist; medium dense; low plasticity; light grey and orange silt stringers. At 9' bgs: Dense silty clay layer (2" thick). At 9.25' bgs: Dense silty clay layer (2" thick). Non-cohesive grab sample collected from 10'-12.5' bgs. At 10.5' bgs: Dense silty clay layer (2" thick).
480	15			80	JKS-48_15-16.5 Sandy Lean Clay (CL) L 48 / 19 / 29 58.9	12.5-15	SAND: Brownish grey; damp to moist; fine-grained; sub-angular; moderately sorted; loose; non-plastic; minor silt content. At 13.5' bgs: Dense clay lens (1" thick). At 14.5' bgs: Color change to dark brown.
						15-16.5	CLAY: Brownish orange heavily mottled with dark brown, orange, and orangish red; moist; stiff; high plasticity; trace silt content, increases with depth; orange silt stringers. Non-cohesive grab sample collected from 15'-16.5' bgs.
						16.5-19	CLAYEY SILTY SAND: Brownish tan; very moist; loose to medium dense; slight plasticity; decreasing clay content with depth; occasional orange silt stringers. At 16.5' bgs: Wet.
475	20				JKS-48_19-20 **USCS:** Clayey Sand (SC) **AL:** 26 / 16 / 10 **-200 Sieve:** 48.7	19-20	SAND: Orangish brown; very moist to wet; fine-grained; sub-angular; moderately sorted; loose; non-plastic; minor silt content, decreases with depth; laminated with light grey clay to 19.25' bgs. Non-cohesive grab sample collected from 19'-20' bgs.

ERM Environmental Resources Management

JKS-48
DRILLING LOG

Proj. No. 0337367 Boring/Well ID JKS-48 Date Drilled 2016-04-06

Project Groundwater Investigation Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 30.00 ' Boring Diam. 8.25 "

N. Coord. 13659658.78' E. Coord. 2186490.78' Surface Elevation 493.71 ' Ft MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 18.50 ' Sump Length 0 '

Top of Casing Elevation 497.19 ' Stickup 3.48 '

Depth to Water: 1. Ft. btoc 11.28 (2016-05-31) 2. Ft. _____ (_____)

Drilling Company Strata Core Services, LLC Driller Joseph Ray

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
	20					20-22.5	SILTY SAND: Orangish brown; saturated; fine to very-fine grained; sub-angular, poorly sorted; loose; non-plastic; minor clay content. At 20.25' bgs: Thin grey clay laminations.
				50		22.5-25	SAND: Tannish brown with grey; saturated; fine-grained; sub-angular; moderately sorted; loose; non-plastic; some silt content; orange silt stringers.
470							At 24.5' bgs: Orange silt lens to 24.75' bgs.
	25					25-27.5	INTERBEDDED SILTY SAND AND CLAY: Tannish grey; saturated; medium dense; laminated silty fine-grained sand with pinkish brown clay; clay laminations fracture along planar surfaces; yellow and orange silt stringers throughout.
				50		27.5-30	CLAYEY SILTY SAND: Tannish grey; saturated; loose; slight plasticity; orange 1/16" thick silt laminations throughout.
465							At 29.5' bgs: Pinkish brown (1/16" thick) clay laminations to 30' bgs.
	30						Refusal (bedrock) enountered at 30' bgs.
460							
	35						
455							
	40						

ERM Environmental Resources Management

JKS-49 DRILLING LOG

Proj. No. 0337367 Boring/Well ID JKS-49 Date Drilled 2016-04-06

Project Groundwater Investigation Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 19.00 ' Boring Diam. 8.25 "

N. Coord. 13660519.40' E. Coord. 2186229.15' Surface Elevation 495.17 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 7.00 ' Sump Length 0 '

Top of Casing Elevation 498.63 ' Stickup 3.46 '

Depth to Water: 1. Ft. btoc 9.32 (2016-05-31) 2. Ft. _____ (_____)

Drilling Company Strata Core Services, LLC Driller Joseph Ray

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
495.17	0			0	No Samples Collected	0-5	NO RECOVERY: Previously excavated by hydrovac truck.
495							
490	5			50		5-6	SAND: Greyish tan; very moist; fine-grained; sub-angular; moderately sorted; loose; non-plastic; orange silt stringers.
						6-10	SILT: Greyish tan; very moist; loose; non-plastic; minor fine-grained sand; occasional yellow silt stringers.
485	10			100		10-15	At 9.5' bgs: Color change to light brown; wet; orange silt stringers. SAND: Light brown; wet; fine-grained; sub-angular; moderately sorted; loose to medium dense; non-plastic; minor silt content; abundant orange silt stringers. At 11.75' bgs: Orange silt lens (2" thick); trace silt stringers. At 12' bgs: Decreasing silt content.
480	15			100		15-16.5	At 14' bgs: Color change to greyish tan. SANDY SILT: Light brown; wet to saturated; loose; non-plastic; occasional orange silt stringers.
						16.5-19	At 16.5' bgs: Pinkish brown clay lens (3/16" thick). SILT: Brownish orange; wet to saturated; loose; non-plastic; minor fine-grained sand content. At 17.5' bgs: Color change to light brown. At 18.25' bgs: Color change to orange; pinkish brown clay lens (1/16" thick). At 18.5' bgs: Minor orange and red sandstone pieces, occurrence increases at depth.
475	20						Refusal (bedrock) enountered at 19' bgs.

ERM Environmental Resources Management

JKS-50 DRILLING LOG

Proj. No. 0337367 Boring/Well ID JKS-50 Date Drilled 2016-04-06

Project Groundwater Investigation Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 14.00 ' Boring Diam. 8.25 "

N. Coord. 13660122.87' E. Coord. 2186836.72' Surface Elevation 494.87 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 7.50 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 2.50 ' Sump Length 0 '

Top of Casing Elevation 498.20 ' Stickup 3.33 '

Depth to Water: 1. Ft. btoc 11.76 (2016-05-31) 2. Ft. _____ (_____)

Drilling Company Strata Core Services, LLC Driller Joseph Ray

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
494.87	0			0	No Samples Collected	0-5	NO RECOVERY: Previously excavated by hydrovac truck.
490	5			80		5-7.75	SILTY CLAY: Orangish brown heavily mottled with light grey, brown, and tan; damp; stiff; medium to high plasticity; increasing silt content with depth; orange silt stringers. At 6' bgs: Tan silt lens (2" thick).
						7.75-8.25	At 7.5' bgs: Color change to brownish orange; minor fine-grained sand content.
						8.25-9.25	SAND: Tan; damp; fine-grained, sub-angular; moderately sorted; dense; non-plastic; minor silt content; occasional orange silt stringers.
485	10			25		9.25-10	SILTY CLAY: Orangish brown mottled with grey, brown, red and occasional yellow; damp; stiff; medium plasticity; orange silt stringers throughout.
						10-13	SILT: Tan; moist; loose; non-plastic; trace orange silt stringers. At 9.75' bgs: Soft clay lens (3/16" thick). NO RECOVERY.
						13-13.75	SILTY CLAY: Brown; saturated; loose; low plasticity; orange silt stringers; sandstone pieces (3/8" thick) near 13.75' bgs.
480	15					13.75-14	SANDSTONE: Brownish orange laminated with orange, tan, and dark brown. Refusal (bedrock) enountered at 14' bgs.
475	20						

ERM Environmental Resources Management

JKS-51 DRILLING LOG

Proj. No. 0337367 Boring/Well ID JKS-51 Date Drilled 2016-04-07

Project Groundwater Investigation Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 29.50 ' Boring Diam. 8.25 "

N. Coord. 13660243.53' E. Coord. 2185630.39' Surface Elevation 494.04 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 7.00 ' Sump Length 0 '

Top of Casing Elevation 496.92 ' Stickup 2.88 '

Depth to Water: 1. Ft. btoc 10.56 (2016-05-31) 2. Ft. _____ (_____)

Drilling Company Strata Core Services, LLC Driller Joseph Ray

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
494.04	0			0	No Samples Collected	0-5	NO RECOVERY: Previously excavated by hydrovac truck.
490	5			60		5-6.5	SILTY CLAY: Light brown with occasional orange mottling; wet; soft; low plasticity; occasional gravel (1/16" thick).
						6.5-10	SAND: Light brown; very moist; fine-grained; sub-angular; moderately sorted; medium dense; slight plasticity; minor silt and clay content. At 7.5' bgs: Clay lenses (up to 3/4" thick) to 8.5' bgs. At 8.5' bgs: Occasional orange silt stringers to 9.5' bgs. At 9' bgs: Clay lamina (1/16" thick) to 10' bgs. At 9.5' bgs: Wet.
485	10			100		10-15	SILT: Light brown; wet; medium dense; low plasticity; laminated with grey clay (1/16" to 3/16" thick) throughout; minor fine-grained sand; orange silt stringers throughout. At 12.5' bgs: Sand lens (2" thick). At 13.5' bgs: Sand lens (2" thick); fractures in planar surfaces to 14.5' bgs. At 14' bgs: Occasional thin clay lamina to 15' bgs. At 14.5' bgs: Color change to light grey.
480	15			100		15-17.75	CLAY: Pinkish grey; moist; medium stiff; low to medium plasticity; laminated with orange and grey silt (up to 3/4" thick) throughout. CLAY: Grey; moist; medium stiff; low plasticity; trace silt content; abundant orange silt stringers.
						17.75-18.25 18.25-19.75	SILTY SAND: Light brown; wet to saturated; very fine to fine-grained; sub-angular; poorly sorted; loose; non-plastic. At 19.25' bgs: Pinkish grey clay lens (2" thick); thin red silt lens below clay; occasional orange silt stringers.
475	20					19.75-26.5	SAND: Light grey; wet; fine-grained; sub-angular; moderately sorted; loose; non-plastic; occasional orange silt stringers.

ERM Environmental Resources Management

JKS-51 DRILLING LOG

Proj. No. 0337367 Boring/Well ID JKS-51 Date Drilled 2016-04-07

Project Groundwater Investigation Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 29.50 ' Boring Diam. 8.25 "

N. Coord. 13660243.53' E. Coord. 2185630.39' Surface Elevation 494.04 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 7.00 ' Sump Length 0 '

Top of Casing Elevation 496.92 ' Stickup 2.88 '

Depth to Water: 1. Ft. btoc 10.56 (2016-05-31) 2. Ft. _____ (_____)

Drilling Company Strata Core Services, LLC Driller Joseph Ray

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
470	20			100	No Samples Collected		At 21.25' bgs: Red silt lens (1/16" thick); abundant orange silt stringers.
	25			100			At 24' bgs: Minor silt and trace clay content.
465	30					26.5-27.75	At 26.25' bgs: Reddish orange silt lens (1/16" thick). SANDY SILT: Tannish light grey; wet; loose; slight plasticity; occasional yellow and orange silt stringers. At 27.5' bgs: Trace clay content.
						27.75-28	CLAY: Dark brown mottled with tannish brown; moist; stiff; very high plasticity (fat); brown silt stringers throughout.
						28-29.5	SAND: Tannish light grey; wet; fine-grained; sub-angular; moderately sorted; loose; non-plastic; trace silt, occurrence decreases with depth; abundant orange silt stringers. At 29.25' bgs: Color change to light brown; occasional orange silt stringers. Refusal (bedrock) enountered at 29.5' bgs.
460	35						
455	40						

STATE OF TEXAS WELL REPORT for Tracking #424209

Owner:	**CPS Energy**	Owner Well #:	**JKS-45**
Address:	**PO Box 2906 San Antonio, TX 78299**	Grid #:	**68-46-5**
Well Location:	**Calaveras Power Station San Antonio, TX**	Latitude:	**29° 19' 01" N**
		Longitude:	**098° 18' 08" W**
Well County:	**Bexar**	Elevation:	**528 ft. above sea level**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **4/4/2016** Drilling End Date: **4/8/2016**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**62**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**38**	**56**	**Sand**	**20/40**

Annular Seal Data: **No Data**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Description (number of sacks & material)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Plug Information:	**Bentonite**	**52**	**62**

	Strata Depth (ft.)	Water Type
Water Quality:	No Data	No Data

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**

112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **Joseph Ray** License Number: **58794**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	5	Ash
5	8	Lt brn sandy clay
8	14	lt gry sandy clay
14	20	Lt gray sand
20	40	Brn silty clay
40	45	Lt gray sand
45	55	yellow/org silty sand
55	62	Green/gray clay

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	40
2	Screen	New Plastic (PVC)	40 10	40	55

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

STATE OF TEXAS WELL REPORT for Tracking #424210

Owner:	**CPS ENERGY**	Owner Well #:	**JKS-46**
Address:	**PO BOX 2906 SAN ANTONIO, TX 78299**	Grid #:	**68-46-5**
Well Location:	**Calaveras Power Station SAN ANTONIO, TX**	Latitude:	**29° 19' 01" N**
		Longitude:	**098° 18' 08" W**
Well County:	**Bexar**	Elevation:	**496 ft. above sea level**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **4/4/2016** Drilling End Date: **4/8/2016**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**30**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**13**	**25**	**Sand**	**20/40**

Annular Seal Data: **No Data**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Description (number of sacks & material)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Plug Information:	**Bentonite**	**26**	**30**

	Strata Depth (ft.)	Water Type
Water Quality:	No Data	No Data

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**

112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **Joseph Ray** License Number: **58794**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	5	ASH
5	8	LT BRN SANDY CLAY
8	14	LT GRY CLAY
14	28	LT GRY SAND
28	30	BRN CLAY

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	15
2	Screen	New Plastic (PVC)	40 10	15	25

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

STATE OF TEXAS WELL REPORT for Tracking #424211

Owner:	**CPS ENERGY**	Owner Well #:	**JKS-47**
Address:	**PO BOX 2906 SAN ANTONIO, TX 78299**	Grid #:	**68-46-5**
Well Location:	**Calaveras Power Station SAN ANTONIO, TX**	Latitude:	**29° 18' 01" N**
		Longitude:	**098° 18' 08" W**
Well County:	**Bexar**	Elevation:	**510 ft. above sea level**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **4/4/2016** Drilling End Date: **4/8/2016**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**48**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**23**	**41**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**2**	**23**	**Bentonite 15 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **No Data**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Description (number of sacks & material)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Plug Information:	**Bentonite**	**41**	**48**

	Strata Depth (ft.)	Water Type
Water Quality:	No Data	No Data

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**

112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **Joseph Ray** License Number: **58794**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	5	ASH
5	8	LT BRN SANDY CLAY
8	14	LT GRAY SANDY CLAY
14	20	LT GRAY SAND
20	40	BRN SILTY CLAY
40	48	LT GRAY SAND

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	25
2	Screen	New Plastic (PVC)	40 10	25	40

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

STATE OF TEXAS WELL REPORT for Tracking #424212

Owner:	**CPS ENERGY**	Owner Well #:	**JKS-48**
Address:	**PO BOX 2906 SAN ANTONIO, TX 78299**	Grid #:	**68-46-5**
Well Location:	**Calaveras Power Station SAN ANTONIO, TX**	Latitude:	**29° 19' 01" N**
		Longitude:	**098° 18' 08" W**
Well County:	**Bexar**	Elevation:	**494 ft. above sea level**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **4/4/2016** Drilling End Date: **4/8/2016**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**30**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**16.5**	**20.5**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**2**	**16.5**	**Bentonite 15 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Description (number of sacks & material)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Plug Information:	**Bentonite**	**29.5**	**30**

	Strata Depth (ft.)	Water Type
Water Quality:	No Data	No Data

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**
112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **Joseph Ray** License Number: **58794**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	5	ASH
5	8	LT BRN CLAY
8	14	LT GRAY CLAY
14	20	LT GRAY SAND
20	30	BRN SILTY CLAY

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	18.5
2	Screen	New Plastic (PVC)	40 10	18.5	28.5

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

STATE OF TEXAS WELL REPORT for Tracking #424213

Owner:	**CPS ENERGY**	Owner Well #:	**JKS-49**
Address:	**PO BOX 2906 SAN ANTONIO, TX 78299**	Grid #:	**68-46-5**
Well Location:	**Calaveras Power Station SAN ANTONIO, TX**	Latitude:	**29° 19' 01" N**
		Longitude:	**098° 18' 08" W**
Well County:	**Bexar**	Elevation:	**495 ft. above sea level**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **4/4/2016** Drilling End Date: **4/8/2016**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**19**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**7**	**17**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**2**	**7**	**Bentonite 2 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Description (number of sacks & material)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Plug Information:	**Bentonite**	**18**	**19**

	Strata Depth (ft.)	Water Type
Water Quality:	No Data	No Data

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**

112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **Joseph Ray** License Number: **58794**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	5	ASH
5	8	LT BRN CLAY
8	14	LT GRAY CLAY
14	19	LT GRAY SAND

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	7
2	Screen	New Plastic (PVC)	40 10	7	17

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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STATE OF TEXAS WELL REPORT for Tracking #424216

Owner:	**CPS ENERGY**	Owner Well #:	**JKS-50**
Address:	**PO BOX 2906 SAN ANTONIO, TX 78299**	Grid #:	**68-46-5**
Well Location:	**Calaveras Power Station SAN ANTONIO, TX**	Latitude:	**29° 19' 01" N**
		Longitude:	**098° 18' 08" W**
Well County:	**Bexar**	Elevation:	**489 ft. above sea level**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **4/4/2016** Drilling End Date: **4/8/2016**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**14**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**1.5**	**10**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0.5**	**1.5**	**Bentonite 1 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Description (number of sacks & material)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Plug Information:	**Bentonite**	**10**	**14**

	Strata Depth (ft.)	Water Type
Water Quality:	No Data	No Data

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**

112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **Joseph Ray** License Number: **58794**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	5	ASH
5	8	LT BRN CLAY
8	14	LT GRAY CLAY
14	15	LT GRAY SAND

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	2.5
2	Screen	New Plastic (PVC)	40 10	2.5	10

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Texas Department of Licensing and Regulation
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Austin, TX 78711
(512) 463-7880

STATE OF TEXAS WELL REPORT for Tracking #424218

Owner:	**CPS ENERGY**	Owner Well #:	**JKS-51**
Address:	**PO BOX 2906 SAN ANTONIO, TX 78299**	Grid #:	**68-46-5**
Well Location:	**Calaveras Power Station SAN ANTONIO, TX**	Latitude:	**29° 19' 01" N**
		Longitude:	**098° 18' 08" W**
Well County:	**Bexar**	Elevation:	**491 ft. above sea level**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **4/4/2016** Drilling End Date: **4/8/2016**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**29.5**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**5**	**23**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**2**	**5**	**Bentonite 3 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Description (number of sacks & material)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Plug Information:	**Bentonite**	**23**	**29.5**

	Strata Depth (ft.)	Water Type
Water Quality:	No Data	No Data

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**

112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **Joseph Ray** License Number: **58794**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	5	ASH
5	8	LT BRN CLAY
8	14	LT GRAY CLAY
14	20	LT GRAY SAND
20	24	BRN SITY CLAY

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	7
2	Screen	New Plastic (PVC)	40 10	7	22

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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ERM Environmental Resources Management

JKS-50R DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-50R Date Drilled 2016-10-07

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 22.50 ' Boring Diam. 8.25 "

N. Coord. 13660149.90' E. Coord. 186841.92' Surface Elevation 494.96 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 9.50 ' Sump Length 0 '

Top of Casing Elevation 498.48 ' Stickup 3.52 '

Depth to Water: 1. Ft. btoc 12.67 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
494.96	0				No Samples Collected	0-15	See boring log JKS-50 from 4/6/16.
				0			
490	5						
				0			
485	10						
				0			
480	15					15-17.5	CLAYEY SAND: Light brown; wet; loose; trace dark gray sandy clay content; very coarse gravel (2" diam.) present.
				50		17.5-22.5	CLAYEY SILTY SAND: Light brown; saturated; loose; light gray pieces of clay; few large (2" diam.) very coarse (2" diam.) angular rocks present.
475	20						

Environmental Resources Management

JKS-50R DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-50R Date Drilled 2016-10-07

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 22.50 ' Boring Diam. 8.25 "

N. Coord. 13660149.90' E. Coord. 186841.92' Surface Elevation 494.96 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 9.50 ' Sump Length 0 '

Top of Casing Elevation 498.48 ' Stickup 3.52 '

Depth to Water: 1. Ft. btoc 12.67 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
	20						
				50		22-22.5	CLAYEY SAND: Brownish gray; dry to damp; loose. Boring terminated at 22.5' bgs.
470	25						
465	30						
460	35						
455	40						

ERM Environmental Resources Management

JKS-52
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-52 Date Drilled 2016-09-01

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 32.50 ' Boring Diam. 8.25 "

N. Coord. 13659683.26' E. Coord. 2186139.05' Surface Elevation 493.56 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 19.00 ' Sump Length 0 '

Top of Casing Elevation 493.15 ' Stickup -0.41'

Depth to Water: 1. Ft. btoc 7.30 (2016-05-21) 2. Ft. ( )

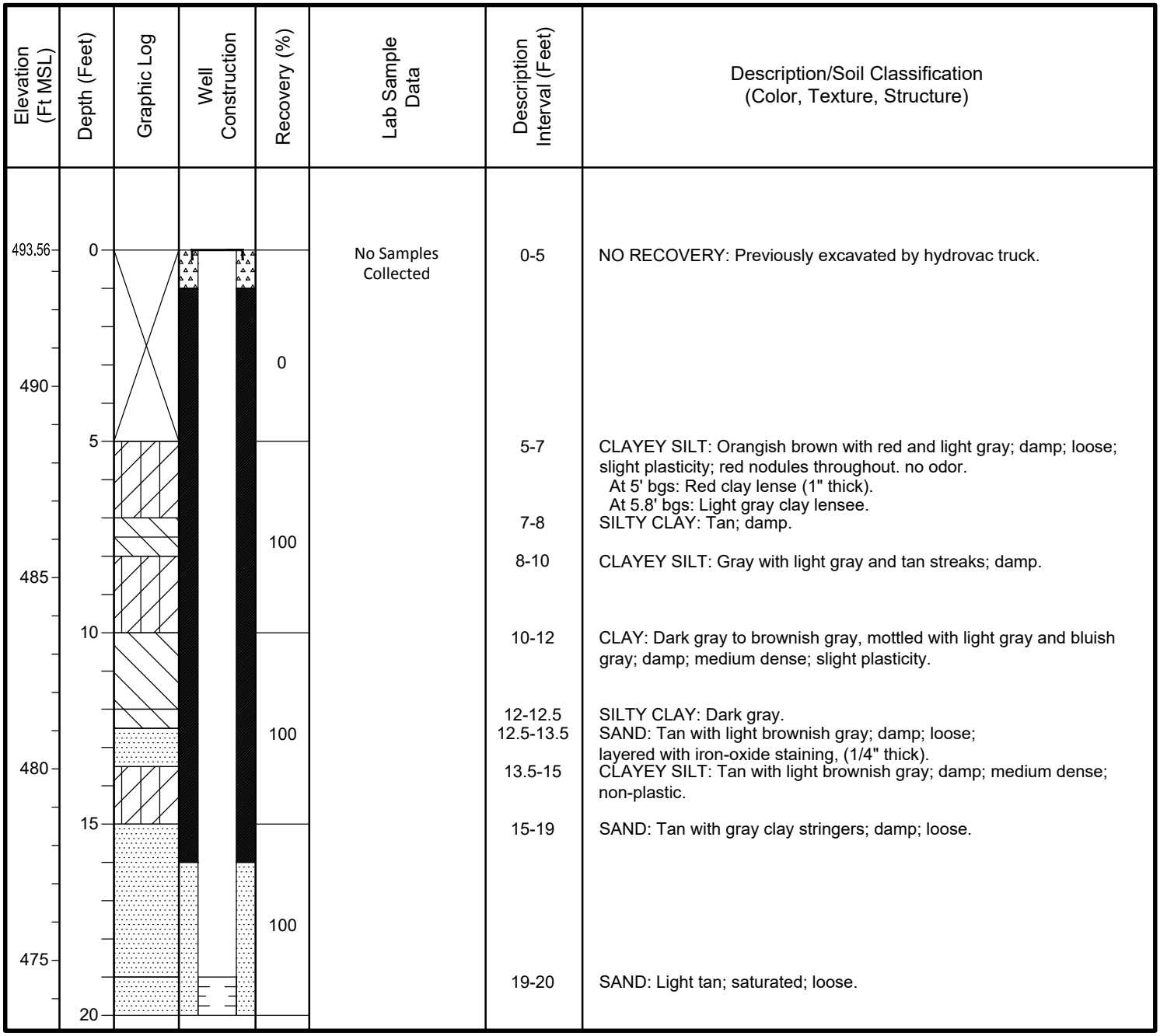
Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.



Elevation (Ft MSL)	Depth (Feet)	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
493.56	0		No Samples Collected	0-5	NO RECOVERY: Previously excavated by hydrovac truck.
490		0			
	5			5-7	CLAYEY SILT: Orangish brown with red and light gray; damp; loose; slight plasticity; red nodules throughout. no odor. At 5' bgs: Red clay lense (1" thick). At 5.8' bgs: Light gray clay lensee.
		100		7-8	SILTY CLAY: Tan; damp.
485				8-10	CLAYEY SILT: Gray with light gray and tan streaks; damp.
	10			10-12	CLAY: Dark gray to brownish gray, mottled with light gray and bluish gray; damp; medium dense; slight plasticity.
		100		12-12.5	SILTY CLAY: Dark gray.
				12.5-13.5	SAND: Tan with light brownish gray; damp; loose; layered with iron-oxide staining, (1/4" thick).
480				13.5-15	CLAYEY SILT: Tan with light brownish gray; damp; medium dense; non-plastic.
	15			15-19	SAND: Tan with gray clay stringers; damp; loose.
		100			
475				19-20	SAND: Light tan; saturated; loose.
	20				

ERM Environmental Resources Management

JKS-52
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-52 Date Drilled 2016-09-01

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 32.50 ' Boring Diam. 8.25 "

N. Coord. 13659683.26' E. Coord. 2186139.05' Surface Elevation 493.56 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 19.00 ' Sump Length 0 '

Top of Casing Elevation 493.15 ' Stickup -0.41'

Depth to Water: 1. Ft. btoc 7.30 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
	20					20-24	SAND: Light orange and tan; damp; medium dense; no odor.
				100			At 21' bgs: Color change to tan with gray striations.
							At 22' bgs: Color change to tan; damp; and loose; At 22.5' bgs: Two gray striations layered within iron-oxide staining.
470						24-25	CLAYEY SAND: Tan; saturated; medium dense.
	25					25-30	INTERBEDDED CLAY AND SAND: Gray and tan; damp; loose.
				100			At 27.5' bgs: Intermittent pinkish gray coloration of clay content to 30' bgs.
465							
	30					30-31	SAND: Gray; damp; loose.
				100		31-32.5	INTERBEDDED CLAY AND SAND: Orange with pinkish gray; damp; loose; medium plasticity.
460							Boring terminated at 32.5' bgs.
	35						
455							
	40						

ERM Environmental Resources Management

JKS-53
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-53 Date Drilled 2016-09-02

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 27.00 ' Boring Diam. 8.25 "

N. Coord. 13659757.34' E. Coord. 2185892.80' Surface Elevation 491.33 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Sump Length 0 '

Top of Casing Elevation 494.74 ' Stickup 3.41 '

Depth to Water: 1. Ft. btoc 8.50 (2016-05-21) 2. Ft. ( )

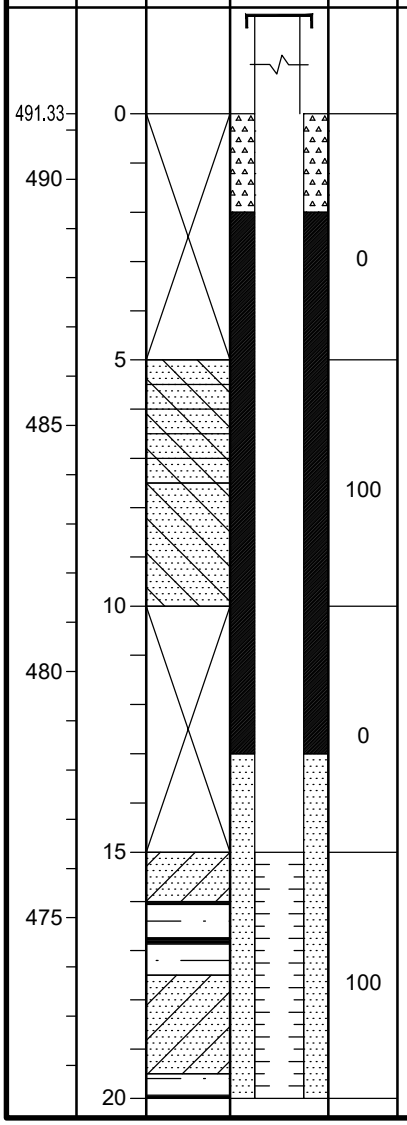
Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.



Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
491.33	0					0-5	NO RECOVERY: Previously excavated by hydrovac truck.
490				0			
	5					5-7.5	SANDY SILTY CLAY: Tan to reddish gray; wet; low plasticity; no odor.
485							At 6' bgs: Pockets of orange colored sand.
				100		7.5-10	SANDY CLAY: Orangish brown and gray; moist; low plasticity.
							At 9' bgs: Pockets of orange colored sand.
	10				JKS-53_10-12.5 **USCS:** Clayey Sand (SC) **AL:** 30 / 14 / 16 **- #200:** 35.9 **k:** 5.34x10^{-6}	10-15	NO RECOVERY Cohesive sample (Shelby tube) collected from 10'-12' bgs.
480				0			Cohesive sample (Shelby tube) collected from 12.5'-15' bgs.
					JKS-53_12.5-15 **USCS:** Clayey Sand (SC) **AL:** 29 / 15 / 14 **- #200:** 48.8 **k:** 4.13x10^{-8}		
	15					15-16	CLAYEY SAND: Tan; wet; loose; non-plastic; no odor.
						16-17.5	INTERBEDDED CLAY AND SAND: Orangish light brown sand interbedded with pinkish gray clay.
475							At 16.5 - 17' bgs: Tan sand; damp.
				100		17.5-19.5	CLAYEY SAND: Light brown and tannish gray; saturated; loose; slight plasticity.
							At 18.5-19' bgs: Tan sand.
	20					19.5-20	INTERBEDDED CLAY AND SAND: Tan sand interbedded with pinkish gray clay; layered with iron-oxide staining; damp; loose.

ERM Environmental Resources Management

JKS-53
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-53 Date Drilled 2016-09-02

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 27.00 ' Boring Diam. 8.25 "

N. Coord. 13659757.34' E. Coord. 2185892.80' Surface Elevation 491.33 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Sump Length 0 '

Top of Casing Elevation 494.74 ' Stickup 3.41 '

Depth to Water: 1. Ft. btoc 8.50 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
470	20			100	JKS-53_20-21 **USCS:** Clayey Sand (SC) **AL:** 27 / 14 / 13 **- #200:** 37.6	20-25	CLAYEY SAND: Gray with tannish orange staining; saturated; loose; non-plastic. Non-cohesive grab sample collected from 20'-21' bgs. At 22-22.5' bgs: Color change to orangish light brown; moist. At 22.5-25' bgs: Saturated.
465	25			100		25-27	SAND: Reddish brown mixed with light gray; damp; medium dense; non-plastic; dry and crumbly with depth. Boring terminated at 27' bgs.
460	30						
455	35						
	40						

ERM Environmental Resources Management

JKS-54
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-54 Date Drilled 2016-09-02

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 27.50 ' Boring Diam. 8.25 "

N. Coord. 13659753.34' E. Coord. 2185641.96' Surface Elevation 492.69 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 12.00 ' Sump Length 0 '

Top of Casing Elevation 496.40 ' Stickup 3.71 '

Depth to Water: 1. Ft. btoc 10.79 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
492.69	0					0-5	NO RECOVERY: Previously excavated by hydrovac truck.
490				0			
	5					5-5.8	CLAYEY SILT: Orangish brown with red; damp; loose; non-plastic; no odor.
						5.8-7.2	At 5.8' bgs: White chalky material. CLAYEY SAND: Light brown to tan; damp.
485				100		7.2-8	INTERBEDDED CLAY AND SAND: Gray clay laminations (1" thick).
						8-11.5	CLAYEY SAND: Orangish brown; medium dense; non-plastic.
	10						At 10.8' bgs: Tan; saturated; and loose.
						11.5-12.5	INTERBEDDED CLAY AND SAND: Tan sand interbedded with light pinkish gray clay; damp; clay laminations are 1/4"-1/2" thick.
480				100	JKS-54_13-14 **USCS:** Silty Clayey Sand (SC-SM) **AL:** 22 / 15 / 7 **- #200:** 33.5	12.5-15	CLAYEY SAND: Tan; wet to saturated; loose; non-plastic. Non-cohseive grab sample collected from 13'-14' bgs. At 13.2-14.2' bgs: Saturated.
	15					15-27.5	At 14.9' bgs: Single thin (1" thick) clay layer. INTERBEDDED CLAY AND SAND: Tan fine grained sand and light pinkish gray clay; damp.
475				100			
	20						

ERM Environmental Resources Management

JKS-54
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-54 Date Drilled 2016-09-02

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 27.50 ' Boring Diam. 8.25 "

N. Coord. 13659753.34' E. Coord. 2185641.96' Surface Elevation 492.69 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 12.00 ' Sump Length 0 '

Top of Casing Elevation 496.40 ' Stickup 3.71 '

Depth to Water: 1. Ft. btoc 10.79 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
470	20			100			
	25			100			At 25-28' bgs: Iron-oxide stained layers between sand and clay; clay content has slight to low plasticity; clay layers are 1/2" thick.
465							Refusal encountered at 28' bgs.
460	30						
	35						
455	40						

ERM Environmental Resources Management

JKS-55
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-55 Date Drilled 2016-09-06

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 25.00 ' Boring Diam. 8.25 "

N. Coord. 13659749.76' E. Coord. 2186840.46' Surface Elevation 490.13 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Sump Length 0 '

Top of Casing Elevation 493.81 ' Stickup 3.68 '

Depth to Water: 1. Ft. btoc 8.36 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
490.13	0				No Samples Collected	0-5	NO RECOVERY: Previously excavated by hydrovac truck.
				0			
485	5					5-11.5	NO RECOVERY: Moderately to highly cemented sand.
				0			
480	10						
						11.5-12.5	NO RECOVERY: Cuttings are saturated; clayey silt material.
				0		12.5-13.5	SANDY CLAY: Dark olive gray; damp; soft; non-plastic.
						13.5-18.5	CLAYEY SAND: Tannish gray with trace iron-oxide staining; damp; loose; non-plastic.
475	15						At 15' bgs: White chalky material (1" thick); wet.
							At 15.5-17.5' bgs: Clayey sand mixed with some gravel. At 16.5' bgs: White chalky layer (1/2" thick).
				100			At 17.5' bgs: White chalky layer (1/2" thick). At 17.5-18.5' bgs: Saturated; tan clayey sand with trace gravel.
						18.5-19.8	SAND: Gray; wet; fine grained.
	20					19.8-20	SAND: Gray; very dense; moderately to highly cemented.

ERM Environmental Resources Management

JKS-55
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-55 Date Drilled 2016-09-06

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 25.00 ' Boring Diam. 8.25 "

N. Coord. 13659749.76' E. Coord. 2186840.46' Surface Elevation 490.13 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Sump Length 0 '

Top of Casing Elevation 493.81 ' Stickup 3.68 '

Depth to Water: 1. Ft. btoc 8.36 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
470	20					20-21	SANDY CLAY: Gray; damp; soft; slight plasticity.
						21-22.5	INTERBEDDED CLAY AND SAND: Fine grained tan sand interbedded with pinkish gray clay; damp.
				100		22.5-23.5	CLAYEY SAND: Tan; trace gravel; one large piece of sandstone (>1" thick).
						23.5-25	SAND: Pinkish gray; fine grained; damp; very thin layers of iron-oxide staining.
465	25						Boring terminated at 25' bgs.
460	30						
455	35						
	40						

ERM Environmental Resources Management

JKS-56
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-56 Date Drilled 2016-09-06

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 25.00 ' Boring Diam. 8.25 "

N. Coord. 13660382.47' E. Coord. 2186847.61' Surface Elevation 493.07 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Sump Length 0 '

Top of Casing Elevation 496.66 ' Stickup 3.59 '

Depth to Water: 1. Ft. btoc 11.20 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
493.07	0				No Samples Collected	0-5	NO RECOVERY: Previously excavated by hydrovac truck.
490				0			
	5					5-5.5	SANDY CLAY: Reddish gray; damp; stiff; non-plastic.
						5.5-7	At 5.5' bgs: Gray sandstone piece (>1" thick). SAND: Light orangish brown; fine grained; damp; loose. At 6.25' bgs: Color changes to tannish gray with some orangish brown.
						7-7.5	SANDY CLAY: Orange; damp; stiff to very stiff; non-plastic.
485				100	0	7.5-9.5	CLAYEY SILT: Orangish tan; saturated; loose; non-plastic; mixed with some gravel and trace pockets of gray, fine grained sand.
	10					9.5-10	CLAYEY SILTY SAND: Orangish tan; saturated; loose; non-plastic.
						10-13	NO RECOVERY
480				15		13-22.5	CLAYEY SAND: Tan; fine grained; saturated; loose; non-plastic.
	15						At 15' bgs: Small pocket of gray, fine grained, loose sand (1" thick). At 16' bgs: Coarse, angular gravel layer (~1-2" thick)
475				50			
	20						

ERM Environmental Resources Management

JKS-56
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-56 Date Drilled 2016-09-06

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 25.00 ' Boring Diam. 8.25 "

N. Coord. 13660382.47' E. Coord. 2186847.61' Surface Elevation 493.07 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Sump Length 0 '

Top of Casing Elevation 496.66 ' Stickup 3.59 '

Depth to Water: 1. Ft. btoc 11.20 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
	20						At 20' bgs: Course, angular gravel layer (~1-2" thick)
470				50		22.5-24.9	SAND: Brownish gray; fine grained; saturated; trace clay content.
	25					24.9-25	SANDY CLAY: Reddish brown; saturated; very soft. Boring terminated at 25' bgs.
465	30						
460	35						
455	40						

ERM Environmental Resources Management

JKS-57
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-57 Date Drilled 2016-09-07

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 27.50 ' Boring Diam. 0.00 "

N. Coord. 13668235.72' E. Coord. 2187486.38' Surface Elevation 503.83 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 12.00 ' Sump Length 0 '

Top of Casing Elevation 506.91 ' Stickup 3.08 '

Depth to Water: 1. Ft. btoc 20.07 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
503.83	0				No Samples Collected	0-5	NO RECOVERY: Previously excavated by hydrovac truck.
500	5			0		5-8	CLAYEY SILT: Dark brown; damp; loose to medium dense; very slight plasticity; rootlets present.
495	10			100		8-12.2	CLAYEY SAND: Orangish brown with trace gray and iron-oxide staining; damp; loose to medium dense; slight plasticity; rootlets present.
							At 10' bgs: Color becomes grayish tan mottled with yellow iron-oxide staining.
490	15			100		12.2-14	SANDSTONE: Magenta red with orangish yellow and gray; damp; several pieces of reddish brown nodules (>1" thick) surrounded by yellow sandy clay.
						14-15	SANDY CLAY: Orangish yellow and gray; damp; slight plasticity; gray and orangish yellow striations of sandy clay; white crystalline structures with medium grained sand throughout.
485	20			100		15-25	INTERBEDDED CLAY AND SAND: Gray with yellow and iron-oxide staining; dry; soft; medium plasticity. At 15-16' bgs: Mostly sand and iron-oxide staining. At 16-17.5' bgs: Mostly gray clay. At 17.5-18.5' bgs: Mostly sand with some yellow and trace iron-oxide staining. At 18.5-20' bgs: Mostly sand with some iron-oxide staining.

ERM Environmental Resources Management

JKS-57
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-57 Date Drilled 2016-09-07

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 27.50 ' Boring Diam. 0.00 "

N. Coord. 13668235.72' E. Coord. 2187486.38' Surface Elevation 503.83 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 12.00 ' Sump Length 0 '

Top of Casing Elevation 506.91 ' Stickup 3.08 '

Depth to Water: 1. Ft. btoc 20.07 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
480	20			100			At 20-21' bgs: Mostly sand with yellow and trace iron-oxide staining. At 21-21.5' bgs: 2" thick layer of reddish brown, hard-packed sand; 4" thick layer of tan, very fine grained, loose sand. At 21.5-25' bgs: Mostly dark gray clay; At 22.5' bgs: Reddish brown coloration; At 24-25' bgs: Color is brownish gray with redox stippling.
475	25			100		25-25.5 25.5-27 27-27.5	SAND: Gray; fine grained; dry; medium dense; low plasticity. At 25.5' bgs: Very thin (1/8" thick) brownish red coloration. INTERBEDDED CLAY AND SAND: Brownish gray clay interbedded with fine grained sand; dense; hard-packed. At 26.6' bgs: Thin, tan, dry, very fine grained, sand. SAND: Highly cemented; reddish brown nodules present. Refusal encountered at 27.5' bgs.
470	30						
465	35						
	40						

ERM Environmental Resources Management

JKS-58
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-58 Date Drilled 2016-09-07

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 32.00 ' Boring Diam. 8.25 "

N. Coord. 13667994.99' E. Coord. 2187797.39' Surface Elevation 500.94 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 20.00 ' Sump Length 0 '

Top of Casing Elevation 504.45 ' Stickup 3.51 '

Depth to Water: 1. Ft. btoc 21.09 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Recovery (%)	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
500.94	0		0-5	NO RECOVERY: Previously excavated by hydrovac truck.
500		0		
	5		5-6	SAND: Brown; fine grained; moist; very loose.
495			6-7	CLAYEY SAND: Grayish brown with red; fine grained; damp; loose; non-plastic.
		100	7-10	SAND: Red, orange, and gray; damp medium grained; very loose to medium dense; slight gray, soft to medium dense, sandy clay; (clay content increases with depth).
	10		10-17	At 9.8' bgs: Color change to dark gray. At 10' bgs: Hard, sandstone, iron ore piece (>1" thick). SILTY CLAY: Gray with alternating yellow and orange layers; dry; dense; slight plasticity.
490		100		
				At 12.2' bgs: Brown sand seam (3" thick).
	15			
485				At 16-16.5' bgs: Brownish tan sandy clay. At 16.5-17' bgs: Gray clay has fractured texture.
		100	17-17.5	CLAY: Gray; damp; mixed with coarse grained sand.
			17.5-19.5	SAND: Tan; moist to wet. At 18-19.5' bgs: Color change to gray with black staining; no odor; white, crystalline, coarse grained structures present.
	20		19.5-20	CLAYEY SILTY SAND: Orangish brown; dry; gravel and some small sandstone pieces present.

ERM Environmental Resources Management

JKS-58 DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-58 Date Drilled 2016-09-07

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 32.00 ' Boring Diam. 8.25 "

N. Coord. 13667994.99' E. Coord. 2187797.39' Surface Elevation 500.94 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 20.00 ' Sump Length 0 '

Top of Casing Elevation 504.45 ' Stickup 3.51 '

Depth to Water: 1. Ft. btoc 21.09 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
480	20					20-21	CLAY: Gray; dry; stiff; small, tan sandy clay pockets present.
						21-22.5	INTERBEDDED CLAY AND SAND: Gray and orangish tan; damp; clay is pinkish gray interbedded with thing orange sand layers.
				100		22.5-25.5	CLAY: Dark pinkish gray; dry; stiff; several very thin, light gray, silty sand layers.
							At 24.5-24.7' bgs: Tan, dry, silty clay.
475	25				JKS-58_26-27 **USCS:** Sandy Lean Clay (CL) **AL:** 38 / 18 / 20 **- #200:** 50.9	25.5-30	CLAYEY SAND: Tan; moist to saturated. At 25.5-27.5' bgs: No distinct layers. Non-cohesive grab sample collected from 26'-27' bgs. At 27.5' bgs: Thin saturated seam. At 27.5-30' bgs: Yellow and orange layering.
				100			
470	30				JKS-58_30-32.5 **USCS:** Fat Clay (CH) **AL:** 57 / 20 / 37 **- #200:** 89.1 **k:** 1.53×10^{-7}	30-32.5	NO RECOVERY: Cohesive sample (Shelby tune) collected from 30'-32' bgs.
							Boring terminated at 32.5' bgs.
465	35						
	40						

ERM Environmental Resources Management

JKS-59
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-59 Date Drilled 2016-09-07

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 27.00 ' Boring Diam. 8.25 "

N. Coord. 13667779.88' E. Coord. 2188352.07' Surface Elevation 493.53 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 12.00 ' Sump Length 0 '

Top of Casing Elevation 496.45 ' Stickup 2.92 '

Depth to Water: 1. Ft. btoc 15.49 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
493.53	0				No Samples Collected	0-5	NO RECOVERY: Previously excavated by hydrovac truck.
490				0			
	5					5-6.5	SILTY SAND: Brown; damp; loose.
						6.5-7	SAND: Tan; damp; loose.
				100		7-10	SILTY CLAY: Dark brown; damp; soft; slight plasticity.
485							At 9-10' bgs: Decreasing silt content; increasing stiffness; some iron-oxide stained nodules observed.
	10					10-11	CLAY: Dark brown; damp; medium stiff; low to medium plasticity.
						11-15	SILTY CLAY: Dark orangish brown to orangish brown; damp; soft; increasing silt content with depth; increasing gray streaks/fissures with depth.
				100			
480							
	15					15-15.5	CLAY: Dark brown to brown; damp; medium stiff to stiff; low plasticity.
						15.5-18	SILTY SAND: Tan; saturated; loose. At 16' bgs: Wet; crumbly; trace clay content.
				100			At 17.5' bgs: Saturated.
475						18-20	SANDY CLAY: Light bluish gray mottled with orange iron-oxide and black staining; moist; medium stiff; slight plasticity.
	20						

ERM Environmental Resources Management

JKS-59
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-59 Date Drilled 2016-09-07

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 27.00 ' Boring Diam. 8.25 "

N. Coord. 13667779.88' E. Coord. 2188352.07' Surface Elevation 493.53 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 12.00 ' Sump Length 0 '

Top of Casing Elevation 496.45 ' Stickup 2.92 '

Depth to Water: 1. Ft. btoc 15.49 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
470	20			100		20-20.5	CLAY: Brown to light brown; damp; medium stiff to stiff; low plasticity.
						20.5-21	
						21-22.5	SANDY CLAY: Light gray mottled with orangish iron-oxide staining; moist; medium stiff; slight plasticity.
							CLAY: Dark pinkish gray; moist; soft; layered with very thin orange/iron-oxide stained silty sand.
						22.5-22.8	
						22.8-25	SILT: Tan; saturated; very loose.
							CLAY: Dark pinkish gray; soft; layered with very thin orange/iron-oxide stained silty sand.
	25			100		25-26	SAND: Gray with orange staining; fine grained; saturated; loose.
465						26-27	CLAY: Gray; saturated; very soft; high plasticity.
	30						Boring terminated at 27' bgs.
460							
	35						
455							
	40						

ERM Environmental Resources Management

JKS-60
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-60 Date Drilled 2016-09-07

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 26.00 ' Boring Diam. 8.25 "

N. Coord. 13667357.02 E. Coord. 2188465.44 Surface Elevation 492.68 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Sump Length 0 '

Top of Casing Elevation 495.70 ' Stickup 3.02 '

Depth to Water: 1. Ft. btoc 17.40 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
492.68	0				No Samples Collected	0-5	NO RECOVERY: Previously excavated with hydrovac truck.
490				0			
	5					5-10	SAND: Grayish tan with orange and yellow; very fine grained; damp; loose; no odor. At 6' bgs: Color change to light pinkish orange.
485				100			At 7.5' bgs: Color change to light gray with trace orange and yellow.
	10					10-10.8	CLAY: Dark gray; moist; soft; slight plasticity.
						10.8-16	SAND: White with yellow; very fine grained; damp; loose.
							At 11.6-13' bgs: Color change to pale yellow.
480				100			At 13-16' bgs: Color change to light orangish yellow.
	15						At 15' bgs: Thin reddish orange stringer. At 15-16' bgs: Moist.
						16-23.5	SAND: Light orange; very fine grained; damp; very dense; unable to collect soil core, soil descriptions based on observation of auger cuttings.
475				0			At 18-23.5' bgs: Color change to pale yellow.
	20						

ERM Environmental Resources Management

JKS-60
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-60 Date Drilled 2016-09-07

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 26.00 ' Boring Diam. 8.25 "

N. Coord. 13667357.02 E. Coord. 2188465.44 Surface Elevation 492.68 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Sump Length 0 '

Top of Casing Elevation 495.70 ' Stickup 3.02 '

Depth to Water: 1. Ft. btoc 17.40 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
470	20			0			At 22' bgs: Moisture content increases to wet.
						23.5-25.7	SAND: Tan; fine grained; saturated; loose.
	25			100			At 25.5' bgs: Color change to white with brown; medium grained.
						25.7-25.9	SILTY SAND: Dark reddish staining; saturated.
465						25.9-26	CLAY-SHALE: Shaley clay; tan; wet; dense; non-plastic.
	30						Boring terminated at 26' bgs.
460							
	35						
455							
	40						

ERM Environmental Resources Management

JKS-61
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-61 Date Drilled 2016-09-08

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 35.00 ' Boring Diam. 8.25 "

N. Coord. 13665721.04' E. Coord. 2187196.65' Surface Elevation 502.52 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 18.00 ' Sump Length 0 '

Top of Casing Elevation 505.51 ' Stickup 2.99 '

Depth to Water: 1. Ft. btoc 24.46 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
502.52	0				No Samples Collected	0-5	NO RECOVERY: Previously excavated with hydrovac truck.
500				0			
	5					5-5.2 5.2-10.5	SANDY SILT: Dark brown; damp; loose; contains rootlets. SAND: Light tannish orange; damp; fine grained; loose.
495				100			At 7.8' bgs: Thin (1/4"), dark gray, sandy clay layer. At 8.2' bgs: Thin (1/4"), dark gray, sandy clay layer.
	10					10.5-12.5	INTERBEDDED CLAY AND SAND: Light gray to white; very fine grained; very hard packed; very thin (1/10") pinkish gray clay stringers throughout. At 10.5' bgs: Pinkish gray clay layer (1" thick).
490				100		12.5-20	SAND: Light gray to white with trace yellow and orange colorations; dry; very fine grained; very hard packed. At 12.5-15' bgs: Sand is cemented.
	15						At 16.5-19' bgs: Three clay stringers (1/4" thick).
485				100			
	20						

ERM Environmental Resources Management

JKS-61
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-61 Date Drilled 2016-09-08

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 35.00 ' Boring Diam. 8.25 "

N. Coord. 13665721.04' E. Coord. 2187196.65' Surface Elevation 502.52 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 18.00 ' Sump Length 0 '

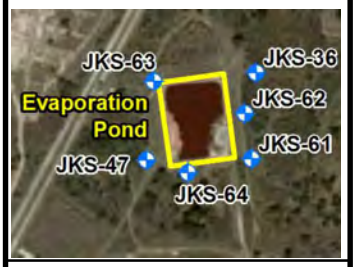
Top of Casing Elevation 505.51 ' Stickup 2.99 '

Depth to Water: 1. Ft. btoc 24.46 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP



NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
	20					20-22.5	CLAYEY SAND: Gray with trace orange; damp; fine grained; loose; trace clay content present. At 21' bgs: Color change to tan with orange and gray; moisture content becomes wet. At 21.8' bgs: Thin pinkish gray clay seam (1/4" thick).
480				100		22.5-25	SAND: Gray with orange, tan, and yellow; fine grained; wet; loose.
	25					25-31.5	CLAYEY SAND: Gray; fine grained; wet to saturated; loose. At 25-25.8' bgs: Saturated.
475				100			At 27.5-28.5' bgs: Saturated.
	30						At 30-31' bgs: Saturated.
				100			At 31-32.5' bgs: Wet.
						31.5-32.5	SANDY CLAY: Pinkish gray; damp; medium dense; non-plastic to plastic; very thin sand stringers throughout (1/10" thick).
470						32.5-33	CLAYEY SILTY SAND: Gray; saturated; loose.
						33-35	SANDY CLAY: Pinkish gray; damp; medium dense; slightly plastic; very thin sand stringers throughout (1/10" thick).
	35						Boring terminated at 35' bgs.
465							
	40						

ERM Environmental Resources Management

JKS-62
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-62 Date Drilled 2016-09-08

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 37.00 ' Boring Diam. 8.25 "

N. Coord. 13666020.13' E. Coord. 2187153.88' Surface Elevation 506.71 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 20.00 ' Sump Length 0 '

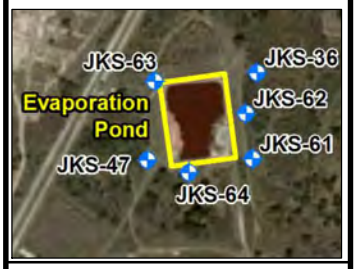
Top of Casing Elevation 509.84 ' Stickup 3.13 '

Depth to Water: 1. Ft. btoc 28.90 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP



NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
506.71	0			0		0-5	NO RECOVERY: Previously excavated with hydrovac truck.
505	5			100		5-6	SANDY SILT: Dark brown; damp; very loose; slight to low plasticity; trace rootlets.
						6-9	INTERBEDDED CLAY AND SAND: Light gray; dry; sand content fine grained, loose; clay content is pinkish gray with slight to low plasticity.
500	10			100		9-15	CLAYEY SAND: Light gray with yellowish orange and pale yellow; very fine grained; dry; trace clay content. At 10' bgs: Color change to light pinkish brown and yellowish orange; moisture content increases to damp; sand is loose; clay is soft and non-plastic. At 11' bgs: Color change to white/light gray and tan, clay is darker gray; moisture content decreases to dry; very dense; crumbles easily.
495	15			50		15-20	SAND: White; dry; dense but crumbles easily.
490	20						

ERM Environmental Resources Management

JKS-62 DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-62 Date Drilled 2016-09-08

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 37.00 ' Boring Diam. 8.25 "

N. Coord. 13666020.13' E. Coord. 2187153.88' Surface Elevation 506.71 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 10.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 20.00 ' Sump Length 0 '

Top of Casing Elevation 509.84 ' Stickup 3.13 '

Depth to Water: 1. Ft. btoc 28.90 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
	20					20-25	SAND: Light gray to tannish gray; fine grained; dry to damp; loose. At 21.2' bgs: Moisture content increases to damp. At 21.4' bgs: Yellow and iron-oxide staining.
485				50			
	25					25-27.5	INTERBEDDED CLAY AND SAND: Gray; fine grained; wet; loose. At 25.5' bgs: Iron-oxide staining and thin (1/4" thick) pinkish gray clay layer.
480				100		27.5-29.5	At 27.5' bgs: Iron-oxide staining and thin (1/4" thick) pinkish gray clay layer. CLAYEY SAND: Gray with iron-oxide staining; saturated; loose; trace clay content. At 29' bgs: Increased iron-oxide staining with clay layers.
	30					29.5-30 30-30.5 30.5-31 31-31.5 31.5-35	INTERBEDDED CLAY AND SAND: Pinkish gray; damp; medium dense; slight plasticity. SAND: Gray; fine grained; damp. INTERBEDDED CLAY AND SAND: Orange, fine grained, moist sand; gray, low plasticity clay; loose to medium dense. CLAY: Brown; moist; loose to medium dense; non plastic. At 31.5 bgs: Thin reddish brown nodule layer (1/4" thick). CLAY: Brown; damp; soft; high plasticity; unable to collect soil core; descriptions based on observation of auger cuttings.
475				0			
	35			0	JKS-62_35-37 **USCS:** Clayey Sand (SC) **AL:** 38 / 17 / 21 **- #200:** 32.3 **k:** 6.63×10^{-7}	35-37	NO RECOVERY: Cohesive sample (Shelby tube) collected from 35'-37' bgs.
470							Boring terminated at 35' bgs.
	40						

ERM Environmental Resources Management

JKS-63
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-63 Date Drilled 2016-09-08

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 50.00 ' Boring Diam. 8.25 "

N. Coord. 13666230.86' E. Coord. 2186553.38' Surface Elevation 523.55 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 20.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 30.00 ' Sump Length 0 '

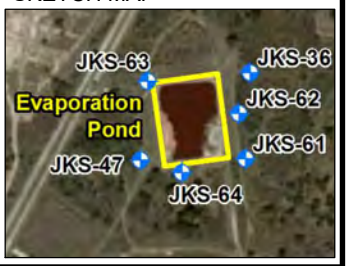
Top of Casing Elevation 526.86 ' Stickup 3.31 '

Depth to Water: 1. Ft. btoc 44.70 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP



NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
523.55	0			0	No Samples Collected	0-5	NO RECOVERY: Previously excavated by hydrovac truck.
520	5			100		5-5.5 5.5-6 6-7.8	SAND: Brown; fine-grained; moist; loose. CLAYEY SAND: Tan; moist; single piece of gray, non-plastic clay. SILTY SAND: Brown lense; fine grained; moist; loose; trace rootlets.
515	10			100		7.8-10.2	SANDY CLAY: Reddish brown to dark gray with red; dry to damp; very stiff; hard-packed; non-plastic.
510	15			75		10.2-12.2	CLAYEY SAND: Orange to pinkish orange; dry to damp; very dense; non-plastic.
505	20					12.2-18	INTERBEDDED CLAY AND SAND: Tan; very fine-grained; very dense/hard-packed; layered with thin gray sandy clay seams. At 15' bgs: Sand color changes to very light gray to white; pinkish gray sandy clay seams throughout; layered with pale yellow colorations.
						18-20	SAND: Gray to brownish orange; dry; very fine-grained; medium dense; crumbles easily.

ERM Environmental Resources Management

JKS-63
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-63 Date Drilled 2016-09-08

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 50.00 ' Boring Diam. 8.25 "

N. Coord. 13666230.86' E. Coord. 2186553.38' Surface Elevation 523.55 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 20.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 30.00 ' Sump Length 0 '

Top of Casing Elevation 526.86 ' Stickup 3.31 '

Depth to Water: 1. Ft. btoc 44.70 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
	20					20-30	INTERBEDDED CLAY AND SAND: Light gray; very fine-grained; dry to damp; dense/hard-packed; layered with thin pinkish gray clay seams and iron-oxide staining.
500				80			
	25						
				80			
495							
	30					30-39	SAND: Gray; dry to saturated; fine-grained; very hard packed; crumbles easily.
				80			At 32.5' bgs: Medium-grained.
490							
	35						
				80			
							At 38-39' bgs: Saturated.
485						39-39.5	CLAYEY SAND: Dark reddish brown; wet; loose.
	40					39.5-50	SAND: Gray; wet; fine-grained; loose.

ERM Environmental Resources Management

JKS-63
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-63 Date Drilled 2016-09-08

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras Power Station - San Antonio Boring T.D. 50.00 ' Boring Diam. 8.25 "

N. Coord. 13666230.86' E. Coord. 2186553.38' Surface Elevation 523.55 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 20.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 30.00 ' Sump Length 0 '

Top of Casing Elevation 526.86 ' Stickup 3.31 '

Depth to Water: 1. Ft. btoc 44.70 (2016-05-21) 2. Ft. ( )

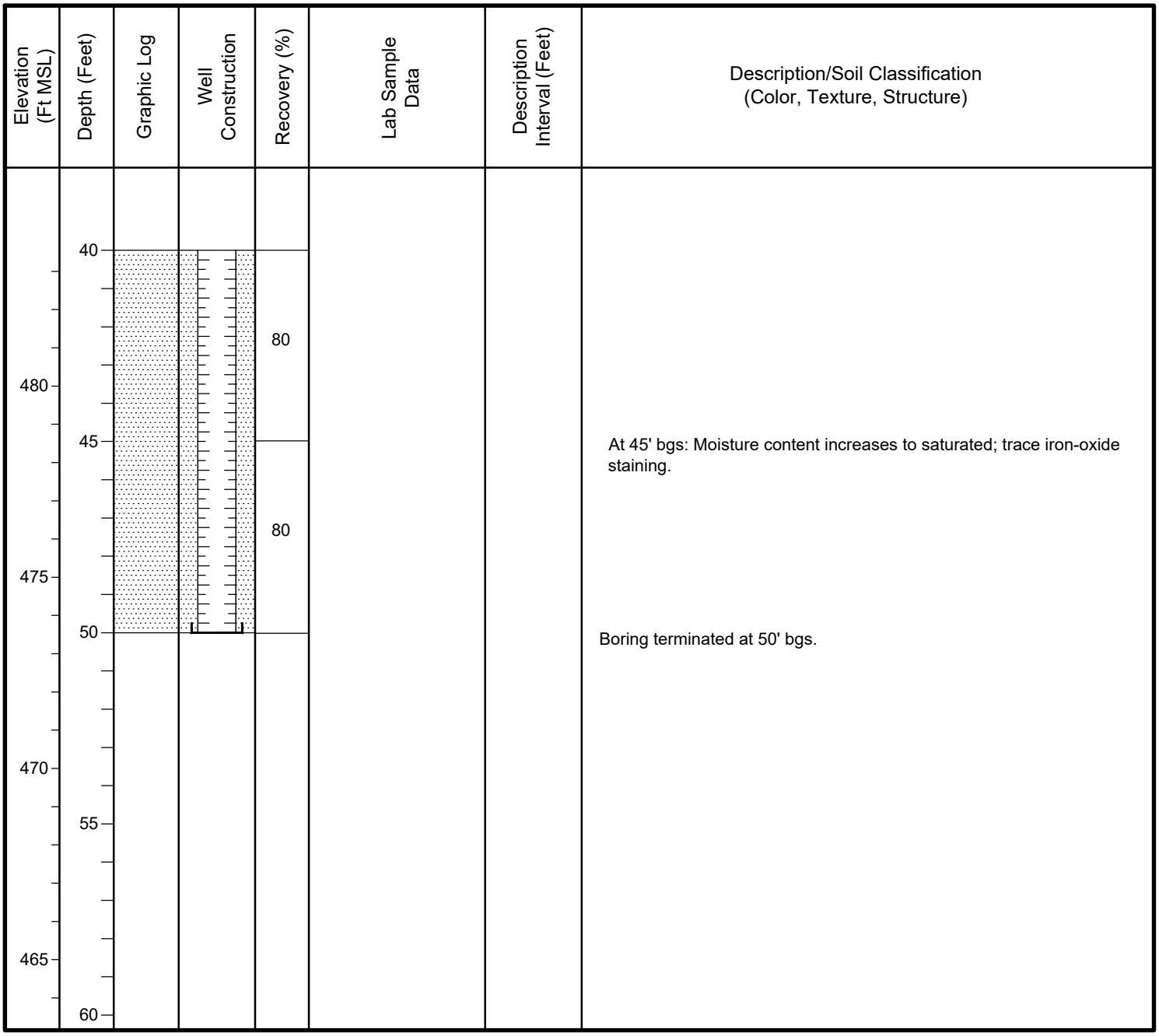
Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.



ERM Environmental Resources Management

JKS-64
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-64 Date Drilled 2016-09-09

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras power Station - San Antonio Boring T.D. 32.00 ' Boring Diam. 8.25 "

N. Coord. 13665627.14' E. Coord. 2186778.76' Surface Elevation 504.38 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Sump Length 0 '

Top of Casing Elevation 507.84 ' Stickup 3.46 '

Depth to Water: 1. Ft. btoc 25.06 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP

NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
504.38	0			0		0-5	NO RECOVERY: Previously excavated with hydrovac truck.
500	5			100		5-6.5	SILTY SAND: Brown; moist; loose.
						6.5-8	INTERBEDDED CLAY AND SAND: Pinkish gray and orange; fine grained, orange sand; pinkish gray clay layered with iron-oxide staining; damp; non-plastic.
495	10			100		8-13	SAND: Light gray and pale yellow; dry; very fine-grained; dense; very hard-packed; trace clay content; layered appearance.
490	15			100		13-22.5	INTERBEDDED CLAY AND SAND: Light gray and pale yellow, fine-grained sand; dark gray, slightly plastic, medium stiff clay.
485	20						At 17' bgs: Thickness of clay layers increases (1-2" thick); low plasticity.

Environmental Resources Management

JKS-64
DRILLING LOG

Proj. No. 0366643 Boring/Well ID JKS-64 Date Drilled 2016-09-09

Project Ground Water Investigation - Phase II Owner CPS Energy

Location Calaveras power Station - San Antonio Boring T.D. 32.00 ' Boring Diam. 8.25 "

N. Coord. 13665627.14' E. Coord. 2186778.76' Surface Elevation 504.38 ' Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Sump Length 0 '

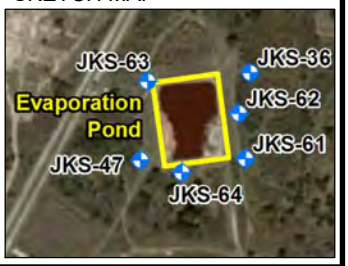
Top of Casing Elevation 507.84 ' Stickup 3.46 '

Depth to Water: 1. Ft. btoc 25.06 (2016-05-21) 2. Ft. ( )

Drilling Company Strata Core Services, LLC Driller Ryan Spaust

Drilling Method Hollow-Stem Auger Log By Andrew Henry

SKETCH MAP



NOTES

Coordinates in Texas South Central State Plane 4204. Elevations in NAVD88 computed using Geoid03.

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
	20				JKS-64_20-30 **USCS:** Clayey Sand (SC) **AL:** 29 / 14 / 15 **- #200:** 30.1		At 20' bgs: Saturated; clay color changes to pinkish gray. Non-cohesive grab sample collected from 20'-30' bgs.
				100		22.5-25	SAND: Gray with bluish gray and orange; fine-grained; loose.
480							At 23.8' bgs: Bluish gray, low plasticity clay (1/2" thick); sand color changes to greenish blue.
	25					25-30	INTERBEDDED CLAY AND SAND: Tannish gray; wet to saturated; fine-grained; wet to saturated; loose; clay layers are pinkish gray with iron-oxide staining.
				100			At 26.8' bgs: Wet. At 27.5' bgs: Saturated. At 28.3' bgs: Wet.
475							
	30					30-32	At 30' bgs: Gray clay; dense/stiff; low plasticirty; 1" thick. NO RECOVERY: Geotechnical sample collected, but not analyzed.
							Boring terminated at 32' bgs.
470							
	35						
465							
	40						

STATE OF TEXAS WELL REPORT for Tracking #443567

Owner:	**Calaveras Power Station**	Owner Well #:	**JKS-50R**
Address:	**12940 US 181 San Antonio, TX 78223**	Grid #:	**68-46-5**
Well Location:	**12940 US 181 San Antonio, TX 78223**	Latitude:	**29° 18' 28.4" N**
		Longitude:	**098° 19' 01.91" W**
Well County:	**Bexar**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **10/7/2016** Drilling End Date: **10/7/2016**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**19.5**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**7.5**	**19.5**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**2**	**Cement 1 Bags/Sacks**
	2	**7.5**	**Bentonite 2 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**

112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **William Fields** License Number: **56033**

Apprentice Name: **Ryan Spaust**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	17.5	Clayey sand -light brown
17.5	19.5	Clayey silty sand - light brown

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	9.5
2	Screen	New Plastic (PVC)	40 10	9.5	19.5

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

STATE OF TEXAS WELL REPORT for Tracking #443571

Owner:	**Calaveras Power Station**	Owner Well #:	**JKS-52**
Address:	**12940 US 181 San Antonio, TX 78223**	Grid #:	**68-46-5**
		Latitude:	**29° 18' 28.4" N**
Well Location:	**12940 US 181 San Antonio, TX 78223**	Longitude:	**098° 19' 01.91" W**
Well County:	**Bexar**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **9/1/2016** Drilling End Date: **9/1/2016**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**29**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**7.5**	**19.5**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**2**	**Cement 1 Bags/Sacks**
	2	**17**	**Bentonite 2 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**

112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **William Fields** License Number: **56033**

Apprentice Name: **Ryan Spaust**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	7	Clayey silt - orangish brown
7	15	Clayey silty - gray to brown
15	19	Sand - tan with gray
19	24	Sand - light orange and tan
24	29	Clayey sand - tan

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	19
2	Screen	New Plastic (PVC)	40 10	19	29

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Texas Department of Licensing and Regulation
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Austin, TX 78711
(512) 463-7880

STATE OF TEXAS WELL REPORT for Tracking #443589

Owner:	**Calaveras Power Station**	Owner Well #:	**JKS-53**
Address:	**12940 US 181 San Antonio, TX 78223**	Grid #:	**68-46-5**
		Latitude:	**29° 18' 28.4" N**
Well Location:	**12940 US 181 San Antonio, TX 78223**	Longitude:	**098° 19' 01.91" W**
Well County:	**Bexar**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **9/2/2016** Drilling End Date: **9/2/2016**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**25**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**17**	**25**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**2**	**Cement 1 Bags/Sacks**
	2	**17**	**Bentonite 2 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**

112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **William Fields** License Number: **56033**

Apprentice Name: **Ryan Spaust**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	7	Clayey silt - orangish brown
7	15	Clayey silty - gray to brown
15	19	Sand - tan with gray
19	23	Sand - light orange and tan
23	25	Sand - reddish brown

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	15
2	Screen	New Plastic (PVC)	40 10	15	25

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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(512) 463-7880

STATE OF TEXAS WELL REPORT for Tracking #443590

Owner:	**Calaveras Power Station**	Owner Well #:	**JKS-54**
Address:	**12940 US 181 San Antonio, TX 78223**	Grid #:	**68-46-5**
		Latitude:	**29° 18' 28.4" N**
Well Location:	**12940 US 181 San Antonio, TX 78223**	Longitude:	**098° 19' 01.91" W**
Well County:	**Bexar**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **9/2/2016** Drilling End Date: **9/2/2016**

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	**8.25**	**0**	**22**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	Bottom Depth (ft.)	Filter Material	Size
Filter Pack Intervals:	**10**	**22**	**Sand**	**20/40**

	Top Depth (ft.)	Bottom Depth (ft.)	Description (number of sacks & material)
Annular Seal Data:	**0**	**2**	**Cement 1 Bags/Sacks**
	2	**10**	**Bentonite 2 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**

112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **William Fields** License Number: **56033**

Apprentice Name: **Ryan Spaust**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	7	Clayey silt - orangish brown
7	15	Clayey silty - gray to brown
15	19	Sand - tan with gray
19	22	Sand - light orange and tan

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	12
2	Screen	New Plastic (PVC)	40 10	12	22

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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P.O. Box 12157
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STATE OF TEXAS WELL REPORT for Tracking #443591

Owner:	**Calaveras Power Station**	Owner Well #:	**JKS-55**
Address:	**12940 US 181 San Antonio, TX 78223**	Grid #:	**68-46-5**
Well Location:	**12940 US 181 San Antonio, TX 78223**	Latitude:	**29° 18' 28.4" N**
		Longitude:	**098° 19' 01.91" W**
Well County:	**Bexar**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **9/6/2016** Drilling End Date: **9/6/2016**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**25**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**12**	**25**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**2**	**Cement 1 Bags/Sacks**
	2	**12**	**Bentonite 2 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**

112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **William Fields** License Number: **56033**

Apprentice Name: **Ryan Spaust**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	7	Clayey silt - orangish brown
7	15	Clayey silty - gray to brown
15	19	Sand - tan with gray
19	23	Sand - light orange and tan
23	25	Sand - reddish brown

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	15
2	Screen	New Plastic (PVC)	40 10	15	25

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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STATE OF TEXAS WELL REPORT for Tracking #443592

Owner:	**Calaveras Power Station**	Owner Well #:	**JKS-56**
Address:	**12940 US 181 San Antonio, TX 78223**	Grid #:	**68-46-5**
		Latitude:	**29° 18' 28.4" N**
Well Location:	**12940 US 181 San Antonio, TX 78223**	Longitude:	**098° 19' 01.91" W**
Well County:	**Bexar**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **9/6/2016** Drilling End Date: **9/6/2016**

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	**8.25**	**0**	**25**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	Bottom Depth (ft.)	Filter Material	Size
Filter Pack Intervals:	**8**	**25**	**Sand**	**20/40**

	Top Depth (ft.)	Bottom Depth (ft.)	Description (number of sacks & material)
Annular Seal Data:	**0**	**2**	**Cement 1 Bags/Sacks**
	2	**8**	**Bentonite 2 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**

112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **William Fields** License Number: **56033**

Apprentice Name: **Ryan Spaust**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	7	Clayey silt - orangish brown
7	15	Clayey silty - gray to brown
15	19	Sand - tan with gray
19	23	Sand - light orange and tan
23	25	Sand - reddish brown

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	10
2	Screen	New Plastic (PVC)	40 10	10	25

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Austin, TX 78711
(512) 463-7880

STATE OF TEXAS WELL REPORT for Tracking #443593

Owner:	**Calaveras Power Station**	Owner Well #:	**JKS-57**
Address:	**12940 US 181 San Antonio, TX 78223**	Grid #:	**68-46-5**
		Latitude:	**29° 18' 28.4" N**
Well Location:	**12940 US 181 San Antonio, TX 78223**	Longitude:	**098° 19' 01.91" W**
Well County:	**Bexar**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **9/7/2016** Drilling End Date: **9/7/2016**

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	**8.25**	**0**	**27**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	Bottom Depth (ft.)	Filter Material	Size
Filter Pack Intervals:	**10**	**27**	**Sand**	**20/40**

	Top Depth (ft.)	Bottom Depth (ft.)	Description (number of sacks & material)
Annular Seal Data:	**0**	**2**	**Cement 1 Bags/Sacks**
	2	**10**	**Bentonite 2 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**
112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **William Fields** License Number: **56033**

Apprentice Name: **Ryan Spaust**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	7	Clayey silt - orangish brown
7	15	Clayey silty - gray to brown
15	19	Sand - tan with gray
19	23	Sand - light orange and tan
23	27	Sand - reddish brown

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	12
2	Screen	New Plastic (PVC)	40 10	12	27

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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(512) 463-7880

STATE OF TEXAS WELL REPORT for Tracking #443594

Owner:	**Calaveras Power Station**	Owner Well #:	**JKS-58**
Address:	**12940 US 181 San Antonio, TX 78223**	Grid #:	**68-46-5**
Well Location:	**12940 US 181 San Antonio, TX 78223**	Latitude:	**29° 18' 28.4" N**
		Longitude:	**098° 19' 01.91" W**
Well County:	**Bexar**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **9/7/2016** Drilling End Date: **9/7/2016**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**30**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**18**	**30**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**2**	**Cement 1 Bags/Sacks**
	2	**18**	**Bentonite 4 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**

112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **William Fields** License Number: **56033**

Apprentice Name: **Ryan Spaust**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	7	Clayey silt - orangish brown
7	15	Clayey silty - gray to brown
15	19	Sand - tan with gray
19	23	Sand - light orange and tan
23	30	Sand - reddish brown

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	20
2	Screen	New Plastic (PVC)	40 10	20	30

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

STATE OF TEXAS WELL REPORT for Tracking #443595

Owner:	**Calaveras Power Station**	Owner Well #:	**JKS-59**
Address:	**12940 US 181 San Antonio, TX 78223**	Grid #:	**68-46-5**
		Latitude:	**29° 18' 28.4" N**
Well Location:	**12940 US 181 San Antonio, TX 78223**	Longitude:	**098° 19' 01.91" W**
Well County:	**Bexar**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **9/7/2016** Drilling End Date: **9/7/2016**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**27**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**10**	**27**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**2**	**Cement 1 Bags/Sacks**
	2	**10**	**Bentonite 2 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**

112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **William Fields** License Number: **56033**

Apprentice Name: **Ryan Spaust**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	7	Clayey silt - orangish brown
7	15	Clayey silty - gray to brown
15	19	Sand - tan with gray
19	23	Sand - light orange and tan
23	27	Sand - reddish brown

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	12
2	Screen	New Plastic (PVC)	40 10	12	27

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P.O. Box 12157
Austin, TX 78711
(512) 463-7880

STATE OF TEXAS WELL REPORT for Tracking #443596

Owner:	**Calaveras Power Station**	Owner Well #:	**JKS-60**
Address:	**12940 US 181 San Antonio, TX 78223**	Grid #:	**68-46-5**
		Latitude:	**29° 18' 28.4" N**
Well Location:	**12940 US 181 San Antonio, TX 78223**	Longitude:	**098° 19' 01.91" W**
Well County:	**Bexar**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **9/7/2016** Drilling End Date: **9/7/2016**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**25**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**8**	**25**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**2**	**Cement 1 Bags/Sacks**
	2	**8**	**Bentonite 2 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**

112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **William Fields** License Number: **56033**

Apprentice Name: **Ryan Spaust**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	7	Clayey silt - orangish brown
7	15	Clayey silty - gray to brown
15	19	Sand - tan with gray
19	23	Sand - light orange and tan
23	25	Sand - reddish brown

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	10
2	Screen	New Plastic (PVC)	40 10	10	25

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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P.O. Box 12157
Austin, TX 78711
(512) 463-7880

STATE OF TEXAS WELL REPORT for Tracking #443597

Owner:	**Calaveras Power Station**	Owner Well #:	**JKS-61**
Address:	**12940 US 181 San Antonio, TX 78223**	Grid #:	**68-46-5**
		Latitude:	**29° 18' 28.4" N**
Well Location:	**12940 US 181 San Antonio, TX 78223**	Longitude:	**098° 19' 01.91" W**
Well County:	**Bexar**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **9/8/2016** Drilling End Date: **9/8/2016**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**33**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**15**	**33**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**2**	**Cement 1 Bags/Sacks**
	2	**15**	**Bentonite 2 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**

112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **William Fields** License Number: **56033**

Apprentice Name: **Ryan Spaust**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	7	Clayey silt - orangish brown
7	15	Clayey silty - gray to brown
15	19	Sand - tan with gray
19	23	Sand - light orange and tan
23	33	Sand - reddish brown

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	18
2	Screen	New Plastic (PVC)	40 10	18	33

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

STATE OF TEXAS WELL REPORT for Tracking #443598

Owner:	**Calaveras Power Station**	Owner Well #:	**JKS-62**
Address:	**12940 US 181 San Antonio, TX 78223**	Grid #:	**68-46-5**
Well Location:	**12940 US 181 San Antonio, TX 78223**	Latitude:	**29° 18' 28.4" N**
		Longitude:	**098° 19' 01.91" W**
Well County:	**Bexar**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **9/8/2016** Drilling End Date: **9/8/2016**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**30**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**18**	**30**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**2**	**Cement 1 Bags/Sacks**
	2	**18**	**Bentonite 2 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**

112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **William Fields** License Number: **56033**

Apprentice Name: **Ryan Spaust**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	7	Clayey silt - orangish brown
7	15	Clayey silty - gray to brown
15	19	Sand - tan with gray
19	23	Sand - light orange and tan
23	30	Sand - reddish brown

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	20
2	Screen	New Plastic (PVC)	40 10	20	30

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

STATE OF TEXAS WELL REPORT for Tracking #443599

Owner:	**Calaveras Power Station**	Owner Well #:	**JKS-63**
Address:	**12940 US 181 San Antonio, TX 78223**	Grid #:	**68-46-5**
Well Location:	**12940 US 181 San Antonio, TX 78223**	Latitude:	**29° 18' 28.4" N**
		Longitude:	**098° 19' 01.91" W**
Well County:	**Bexar**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **9/8/2016** Drilling End Date: **9/8/2016**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**50**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**28**	**50**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**2**	**Cement 1 Bags/Sacks**
	2	**28**	**Bentonite 2 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**

112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **William Fields** License Number: **56033**

Apprentice Name: **Ryan Spaust**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	7	Clayey silt - orangish brown
7	15	Clayey silty - gray to brown
15	19	Sand - tan with gray
19	23	Sand - light orange and tan
23	50	Sand - reddish brown

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	30
2	Screen	New Plastic (PVC)	40 10	30	50

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

STATE OF TEXAS WELL REPORT for Tracking #443600

Owner:	**Calaveras Power Station**	Owner Well #:	**JKS-64**
Address:	**12940 US 181 San Antonio, TX 78223**	Grid #:	**68-46-5**
		Latitude:	**29° 18' 28.4" N**
Well Location:	**12940 US 181 San Antonio, TX 78223**	Longitude:	**098° 19' 01.91" W**
Well County:	**Bexar**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **9/9/2016** Drilling End Date: **9/9/2016**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**30**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**12**	**30**	**Sand**	**20/40**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**2**	**Cement 1 Bags/Sacks**
	2	**12**	**Bentonite 2 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Strata Depth (ft.)	Water Type
Water Quality:	**No Data**	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

The driller did certify that while drilling, deepening or otherwise altering the above described well, injurious water or constituents was encountered and the landowner or person having the well drilled was informed that such well must be completed or plugged in such a manner as to avoid injury or pollution.

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Strata Core Services, LLC**

112 S. Norwood Drive
Hurst, TX 76053

Driller Name: **William Fields** License Number: **56033**

Apprentice Name: **Ryan Spaust**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	7	Clayey silt - orangish brown
7	15	Clayey silty - gray to brown
15	19	Sand - tan with gray
19	23	Sand - light orange and tan
23	30	Sand - reddish brown

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	Riser	New Plastic (PVC)	40	0	15
2	Screen	New Plastic (PVC)	40 10	15	30

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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P.O. Box 12157
Austin, TX 78711
(512) 463-7880

Laboratory Results

Appendix B

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

TABLE 1

LABORATORY TEST SUMMARY

PROJECT: GW Investigation / CPS Calaveras Station

HTS PROJECT NO.: 16-S-217

LOCATION: San Antonio, Texas

CLIENT: ERM

ERM PROJECT #: 0337367

Sample ID	Sample Depth (feet)	Type of Material	Moisture Content (%)	Bulk Density (pcf)	Atterberg Limits (%)			-200 Sieve (%)	Coeffificent of Permeability, k (cm/sec)	Solids Specific Gravity	Remarks
					LL	PL	PI				
JKS-45	28-30	Fat Clay (CH)	24.3		61	22	39	91.6*			28'-30': Particle Size Analysis (ASTM D422)
	36-38	Fat Clay (CH)	19.0		67	24	43	90.5*			36'-38': Particle Size Analysis (ASTM D422)
	50-52	Silty Sand (SM)	18.0		Non Plastic			12.6*			50'-52': Particle Size Analysis (ASTM D422)
	55-57	Fat Clay (CH)	27.9		75	28	47	97.0*			55'-57': Particle Size Analysis (ASTM D422)
	60-62	Fat Clay (CH)	22.6	120.9	75	26	49	86.4*	1.82^{-08}	2.696	60'-62': Particle Size Analysis (ASTM D421) (no hydrometer)
JKS-48	10-12.5	Clayey Sand (SC)	20.5		35	16	19	44.6*			10'-12.5': Particle Size Analysis (ASTM D422)
	15-16.5	Sandy Lean Clay (CL)	19.1		48	19	29	58.9*			15'-16.5': Particle Size Analysis (ASTM D422)
	19-20	Clayey Sand (SC)	25.2		26	16	10	48.7*			19'-20': Particle Size Analysis (ASTM D422)

* From Particle Size Analysis testing

HTS, Inc. Consultants

9416 Pickering Street
Houston, Texas 77091
Tel: (713) 692-8373 Fax: (713) 692-8501

SPECIFIC GRAVITY OF SOIL SOLIDS

(ASTM D-854)

Project No:	16-S-217	Sample Identification:	Samples transported to HTS Laboratory on 04/12/2016
Technician:	M. Coronado	Sample Description:	Fat Clay (CH)

Project : Laboratory Testing - GW Investigation / CPS Calaveras Station (ERM Project #: 0337367)

LABORATORY TEST DATA/ RESULTS

Sample:	JKS-45, 60'-62'
Flask No.	F-1
Flask Weight (gms)	171.83
Weight of Dry Soil (gms)	50.02
Wt. Flask and Water (gms)	669.90
Wt. Flask+Water+Soil (gms)	701.37
Volume of Flask at 20° (ml)	500.0
Container No.	51
Wt. of Container (gms)	30.49
Wt. of Container + Soil (gms)	80.51
Temperature (°C)	20.9
Specific Gravity:	**2.696**

Performed By: MC Date: 5/9/2016 Checked By: BFM Date: 05/13/16

HTS, Inc. Consultants

9416 Pickering Street
Houston, Texas 77091
Tel: (713) 692-8373 Fax: (713) 692-8501

FALLING HEAD / RISING TAIL HYDRAULIC CONDUCTIVITY TEST

(ASTM D-5084-03)

Project No:	16-S-217	Sample Identification:	JKS-45, Depth = 60'-62'
Technician:	M. Coronado	Sample Description:	Fat Clay (CH)

Project : Laboratory Testing - GW Investigation / CPS Calaveras Station (ERM #: 0337367)

INITIAL CONDITIONS				FINAL CONDITIONS			
WATER CONTENT		SPECIMEN DATA		WATER CONTENT		SPECIMEN DATA	
Tare No.:	50	Length, in:	2.065	Tare No.:	46	Length, in:	2.048
Wet+Tare, gms:	153.61	Diameter, in:	2.763	Wet+Tare, gms:	154.96	Diameter, in:	2.815
Dry+Tare, gms:	130.96	Wet mass, gms:	402.31	Dry+Tare, gms:	128.83	Wet mass, gms:	413.68
Tare Weight, gms:	30.50	Area, cm^2:	38.68	Tare Weight, gms:	30.50	Area, cm^2:	40.15
Moisture, %	22.5	Volume, cc:	202.9	Moisture, %	26.6	Volume, cc:	208.9
		Unit wet wt, pcf:	123.7			Unit wet wt, pcf:	123.6
Specific Gravity:	2.696	Unit dry wt, pcf:	101.0	Specific Gravity:	2.696	Unit dry wt, pcf:	97.6
Saturation, %:	91.2	Void Ratio:	0.666	Saturation, %:	99.1	Void Ratio:	0.723
Perm. Cell No.:	3	Burret diam, cm:	1.123	Burret area, cm^2.:	0.991	Burret factor,cm/cc:	1.009
Cell Pressure, psi:	10.0	Head Pressure, psi:	7.0	Tail Pressure, psi:	5.0	Hydraulic Gradient:	30.3

PERMEABILITY MEASUREMENTS

Date	Time	Elapsed Time (sec)	Temp (C)	Pressure Diff. (psi)	Head Rdg (cc)	Tail Rdg (cc)	Head Change (cm)	Tail Change (cm)	Total Head (cm)	Permeability Kt (cm/sec)	Permeability K_{20} (cm/sec)
5/2/2016	9:15a	0	21.9	2.0	2.00	20.00	0.000	0.000	158.76	0.00E+00	0.00E+00
5/2/2016	12:15p	10800	21.9	2.0	2.20	19.70	0.202	0.303	158.26	1.89E-08	1.81E-08
5/2/2016	3:20p	11100	22.0	2.0	2.50	19.40	0.303	0.303	157.65	2.22E-08	2.12E-08
5/3/2016	9:15a	64500	21.9	2.0	4.00	17.90	1.514	1.514	154.63	1.93E-08	1.85E-08
5/3/2016	12:20p	11100	21.9	2.0	4.50	17.40	0.505	0.505	153.62	3.79E-08	3.63E-08
5/4/2016	9:25a	75900	21.9	2.0	6.00	16.00	1.514	1.413	150.69	1.63E-08	1.56E-08
5/4/2016	12:55p	12600	22.0	2.0	6.30	15.70	0.303	0.303	150.08	2.05E-08	1.96E-08
5/4/2016	4:35p	13200	22.0	2.0	6.60	15.40	0.303	0.303	149.48	1.97E-08	1.88E-08
5/5/2016	9:10a	59700	21.9	2.0	8.00	14.10	1.413	1.312	146.75	1.98E-08	1.89E-08

Coefficient of Permeability, k = **1.82E-08** cm/sec

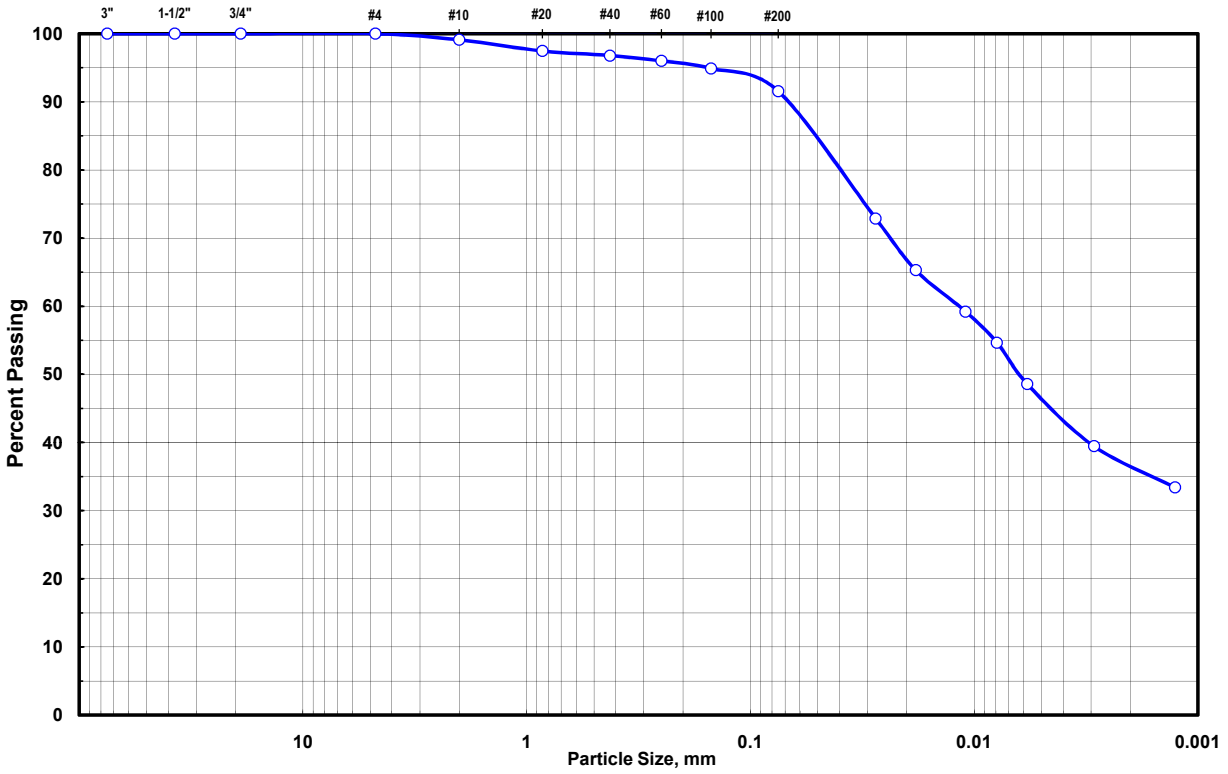
Performed By: MC Date: 4/26/2016 Checked By: BFM Date: 05/13/16

HTS, Inc. Consultants

416 Pickering Street
Houston, Texas 77091
Ph: 713-692-8373 Fax: 713-692-8502

PARTICLE SIZE DISTRIBUTION CURVE

(ASTM D-422)



GRAVEL		SAND			SILT	CLAY
Coarse	Fine	Coarse	Medium	Fine		

ASTM D-2487 SOIL CLASSIFICATION

Project:	**Laboratory Testing - GW Investigation / CPS Calaveras Station**	Liquid Limit:	**61**	% Pass No. 200:	**91.6**
Client:	**ERM**	Plastic Limit:	**22**	% Moisture:	**24.3**
Project No.:	**16-S-217**	Plasticity Index:	**39**	Test Method:	**ASTM D-422**
Sample ID:	**JKS-45, 28'-30'**	Tested By:	**MC**	Date Tested:	**4/25/2016**
Remarks:	**ERM Project #: 0337367**	Checked By:	**BFM**		
Description:	**Fat Clay (CH)**	Date Checked:	**5/12/2016**		

HYDROMETER ANALYSIS

CLIENT: ERM PROJECT: CPS Calaveras Station DATE: 4/25/2016

DATE SAMPLED: 04/12/16 LABORATORY I.D. NO:

SAMPLE LOCATION: JKS-45, 28'-30' SAMPLE DESCRIPTION: Fat Clay (CH)

DISPERSING AGENT: Sodium Hexametaphosphate COMPOSITE CORRECTION: 3

SPECIFIC GRAVITY OF SOIL: 2.70 (estimated) DRY WEIGHT OF SOIL: 65.02

GRADUATE: 1000 ML HYDROMETER: 152H a VALUE: 0.99

TIME OF READING	ELAPSED TIME (min)	TEMP READING (C)	ACTUAL HYDROMETER READING	CORRECTED HYDROMETER READING (Composite Reading)	EFFECTIVE DEPTH L, cm	VALUE OF K	DIAMETER OF PARTICLE SIZE, mm	PERCENT FINER
9:57 AM	0							
9:59 AM	2	20.9	51.0	48.0	8.40	0.01344	0.0275	73.5
10:02 AM	5	20.9	46.0	43.0	9.20	0.01344	0.0182	65.9
10:12 AM	15	20.9	42.0	39.0	9.90	0.01344	0.0109	59.7
10:27 AM	30	20.9	39.0	36.0	10.40	0.01344	0.0079	55.1
10:57 AM	60	20.9	35.0	32.0	11.10	0.01344	0.0058	49.0
2:07 PM	250	21.0	29.0	26.0	12.00	0.01328	0.0029	39.8
9:57 AM	1440	20.9	25.0	22.0	12.70	0.01344	0.0013	33.7

SIEVE ANALYSIS

STARTING WEIGHT: **65.02** gms. Container ID: F STARTING DRY WEIGHT: **64.63** gms.

Container + Soil : 29.35 gms. (corrected for hygroscopic moisture)

Container + Dry Soil : 29.26 gms.

Wt. of Container: 14.33 gms.

Hygroscopic Moisture: **0.60** %

SIEVE SIZE	PARTICLE SIZE, mm	CUMULATIVE WEIGHT RETAINED	PERCENT RETAINED	PERCENT PASSING
3"	75.0000	0.00	0.0	100.0
1-1/2"	37.5000	0.00	0.0	100.0
3/4"	19.0000	0.00	0.0	100.0
#4	4.7500	0.00	0.0	100.0
#10	2.0000	0.57	0.9	99.1
#20	0.8500	1.08	1.7	97.5
#40	0.4250	1.53	2.3	96.8
#60	0.2500	2.04	3.1	96.0
#100	0.1500	2.76	4.3	94.9
#200	0.0750	4.97	7.6	91.6
	0.0275			72.9
	0.0182			65.3
	0.0109			59.2
	0.0079			54.7
	0.0058			48.6
	0.0029			39.5
	0.0013			33.4

HYDROMETER ANALYSIS CALCULATION.XLS

Particle Size Analysis of Soils (ASTM D-422)

HTS, INC. Consultants

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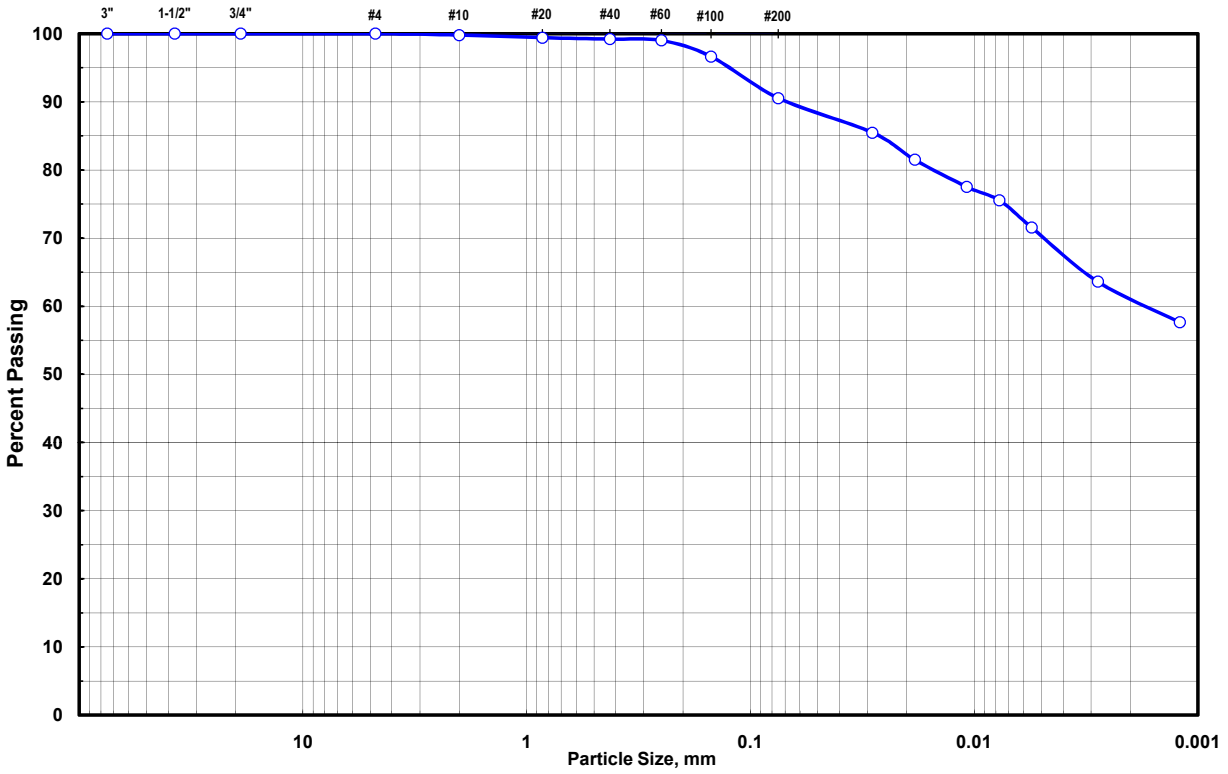
416 Pickering Street
Houston, Texas 77091
Ph: 713-692-8373 Fax: 713-692-8502

PARTICLE SIZE DISTRIBUTION CURVE

(ASTM D-422)



GRAVEL		SAND			SILT	CLAY
Coarse	Fine	Coarse	Medium	Fine		

ASTM D-2487 SOIL CLASSIFICATION

Project:	**Laboratory Testing - GW Investigation / CPS Calaveras Station**	Liquid Limit:	**67**	% Pass No. 200:	**90.5**
Client:	**ERM**	Plastic Limit:	**24**	% Moisture:	**19.0**
Project No.:	**16-S-217**	Plasticity Index:	**43**	Test Method:	**ASTM D-422**
Sample ID:	**JKS-45, 36'-38'**	Tested By:	**MC**	Date Tested:	**4/25/2016**
Remarks:	**ERM Project #: 0337367**	Checked By:	**BFM**		
Description:	**Fat Clay (CH)**	Date Checked:	**5/12/2016**		

HYDROMETER ANALYSIS

CLIENT: ERM PROJECT: CPS Calaveras Station DATE: 4/25/2016

DATE SAMPLED: 04/12/16 LABORATORY I.D. NO:

SAMPLE LOCATION: JKS-45, 36'-38' SAMPLE DESCRIPTION: Fat Clay (CH)

DISPERSING AGENT: Sodium Hexametaphosphate COMPOSITE CORRECTION: 3

SPECIFIC GRAVITY OF SOIL: 2.70 (estimated) DRY WEIGHT OF SOIL: 50.04

GRADUATE: 1000 ML HYDROMETER: 152H a VALUE: 0.99

TIME OF READING	ELAPSED TIME (min)	TEMP READING (C)	ACTUAL HYDROMETER READING	CORRECTED HYDROMETER READING (Composite Reading)	EFFECTIVE DEPTH L, cm	VALUE OF K	DIAMETER OF PARTICLE SIZE, mm	PERCENT FINER
10:07 AM	0							
10:09 AM	2	21.0	46.0	43.0	9.20	0.01328	0.0285	85.6
10:12 AM	5	21.0	44.0	41.0	9.60	0.01328	0.0184	81.7
10:22 AM	15	21.0	42.0	39.0	9.90	0.01328	0.0108	77.7
10:37 AM	30	21.0	41.0	38.0	10.10	0.01328	0.0077	75.7
11:07 AM	60	21.0	39.0	36.0	10.40	0.01328	0.0055	71.7
2:17 PM	250	21.0	35.0	32.0	11.10	0.01328	0.0028	63.7
10:07 AM	1440	20.9	32.0	29.0	11.50	0.01344	0.0012	57.8

SIEVE ANALYSIS

STARTING WEIGHT: **50.04** gms. Container ID: B STARTING DRY WEIGHT: **49.71** gms.

Container + Soil : 29.35 gms. (corrected for hygroscopic moisture)

Container + Dry Soil : 29.25 gms.

Wt. of Container: 14.32 gms.

Hygroscopic Moisture: **0.67** %

SIEVE SIZE	PARTICLE SIZE, mm	CUMULATIVE WEIGHT RETAINED	PERCENT RETAINED	PERCENT PASSING
3"	75.0000	0.00	0.0	100.0
1-1/2"	37.5000	0.00	0.0	100.0
3/4"	19.0000	0.00	0.0	100.0
#4	4.7500	0.00	0.0	100.0
#10	2.0000	0.10	0.2	99.8
#20	0.8500	0.20	0.4	99.4
#40	0.4250	0.29	0.6	99.2
#60	0.2500	0.40	0.8	99.0
#100	0.1500	1.58	3.2	96.6
#200	0.0750	4.65	9.3	90.5
	0.0285			85.5
	0.0184			81.5
	0.0108			77.5
	0.0077			75.5
	0.0055			71.6
	0.0028			63.6
	0.0012			57.6

HYDROMETER ANALYSIS CALCULATION.XLS

Particle Size Analysis of Soils (ASTM D-422)

HTS, INC. Consultants

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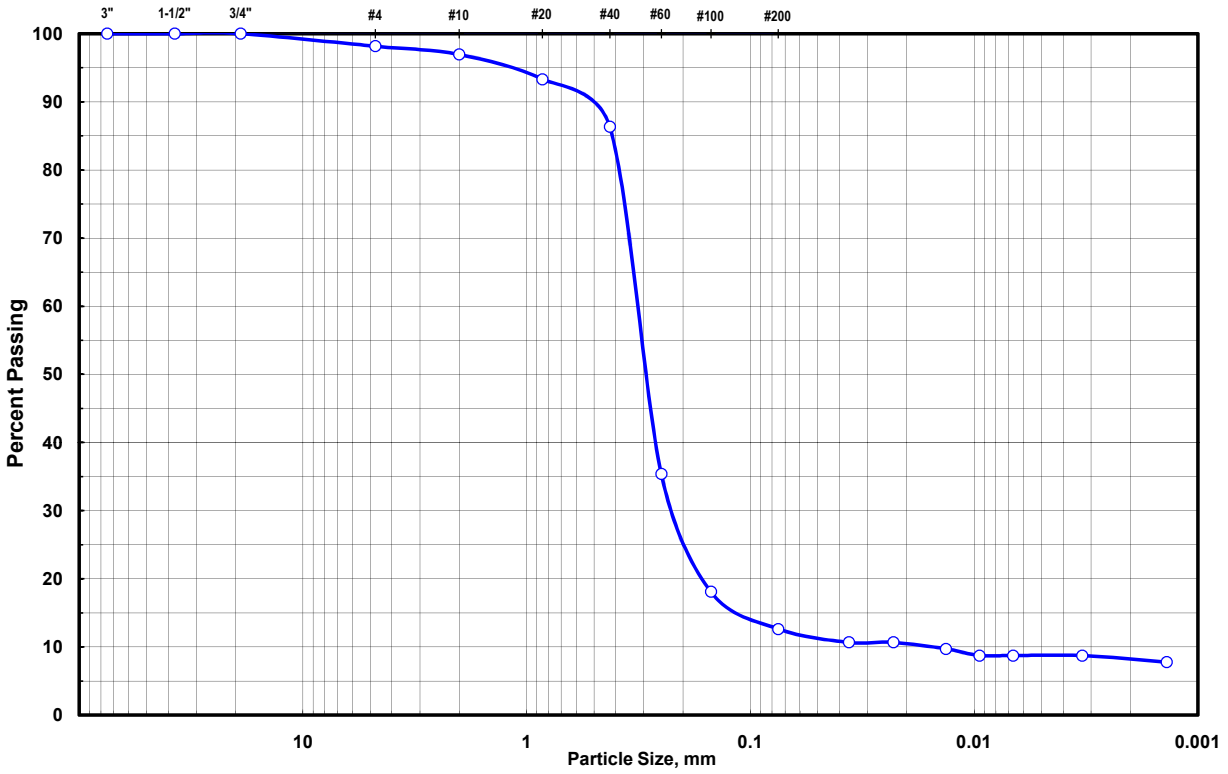
Houston, Texas 77091
Ph: 713-692-8373 Fax: 713-692-8502

PARTICLE SIZE DISTRIBUTION CURVE

(ASTM D-422)



GRAVEL		SAND			SILT	CLAY
Coarse	Fine	Coarse	Medium	Fine		

ASTM D-2487 SOIL CLASSIFICATION

Project:	**Laboratory Testing - GW Investigation / CPS Calaveras Station**	Liquid Limit:	**Non-Plastic**	% Pass No. 200:	**12.6**
Client:	**ERM**	Plastic Limit:	**Non-Plastic**	% Moisture:	**18.0**
Project No.:	**16-S-217**	Plasticity Index:	**Non-Plastic**	Test Method:	**ASTM D-422**
Sample ID:	**JKS-45, 50'-52'**	Tested By:	**MC**	Date Tested:	**3/29/2016**
Remarks:	**ERM Project #: 0337367**	Checked By:	**BFM**		
Description:	**Silty Sand (SM)**	Date Checked:	**5/12/2016**		

HYDROMETER ANALYSIS

CLIENT: ERM PROJECT: CPS Calaveras Station DATE: 5/2/2016

DATE SAMPLED: 04/12/16 LABORATORY I.D. NO:

SAMPLE LOCATION: JKS-45, 50'-52' SAMPLE DESCRIPTION: Silty Sand (SM)

DISPERSING AGENT: Sodium Hexametaphosphate COMPOSITE CORRECTION: 3

SPECIFIC GRAVITY OF SOIL: 2.65 (estimated) DRY WEIGHT OF SOIL: 100.02

GRADUATE: 1000 ML HYDROMETER: 152H a VALUE: 1.00

TIME OF READING	ELAPSED TIME (min)	TEMP READING (C)	ACTUAL HYDROMETER READING	CORRECTED HYDROMETER READING (Composite Reading)	EFFECTIVE DEPTH L, cm	VALUE OF K	DIAMETER OF PARTICLE SIZE, mm	PERCENT FINER
10:22 AM	0							
10:24 AM	2	21.2	14.0	11.0	14.50	0.01348	0.0363	11.0
10:27 AM	5	21.2	14.0	11.0	14.50	0.01348	0.0230	11.0
10:37 AM	15	21.2	13.0	10.0	14.70	0.01348	0.0133	10.0
10:52 AM	30	21.2	12.0	9.0	14.80	0.01348	0.0095	9.0
11:22 AM	60	21.3	12.0	9.0	14.80	0.01348	0.0067	9.0
2:32 PM	250	21.3	12.0	9.0	14.80	0.01348	0.0033	9.0
10:22 AM	1440	21.0	11.0	8.0	15.00	0.01348	0.0014	8.0

SIEVE ANALYSIS

STARTING WEIGHT: **100.02** gms.

Container ID: A

Container + Soil : 29.49 gms.

Container + Dry Soil : 29.47 gms.

Wt. of Container: 14.42 gms.

Hygroscopic Moisture: **0.13** %

STARTING DRY WEIGHT: **99.89** gms.
(corrected for hygroscopic moisture)

SIEVE SIZE	PARTICLE SIZE, mm	CUMULATIVE WEIGHT RETAINED	PERCENT RETAINED	PERCENT PASSING
3"	75.0000	0.00	0.0	100.0
1-1/2"	37.5000	0.00	0.0	100.0
3/4"	19.0000	0.00	0.0	100.0
#4	4.7500	1.83	1.8	98.2
#10	2.0000	3.04	3.0	97.0
#20	0.8500	3.76	3.8	93.3
#40	0.4250	10.95	11.0	86.3
#60	0.2500	63.50	63.5	35.4
#100	0.1500	81.36	81.3	18.1
#200	0.0750	87.00	87.0	12.6
	0.0363			10.7
	0.0230			10.7
	0.0133			9.7
	0.0095			8.7
	0.0067			8.7
	0.0033			8.7
	0.0014			7.8

HYDROMETER ANALYSIS CALCULATION.XLS

Particle Size Analysis of Soils (ASTM D-422)

HTS, INC. Consultants

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Houston, Texas 77091
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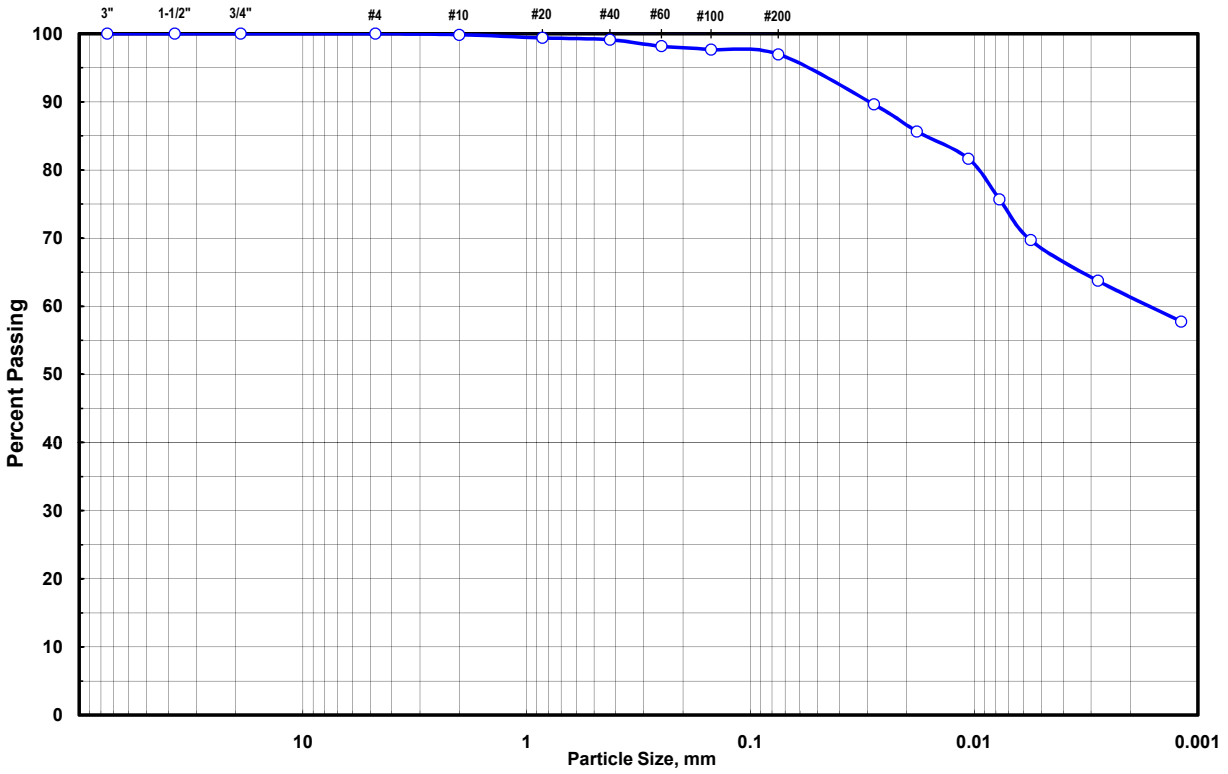
PARTICLE SIZE DISTRIBUTION CURVE

(ASTM D-422)



GRAVEL		SAND			SILT	CLAY
Coarse	Fine	Coarse	Medium	Fine		

ASTM D-2487 SOIL CLASSIFICATION

Project:	**Laboratory Testing - GW Investigation / CPS Calaveras Station**	Liquid Limit:	**75**	% Pass No. 200:	**97.0**
Client:	**ERM**	Plastic Limit:	**28**	% Moisture:	**27.9**
Project No.:	**16-S-217**	Plasticity Index:	**47**	Test Method:	**ASTM D-422**
Sample ID:	**JKS-45, 55'-57'**	Tested By:	**MC**	Date Tested:	**5/2/2016**
Remarks:	**ERM Project #: 0337367**	Checked By:	**BFM**		
Description:	**Fat Clay (CH)**	Date Checked:	**5/13/2016**		

HYDROMETER ANALYSIS

CLIENT: ERM PROJECT: CPS Calaveras Station DATE: 5/2/2016

DATE SAMPLED: 04/12/16 LABORATORY I.D. NO:

SAMPLE LOCATION: JKS-45, 55'-57' SAMPLE DESCRIPTION: Fat Clay (CH)

DISPERSING AGENT: Sodium Hexametaphosphate COMPOSITE CORRECTION: 3

SPECIFIC GRAVITY OF SOIL: 2.70 (estimated) DRY WEIGHT OF SOIL: 50.02

GRADUATE: 1000 ML HYDROMETER: 152H a VALUE: 0.99

TIME OF READING	ELAPSED TIME (min)	TEMP READING (C)	ACTUAL HYDROMETER READING	CORRECTED HYDROMETER READING (Composite Reading)	EFFECTIVE DEPTH L, cm	VALUE OF K	DIAMETER OF PARTICLE SIZE, mm	PERCENT FINER
10:32 AM	0							
10:34 AM	2	21.4	48.0	45.0	8.90	0.01328	0.0280	89.8
10:37 AM	5	21.4	46.0	43.0	9.20	0.01328	0.0180	85.8
10:47 AM	15	21.4	44.0	41.0	9.60	0.01328	0.0106	81.8
11:02 AM	30	21.4	41.0	38.0	10.10	0.01328	0.0077	75.8
11:32 AM	60	21.4	38.0	35.0	10.60	0.01328	0.0056	69.8
2:42 PM	250	21.4	35.0	32.0	11.10	0.01328	0.0028	63.8
10:32 AM	1440	21.0	32.0	29.0	11.50	0.01328	0.0012	57.9

SIEVE ANALYSIS

STARTING WEIGHT: **50.02** gms.

Container ID: D

Container + Soil : 29.20 gms.

Container + Dry Soil : 29.08 gms.

Wt. of Container: 14.19 gms.

Hygroscopic Moisture: **0.81** %

STARTING DRY WEIGHT: **49.62** gms.
(corrected for hygroscopic moisture)

SIEVE SIZE	PARTICLE SIZE, mm	CUMULATIVE WEIGHT RETAINED	PERCENT RETAINED	PERCENT PASSING
3"	75.0000	0.00	0.0	100.0
1-1/2"	37.5000	0.00	0.0	100.0
3/4"	19.0000	0.00	0.0	100.0
#4	4.7500	0.00	0.0	100.0
#10	2.0000	0.08	0.2	99.8
#20	0.8500	0.23	0.5	99.4
#40	0.4250	0.36	0.7	99.1
#60	0.2500	0.84	1.7	98.2
#100	0.1500	1.08	2.2	97.7
#200	0.0750	1.44	2.9	97.0
	0.0280			89.6
	0.0180			85.7
	0.0106			81.7
	0.0077			75.7
	0.0056			69.7
	0.0028			63.7
	0.0012			57.8

HYDROMETER ANALYSIS CALCULATION.XLS

Particle Size Analysis of Soils (ASTM D-422)

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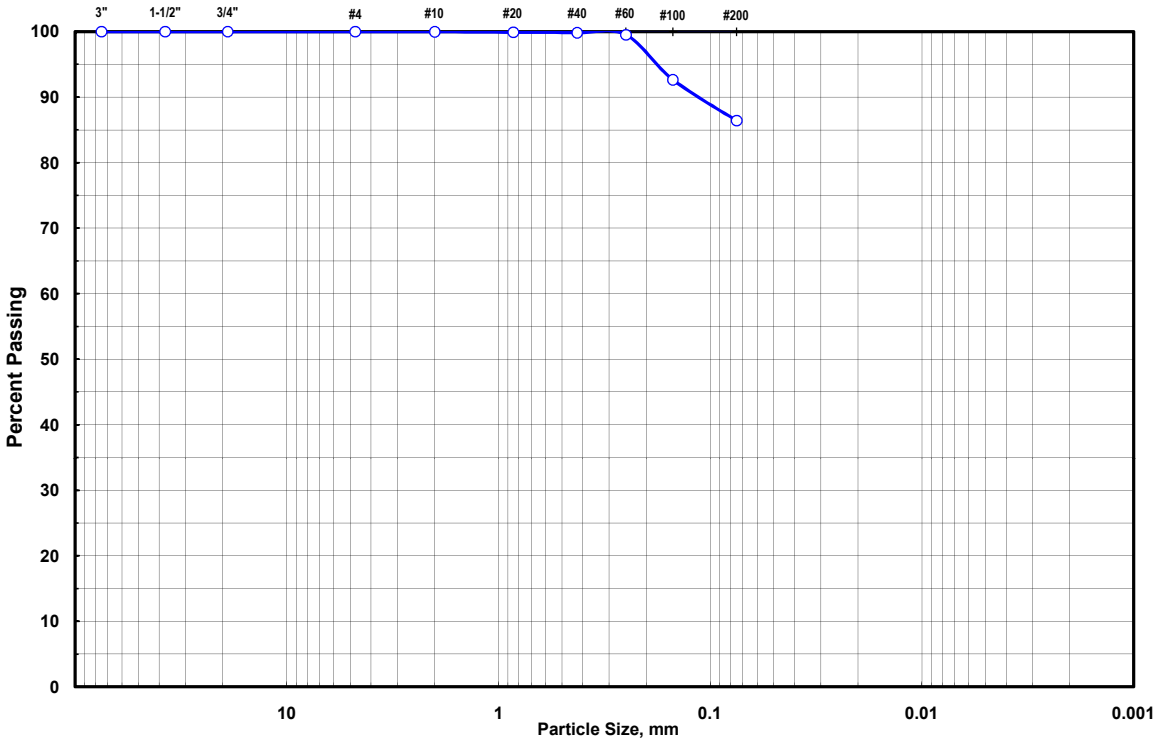
PARTICLE SIZE DISTRIBUTION CURVE

(ASTM D-422)



GRAVEL		SAND			SILT	CLAY
Coarse	Fine	Coarse	Medium	Fine		

ASTM D-2487 SOIL CLASSIFICATION

Project:	**Laboratory Testing - GW Investigation / CPS Calaveras Station**	Liquid Limit:	**75**	% Pass No. 200:	**86.4**
Client:	**ERM**	Plastic Limit:	**26**	% Moisture:	**22.6**
Project No.:	**16-S-217**	Plasticity Index:	**49**	Test Method:	**ASTM D-421**
Sample ID:	**JKS-45, 60'-62'**	Tested By:	**MC**	Date Tested:	**5/2/2016**
Remarks:	**ERM Project #: 0337367**	Checked By:	**BFM**		
Description:	**Fat Clay (CH)**	Date Checked:	**5/13/2016**		

HYDROMETER ANALYSIS

CLIENT: ERM PROJECT: CPS Calaveras Station DATE: 4/28/2016

DATE SAMPLED: 04/12/16 LABORATORY I.D. NO:

SAMPLE LOCATION: JK-45, 60'-62' SAMPLE DESCRIPTION: Fat Clay (CH)

DISPERSING AGENT: Sodium Hexametaphosphate COMPOSITE CORRECTION: 3

SPECIFIC GRAVITY OF SOIL: 2.70 (estimated) DRY WEIGHT OF SOIL: 220.50

GRADUATE: 1000 ML HYDROMETER: 152H a VALUE: 0.99

TIME OF READING	ELAPSED TIME (min)	TEMP READING (C)	ACTUAL HYDROMETER READING	CORRECTED HYDROMETER READING (Composite Reading)	EFFECTIVE DEPTH L, cm	VALUE OF K	DIAMETER OF PARTICLE SIZE, mm	PERCENT FINER

SIEVE ANALYSIS

STARTING WEIGHT: **220.50** gms.

Container ID: E

Container + Soil : 527.07 gms.

Container + Dry Soil : 527.07 gms.

Wt. of Container: 365.51 gms.

Hygroscopic Moisture: **0.00** %

STARTING DRY WEIGHT: **220.50** gms.
(corrected for hygroscopic moisture)

SIEVE SIZE	PARTICLE SIZE, mm	CUMULATIVE WEIGHT RETAINED	PERCENT RETAINED	PERCENT PASSING
3"	75.0000	0.00	0.0	100.0
1-1/2"	37.5000	0.00	0.0	100.0
3/4"	19.0000	0.00	0.0	100.0
#4	4.7500	0.00	0.0	100.0
#10	2.0000	0.02	0.0	100.0
#20	0.8500	0.20	0.1	99.9
#40	0.4250	0.37	0.2	99.8
#60	0.2500	1.08	0.5	99.5
#100	0.1500	16.21	7.4	92.6
#200	0.0750	29.92	13.6	86.4

HYDROMETER ANALYSIS CALCULATION.XLS

Particle Size Analysis of Soils (ASTM D-421)

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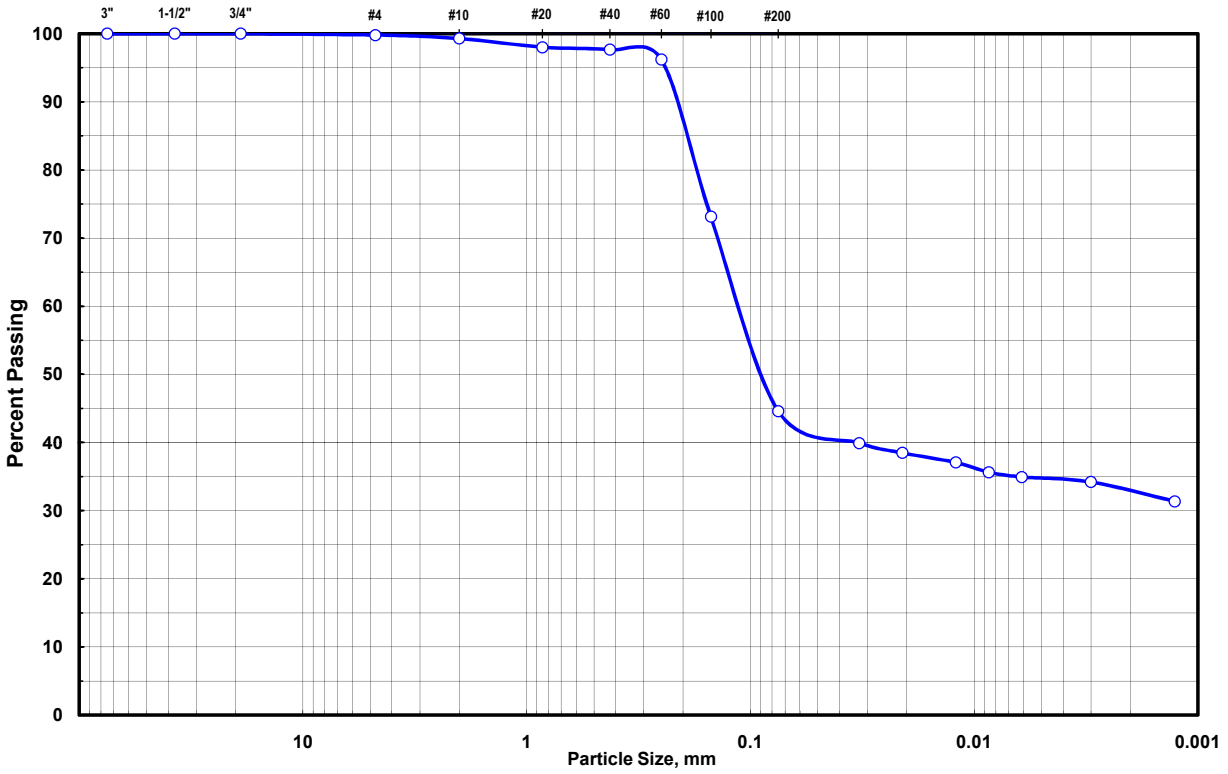
PARTICLE SIZE DISTRIBUTION CURVE

(ASTM D-422)



GRAVEL		SAND			SILT	CLAY
Coarse	Fine	Coarse	Medium	Fine		

ASTM D-2487 SOIL CLASSIFICATION

Project:	**Laboratory Testing - GW Investigation / CPS Calaveras Station**	Liquid Limit:	**35**	% Pass No. 200:	**44.6**
Client:	**ERM**	Plastic Limit:	**16**	% Moisture:	**20.5**
Project No.:	**16-S-217**	Plasticity Index:	**19**	Test Method:	**ASTM D-422**
Sample ID:	**JKS-48, 10'-12.5'**	Tested By:	**MC**	Date Tested:	**5/2/2016**
Remarks:	**ERM Project #: 0337367**	Checked By:	**BFM**		
Description:	**Clayey Sand (SC)**	Date Checked:	**5/13/2016**		

HYDROMETER ANALYSIS

CLIENT: ERM PROJECT: CPS Calaveras Station DATE: 4/28/2016

DATE SAMPLED: 04/12/16 LABORATORY I.D. NO:

SAMPLE LOCATION: JK-48, 10'-12.5' SAMPLE DESCRIPTION: Clayey Sand (SC)

DISPERSING AGENT: Sodium Hexametaphosphate COMPOSITE CORRECTION: 3

SPECIFIC GRAVITY OF SOIL: 2.65 (estimated) DRY WEIGHT OF SOIL: 70.03

GRADUATE: 1000 ML HYDROMETER: 152H a VALUE: 1.00

TIME OF READING	ELAPSED TIME (min)	TEMP READING (C)	ACTUAL HYDROMETER READING	CORRECTED HYDROMETER READING (Composite Reading)	EFFECTIVE DEPTH L, cm	VALUE OF K	DIAMETER OF PARTICLE SIZE, mm	PERCENT FINER
10:52 AM	0							
10:54 AM	2	21.3	31.0	28.0	11.70	0.01348	0.0326	40.2
10:57 AM	5	21.3	30.0	27.0	12.00	0.01348	0.0209	38.8
11:07 AM	15	21.3	29.0	26.0	12.00	0.01348	0.0121	37.3
11:22 AM	30	21.3	28.0	25.0	12.20	0.01348	0.0086	35.9
11:52 AM	60	21.3	27.5	24.5	12.40	0.01348	0.0061	35.2
3:02 PM	250	21.5	27.0	24.0	12.40	0.01348	0.0030	34.5
10:52 AM	1440	21.3	25.0	22.0	12.70	0.01348	0.0013	31.6

SIEVE ANALYSIS

STARTING WEIGHT: **70.03** gms.

Container ID: G

Container + Soil : 29.37 gms.

Container + Dry Soil : 29.29 gms.

Wt. of Container: 14.32 gms.

Hygroscopic Moisture: **0.53** %

STARTING DRY WEIGHT: **69.66** gms.
(corrected for hygroscopic moisture)

SIEVE SIZE	PARTICLE SIZE, mm	CUMULATIVE WEIGHT RETAINED	PERCENT RETAINED	PERCENT PASSING
3"	75.0000	0.00	0.0	100.0
1-1/2"	37.5000	0.00	0.0	100.0
3/4"	19.0000	0.00	0.0	100.0
#4	4.7500	0.15	0.2	99.8
#10	2.0000	0.48	0.7	99.3
#20	0.8500	0.92	1.3	98.0
#40	0.4250	1.17	1.7	97.7
#60	0.2500	2.18	3.1	96.2
#100	0.1500	18.46	26.4	73.1
#200	0.0750	38.58	55.1	44.6
	0.0326			39.9
	0.0209			38.5
	0.0121			37.1
	0.0086			35.6
	0.0061			34.9
	0.0030			34.2
	0.0013			31.4

HYDROMETER ANALYSIS CALCULATION.XLS

Particle Size Analysis of Soils (ASTM D-422)

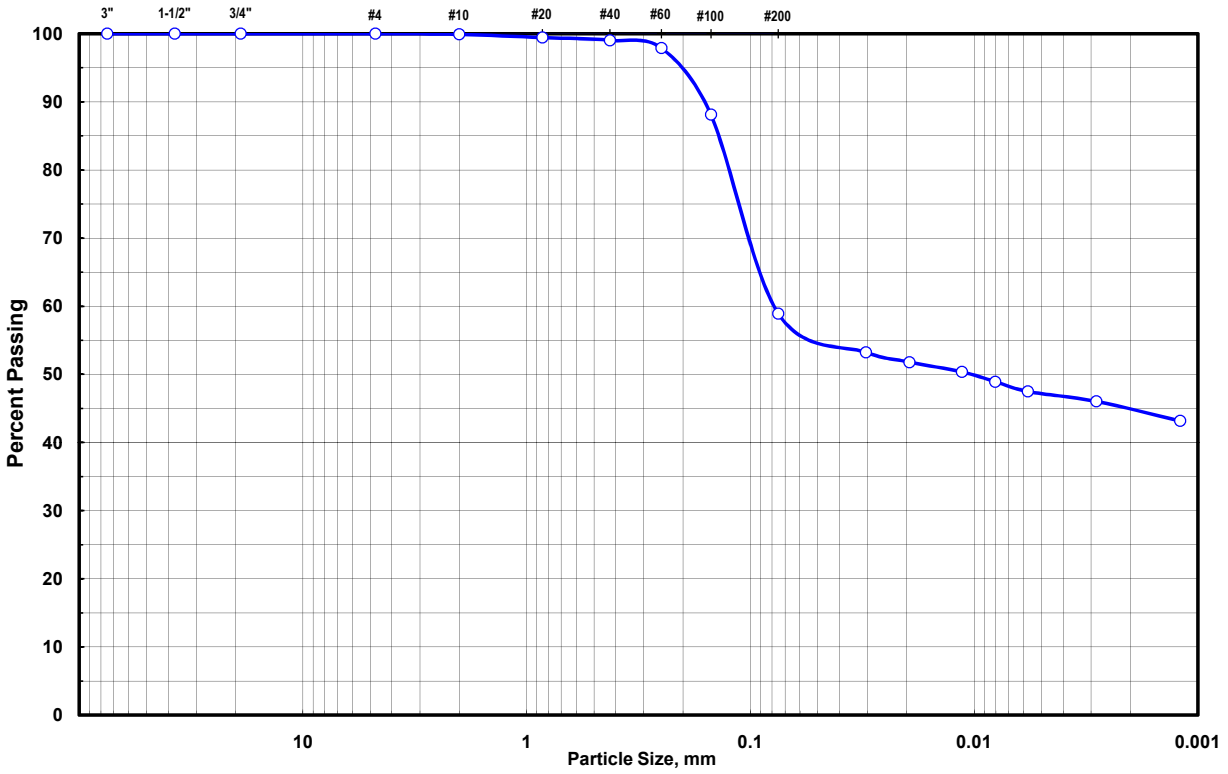
HTS, INC. Consultants

HTS, Inc. Consultants

416 Pickering Street
Houston, Texas 77091
Ph: 713-692-8373 Fax: 713-692-8502

PARTICLE SIZE DISTRIBUTION CURVE

(ASTM D-422)



GRAVEL		SAND			SILT	CLAY
Coarse	Fine	Coarse	Medium	Fine		

ASTM D-2487 SOIL CLASSIFICATION

Project:	**Laboratory Testing - GW Investigation / CPS Calaveras Station**	Liquid Limit:	**48**	% Pass No. 200:	**58.9**
Client:	**ERM**	Plastic Limit:	**19**	% Moisture:	**19.1**
Project No.:	**16-S-217**	Plasticity Index:	**29**	Test Method:	**ASTM D-422**
Sample ID:	**JKS-48, 15'-16.5'**	Tested By:	**MC**	Date Tested:	**4/29/2016**
Remarks:	**ERM Project #: 0337367**	Checked By:	**BFM**		
Description:	**Sandy Lean Clay (CL)**	Date Checked:	**5/13/2016**		

HYDROMETER ANALYSIS

CLIENT: ERM PROJECT: CPS Calaveras Station DATE: 4/29/2016

DATE SAMPLED: 04/12/16 LABORATORY I.D. NO:

SAMPLE LOCATION: JK-48, 15'-16.5' SAMPLE DESCRIPTION: Sandy Lean Clay (CL)

DISPERSING AGENT: Sodium Hexametaphosphate COMPOSITE CORRECTION: 3

SPECIFIC GRAVITY OF SOIL: 2.65 (estimated) DRY WEIGHT OF SOIL: 70.03

GRADUATE: 1000 ML HYDROMETER: 152H a VALUE: 1.00

TIME OF READING	ELAPSED TIME (min)	TEMP READING (C)	ACTUAL HYDROMETER READING	CORRECTED HYDROMETER READING (Composite Reading)	EFFECTIVE DEPTH L, cm	VALUE OF K	DIAMETER OF PARTICLE SIZE, mm	PERCENT FINER
11:02 AM	0							
11:04 AM	2	21.2	40.0	37.0	10.20	0.01348	0.0304	53.3
11:07 AM	5	21.2	39.0	36.0	10.40	0.01348	0.0194	51.9
11:17 AM	15	21.2	38.0	35.0	10.60	0.01348	0.0113	50.4
11:32 AM	30	21.2	37.0	34.0	10.70	0.01348	0.0081	49.0
12:02 PM	60	21.2	36.0	33.0	10.90	0.01348	0.0057	47.5
3:12 PM	250	21.4	35.0	32.0	11.10	0.01348	0.0028	46.1
11:02 AM	1440	21.2	33.0	30.0	11.40	0.01348	0.0012	43.2

SIEVE ANALYSIS

STARTING WEIGHT: **70.03** gms.

Container ID: H

Container + Soil : 29.39 gms.

Container + Dry Soil : 29.26 gms.

Wt. of Container: 14.34 gms.

Hygroscopic Moisture: **0.87** %

STARTING DRY WEIGHT: **69.43** gms.
(corrected for hygroscopic moisture)

SIEVE SIZE	PARTICLE SIZE, mm	CUMULATIVE WEIGHT RETAINED	PERCENT RETAINED	PERCENT PASSING
3"	75.0000	0.00	0.0	100.0
1-1/2"	37.5000	0.00	0.0	100.0
3/4"	19.0000	0.00	0.0	100.0
#4	4.7500	0.00	0.0	100.0
#10	2.0000	0.06	0.1	99.9
#20	0.8500	0.33	0.5	99.4
#40	0.4250	0.61	0.9	99.0
#60	0.2500	1.41	2.0	97.9
#100	0.1500	8.26	11.8	88.1
#200	0.0750	28.74	41.0	58.9
	0.0304			53.2
	0.0194			51.8
	0.0113			50.4
	0.0081			48.9
	0.0057			47.5
	0.0028			46.1
	0.0012			43.2

HYDROMETER ANALYSIS CALCULATION.XLS

Particle Size Analysis of Soils (ASTM D-422)

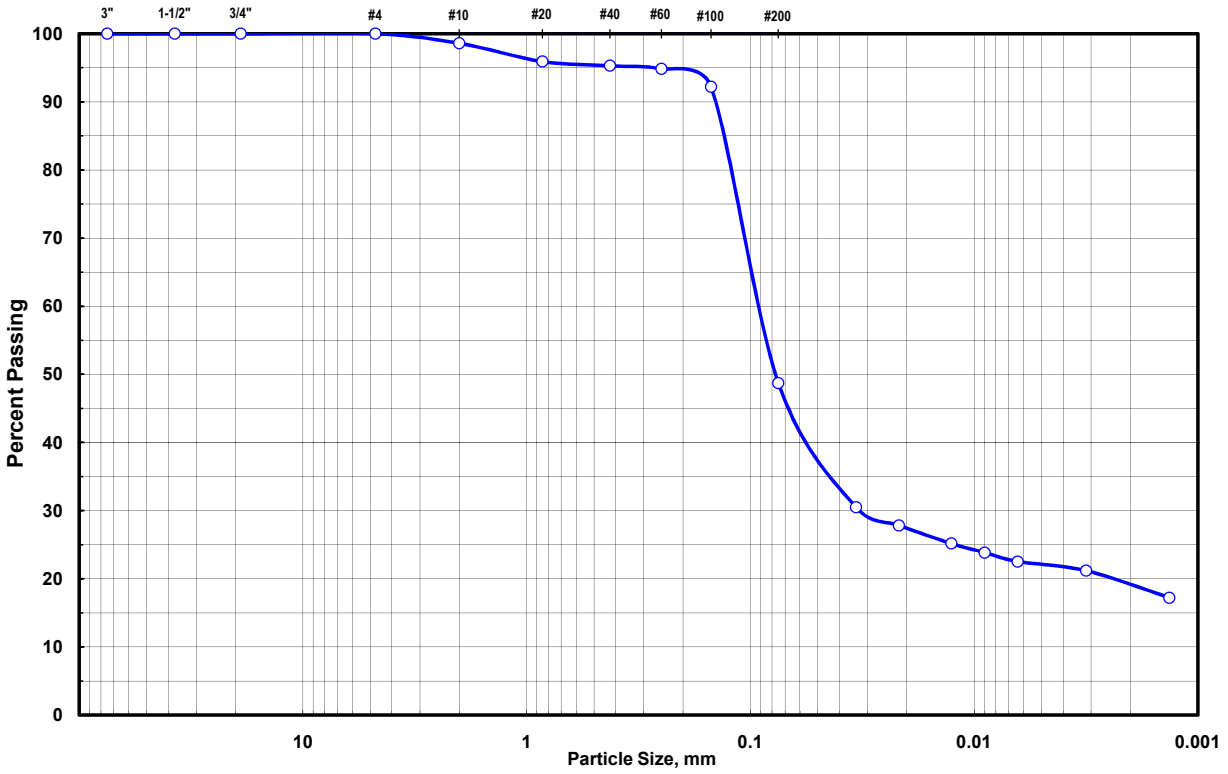
HTS, INC. Consultants

HTS, Inc. Consultants

416 Pickering Street
Houston, Texas 77091
Ph: 713-692-8373 Fax: 713-692-8502

PARTICLE SIZE DISTRIBUTION CURVE

(ASTM D-422)



GRAVEL		SAND			SILT	CLAY
Coarse	Fine	Coarse	Medium	Fine		

ASTM D-2487 SOIL CLASSIFICATION

Project:	**Laboratory Testing - GW Investigation / CPS Calaveras Station**	Liquid Limit:	**26**	% Pass No. 200:	**48.7**
Client:	**ERM**	Plastic Limit:	**16**	% Moisture:	**25.2**
Project No.:	**16-S-217**	Plasticity Index:	**10**	Test Method:	**ASTM D-422**
Sample ID:	**JKS-48, 19'-20'**	Tested By:	**MC**	Date Tested:	**5/2/2016**
Remarks:	**ERM Project #: 0337367**	Checked By:	**BFM**		
Description:	**Clayey Sand (SC)**	Date Checked:	**5/13/2016**		

HYDROMETER ANALYSIS

CLIENT: ERM PROJECT: CPS Calaveras Station DATE: 5/2/2016

DATE SAMPLED: 04/12/16 LABORATORY I.D. NO:

SAMPLE LOCATION: JK-48, 19'-20' SAMPLE DESCRIPTION: Sandy Lean Clay (CL)

DISPERSING AGENT: Sodium Hexametaphosphate COMPOSITE CORRECTION: 3

SPECIFIC GRAVITY OF SOIL: 2.65 (estimated) DRY WEIGHT OF SOIL: 75.02

GRADUATE: 1000 ML HYDROMETER: 152H a VALUE: 1.00

TIME OF READING	ELAPSED TIME (min)	TEMP READING (C)	ACTUAL HYDROMETER READING	CORRECTED HYDROMETER READING (Composite Reading)	EFFECTIVE DEPTH L, cm	VALUE OF K	DIAMETER OF PARTICLE SIZE, mm	PERCENT FINER
10:42 AM	0							
10:44 AM	2	21.2	26.0	23.0	12.50	0.01348	0.0337	30.9
10:47 AM	5	21.2	24.0	21.0	12.90	0.01348	0.0217	28.2
10:57 AM	15	21.2	22.0	19.0	13.20	0.01348	0.0126	25.5
11:12 AM	30	21.2	21.0	18.0	13.30	0.01348	0.0090	24.2
11:42 AM	60	21.2	20.0	17.0	13.50	0.01348	0.0064	22.9
2:52 PM	250	21.4	19.0	16.0	13.70	0.01348	0.0032	21.5
10:42 AM	1440	21.2	16.0	13.0	14.20	0.01348	0.0013	17.5

SIEVE ANALYSIS

STARTING WEIGHT: **75.02** gms. Container ID: F STARTING DRY WEIGHT: **74.37** gms.

Container + Soil : 29.36 gms. (corrected for hygroscopic moisture)

Container + Dry Soil : 29.23 gms.

Wt. of Container: 14.32 gms.

Hygroscopic Moisture: **0.87** %

SIEVE SIZE	PARTICLE SIZE, mm	CUMULATIVE WEIGHT RETAINED	PERCENT RETAINED	PERCENT PASSING
3"	75.0000	0.00	0.0	100.0
1-1/2"	37.5000	0.00	0.0	100.0
3/4"	19.0000	0.00	0.0	100.0
#4	4.7500	0.00	0.0	100.0
#10	2.0000	1.06	1.4	98.6
#20	0.8500	2.04	2.7	95.9
#40	0.4250	2.50	3.3	95.3
#60	0.2500	2.85	3.8	94.8
#100	0.1500	4.83	6.4	92.2
#200	0.0750	37.93	50.6	48.7
	0.0337			30.5
	0.0217			27.8
	0.0126			25.2
	0.0090			23.9
	0.0064			22.5
	0.0032			21.2
	0.0013			17.2

HYDROMETER ANALYSIS CALCULATION.XLS

Particle Size Analysis of Soils (ASTM D-422)

HTS, INC. Consultants

TABLE 1

LABORATORY TEST SUMMARY

PROJECT: Phase II - CCR Well Network Installation
CPS Calaveras Power Station
LOCATION: San Antonio, Texas

HTS PROJECT NO.: 16-S-370

CLIENT: Environmental Resources Management

ERM PROJECT #: 0366643

Sample ID	Sample Depth (feet)	Type of Material	Moisture Content (%)	Bulk Density (pcf)	Atterberg Limits (%)			-200 Sieve* (%)	Coeffificent of Permeability, k (cm/sec)	Solids Specific Gravity	Remarks
					LL	PL	PI				
JKS-53	10-12.5	Clayey Sand (SC)	24.2	101.8	30	14	16	35.9	5.34E-06	2.68	10'-12.5': Particle Size Analysis (ASTM D421)
	12.5-15	Clayey Sand (SC)	23.6	97.1	29	15	14	48.8	4.13E-08	2.68	12.5'-15': Particle Size Analysis (ASTM D421)
	20-21	Clayey Sand (SC)	29.5		27	14	13	37.6			20'-21': Particle Size Analysis (ASTM D422)
JKS-54	13-14	Silty Clayey Sand (SC-SM)	25.5		22	15	7	33.5			13'-14': Particle Size Analysis (ASTM D422)
JKS-58	26-27	Sandy Lean Clay (CL)	22.7		38	18	20	50.9			26'-27': Particle Size Analysis (ASTM D422)
	30-32.5	Fat Clay (CH)	20.3	100.0	57	20	37	89.1	1.53E-07	2.72	30'- 32.5': Particle Size Analysis (ASTM D421)
JKS-62	35-37	Clayey Sand (SC)	18.4	93.8	38	17	21	32.3	6.63E-07	2.68	35'-37': Particle Size Analysis (ASTM D421)
JKS-64	20-30	Clayey Sand (SC)	28.6		29	14	15	30.1			20'-30': Particle Size Analysis (ASTM D422)

ASTM D 421: Particle Size Analysis without Hydrometer
ASTM D 422: Particle Size Analysis With Hydrometer

* From Particle Size Analysis testing

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Houston, Texas 77091
Tel: (713) 692-8373 Fax: (713) 692-8501

SPECIFIC GRAVITY OF SOIL SOLIDS

(ASTM D-854)

Project No:	16-S-370	Project Name:	Laboratory Testing, CCR Well Network/CPS Calaveras Station, ERM Project No. 0366643
Technician:	M. Coronado	Testing Date:	10/05/2016 and 10/06/2016

LABORATORY TEST DATA/ RESULTS

Sample ID: JKS-53, 10'-12.5'		Sample: JKS-53, 12.5'-15'		Sample: JKS-58, 30'-32.5'		Sample: JKS-62, 35'-37'	
Flask No.	A-1	Flask No.	B-1	Flask No.	C-1	Flask No.	D-1
Flask Weight (gms)	169.35	Flask Weight (gms)	169.41	Flask Weight (gms)	174.29	Flask Weight (gms)	171.31
Weight of Dry Soil (gms)	75.18	Weight of Dry Soil (gms)	75.05	Weight of Dry Soil (gms)	50.10	Weight of Dry Soil (gms)	75.08
Wt. Flask and Water (gms)	667.02	Wt. Flask and Water (gms)	667.28	Wt. Flask and Water (gms)	672.37	Wt. Flask and Water (gms)	669.05
Wt. Flask+Water+Soil (gms)	714.16	Wt. Flask+Water+Soil (gms)	714.36	Wt. Flask+Water+Soil (gms)	704.03	Wt. Flask+Water+Soil (gms)	716.07
Volume of Flask at 20° (ml)	500.0	Volume of Flask at 20° (ml)	500.0	Volume of Flask at 20° (ml)	500.0	Volume of Flask at 20° (ml)	500.0
Container No.	40	Container No.	41	Container No.	42	Container No.	43
Wt. of Container (gms)	30.43	Wt. of Container (gms)	30.53	Wt. of Container (gms)	30.55	Wt. of Container (gms)	30.40
Wt. of Container + Soil (gms)	105.61	Wt. of Container + Soil (gms)	105.58	Wt. of Container + Soil (gms)	80.65	Wt. of Container + Soil (gms)	105.48
Temperature (°C)	22.8	Temperature (°C)	22.7	Temperature (°C)	22.5	Temperature (°C)	22.4
Specific Gravity:	**2.681**	Specific Gravity:	**2.683**	Specific Gravity:	**2.717**	Specific Gravity:	**2.676**

Checked By: BFM Date: 10/12/16

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FALLING HEAD / RISING TAIL HYDRAULIC CONDUCTIVITY TEST

(ASTM D-5084-03)

Project No:	16-S-370	Sample Identification:	JKS-53, Depth = 10'-12.5'
Technician:	M. Coronado	Sample Description:	Tan and brown CLAYEY SAND (SC)

Project: Laboratory Testing, CCR Well Network/CPS Calaveras Station (ERM Project No. 0366643)

INITIAL CONDITIONS

WATER CONTENT		SPECIMEN DATA	
Tare No.:	54	Length, in:	2.062
Wet+Tare, gms:	131.44	Diameter, in:	2.725
Dry+Tare, gms:	111.76	Wet mass, gms:	397.05
Tare Weight, gms:	30.56	Area, cm^2:	37.63
Moisture, %	24.2	Volume, cc:	197.1
		Unit wet wt, pcf:	125.7
Specific Gravity:	2.681	Unit dry wt, pcf:	101.2
Saturation, %:	99.5	Void Ratio:	0.653
Perm. Cell No.:	5	Burret diam, cm:	1.06
Cell Pressure, psi:	5.0	Head Pressure, psi:	2.0

FINAL CONDITIONS

WATER CONTENT		SPECIMEN DATA	
Tare No.:	40	Length, in:	2.030
Wet+Tare, gms:	131.44	Diameter, in:	2.738
Dry+Tare, gms:	111.66	Wet mass, gms:	394.94
Tare Weight, gms:	30.42	Area, cm^2:	37.99
Moisture, %	24.3	Volume, cc:	195.9
		Unit wet wt, pcf:	125.8
Specific Gravity:	2.681	Unit dry wt, pcf:	101.2
Saturation, %:	99.8	Void Ratio:	0.653
Burret area, cm^2.:	1.06	Burret factor,cm/cc:	1.009
Tail Pressure, psi:	1.0	Hydraulic Gradient:	16.9

PERMEABILITY MEASUREMENTS

Date	Time	Elapsed Time (sec)	Temp (C)	Pressure Diff. (psi)	Head Rdg (cc)	Tail Rdg (cc)	Head Change (cm)	Tail Change (cm)	Total Head (cm)	Permeability Kt (cm/sec)	Permeability K_{20} (cm/sec)
10/6/2016	9:30a	0	23.6	1.0	2.00	20.00	0.000	0.000	88.46	0.00E+00	0.00E+00
10/6/2016	9:35a	300	23.6	1.0	3.00	19.00	1.009	1.009	86.44	5.53E-06	5.07E-06
10/6/2016	9:40a	300	23.6	1.0	4.20	17.60	1.211	1.413	83.82	7.39E-06	6.77E-06
10/6/2016	9:45a	300	23.6	1.0	5.10	16.50	0.908	1.110	81.80	5.84E-06	5.36E-06
10/6/2016	9:50a	300	23.6	1.0	6.00	15.80	0.908	0.706	80.19	4.78E-06	4.38E-06
10/6/2016	9:55a	300	23.6	1.0	7.00	14.80	1.009	1.009	78.17	6.11E-06	5.60E-06
10/6/2016	10:00a	300	23.6	1.0	8.00	13.70	1.009	1.110	76.05	6.59E-06	6.04E-06

Coefficient of Permeability, k = **5.34E-06** cm/sec

Performed By: MC Date: 10/3/2016 Checked By: BFM Date: 10/12/16

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Tel: (713) 692-8373 Fax: (713) 692-8501

FALLING HEAD / RISING TAIL HYDRAULIC CONDUCTIVITY TEST

(ASTM D-5084-03)

Project No:	16-S-370	Sample Identification:	JKS-53, Depth = 12.5'-15'
Technician:	M. Coronado	Sample Description:	Light brown and brown CLAYEY SAND (SC)

Project: Laboratory Testing, CCR Well Network/CPS Calaveras Station (ERM Project No. 0366643)

INITIAL CONDITIONS

WATER CONTENT		SPECIMEN DATA	
Tare No.:	53	Length, in:	2.095
Wet+Tare, gms:	136.44	Diameter, in:	2.705
Dry+Tare, gms:	116.19	Wet mass, gms:	393.77
Tare Weight, gms:	30.54	Area, cm^2:	37.08
Moisture, %	23.6	Volume, cc:	197.3
		Unit wet wt, pcf:	124.5
Specific Gravity:	2.683	Unit dry wt, pcf:	100.7
Saturation, %:	95.8	Void Ratio:	0.662
Perm. Cell No.:	1	Burret diam, cm:	1.06
Cell Pressure, psi:	5.0	Head Pressure, psi:	2.0

FINAL CONDITIONS

WATER CONTENT		SPECIMEN DATA	
Tare No.:	43	Length, in:	2.095
Wet+Tare, gms:	132.79	Diameter, in:	2.703
Dry+Tare, gms:	112.35	Wet mass, gms:	393.23
Tare Weight, gms:	30.41	Area, cm^2:	37.02
Moisture, %	24.9	Volume, cc:	197.0
		Unit wet wt, pcf:	124.6
Specific Gravity:	2.683	Unit dry wt, pcf:	99.7
Saturation, %:	98.5	Void Ratio:	0.679
Burret area, cm^2.:	0.991	Burret factor,cm/cc:	1.009
Tail Pressure, psi:	1.0	Hydraulic Gradient:	16.6

PERMEABILITY MEASUREMENTS

Date	Time	Elapsed Time (sec)	Temp (C)	Pressure Diff. (psi)	Head Rdg (cc)	Tail Rdg (cc)	Head Change (cm)	Tail Change (cm)	Total Head (cm)	Permeability Kt (cm/sec)	Permeability K_{20} (cm/sec)
10/6/2016	10:10a	0	23.9	1.0	2.00	20.00	0.000	0.000	88.46	0.00E+00	0.00E+00
10/6/2016	11:15a	3900	23.9	1.0	2.10	19.90	0.101	0.101	88.26	4.17E-08	3.79E-08
10/6/2016	12:15p	3600	23.9	1.0	2.20	19.80	0.101	0.101	88.06	4.53E-08	4.12E-08
10/6/2016	1:15p	3600	23.9	1.0	2.30	19.70	0.101	0.101	87.86	4.54E-08	4.13E-08
10/6/2016	2:15p	3600	23.9	1.0	2.40	19.60	0.101	0.101	87.65	4.55E-08	4.14E-08
10/6/2016	3:15p	3600	23.9	1.0	2.50	19.50	0.101	0.101	87.45	4.56E-08	4.14E-08

Coefficient of Permeability, k = **4.13E-08** cm/sec

Performed By: MC Date: 10/3/2016 Checked By: BFM Date: 10/12/16

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Tel: (713) 692-8373 Fax: (713) 692-8501

FALLING HEAD / RISING TAIL HYDRAULIC CONDUCTIVITY TEST

(ASTM D-5084-03)

Project No:	16-S-370	Sample Identification:	JKS-58, Depth = 30'-32.5'
Technician:	M. Coronado	Sample Description:	Dark gray FAT CLAY (CH)

Project: Laboratory Testing, CCR Well Network/CPS Calaveras Station (ERM Project No. 0366643)

INITIAL CONDITIONS

WATER CONTENT		SPECIMEN DATA	
Tare No.:	51	Length, in:	1.932
Wet+Tare, gms:	133.56	Diameter, in:	2.700
Dry+Tare, gms:	116.21	Wet mass, gms:	360.36
Tare Weight, gms:	30.56	Area, cm^2:	36.94
Moisture, %	20.3	Volume, cc:	181.3
		Unit wet wt, pcf:	124.0
Specific Gravity:	2.717	Unit dry wt, pcf:	103.2
Saturation, %:	85.5	Void Ratio:	0.644
Perm. Cell No.:	2	Burret diam, cm:	1.06
Cell Pressure, psi:	7.0	Head Pressure, psi:	3.0

FINAL CONDITIONS

WATER CONTENT		SPECIMEN DATA	
Tare No.:	42	Length, in:	1.930
Wet+Tare, gms:	131.43	Diameter, in:	2.710
Dry+Tare, gms:	110.27	Wet mass, gms:	365.13
Tare Weight, gms:	30.55	Area, cm^2:	37.21
Moisture, %	26.5	Volume, cc:	182.4
		Unit wet wt, pcf:	124.9
Specific Gravity:	2.717	Unit dry wt, pcf:	98.7
Saturation, %:	100.4	Void Ratio:	0.717
Burret area, cm^2.:	0.991	Burret factor,cm/cc:	1.009
Tail Pressure, psi:	2.0	Hydraulic Gradient:	18.0

PERMEABILITY MEASUREMENTS

Date	Time	Elapsed Time (sec)	Temp (C)	Pressure Diff. (psi)	Head Rdg (cc)	Tail Rdg (cc)	Head Change (cm)	Tail Change (cm)	Total Head (cm)	Permeability Kt (cm/sec)	Permeability K_{20} (cm/sec)
10/6/2016	10:45a	0	23.7	1.0	2.00	20.00	0.000	0.000	88.46	0.00E+00	0.00E+00
10/6/2016	11:15a	1800	23.7	1.0	2.20	19.80	0.202	0.202	88.06	1.66E-07	1.52E-07
10/6/2016	11:30a	900	23.7	1.0	2.30	19.70	0.101	0.101	87.86	1.66E-07	1.52E-07
10/6/2016	11:45a	900	23.7	1.0	2.50	19.50	0.202	0.202	87.45	3.34E-07	3.05E-07
10/6/2016	12:45a	3600	23.7	1.0	2.80	19.30	0.303	0.202	86.95	1.05E-07	9.59E-08
10/6/2016	1:45p	3600	23.7	1.0	3.00	19.00	0.202	0.303	86.44	1.06E-07	9.64E-08
10/6/2016	2:45p	3600	23.7	1.0	3.30	18.70	0.303	0.303	85.84	1.27E-07	1.16E-07

Coefficient of Permeability, k = **1.53E-07** cm/sec

Performed By: MC Date: 10/3/2016 Checked By: BFM Date: 10/12/16

HTS, Inc. Consultants

9416 Pickering Street
Houston, Texas 77091
Tel: (713) 692-8373 Fax: (713) 692-8501

FALLING HEAD / RISING TAIL HYDRAULIC CONDUCTIVITY TEST

(ASTM D-5084-03)

Project No:	16-S-370	Sample Identification:	JKS-62, Depth = 35'-37'
Technician:	M. Coronado	Sample Description:	Light brown and brown CLAYEY SAND (SC)

Project: Laboratory Testing, CCR Well Network/CPS Calaveras Station (ERM Project No. 0366643)

INITIAL CONDITIONS				FINAL CONDITIONS			
WATER CONTENT		SPECIMEN DATA		WATER CONTENT		SPECIMEN DATA	
Tare No.:	52	Length, in:	2.040	Tare No.:	41	Length, in:	2.033
Wet+Tare, gms:	133.74	Diameter, in:	2.695	Wet+Tare, gms:	135.61	Diameter, in:	2.700
Dry+Tare, gms:	117.68	Wet mass, gms:	347.14	Dry+Tare, gms:	114.90	Wet mass, gms:	357.91
Tare Weight, gms:	30.54	Area, cm^2:	36.80	Tare Weight, gms:	30.53	Area, cm^2:	36.94
Moisture, %	18.4	Volume, cc:	190.7	Moisture, %	24.5	Volume, cc:	190.7
		Unit wet wt, pcf:	113.6			Unit wet wt, pcf:	117.1
Specific Gravity:	2.676	Unit dry wt, pcf:	95.9	Specific Gravity:	2.676	Unit dry wt, pcf:	94.0
Saturation, %:	66.6	Void Ratio:	0.741	Saturation, %:	84.5	Void Ratio:	0.776
Perm. Cell No.:	3	Burret diam, cm:	1.06	Burret area, cm^2.:	0.991	Burret factor,cm/cc:	1.009
Cell Pressure, psi:	5.0	Head Pressure, psi:	2.0	Tail Pressure, psi:	1.0	Hydraulic Gradient:	17.1

PERMEABILITY MEASUREMENTS

Date	Time	Elapsed Time (sec)	Temp (C)	Pressure Diff. (psi)	Head Rdg (cc)	Tail Rdg (cc)	Head Change (cm)	Tail Change (cm)	Total Head (cm)	Permeability Kt (cm/sec)	Permeability K_{20} (cm/sec)
10/6/2016	10:30a	0	24.6	1.0	2.00	20.00	0.000	0.000	88.46	0.00E+00	0.00E+00
10/6/2016	10:40a	600	24.6	1.0	2.50	19.70	0.505	0.303	87.65	1.06E-06	9.44E-07
10/6/2016	10:50a	600	24.6	1.0	2.70	19.50	0.202	0.202	87.25	5.33E-07	4.75E-07
10/6/2016	11:00a	600	24.6	1.0	2.90	19.00	0.202	0.505	86.54	9.38E-07	8.37E-07
10/6/2016	11:10a	600	24.6	1.0	3.20	18.70	0.303	0.303	85.94	8.10E-07	7.23E-07
10/6/2016	11:20a	600	24.6	1.0	3.40	18.40	0.202	0.303	85.44	6.80E-07	6.06E-07
10/6/2016	11:30a	600	24.6	1.0	3.60	18.20	0.202	0.202	85.03	5.47E-07	4.88E-07

Coefficient of Permeability, k = **6.63E-07** cm/sec

Performed By: MC Date: 10/6/2016 Checked By: BFM Date: 10/12/16

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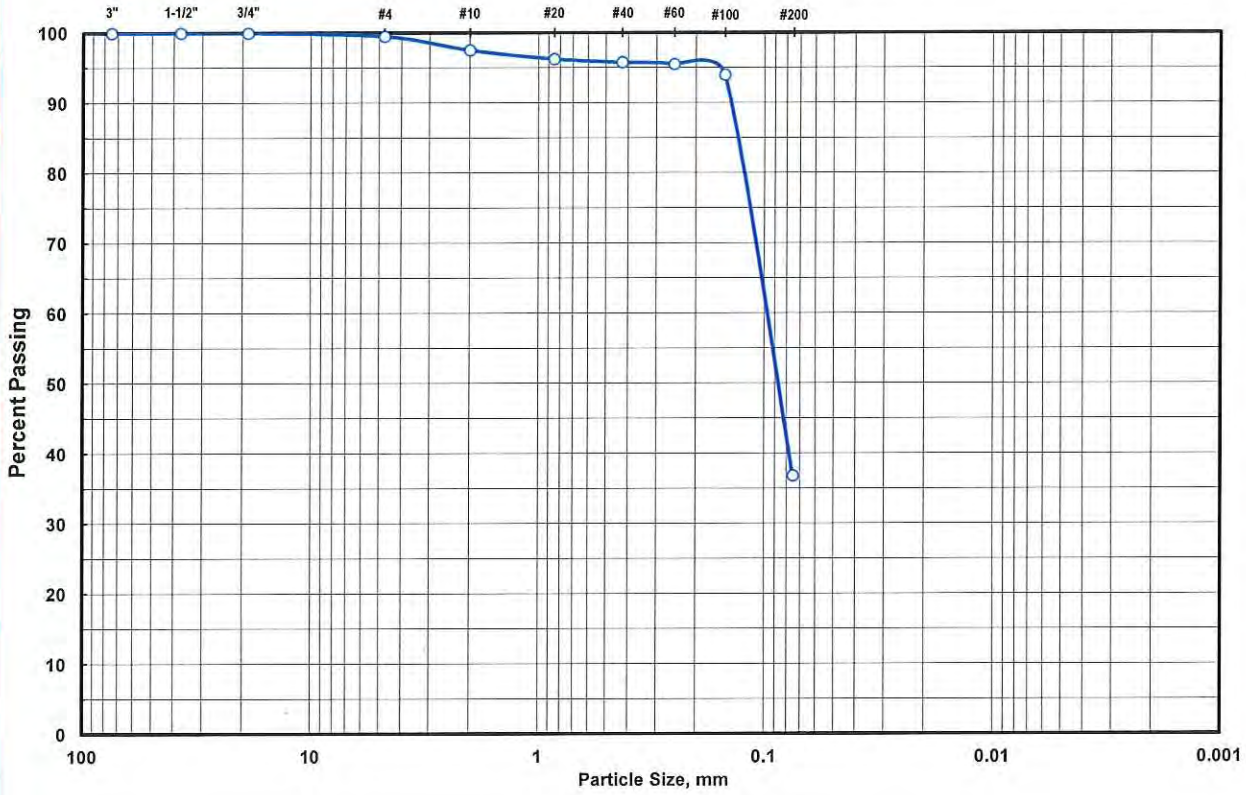
PARTICLE SIZE DISTRIBUTION CURVE

(ASTM D-421)



GRAVEL		SAND			SILT	CLAY
Coarse	Fine	Coarse	Medium	Fine		

ASTM D-2487 SOIL CLASSIFICATION

Project:	**Phase II - CCR Well Network Installation, CPS Calaveras Power Station**	Liquid Limit:	**30**	% Pass No. 200:	**36.8**
Client:	**Environmental Resources Management**	Plastic Limit:	**14**	% Moisture:	**24.2**
Project No.:	**16-S-370**	Plasticity Index:	**16**	Test Method:	**ASTM D-421**
Sample ID:	**JKS- 53 , Depth = 10' - 12.5'**	Tested By:	**MC**	Date Tested:	**10/5/2016**
Remarks:		Checked By:	**BHA**		
Description:	**Tan and brown CLAYEY SAND (SC)**	Date Checked:	**10/12/2016**		

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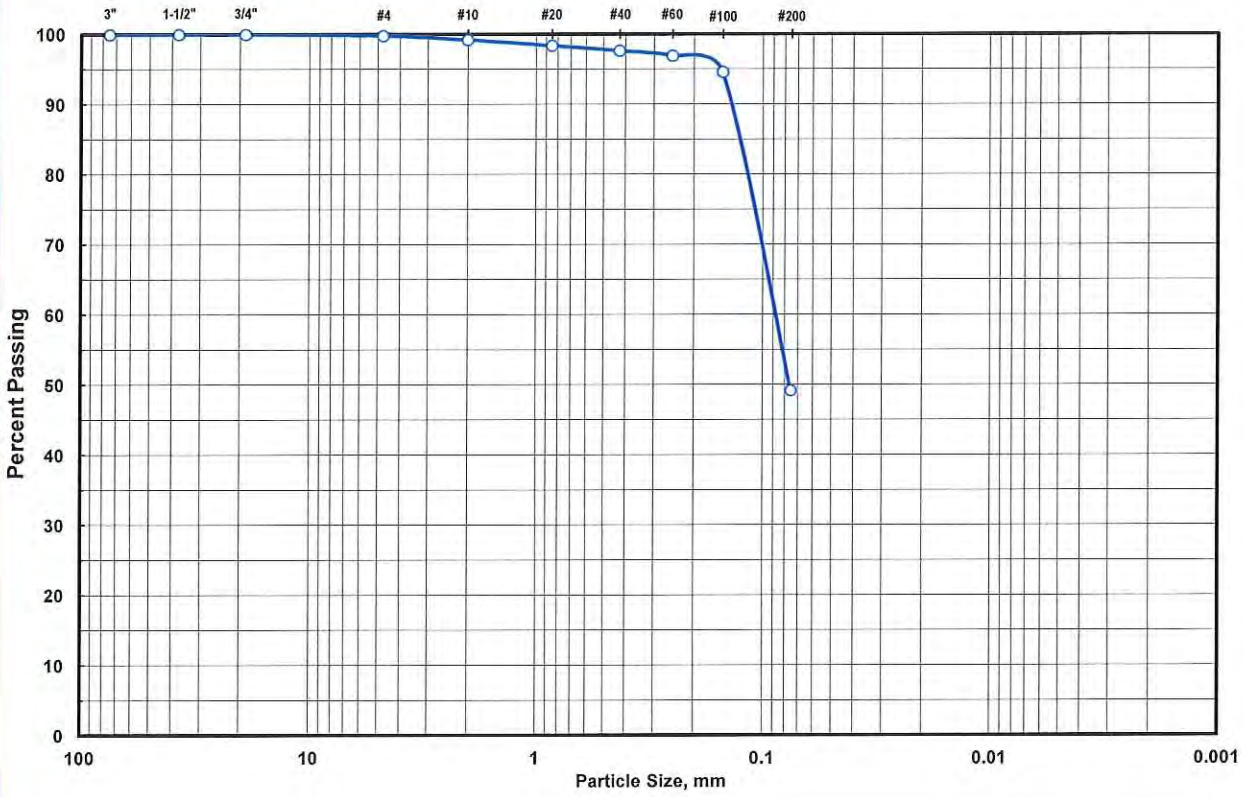
PARTICLE SIZE DISTRIBUTION CURVE

(ASTM D-421)



GRAVEL		SAND			SILT	CLAY
Coarse	Fine	Coarse	Medium	Fine		

ASTM D-2487 SOIL CLASSIFICATION

Project:	**Phase II - CCR Well Network Installation, CPS Calaveras Power Station**	Liquid Limit:	**29**	% Pass No. 200:	**49.2**
Client:	**Environmental Resources Management**	Plastic Limit:	**15**	% Moisture:	**23.6**
Project No.:	**16-S-370**	Plasticity Index:	**14**	Test Method:	**ASTM D-421**
Sample ID:	**JKS- 53 , Depth = 12.5' - 15'**	Tested By:	**MC**	Date Tested:	**10/5/2016**
Remarks:		Checked By:	**BHA**		
Description:	**Tan and brown CLAYEY SAND (SC)**	Date Checked:	**10/12/2016**		

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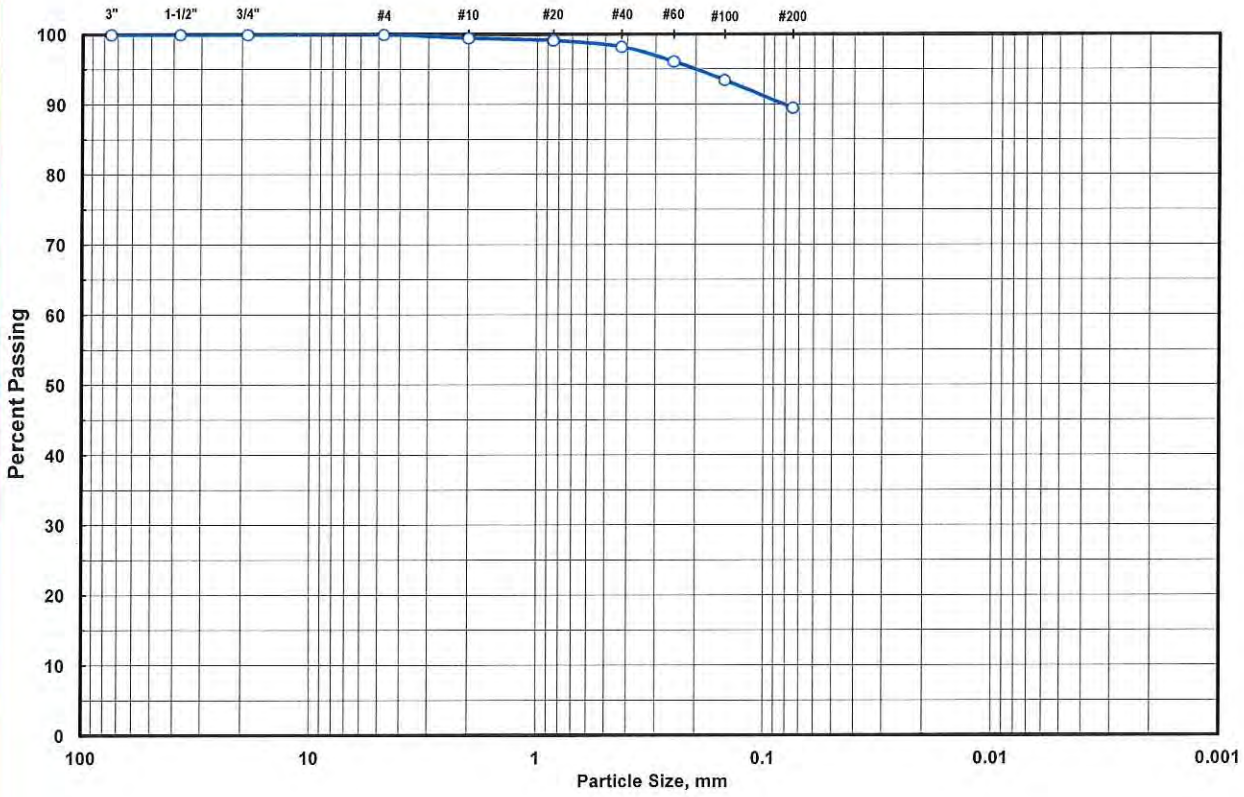
PARTICLE SIZE DISTRIBUTION CURVE

(ASTM D-421)



GRAVEL		SAND			SILT	CLAY
Coarse	Fine	Coarse	Medium	Fine		

ASTM D-2487 SOIL CLASSIFICATION

Project:	Phase II - CCR Well Network Installation, CPS Calaveras Power Station	Liquid Limit:	57	% Pass No. 200:	89.5
Client:	Environmental Resources Management	Plastic Limit:	20	% Moisture:	20.3
Project No.:	16-S-370	Plasticity Index:	37	Test Method:	ASTM D-421
Sample ID:	JKS- 58 , Depth = 30' - 32.5'	Tested By:	MC	Date Tested:	10/5/2016
Remarks:		Checked By:	BHA		
Description:	Dark gray FAT CLAY (CH)	Date Checked:	10/12/2016		

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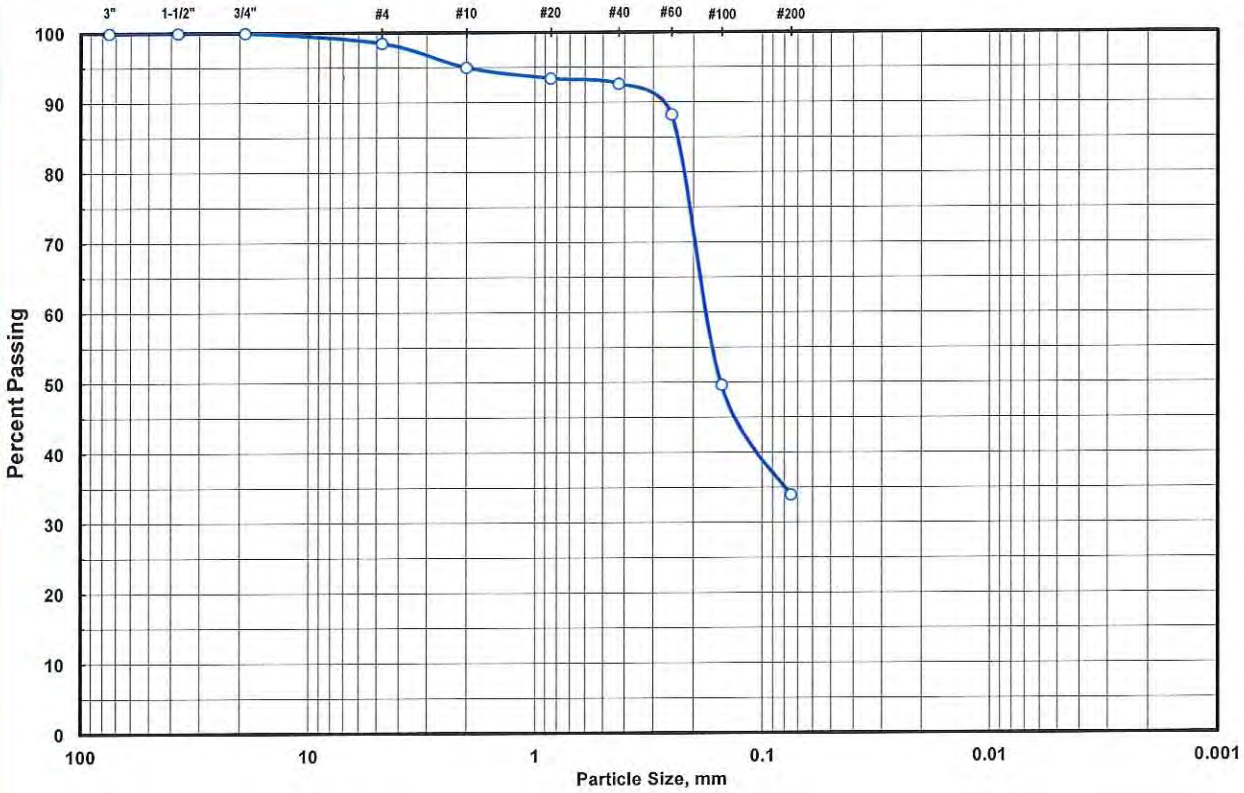
PARTICLE SIZE DISTRIBUTION CURVE

(ASTM D-421)



GRAVEL		SAND			SILT	CLAY
Coarse	Fine	Coarse	Medium	Fine		

ASTM D-2487 SOIL CLASSIFICATION

Project:	Phase II - CCR Well Network Installation, CPS Calaveras Power Station	Liquid Limit:	38	% Pass No. 200:	34.0
Client:	Environmental Resources Management	Plastic Limit:	17	% Moisture:	18.4
Project No.:	16-S-370	Plasticity Index:	21	Test Method:	ASTM D-421
Sample ID:	JKS- 62 , Depth = 35' - 37'	Tested By:	MC	Date Tested:	10/5/2016
Remarks:		Checked By:	BHA		
Description:	Light brown and brown CLAYEY SAND (SC)	Date Checked:	10/12/2016		

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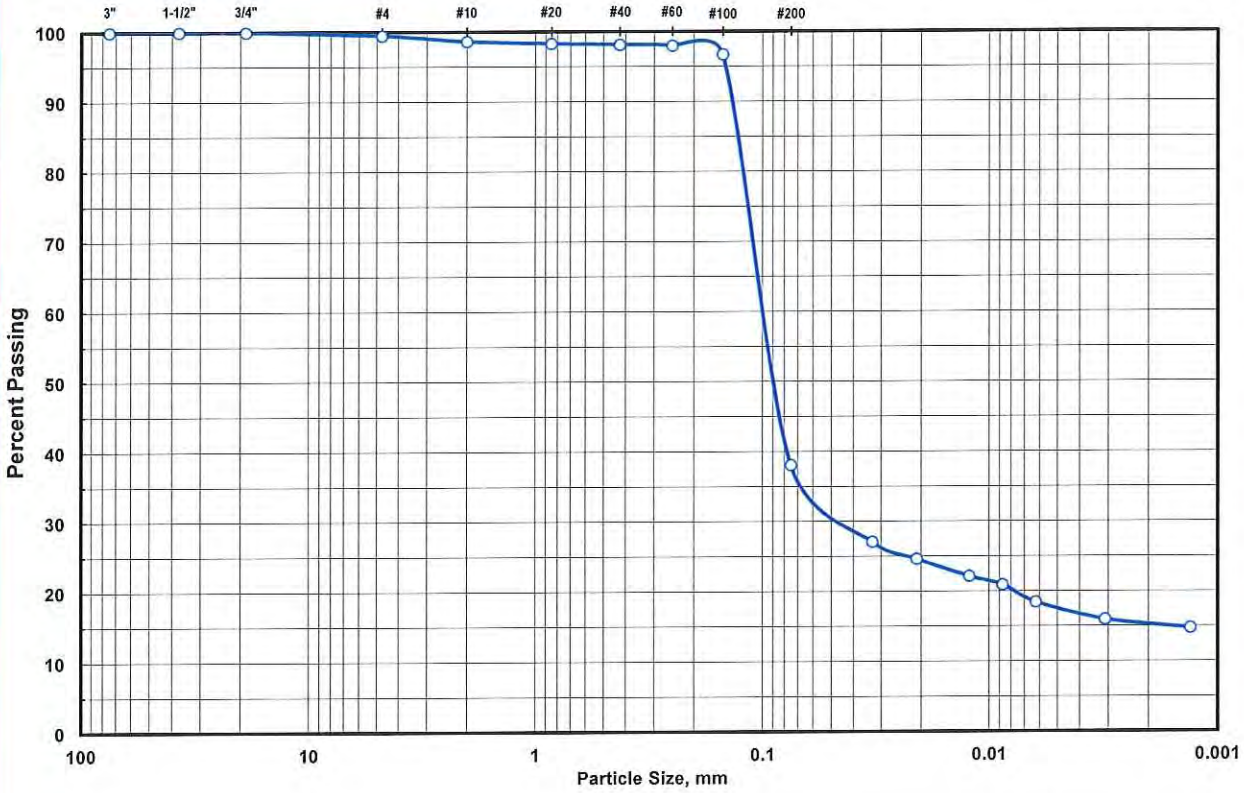
PARTICLE SIZE DISTRIBUTION CURVE

(ASTM D-422)



GRAVEL		SAND			SILT	CLAY
Coarse	Fine	Coarse	Medium	Fine		

ASTM D-2487 SOIL CLASSIFICATION

Project:	Phase II - CCR Well Network Installation, CPS Calaveras Power Station	Liquid Limit:	27	% Pass No. 200:	38.1
Client:	Environmental Resources Management	Plastic Limit:	14	% Moisture:	29.5
Project No.:	16-S-370	Plasticity Index:	13	Test Method:	ASTM D-422
Sample ID:	JKS- 53 , Depth = 20' - 21'	Tested By:	MC	Date Tested:	10/4/2016
Remarks:		Checked By:	BHA		
Description:	Tan and light brown CLAYEY SAND (SC)	Date Checked:	10/12/2016		

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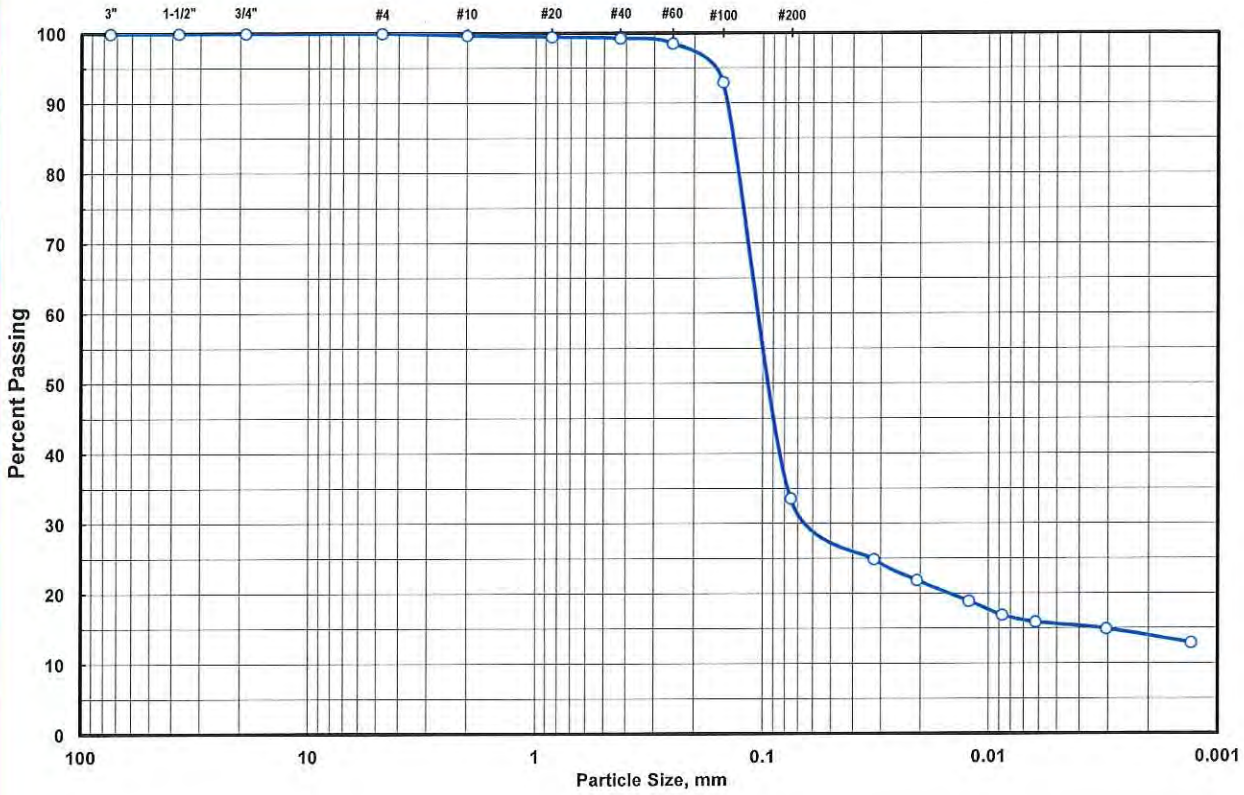
PARTICLE SIZE DISTRIBUTION CURVE

(ASTM D-422)



GRAVEL		SAND			SILT	CLAY
Coarse	Fine	Coarse	Medium	Fine		

ASTM D-2487 SOIL CLASSIFICATION

Project:	Phase II - CCR Well Network Installation, CPS Calaveras Power Station	Liquid Limit:	22	% Pass No. 200:	33.6
Client:	Environmental Resources Management	Plastic Limit:	15	% Moisture:	25.5
Project No.:	16-S-370	Plasticity Index:	7	Test Method:	ASTM D-422
Sample ID:	JKS- 54 , Depth = 13' - 14'	Tested By:	MC	Date Tested:	10/4/2016
Remarks:		Checked By:	BHA		
Description:	Light brown and tan SILTY CLAYEY SAND (SC-SM)	Date Checked:	10/12/2016		

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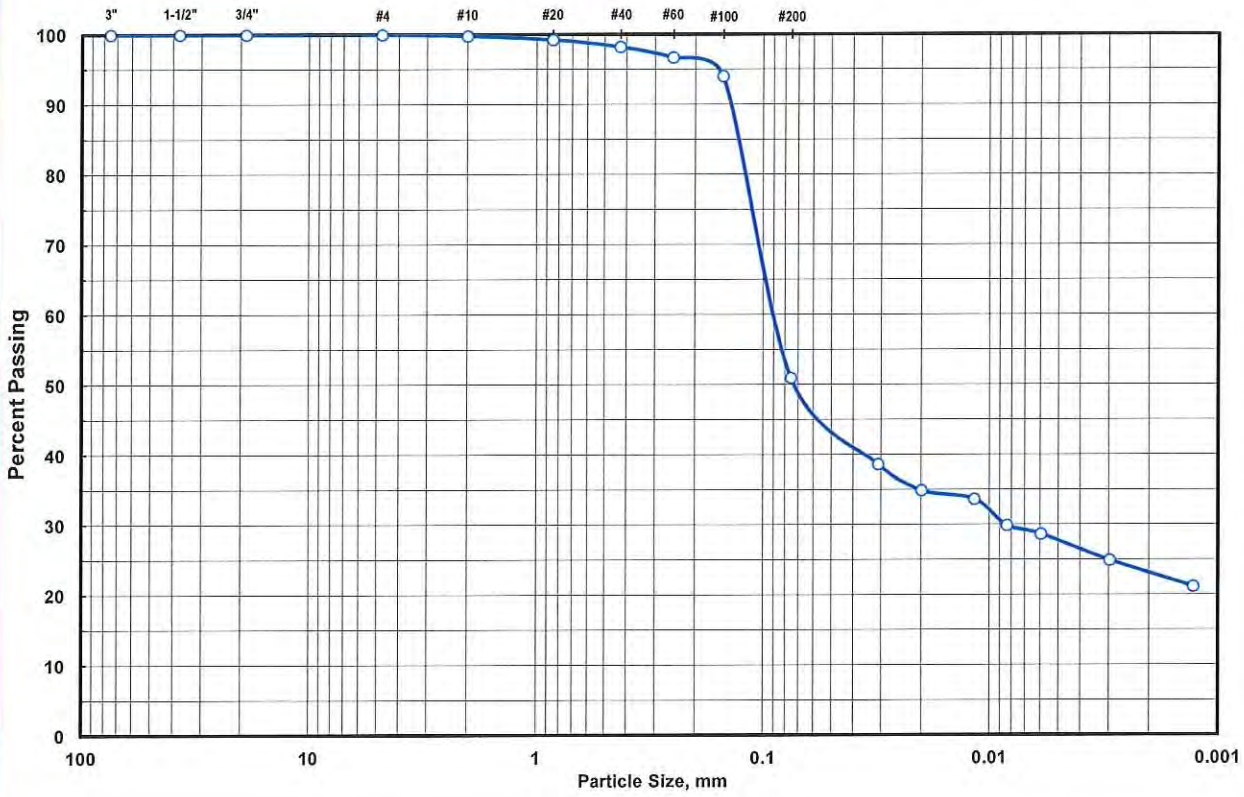
PARTICLE SIZE DISTRIBUTION CURVE

(ASTM D-422)



GRAVEL		SAND			SILT	CLAY
Coarse	Fine	Coarse	Medium	Fine		

ASTM D-2487 SOIL CLASSIFICATION

Project:	**Phase II - CCR Well Network Installation, CPS Calaveras Power Station**	Liquid Limit:	**38**	% Pass No. 200:	**51.0**
Client:	**Environmental Resources Management**	Plastic Limit:	**18**	% Moisture:	**22.7**
Project No.:	**16-S-370**	Plasticity Index:	**20**	Test Method:	**ASTM D-422**
Sample ID:	**JKS- 58 , Depth = 26' - 27'**	Tested By:	**MC**	Date Tested:	**10/4/2016**
Remarks:		Checked By:	**BHA**		
Description:	**Tan and brown SANDY LEAN CLAY (CL)**	Date Checked:	**10/12/2016**		

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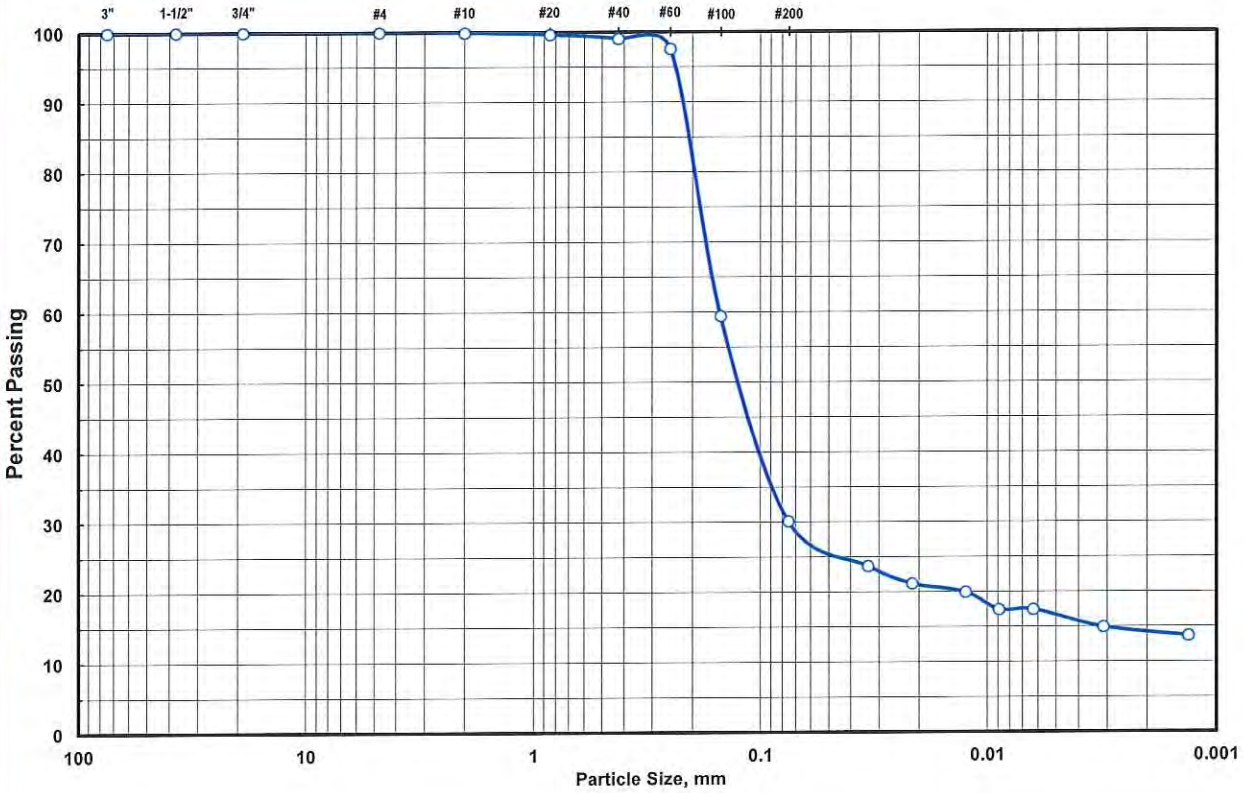
PARTICLE SIZE DISTRIBUTION CURVE

(ASTM D-422)



GRAVEL		SAND			SILT	CLAY
Coarse	Fine	Coarse	Medium	Fine		

ASTM D-2487 SOIL CLASSIFICATION

Project:	Phase II - CCR Well Network Installation, CPS Calaveras Power Station	Liquid Limit:	29	% Pass No. 200:	30.2
Client:	Environmental Resources Management	Plastic Limit:	14	% Moisture:	28.6
Project No.:	16-S-370	Plasticity Index:	15	Test Method:	ASTM D-422
Sample ID:	JKS- 64 , Depth = 20' - 30'	Tested By:	MC	Date Tested:	10/4/2016
Remarks:		Checked By:	BHA		
Description:	Dark brown CLAYEY SAND (SC)	Date Checked:	10/12/2016		

Groundwater Monitoring System Certification

Appendix C

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

GROUNDWATER MONITORING SYSTEM CERTIFICATION
40 CFR §257.91(f)
Calaveras Power Station
San Antonio, Texas
CPS Energy

The owner or operator must obtain a certification from a qualified professional engineer stating that the groundwater monitoring system has been designed and constructed to meet the requirements of 40 CFR §257.91.

According to 40 CFR §257.91(a), the groundwater monitoring system must consist of a sufficient number of wells, installed at appropriate locations and depths, to yield groundwater samples from the uppermost aquifer that:

1. Accurately represent the quality of background groundwater that has not been affected by leakage from a CCR unit; and
2. Accurately represent the quality of groundwater passing the waste boundary of the CCR unit.

40 CFR §257.91(b) states that the number, spacing, and depths of groundwater monitoring system must be determined based upon site-specific technical information that must include a characterization of:

(1) Aquifer thickness, groundwater flow rate, groundwater flow direction; and
(2) Saturated and unsaturated geologic units and fill materials overlying the uppermost aquifer, materials comprising the uppermost aquifer, and materials comprising the confining unit defining the lower boundary of the uppermost aquifer.

CERTIFICATION

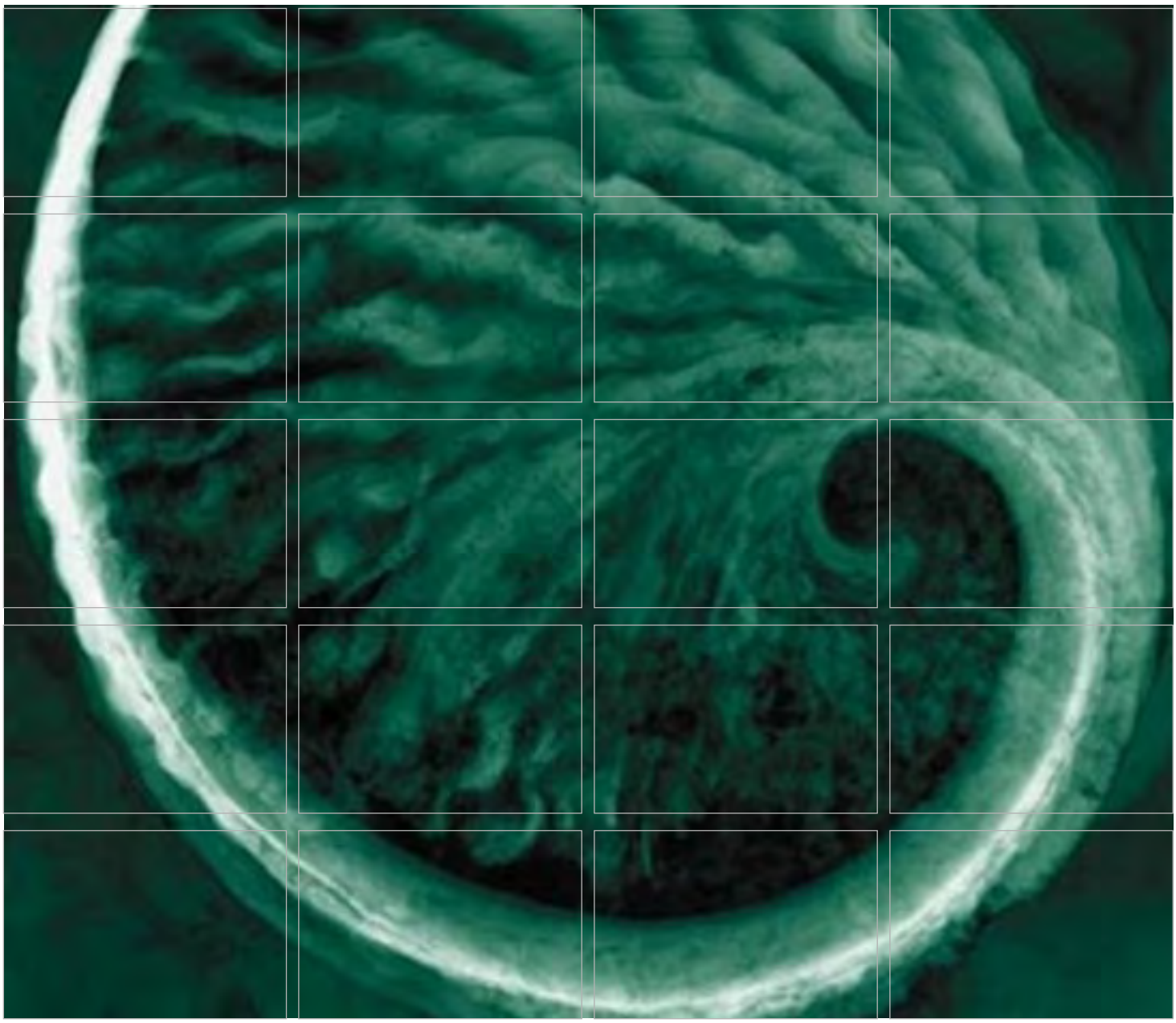
I hereby certify that the groundwater monitoring systems for the CCR units located at the Calaveras Power Station have been designed and constructed to meet the requirements of 40 CFR §257.91.

Jeffery L. Bauguss, P.E.

Texas Licensed Professional Engineer No. 86195

10/16/17

Attachment 18 Groundwater Sampling and Analysis Program



Groundwater Sampling and Analysis Program

CPS Energy
Calaveras Power Station
San Antonio, Texas

October 2017
Updated January 2022

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Groundwater Sampling and Analysis Program

October 2017
Updated January 2022

Project No. 0337367
San Antonio, Texas

Jeffery L. Bauguss, P.E.
Partner-in-Charge

Wally Zverina
Project Manager

Nick Houtchens
Project Consultant

Environmental Resources Management
206 East 9th Street, Suite 1700
Austin, TX 78701
T: 512-459-4700
F: 512-597-8368

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

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APPENDICES

January 2022 Updates only included revisions to:
Form 1, Form 2, Form 3, Table 1, Figure 1, and Appendix B

1.0 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) (a.k.a. the CCR Rule). The Power Station is located in unincorporated Bexar County, Texas, approximately 13 miles southeast of San Antonio. Currently, CPS Energy operates five CCR units at the Power Station which are subject to the CCR Rule:

- Sludge Recycle Holding (SRH) Pond,
- North Bottom Ash Pond (BAP),
- South BAP,
- Evaporation Pond (EP), and
- Fly Ash Landfill (FAL).

This Sampling and Analysis Program (SAP) describes the methods and procedures to be used for conducting groundwater monitoring at the Calaveras Power Station CCR Units. This SAP is subject to periodic revision as circumstances and/or new regulations dictate. Revisions to the SAP must be approved by a qualified professional engineer before placed in effect. The most up-to-date version of the SAP shall be kept in the Operating Records for use by CPS Energy and subcontractor personnel.

For the purposes of this SAP, the SRH Pond and BAPs are termed the Southern CCR Units and the EP and FAL are termed the Northern CCR Units. Even though the SRH Pond and the BAPs are in close proximity, two separate monitor well networks will be used to monitor the groundwater in the vicinity of these two Southern CCR Units. Due to the horizontal distance between the EP and FAL, two separate monitor well networks will be used to monitor groundwater in the vicinity of these two Northern CCR Units.

1.1 OBJECTIVES AND PURPOSE

The objective of the groundwater monitoring program is to provide analytical data for groundwater collected from monitor wells as required by the CCR Rule (40 CFR §257.90-257.98). The SAP describes the procedures and techniques associated with the following:

- Pre-field activities,
- Record keeping and chain-of-custody,
- Well assessment prior to purging,
- Groundwater sampling procedures,
- Decontamination and waste management,
- Sample packing and shipping,

- Analytical procedures, and
- Quality assurance.

The purpose of the sampling protocol described herein is to provide the basis for sampling consistency and scientific credibility in obtaining the desired analyses. Groundwater sampling will be conducted in general accordance with applicable procedures established in the *RCRA Groundwater Monitoring: Technical Enforcement Guidance Document* (*TEGD*) (EPA 530-R-93-001, November 1992 and subsequent updates).

1.2 GROUNDWATER MONITOR WELL NETWORKS

Monitor well networks have been installed for all the CCR Units as required by 40 CFR §257.91. Even though the SRH Pond and the BAPs are in close proximity, two separate monitor well networks will be used to monitor the groundwater in the vicinity of these two Southern CCR Units. Due to the horizontal distance between the EP and FAL, two separate monitor well networks will be used to monitor groundwater in the vicinity of these two units. Each monitor well network includes a sufficient number of wells installed in the uppermost aquifer to represent the quality of background groundwater quality (upgradient of the CCR Units), and a sufficient number of wells downgradient of the CCR Units capable of yielding samples representative of constituents passing the waste boundaries.

The locations of monitor well networks are provided in **Figure 1**. Well function information is provided in **Table 1**.

In addition to groundwater monitor wells that comprise the monitor well networks, there are several wells at the Power Station that will be utilized as water level wells to assess groundwater elevations only.

1.3 SAMPLING FREQUENCY AND MONITORING PROGRAMS

Initial Monitoring Period (Prior to October 17, 2017)

Per the CCR Rule, for existing CCR landfills and surface impoundments, CPS Energy must provide analytical data from a minimum of eight independent samples from each background (upgradient) and downgradient well no later than October 17, 2017. Samples must be analyzed for the constituents listed in Appendix III *(Detection Monitoring Constituents*) and Appendix IV (*Assessment Monitoring Constituents*) of the CCR Rule. Detection Monitoring Constituents and Assessment Monitoring Constituents are identified in **Table 2** and **Table 3**, respectively.

Detection Monitoring

A Detection Monitoring Program must be implemented consistent with 40 CFR §257.94. After the initial monitoring period, at a minimum, the Detection Monitoring Program sampling events will be conducted on a semi-annual basis, for the constituents listed in **Table 2** (Detection Monitoring Constituents). This

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

Assessment Monitoring

After the initial monitoring period, Assessment Monitoring is required whenever a statistically significant increase over background constituent concentrations has been determined for one or more of the constituents listed in **Table 2** (Detection Monitoring Constituents). Sampling must be conducted within 90 days of triggering an Assessment Monitoring Program for the constituents listed in **Table 3 (**Assessment Monitoring Constituents). Within 90 days of receiving the results, and on a semiannual basis thereafter, all wells must be sampled for the constituents listed in **Table 2** and **Table 3**. Groundwater protection standards must also be established of all constituents detected.

Corrective Actions

If any constituent listed in **Table 3** is detected at a statistically significant concentration exceeding the groundwater protection standard defined in 40 CFR §257.95 (or immediately upon detection of a release from a CCR unit), an assessment of corrective action measures consistent with 40 CFR 257.96 must be undertaken.

1.4 STATISTICAL METHOD SELECTION

In accordance with 40 CFR §257.93(f), an appropriate statistical method must be selected to evaluate analytical results. Potential methods that could be selected to evaluate analytical results are as follows:

1. A parametric analysis of variance followed by multiple comparison procedures to identify statistically-significant evidence of contamination (this method must include estimation and testing of the contrasts between each compliance well's mean and the background mean levels for each constituent).
2. An analysis of variance based on ranks followed by multiple comparison procedures to identify statistically-significant evidence of contamination (this method must include estimation and testing of the contrasts between each compliance well's median and the background median levels for each constituent).
3. A tolerance or prediction interval (PI) procedure in which an interval for each constituent is established from the distribution of the background data and the level of each constituent in each compliance well is compared to the upper tolerance or upper prediction limit (UPL).
4. A control chart approach that gives control limits for each constituent.
5. Another statistical method that meets the performance standards of 40 CFR §257.93, paragraph (g).

For the evaluation of these CCR units, a PI approach will be used. This approach is consistent with all of the requirements in the CCR Rule and the USEPA Unified Guidance (2009). The PI approach is the most strongly recommended because it allows the analyst to establish an acceptable site-wide false positive rate and provides a retesting strategy to minimize false positive results.

A decision framework was developed to optimize the PI approach and to guide stakeholders through the analytical process and to ensure that all the performance criteria are met. The decision framework is provided as **Figure 2**. The primary components of the decision framework include 1) establishing the background (upgradient) dataset and calculating an UPL for the downgradient dataset.

1) Concentrations measured in background wells are used as a basis for comparison to support decisions related to whether the CCR unit is impacting groundwater. This background dataset will be established after reviewing the statistical assumptions for UPLs including:
    - Statistically independent measurements,
    - Spatial stationarity,
    - Verification of detection rate and data distribution for each data set,
    - Accounting for possible outliers, and
    - Temporal stationarity.
2) Background data are used to construct a concentration limit which is then compared to one or more observations from a compliance point (downgradient) population. The acceptable range of concentrations includes all values greater than the prediction limit. To meet performance criteria, UPLs will be constructed with 95% confidence, a 1-of-2 retesting scheme, and an annual site-wide false positive rate of 0.1.

In the final stage of the approach, the background UPL is compared to each downgradient well concentration. Each sampling event will provide downgradient well concentrations that will be compared to the calculated UPLs. If the most recent downgradient well concentration is below the UPL, the test is complete and no further samples need to be collected. If the most recent concentration exceeds the calculated UPL, then the following options may be executed to determine whether a statistically significant increase has occurred:

- Examination of outside factors influencing the concentrations, and
- Resampling and retesting.

Certification from a qualified professional engineer stating that the selected statistical method is appropriate for evaluating the groundwater monitoring data for the CCR units is provided in **Appendix A**.

2.0 PRE-FIELD ACTIVITIES

At the beginning of each groundwater monitoring event, the necessary field equipment will be obtained. An example equipment list is provided in **Appendix B**.

Sampling personnel (CPS Energy personnel and/or subcontractors) must comply with all safety and health guidelines for the Power Station.

The levels of personal protective equipment (PPE) to be used for work tasks will be selected based on known or anticipated physical hazards, as well as the types, concentrations and exposure routes of contaminants that may be encountered on site. Currently, it is anticipated that work will be initially conducted in Level D PPE. PPE levels will be upgraded or downgraded based on a change in site conditions. Hazards will be reassessed when a significant change in site conditions occurs.

3.0 RECORD KEEPING AND CHAIN-OF-CUSTODY

This section of the SAP provides information on field recording, field instrument calibration, and chain-of-custody procedures.

3.1 FIELD RECORDING

Documentation of activities associated with groundwater monitoring events will be recorded each day in a bound field logbook with hard cover, water resistant paper, and sequentially numbered pages. Documentation will be completed in waterproof, black or blue ink and written errors will be crossed out with a single line, initialed, and dated. The logbooks will remain on-site during use and then will be stored off-site. Entries in the logbook will be chronological and will include, where applicable and appropriate, such information as the following:

- Date and times,
- Locations of particular events,
- Instrument calibrations,
- Weather (temperature and wind direction) and significant changes in climatic conditions that may affect monitoring activities or results, and
- Other information/observations pertinent to the well inspection, well gauging, and sampling event.

Each page of the field logbook will be signed by the person(s) making entries in the logbook.

Three separate field report forms have been developed as an extension to the field logbook. These include the following:

- Monitor Well Inspection Record (**Form 1**),
- Monitor Well Gauging Record (**Form 2**), and
- Monitor Well Sampling Record (**Form 3**).

These forms (or equivalent) may be used for recording water level data, well purging volumes, and sampling data. The field report forms or logbook may include, but not be limited to the following:

- Names of members of the gauging or sampling team,
- Date and time,
- Specific activity being performed,
- Well identification,
- Sample identification number,
- Sample volume,
- Sampling method,

- Preservative type,
- Analyses to be performed, and
- Measured field water quality parameters and readings (when applicable).

3.2 FIELD INSTRUMENT CALIBRATION

The following meters/probes will be used to analyze groundwater samples in the field:

- Temperature and pH,
- Specific conductance (SC),
- Oxidation-reduction potential (ORP),
- Dissolved oxygen (DO), and
- Turbidity.

The quality of data generated by these measurements will be verified through qualitative means, such as regular calibrations, compliance with operating instructions, and decontamination between uses. A calibration procedure establishes the relationship between a known calibration standard and the accuracy of a measurement made by an instrument according to that standard. Calibration indicates absolute physical or electronic calibration and is not to be confused with chemical standardization.

The calibration for field monitoring equipment will be checked in accordance with manufacturer's specifications, but at least daily. Instrument calibration may be checked prior to entering the site or in the field prior to use. The time, date, and location of instrument calibration and verification will be recorded in the field logbook. If an instrument is out of calibration, then the calibration will be performed as needed.

3.3 CHAIN-OF-CUSTODY

Possession of samples will be traceable from the time of sample collection through check-in at the laboratory. Documentation begins immediately following sample collection and proper labeling and is accomplished using a standard chain-of-custody form. This document traces possession of each sample from the time of collection through time of analysis. For the purpose of these procedures, a sample is considered in custody if it is:

- In sampler's physical possession;
- In view, after being in physical possession;
- Locked to prevent tampering, after having been in physical possession; or
- In a secured area, restricted to authorized personnel.

The chain-of-custody form contains the following information:

- Project number, site name, and company address;
- Number of samples;
- Preservatives used for sample collection;
- Sample description (*e.g.*, water, etc.);
- Sample ID number;
- Date and time of sample collection;
- Number of containers for the sample;
- Name of sampler responsible for sample transmittal;
- Signatures of all persons involved in the chain-of-custody;
- Type of analysis requested;
- Requested turnaround time and level of quality control documentation; and
- Pertinent comments about sample or sample conditions.

This information is entered onto the chain-of-custody form. Upon receipt of samples, the analytical laboratory will initiate its own chain-of-custody procedures.

The sampler shall be responsible for properly packaging and dispatching samples to the analytical laboratory (see Section 6.0). When transferring samples, the sampler shall sign and record the date and time on the first *Relinquished By* line on the chain-of-custody form. The person to whom custody is being transferred shall sign on the first *Accepted By* line of the chain-of-custody form, indicating that custody is being accepted by that person for all the samples listed on the sheet. When samples are shipped via courier, the chain-of-custody form is attached to the inside of the shipping container and the shipping container is sealed using tape. For subsequent transfers of custody, the succeeding *Relinquish* and *Receipt* lines are used. To reduce custody records, the number of custodians in the chain-of-custody is minimized.

The following record keeping items will supplement the chain-of-custody form:

- Field Logbook,
- Monitor Well Sampling Record, and
- Sample Receipt Checklist (typically provided by the laboratory).

4.0 WELL ASSESSMENT PRIOR TO PURGING

This section of the SAP provides information about inspecting monitor wells, gauging fluid levels, and weather conditions. To reduce potential cross-contamination during fluid level measurements, one of the following two options are recommended:

1. Activities begin at the upgradient wells and then proceed to downgradient wells, with water that is *potentially affected*; or
2. Each well sampling team carries dedicated well gauging equipment (one set for *potentially affected* wells and one set for non-affected wells). The determination as to which equipment is used at a particular well should be based on historical data.

As required, PPE will be worn at all times during the performance of the described procedures.

4.1 MONITOR WELL INSPECTION

The sampling team shall perform a visual inspection of each monitor well and record the results in the field logbook or on a Monitor Well Inspection Record (**Form 1**). The inspection of each well will include the following:

- Inspecting the casing and cap for cracks, signs of deterioration, or tampering;
- Verifying the identification information on the well is correct and clearly visible;
- Determining whether the cap and monitor well are secure (via locks, bolted vault covers, in addition to general facility security);
- Inspecting the well pad for cracks, signs of deterioration, erosion, settling, and/or animal and insect burrowing; and
- Where appropriate, inspecting any dedicated equipment for signs of cleanliness, structural integrity, and deterioration.

4.2 WATER LEVEL AND TOTAL DEPTH INFORMATION

The depth to groundwater (DTW) and total depth (TD) in each well will be measured at the beginning of each sampling event before undertaking any purging or sampling activities and will be recorded in the field log book or on a Monitor Well Gauging Record (**Form 2**). The distance from the designated measuring point at the top-of-casing (TOC) to the water surface will be measured to the nearest 0.01-foot with an electric water level indicator. The designated measuring point is typically a notched "V" cut or black square on the PVC casing. In the event that a measuring point has not been designated, measurements including DTW and TD will be taken from the TOC on the true north side of the well.

Total well depth will be measured by allowing the probe to drop to the bottom of the well and determining the depth where the tape becomes slack. The reading will be recorded to the nearest 0.01-foot. These measurements will be compared with previous measurements and the original well depth to determine if sediment has accumulated within the screened interval, (*i.e.*, "silted in"). Wells which have sediment in the screened interval will be redeveloped.

See Section 9.0 for equipment decontamination procedures, investigation-derived waste (IDW) management, and IDW sampling.

4.3 WEATHER CONDITIONS

Weather conditions at the time of gauging/sampling activities (*e.g.*, precipitation, temperature, wind speed and direction) will be recorded in the field logbook or the Monitor Well Sampling Record (**Form 3**).

5.0 GROUNDWATER SAMPLING PROCEDURES

This section of the SAP provides information about purging and sampling groundwater collected from monitor wells. During the last 10 years, the method of micropurging (*i.e.*, low-flow/minimal drawdown sampling) has gained favored status and acceptability in the regulated community. As a result, micropurging will be the preferred method of sampling for all the monitor wells at the Power Station.

For purging and sampling of groundwater it is recommended that activities begin at the upgradient wells and then proceed to downgradient wells, with water that are *potentially affected*. As required, PPE will be worn at all times during the performance of the described procedures.

5.1 MICROPURGING OF WELLS

To establish a common point of reference, low-flow refers to the flow rate at which water enters the pump intake and is the rate that is imparted to the formation pore water in the immediate vicinity of the well screen. The pump intake should be set:

1. Just above the mid-point of the screened interval if the transmissive zone is thicker than the screened section; or
2. Mid-point of the transmissive interval when the screened section is greater than the thickness of transmissive zone.

Water level drawdown provides the best indication of the stress (drawdown) imparted by a given flow rate for a given hydrogeological situation. Flow rates during low-flow purging will be used to regulate drawdown to less than 0.1 meter (0.3 feet). While these flow rates will typically range between 0.1 to 0.5 liter/minute (L/min), the flow rate for an individual well may vary due to site-specific hydrogeology. For example, sand channel lenses may support flow rates of up to 1 L/min without causing drawdown greater than 0.3 feet. Alternatively, wells that screen clayey, silty layers may not produce groundwater at 0.1 L/min without having drawdown greater than 0.3 feet.

For monitor wells with low water productivity that have drawdown greater than 0.3 feet, there are two possible situations:

- Drawdown is greater than 0.3 feet, but stabilizes at a level above the pump intake; or
- Drawdown continues to occur even at the slowest possible pumping rate (*e.g.*, using a peristaltic pump).

For these situations, the following purging and sampling procedures will be followed and documented on the sampling record.

- If drawdown is greater than 0.3 feet, but stabilizes at a level above the pump intake; record water levels in well and continue to monitor water quality

indicator parameters until they stabilize. Collect groundwater sample upon stabilization of water quality indicator parameters.

- If drawdown is greater than 0.3 feet and continues to drop, then pump the well until the water level reaches the bottom of the screened interval. Stop pumping and allow recovery to a minimum of 80% of the original water level before collecting a groundwater sample using the same low flow rate. If the water level drops to the bottom of the screened section before all sample bottles have been filled, allow the well to recovery to a minimum of 80% of the original water level before continuing to fill the remaining sample bottles. If possible, the well should be sampled no more than 24 hours after the completion of purging, regardless of the recovery.

Groundwater samples will be collected from the monitor wells using the following low-flow (micropurge) procedures.

- Wells with DTW measurements less than 29 feet below TOC will be purged and sampled using a non-submersible peristaltic pump. Wells requiring a peristaltic pump for sample collection are listed in **Table 1.** Insert clean disposable polyethylene tubing into the well casing with the intake placed at the appropriate depth discussed above**.** Remember to include enough slack in tubing to allow for drawdown of the water level to the bottom of screen. Silicon tubing will be connected to the polyethylene tubing and threaded through the pumping apparatus on the peristaltic pump.
- Wells with DTW measurements greater than 29 feet below TOC will be purged and sampled using a submersible pump. Wells requiring a submersible pump for sample collection are listed in **Table 1.** The submersible pump should be fitted with clean disposable polyethylene tubing and the tubing inserted into the well with the intake placed at the appropriate depth discussed above.
- If dedicated polyethylene and silicon tubing were utilized and left in the monitor well from a previous groundwater sampling event, skip the first two bullets above. Before sampling, check tubing for any damage and replace as necessary using the above mentioned methodology.
- The selected pump will be used to purge groundwater at a low-flow rate, generally less than approximately 0.5 L/min (100-500 milliliter/min).
- The well should be pumped at a sustainable flow rate to allow the lowest drawdown of water level (see above) until water quality parameters stabilize or the water level drops below the bottom of the screened interval.
- Groundwater quality indicator parameters will be monitored during low-flow purging to determine stabilization. **Table 4** summaries the water quality indicator parameters to be monitored and their stability criteria.

Measurements of water quality indicator parameters will be recorded every 3 to 5 minutes until stabilization is achieved. These measurements, along with flow rate and depth to water, will be recorded be recorded in the field log book or on a Monitor Well Sampling Record (**Form 3**). Stabilization is achieved when at

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 sampling containers in a manner that reduces the amount of exposure to the ambient environment. The sequence of sample collection will be as follows:

- Metals,
- Water Chemistry (cations, anions, TDS, pH, etc.), and
- Radioactive elements (if required).

All samples will be collected in clean, laboratory-supplied sample containers with the appropriate preservative for the analytical method.

Metals analysis will measure total recoverable metals, which captures both particulate and dissolved fractions. Groundwater samples **will not** be field-filtered prior to analysis. Samples will be collected and analyzed for constituents identified in a given groundwater monitoring program's list of analytes. Analytical parameter classes, container size and type, preservatives, and holding times (before which the analysis must be performed) are listed in **Table 5**. Any required preservatives will be added to the bottles by the laboratory prior to delivery to the sampling personnel.

A sample label will be affixed to each sample container. Complete the label on each sample container with the typical information:

- Project name,
- Sample identification (well ID),
- Date and time of collection,
- Sample type, requested analysis,
- Type of preservative (if any), and
- Sampler's initials.

Sampler shall record the sample ID, sampling procedure, date, and time of sample collection on the Monitor Well Sampling Record (**Form 3**) or field log book. Sampler shall record the sample ID (well ID), time and date of collection, sample media, and specified analyses to be conducted by the laboratory, if not already provided, on the chain-of-custody record. See Section 3.3 for details on sample custody information.

Sampler shall check that the sample container caps are tight; then place the filled sample containers into a sample cooler containing bagged ice in a manner to prevent breakage. The cooler will be packed with sufficient ice to maintain the proper preservation temperature. See Section 6.0 for details on sample packing and shipment.

After sampling is completed at a particular well, the tubing will be removed from the well and placed in an appropriate disposal container (See Section 9.0). The well will be secured before proceeding to the next well.

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

5.3 QUALITY CONTROL SAMPLING

Quality control (QC) and quality assurance (QA) samples will be collected and analyzed along with monitor well samples to assess the variability introduced in sampling, handling, shipping, and analysis. The analytical program for the QC samples will follow the analytical program for the associated investigative samples. The following sample types will be collected.

- **Blind Duplicate** - One duplicate sample will be collected at each CCR Unit for each sampling event; a total of three blind duplicates will be collected per event. The blind duplicate will be analyzed for identical parameters as the monitor well samples. The duplicate sample(s) will be collected from randomly selected wells; and will be labeled with an appropriate identification number other than the well number. The sample bottles for regular and duplicate analysis will be filled in alternate succession for each required analysis (e.g. fill the metals sample container, then the metals duplicate container). The identification number will be recorded in the field log book, or in a separate Monitor Well Sampling Record.
- **Matrix Spike/Matrix Spike Duplicates (MS/MSDs) –** One MS/MSD will be collected during each sampling event to test the potential effects of matrix interference on the laboratory results. To reduce the possible adverse impact to the laboratory equipment, wells selected for the MS/MSD samples will be those that historically have shown low or non-detect constituent concentrations (to the extent practical). The sample is collected as a triplicate (the original sample plus two additional sets). The matrix spike sample will be labeled with the well number followed by an "MS". Similarly, the matrix spike duplicate will be labeled with the well number followed by "MSD".
- **Field Blank** - One field blank sample will be collected at each CCR unit for each sampling event; a total of three field blanks will be collected per event. Field blank samples provide information about potential contamination of the samples during exposure to ambient conditions at the site during sample collection. Field blanks will be prepared at a specified well site by pouring commercially-available distilled water into sample bottles and vials in the

same quantities as the groundwater samples. The samples should be labeled appropriately and stored in the same manner as the groundwater samples.

- **Equipment Blank –** An equipment blank sample will be collected during the groundwater sampling event only if non-dedicated sampling equipment is used. After the non-dedicated equipment has been cleaned and rinsed (see Section 9.0 for decontamination procedures), distilled water will be passed over (*e.g.*, poured over) the decontaminated equipment and the water will be collected in appropriate sample containers. The equipment blanks will be analyzed for the same suite of parameters as the monitor well samples. Equipment blanks will not be collected if dedicated equipment is used for sample collection.

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 with a paper towel) and repacked in the cooler. Sample containers will not be opened after they have been sealed. The containers will be placed inside a sealed plastic Ziploc-style bag and will then be placed in coolers containing sufficient ice (or packs of frozen gel) to maintain a sample temperature of approximately 4° C. Sample coolers should be lined with a new, large plastic trash bag to reduce the potential of melt water leaks. Care must be taken to avoid leakage of water from melted ice because overnight delivery service (*e.g.*, FedEx) will not accept leaking coolers.

The sampler will be responsible for properly packaging and dispatching samples to the analytical laboratory. This responsibility includes using the proper shipping container, shipping labels, shipping papers, and filling out, dating, and signing the appropriate portion of the chain-of-custody form. Samples will be packed with cushioning material sufficient to reduce the potential for breakage of glass sample containers during transport. The chain-of-custody form will be placed inside a sealed plastic Ziploc-style bag and the bag placed inside the cooler on top of the cushioning material.

If a laboratory with a local or nearby field-service center is contracted to perform analytical services, samples and coolers will be transported directly to the laboratory service-center or to a secure drop-off location by field personnel on the same day as sampling. The insulated coolers containing groundwater samples will be delivered to or picked-up by the laboratory and signed over to the laboratory personnel in accordance with chain of custody procedures for storage and analysis.

If a distant laboratory is contracted to perform analytical services, then samples and coolers will be shipped via overnight delivery service (*e.g.*, FedEx). Shipments will be accompanied by the chain-of-custody form and it will be sealed in an airtight, resealable plastic bag inside the cooler. The cooler will be taped shut with clear packaging tape and a tamper-evident custody seal will be attached across the lid. This seal will only be broken by the recipient at the laboratory.

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 *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA SW 846), ASTM Standard Test Methods*, or other EPA-approved methods. Detection limits will be those recommended for the procedure and analytical instrument specified.

8.0 QUALITY ASSURANCE

This section briefly summarizes the quality assurance measures during field and laboratory activities associated with groundwater monitoring.

8.1 FIELD QUALITY ASSURANCE

Sample collection will be conducted according to the procedures outlined in Section 5.2. These procedures are designed to minimize potential sources of contamination and include the following key elements:

- Using dedicated or disposable tubing for each well to reduce the potential for cross-contamination between wells.
- Completing purging using low-flow (micropurge) sampling techniques. If the screened water-bearing unit has low hydraulic conductivity that results in drawdown greater than the guidelines for low-flow sampling, the well should be allowed to recover to at least 80 percent of the static water level prior to sampling.
- Using duplicates, matrix spikes, matrix spike duplicates, field blanks, and equipment blank samples to assess potential cross-contamination during sample collection, transport, and analysis as well as providing a check on the data quality from the laboratory (see Section 5.3).
- Handling samples, preservatives, and sample containers carefully to minimize exposure time and potential for evaporative loss and/or airborne contamination.
- Using containerized ice whenever possible to maintain 4°C sample temperatures during transit and cushioning materials to minimize breakage.

8.2 LABORATORY QUALITY ASSURANCE

The laboratory documentation system will comply with the requirements of the USEPA analytical protocols, as appropriate. The laboratory will perform internal QC checks for the analytical method. Depending on the analytical method, the QC checks may include analyzing sample spikes, surrogate spikes, reference samples, laboratory control samples, storage blanks, and/or method blanks.

The laboratory will document internally that instrument and analytical QC criteria have been met. The data package will contain all of the information required to evaluate compliance with the analytical methods' required and recommended QC checks, instrument tuning, calibration, and sample analysis. If errors or deficiencies are identified in an analytical system, corrective actions are implemented to return the system to normal operation.

8.3 DATA REVIEW AND EVALUATION

A data validation will be performed to assess whether the dataset meet the project requirements in terms of following the appropriate analytical methods, sample locations, and sampling procedures. All sample collection procedures and laboratory reports will be reviewed to verify that the field and laboratory QA/QC requirements have been met.

The final reportable data, laboratory checklist, associated exception report(s), laboratory quality control data, and chain-of-custody will be reviewed in accordance with applicable EPA guidance, including, but not limited to the *National Functional Guidelines for Inorganic Superfund Data Review* (EPA 540-R-013-001), August 2014. Data precision and accuracy will be assessed based on control limits of 70-130% for laboratory control samples (except for antimony which will be assessed based on control limits of 50-150%) and 75-125% for spike sample analysis. A control limit of 20% for the relative percent difference (RPD) shall be used for original and duplicate sample values.

9.0 DECONTAMINATION AND WASTE MANAGEMENT

This section of the SAP provides information about equipment cleaning procedures and management of IDW during monitoring events.

9.1 EQUIPMENT DECONTAMINATION PROCEDURES

The decontamination of sampling equipment is necessary to reduce the potential for the spread of constituents to clean areas, to reduce exposure of personnel to constituents of concern, and to reduce the potential cross-contamination when equipment is used more than once.

The water level tape and probe which have contact with groundwater in the well will be wiped clean with a disposable material (*e.g.*, paper towel), washed with solution of non-phosphate detergent (Liquinox® or equivalent) and distilled water, rinsed with distilled water, and wiped dry with a disposable material after use at each well.

To reduce the potential for cross-contamination between monitor wells during purging and sampling, well-dedicated or disposable equipment will be used to the extent practical. If non-dedicated pumps, discharge, and safety lines are used at a well, such equipment will be washed with non-phosphate detergent and distilled water solution, then rinsed with distilled water.

9.2 MANAGEMENT OF INVESTIGATION-DERIVED WASTE

Common IDW from the groundwater sampling events are purge water, decontamination water, and trash (i.e., non-reusable plastic tubing, nitrile gloves, paper towels, etc.).

Well purge water will be managed by CPS Energy. The purge water and decontamination water will be containerized in 55-gallon DOT-approved drums for management and disposal by CPS Energy personnel in accordance with CPS Energy procedures. Purge water from each well should be temporarily containerized at the wellhead in 5-gallon plastic buckets. Upon completion of sampling at each well, water from the 5-gallon bucket(s) should be transferred to a temporary DOT-approved 55-gallon drum(s). Drums should be labeled and secured by CPS Energy personnel.

Disposable equipment and supplies (i.e., domestic trash) will be placed in heavy-duty plastic bags and the full bags placed in Power Station-designated receptacles. If it becomes necessary to place affected materials in a 55-gallon DOT-approved drum(s), then the drums will be labeled and secured. Further management of the drums and containerized waste will be handled by CPS Energy.

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 to properly characterize and profile the liquid waste for proper disposal.

The IDW sample will be collected directly from the drum(s) using a disposable plastic bailer or similar disposable container (e.g., un-preserved laboratory container), and immediately placed in a clean, laboratory-supplied sample container with the appropriate preservative for the selected analytical method. If multiple drums are needed to containerize the liquid IDW, a representative amount of water should be collected from each drum, and placed into the laboratory-provided sampling container.

The IDW sample will be analyzed for the specified metals listed 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 7**. Sample analyses will be performed in accordance with the procedures previously discussed in Section 7.0.

Samples will be labeled, handled, and packaged in accordance with the procedures described previously in Section 5.2. Sampler shall record the sample ID, sampling procedure, date, and time of sample collection in the fieldbook. Sample custody information will be recorded in accordance with the procedures described previously in Section 3.3.

Forms

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

FORM 1

MONITOR WELL GAUGING RECORD

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

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

GAUGING RECORD	
Measuring Point:	Top of Casing
Instrument ID:	

CCR Units	Well ID	DTW (Ft.)	TD (Ft.)	Notes
Fly Ash Landfill	JKS-31			
	JKS-33			
	JKS-45			
	JKS-46			
	JKS-57			
	JKS-58			
	JKS-59			
	JKS-60			
Evaporation Pond	JKS-36			
	JKS-47			
	JKS-61			
	JKS-62			
	JKS-63R			
	JKS-64			
SRH Ponds / Bottom Ash Ponds	JKS-48			
	JKS-49			
	JKS-50R			
	JKS-51			
	JKS-52			
	JKS-53			
	JKS-54			
	JKS-55			
	JKS-56			

FORM 2

MONITOR WELL INSPECTION RECORD

Groundwwater Sampling and Analysis Plan
CPS Energy – Calaveras Power Station
San Antonio, Texas

Client: CPS Energy - Calaveras Power Station	**Well ID:**
Site Location: San Antonio, Texas	
Unit (circle one): Fly Ash Landfill Evaporation Pond SRH Pond/Bottom Ash Ponds Future PDPs Future EPs Closed Landfills	
Date/Time:	**Stick-Up** ☐ **Flush-Mount** ☐
Is the well site clear of weeds and debris? *Comments*:	Yes No
Has the grass been mowed? *Comments:*	Yes No
Are there bollards or protective barriers around the well? *Comments:*	Yes No
Is the well identification clearly visible and in good condition? *Comments:*	Yes No
Is the outer casing (or vault) in good condition? *Comments:*	Yes No
Is the outer casing (or vault) equipped with a protective cap? *Comments:*	Yes No
Does the well have a concrete surface pad? *Comments:*	Yes No
If yes, what is the condition of the pad? *Comments:*	Good Cracked Broken
What is the condition of the inner casing? *Comments:*	Good Cracked Broken
Does the inner casing have a cap? *Comments:*	Yes No
Is the well locked? *Comments:*	Yes No
If yes, what is the condition of the lock? *Comments:*	Good Poor
Is the annulus between the inner and outer casing free of standing water? *Comments:*	Yes No
Is the survey measuring point marked on the TOC? *Comments:*	Yes No
Expected Depth of Well:	**Measured Depth of Well:**
General Observations:	

Name of Sampler:_____ **Signature:**_____

Company:_____ **Date:**_____

FORM 3

MONITOR WELL SAMPLING RECORD

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

PROJECT INFORMATION			
Unit (circle one):	Fly Ash Landfill	Evaporation Pond	SRH Pond/Bottom Ash Ponds
	Future PDPs	Future EPs	Closed Landfills

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

INITIAL MEASUREMENTS			
Measuring Point:	Top of Casing	**Water Column Ht. (H1 = D2-D1):**	
Measuring Point Elevation:		**Max. Drawdown (D1 + 0.33 ft.):**	
Depth to Water (D1):		**DTW at 80% Rec. (D2 - (0.80*H1)):**	
Total Well Depth (D2):		**Tubing Intake Depth:**	

PURGING RECORD

Purge Method: **Instrument ID:**

Time (Hr:Min)	**Pump Rate** (mL/min)	**DTW** (ft. btoc)	**Temp.** (°C)	**pH** (Std Units)	**ORP** (mV)	**SC** (mS/cm2)	**DO** (mg/L)	**Turbidity** (NTU)
Stabilization Criteria:		± 0.3 Ft.	--	± 0.1 Units	± 10 mV	± 3%	± 10%	± 10%

Total groundwater purged (gallons):

SAMPLING RECORD

Analysis Requested	**Container/Preservative**

Sample Date/Time:

Sampling Remarks:

Tables

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

TABLE 1

WELL INFORMATION SUMMARY

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

CCR Unit	Well ID	Top of Casing Elevation (feet msl)	Well Diameter (inches)	Approximate Screen Interval (feet btoc)	Required Pump for Sample Collection
Fly Ash Landfill	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
Evaporation Pond	JKS-36	508.41	2.0	41.5 - 51.5	Peristaltic
	JKS-47	513.63	2.0	28.4 - 43.4	Submersible
	JKS-61	505.51	2.0	21 - 36	Peristaltic
	JKS-62	509.84	2.0	23.1 - 33.1	Peristaltic
	JKS-63R	522.27	2.0	38.1 - 53.1	Submersible
	JKS-64	507.84	2.0	18.5 - 33.5	Peristaltic
SRH Pond	JKS-51	496.92	2.0	9.9 - 24.9	Peristaltic
	JKS-52	493.15	2.0	18.6 - 28.6	Peristaltic
	JKS-53	494.74	2.0	18.4 - 28.4	Peristaltic
	JKS-54	496.40	2.0	15.7 - 25.7	Peristaltic
Bottom Ash Ponds	JKS-48	497.19	2.0	22 - 32	Peristaltic
	JKS-49	498.63	2.0	10.5 - 20.5	Peristaltic
	JKS-50R	498.48	2.0	13 - 23	Peristaltic
	JKS-52	493.15	2.0	18.6 - 28.6	Peristaltic
	JKS-55	493.81	2.0	18.7 - 28.7	Peristaltic
	JKS-56	496.66	2.0	13.6 - 28.6	Peristaltic

NOTES:

msl: mean sea level
btoc: below top of casing

TABLE 2

CONSTITUENTS FOR DETECTION MONITORING

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

Constituents for Detection Monitoring
Boron
Calcium
Chloride
Fluoride
Sulfate
pH
Total Dissolved Solids (TDS)

NOTE:

From Appendix III to 40 CFR Part 257 - Constituents for Detection Monitoring

TABLE 3

CONSTITUENTS FOR ASSESSMENT MONITORING

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

Constituents for Assessment Monitoring
Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Fluoride
Lead
Lithium
Mercury
Molybdenum
Selenium
Thallium
Radium 226 & 228 (Combined)

NOTE:

From Appendix IV to 40 CFR Part 257 - Constituents for Detection Monitoring

TABLE 4

WATER QUALITY INDICATOR PARAMETERS

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

Water Quality Indicator Parameters	Stabilization Ranges (Three successive readings)
Temperature	Not used for stabilization
pH	± 0.1 standard units
Specific Conductivity	± 3%
Dissolved Oxygen	± 10%
Oxidation Reduction Potential	± 10 millivolts
Turbidity	± 10 %

TABLE 5

SUMMARY OF GROUNDWATER SAMPLE CONSTITUENT GROUPS AND ANALYTICAL INFORMATION

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

Laboratory Parameters	Lab Method	Parameter Group	Practical Quantitation Limit (PQL) mg/L	Container Size and Type	Preservative	Holding Time
Metals						
Antimony	SW-846 Method 6010B	Assessment Monitoring	0.01	1 - 500-mL HDPE (high density polyethylene)	HNO3 to pH<2; <6ºC	180 Days (a)
Arsenic	SW-846 Method 6010B	Assessment Monitoring	0.01			
Barium	SW-846 Method 6010B	Assessment Monitoring	0.01			
Beryllium	SW-846 Method 6010B	Assessment Monitoring	0.004			
Boron	SW-846 Method 6010B	Detection Monitoring	0.05			
Cadmium	SW-846 Method 6010B	Assessment Monitoring	0.005			
Calcium	SW-846 Method 6010B	Detection Monitoring	0.2			
Chromium	SW-846 Method 6010B	Assessment Monitoring	0.01			
Cobalt	SW-846 Method 6010B	Assessment Monitoring	0.01			
Lead	SW-846 Method 6010B	Assessment Monitoring	0.01			
Lithium	SW-846 Method 6010B	Assessment Monitoring	0.02			
Mercury	SW-846 Method 7470A	Assessment Monitoring	0.0002			
Molybdenum	SW-846 Method 6010B	Assessment Monitoring	0.01			
Selenium	SW-846 Method 6010B	Assessment Monitoring	0.02			
Thallium	SW-846 Method 6010B	Assessment Monitoring	0.02			
Radiochemistry						
Radium 226 & 228 (Combined)	EPA Method 903.0/904.0	Assessment Monitoring	Radium-226 by EPA 903.0 or 903.1: 1 pCi/L Radium-228 by EPA 904.0: 1 pCi/L	1 - Gallon Plastic	HNO3 to pH<2; <6ºC	180 Days
Anions						
Chloride	EPA Method 300.0	Detection Monitoring	0.5	1 - 250-mL HDPE	<6ºC	28 Days
Fluoride	EPA Method 300.0	Assessment/Detection Monitoring	0.5			
Sulfate	EPA Method 300.0	Detection Monitoring	0.5			
Other						
Total Dissolved Solids (TDS)	SM2540C	Detection Monitoring	5	1 - 1-L HDPE	<6ºC	7 Days
Field Parameters						
pH	Multiparameter probe	Detection Monitoring	(b)	(b)	(b)	(b)
Temperature	Multiparameter probe	(b)	(b)			
Oxidation-Reduction Potential	Multiparameter probe	(b)	(b)			
Dissolved Oxygen	Multiparameter probe	(b)	(b)			
Turbidity	Multiparameter probe	(b)	(b)			
Specific Conductance	Multiparameter probe	(b)	(b)			

NOTES:

(a) 180 days for all metals except mercury which is 28 days.
(b) Standard field measurement collected during sampling (no Parameter Group and no PQLs).
Actual PQLs reported by the laboratory may vary due to the nature of individual samples.
Methods may be updated or substituted by an appropriate EPA or TCEQ-approved method with comparable detection limits that meet action levels.

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

TABLE 7

SUMMARY OF IDW SAMPLE CONSTITUENT GROUPS AND ANALYTICAL INFORMATION

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

Laboratory Parameters	Lab Method	Parameter Group	Practical Quantitation Limit (PQL) mg/L	Container Size and Type	Preservative	Holding Time
Metals						
Antimony	SW-846 Method 6010B	Assessment Monitoring	0.01	1 - 500-mL HDPE (high density polyethylene)	HNO3 to pH<2; <6ºC	180 Days (a)
Arsenic	SW-846 Method 6010B	Assessment Monitoring	0.01			
Barium	SW-846 Method 6010B	Assessment Monitoring	0.01			
Beryllium	SW-846 Method 6010B	Assessment Monitoring	0.004			
Cadmium	SW-846 Method 6010B	Assessment Monitoring	0.005			
Chromium	SW-846 Method 6010B	Assessment Monitoring	0.01			
Lead	SW-846 Method 6010B	Assessment Monitoring	0.01			
Mercury	SW-846 Method 7470A	Assessment Monitoring	0.0002			
Nickel	SW-846 Method 6010B	Assessment Monitoring	0.002			
Selenium	SW-846 Method 6010B	Assessment Monitoring	0.02			
Silver	SW-846 Method 6010B	Assessment Monitoring	0.002			

NOTES:

(a) 180 days for all metals except mercury which is 28 days.
Actual PQLs reported by the laboratory may vary due to the nature of individual samples.
Methods may be updated or substituted by an appropriate EPA or TCEQ-approved method with comparable detection limits that meet action levels.

Figures

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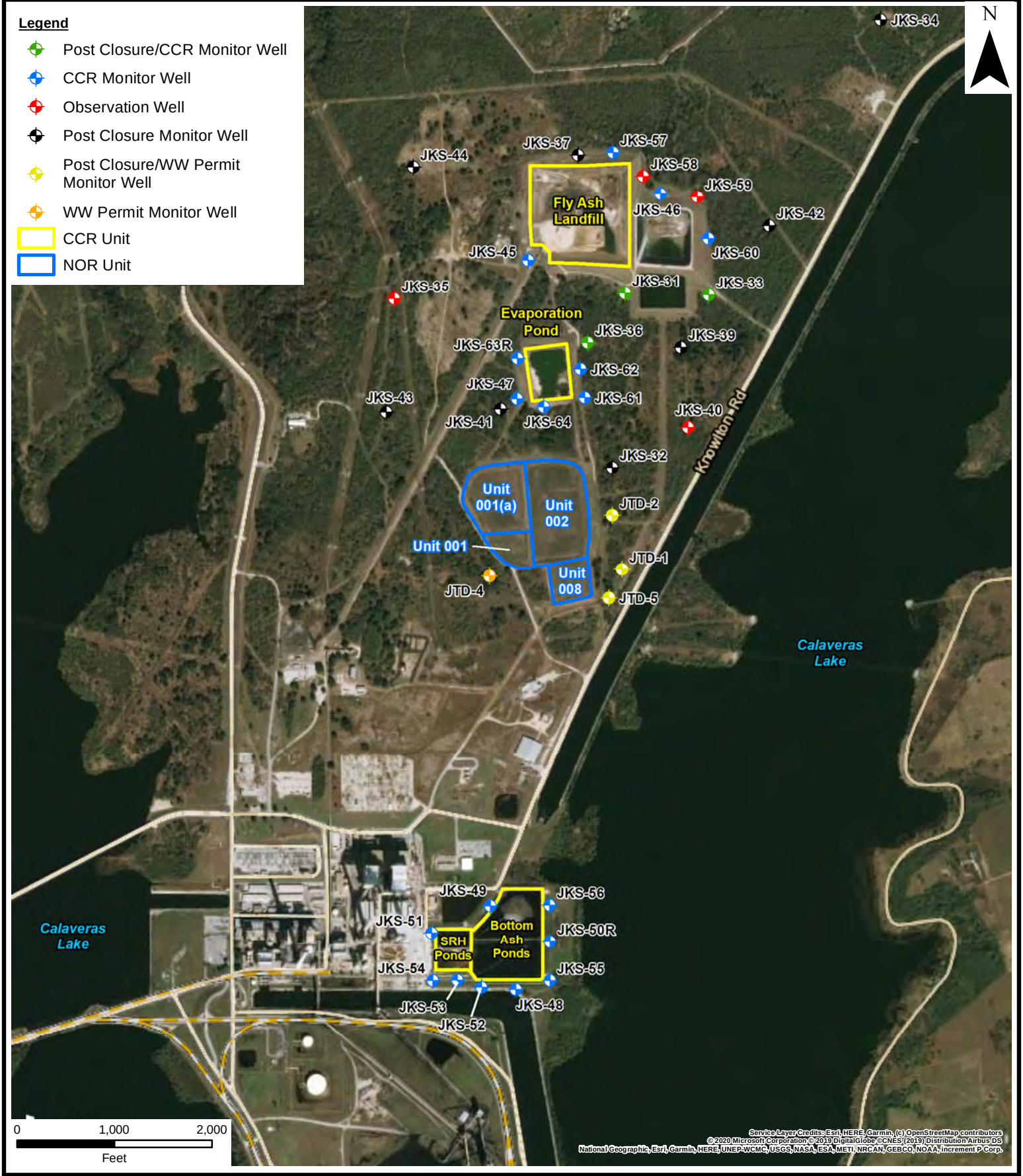


Environmental Resources Management

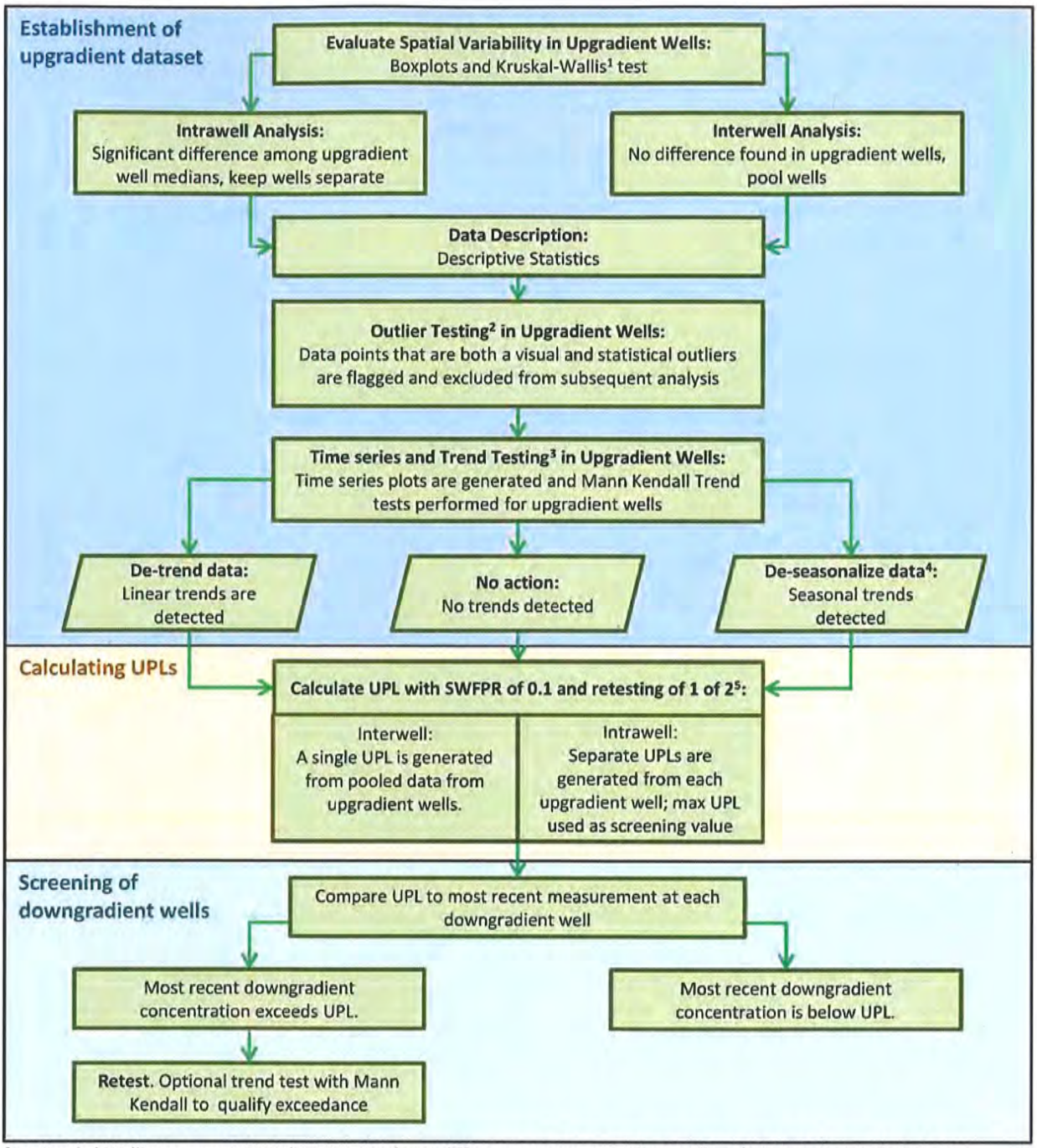
DESIGN:	NH	DRAWN:	EFC	CHKD.:	WZ
DATE:	1/28/2020	SCALE:	AS SHOWN	REVISION:	0

\\ushoufs01\Data\Houston\Projects\0503422 CPS Energy Calaveras 2019 CCR Tasks.WZ\GIS_CAD\MXD\WorkingFigures\fig1_0503422_CPSCalv_MonWellLocMap.mxd

FIGURE 1
MONITOR WELL LOCATION MAP

CPS Energy - Calaveras Power Station
San Antonio, Texas

ERM



[1]For Kruskal-Wallis test, a $p<0.05$ indicates a significant difference among upgradient wells. A $p \geq 0.05$ indicates there is no difference. Boxplots provide a visual for the comparison.

[2]Test each upgradient dataset for outliers using Dixon's test if number of data points (N) is < 25 and Rosner's test if $N \geq 25$. Data points with outlier test results with $p < 0.05$, as well as visual outliers (using QQ plots) are excluded from subsequent analysis.

[3]For linear trend testing using Mann Kendall test, $p<0.05$ indicates a significant trend while $p>=0.05$ indicates no trend. Testing for seasonality requires at least three years of data and a seasonal Mann Kendall test.

[4]A minimum of five years of data are needed to perform season al trend tests

[5]UPL calculated with a 1 of 2 retesting scheme, site wide annual false positive rate of 0.1 and event site-wide false positive rate of 0.05. Calculate UPL using Sanitas with recommended SAP procedure (handling of <8 detected values, no detected values, bootstrapping, etc.)

Environmental Resources Management

DESIGN:	DRAWN: MH	CHKD.:
DATE: 9/26/2017	SCALE: AS SHOWN	REV.:

FIGURE 2
DECISION FRAMEWORK

CPS Energy - Calaveras Power Station
San Antonio, Texas

ERM

Statistical Method Certification

Appendix A

Environmental Resources Management
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STATISTICAL METHOD CERTIFICATION
40 CFR §257.93(f)(6)
Calaveras Power Station
San Antonio, Texas
CPS Energy

CERTIFICATION

I hereby certify that the selected statistical method identified in this document is appropriate for evaluating groundwater monitoring data for the CCR units in accordance with the requirements of 40 CFR §257.93.

10/16/17

Jeffery L. Bauguss, P.E.

Texas Licensed Professional Engineer No. 86195

Groundwater Sampling Field Equipment List

Appendix B

Environmental Resources Management
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(512) 459-4700

APPENDIX B
GROUNDWATER SAMPLING FIELD EQUIPMENT LIST

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

Groundwater Sampling Equipment to be Rented from FARRWEST (or Other Preferred Vendor)

Quantity	Item	Equipment Models (Options)
2	Peristaltic pump (variable speed, DC) - with modular battery & battery connection clips	1. GeoTech GeoPump II
1	Stainless steel submersible pump – capable of reaching depths of ~60 ft. *(For wells w/ groundwater elevation approx. >29 ft. btoc, such as wells)*	1. Proactive SS Monsoon Sumbersible Pump *(request restrictor valve from FARRWEST)*
1	Low flow controller (use with submersible pump). *(For wells w/ groundwater elevation approx. >29 ft. btoc)*	1. Proactive Low Flow Power Booster 2 LCD Controller
1	**Bladder pump (0.75") - capable of reaching depths of ~70 ft. *(For JKS-44 that has broken and/or bent PVC joints)*	1. QED SamplePro Bladder Pump 0.75"
1	Bladder pump controller / air compressor combo	1. QED MP50 Controller/Compressor
1	Marine Battery 12v w/ charger *(OPTIONAL - can use vehicle as power source)*	1. DieHard Marine 12v
2	100 ft. portable water level indicator	1. Solinst Model 101 Water Level Meter 100'
2	Multi-parameter groundwater quality meter – capable of measuring dissolved oxygen, pH, specific conductivity, temperature, oxidation reduction potential, and turbidity (if possible) – with groundwater flow through cell & calibration standards	1. Horiba U-52 *(turbidity probe included)*; or 2. YSI 6920 V2 *(model used during ERM training, turbidity probe included)*; or 3. YSI 556 MPS ***(no turbdity probe, will need to rent separate turbidity meters)***
2	Turbidity meter – with calibration standards ***(rent if using YSI 556 MPS)***	1. LaMotte 2020we

Equipment quantities based on (2) sampling teams. Assumes each team has (1) submersible pump, and only one team is assigned to sample via peristaltic pump and bladder pump.
*** Not available from FARRWEST*

Consumeable Sampling Supplies to be Purchased from FARRWEST (or Other Preferred Vendor)

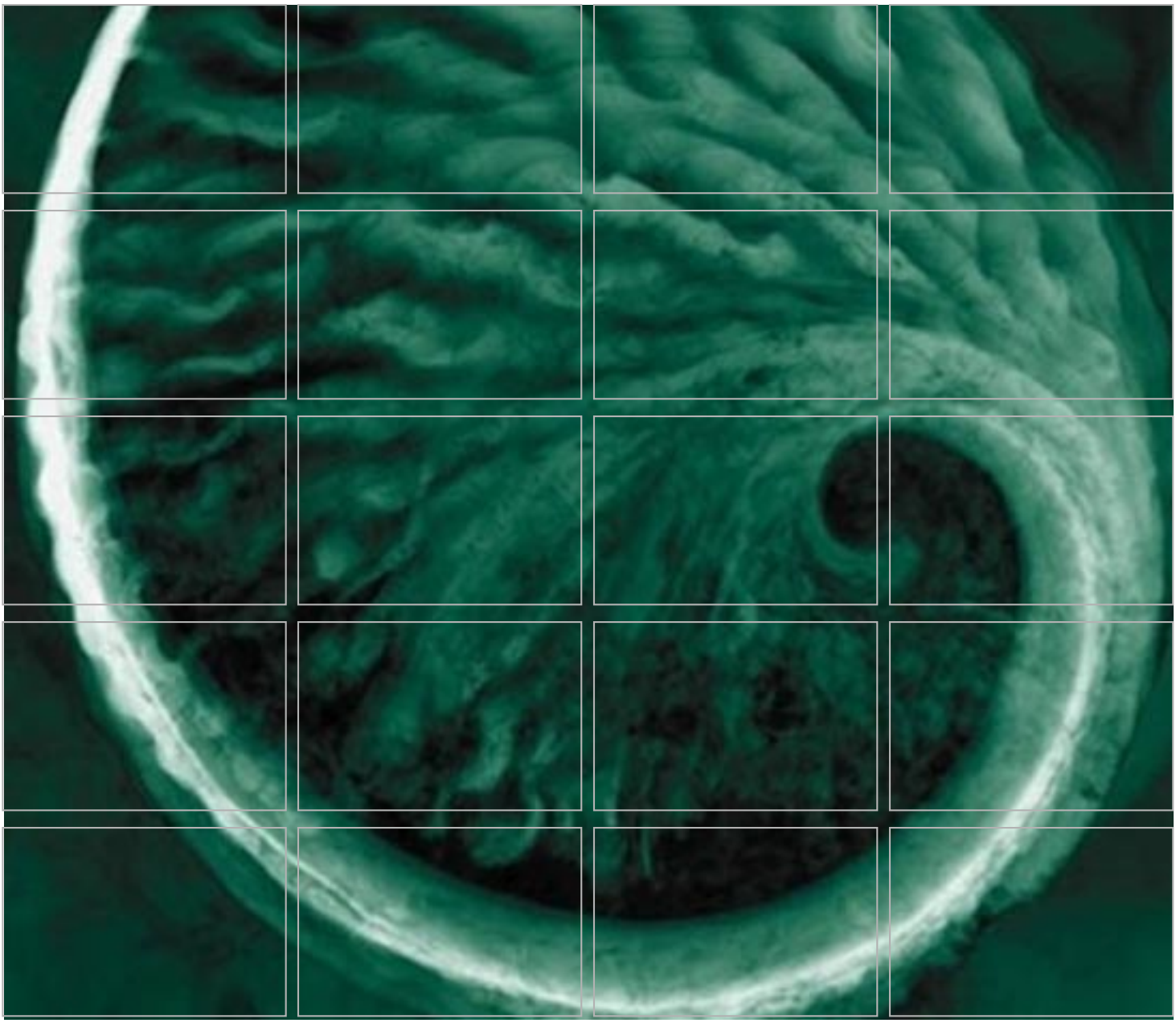
Quantity	Item	Notes
250 ft	Low-density polyethylene (LDPE) tubing (0.17" ID x 1/4" OD)	To be used with peristaltic pump; need approximately 50 ft of tubing to install into new Future PD Pond well (JKS-67). Suggest having an additional 200 ft on hand in case other well tubing needs to be replaced.
300 ft	LDPE tubing (3/8" ID x 1/2" OD) *(For wells w/ groundwater elevation approx. >29 ft. btoc)*	To be used with submersible pump; need approximately 100 ft of tubing to install into new Furture PDP wells (JKS-65 and -67). Suggest having an additional 200 ft on hand in case well tubing needs to be replaced, or if water level drops below peristaltic pumping range.
15 ft	Silicon tubing (3/16" ID x 3/8" OD)	To be used with peristaltic pump; suggest having 15 ft on hand in case well tubing needs to be replaced.
1	**0.75 Bladder Kit	To be used with bladder pump; includes 1 bladder, 1 grab plate, and replacement o-rings. After first kit purchased, you only need to purchase bladder(s) and grab plate(s) unless o-rings are used.
100 ft	**Bonded LDPE tubing (0.17" x 1/4" OD)	To be used with bladder pump; suggest having 100 ft on hand in case well tubing in JKS-44 needs to be replaced.
4 boxes	Nitrile, Powder-free gloves	4 boxes to be split amongst each sample team *(~1 box per person)*
0.5 L	Phosphate-free cleaner	Alconox or Liquinox *(verify what FARRWEST has available)*

Supply quantities suggested for each event.
*** Not available from FARRWEST*

Additional Supplies and Equipment

Quantity	Item
2	Tubing Cutters
2	Tubing Clamps
1	55-Gallon Drum
2	Graduated 5-Gallon Buckets
8	5-Gallon Buckets w/ lids for purge water
2	Graduated Cylinders – capable of reading up to 500mL
1	Scrub brush for decontamination of non-dedicated sampling equipment
4-6 Gallons	Distilled water for decontamination of non-dedicated sampling equipment
4	Multi-purpose spray bottles
4 Rolls	Paper Towels
1 Box	Large Plastic Trash Bags
1 Pkg	Ball-point Pens
1 Pkg	Waterproof Marking Pens

Attachment 19 Closure and Post-Closure Plan



CCR Unit Closure and Post-Closure Plan

CPS Energy
Calaveras Power Station

San Antonio, Texas

October 14, 2016
Amended December 14, 2020

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CPS Energy

CCR Unit Closure and Post-Closure Plan

October 14, 2016
Amended December 14, 2020

Calaveras Power Station
Project No. 0503422

Jeffery L. Bauguss, P.E.
Partner-in-Charge

Walter Zverina
Project Manager

Charles Johnson, P.E.
Project Consultant

Environmental Resources Management
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024
281-600-1000

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

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1.0 INTRODUCTION

CPS Energy owns and operates the Calaveras Power Station located in San Antonio, Texas. The Station generates coal combustion residuals (CCR) that are subject to regulation under Title 40, Code of Federal Regulations, Part 257 (40 CFR §257).

This document is the Closure Plan and Post-Closure Plan (CPC Plan) for the following four CCR surface impoundments and one CCR landfill at the Calaveras Power Station:

- Sludge Recycle Holding (SRH) Pond,
- North Bottom Ash Pond (BAP),
- South BAP,
- Evaporation Pond (EP), and
- Fly Ash Landfill (FAL).

This CPC Plan describes the steps necessary to close all the CCR units at any point during the active life of the units by either removing the CCR or leaving CCR in place in accordance with 40 CFR §257.102(b).

This CPC Plan also describes post-closure inspection, maintenance and monitoring required for the CCR units closed with CCR left in place in accordance with 40 CFR §257.102(b).

According to 40 CFR §257.102(b)(3)(i), CPS Energy may amend this closure plan at any time.

Per 40 CFR §257.102(b)(3)(ii), CPS Energy must amend this closure plan whenever:

- There is a change in operation of the CCR unit that would substantially affect the written closure plan in effect; or
- Before or after closure activities have commenced, unanticipated events necessitate a revision of the written closure plan.

1.1 REQUIREMENTS

Regulations in 40 CFR §257.102 et seq. require the preparation, certification, posting on an internet site accessible by the public, and, on closure, implementation of a CPC Plan for each existing active CCR unit. A completed, certified copy of this CPC Plan must be maintained indefinitely in the Calaveras Power Station Operating Record. CPS Energy will issue notifications and implement recordkeeping in accordance with 40 CFR §257.105 and 40 CFR §257.106 (see Section 6).

The requirement to prepare and implement the CPC Plan is applicable to owners and operators of CCR units covered under the rule, including:

- New and existing landfills;
- New and existing surface impoundments;
- CCR units located off-site of the electric utilities' or independent power producers' facilities that receive CCR for disposal; and
- Certain inactive CCR surface impoundments if the CCR unit still contains CCR and liquids.

1.2 DEFINITIONS

This CPC Plan includes terms defined consistent with parts of 40 CFR §257 and associated editions of the Federal Register.

- **Active life or in operation** means the period of operation beginning with the initial placement of CCR in the CCR unit and ending at completion of closure activities in accordance with 40 CFR §257.102.
- **Closed** means placement of CCR in a CCR unit has ceased, and the owner or operator has completed closure of the CCR unit in accordance with 40 CFR §257.102 and has initiated post-closure care in accordance with §257.104.
- **Coal combustion residuals (CCR)** means fly ash, bottom ash, boiler slag and flue gas desulfurization materials generated from burning coal for the purpose of generating electricity by electric utilities and independent power producers.
- **CCR landfill** means an area of land or an excavation that receives CCR and which is not a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground or surface coal mine, or a cave. For purposes of this subpart, a CCR landfill also includes sand and gravel pits and quarries that receive CCR, CCR piles, and any practice that does not meet the definition of a beneficial use of CCR.
- **CCR surface impoundment** means a natural topographic depression, manmade excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the unit treats, stores, or disposes of CCR.
- **CCR unit** means any CCR landfill, CCR surface impoundment, or lateral expansion of a CCR unit, or a combination of more than one of these units, based on the context of the paragraph(s) in which it is used. This term includes both new and existing units, unless otherwise specified.
- **Facility** means all contiguous land, and structures, other appurtenances, and improvements on the land, used for treating, storing, disposing, or otherwise conducting solid waste management of CCR. A facility may consist of several treatment, storage, or disposal operational units (e.g. one or more landfills, surface impoundments, or combinations of them).

- **Inactive CCR surface impoundment** means a CCR surface impoundment that no longer receives CCR on or after October 19, 2015 and still contains both CCR and liquids on or after October 19, 2015.
- **Qualified professional engineer** means an individual who is licensed by a state as a Professional Engineer to practice one or more disciplines of engineering and who is qualified by education, technical knowledge and experience to make the specific technical certifications required under this subpart. Professional engineers making these certifications must be currently licensed in the state where the CCR unit(s) is located.

2.0 CCR UNIT DESCRIPTION

CPS Energy owns and operates the Calaveras Power Station which consists of three power plants of which two plants (J.T. Deely and J.K. Spruce) are subject to the CCR Rule. The Calaveras Power Station is located in unincorporated Bexar County, Texas, approximately 13 miles southeast of San Antonio. The J.T. Deely Plant began operation in 1977. The J.K. Spruce Plant Unit 1 began operation in 1992 and Unit 2 began operation in 2011.

Currently, CPS Energy maintains five CCR units at the Calaveras Power Station which are subject to the CCR Rule:

- SRH Pond,
- North BAP,
- South BAP,
- Evaporation Pond (EP), and
- Fly Ash Landfill (FAL).

Of these five CCR units, CPS Energy currently only operates three units at the Calaveras Power Station: Evaporation Pond, Fly Ash Landfill, and the SRH Pond. Although the J.T. Deely Power Plant ceased operation at the end of December 2018 and sluiced bottom ash is no longer being received at the Bottom Ash Ponds (BAPs), the BAPs will continue to be monitored until the units have undergone closure. The location of each CCR unit is shown on Figure 1.

2.1 SLUDGE RECYCLE HOLDING POND

The SRH Pond contains CCR sludge from the air pollution control equipment from both plants. The SRH Pond was constructed as a single impoundment with a divider wall that separates the impoundment into the North and South Ponds. A gate present in the divider wall is closed during normal operating procedures, but can be opened. Each pond is approximately 1.5 acres in area and are located east of the plants, adjacent to the BAPs. The SRH Pond began receiving CCR before October 14, 2015 and is still in service. In accordance with 40 CFR §257.53, the SRH Pond is classified as an active existing CCR surface impoundment.

The interior slopes of the SRH Pond is reportedly constructed with a 10-oz. Geotextile and a 30-mil High Density Polyethylene (HDPE) geomembrane over prepared subgrade. The North Pond bottom liner consists of a six-inch layer of 4,000 psi concrete over one-foot of compacted sand overlying a 30-mil HDPE geomembrane. The South Pond bottom liner also has a six-inch layer of 4,000 psi concrete. Under the concrete is one-foot of compacted fill overlaying a 10-oz. Geotextile, a 30-mil HDPE geomembrane and another 10-oz. Geotextile. The SRH Pond is separated by a concrete divider wall with a sluice gate that allows the North Pond and South Pond to be isolated from each other. Water is pumped from the SRH Pond to clarifiers via two 18-inch steel pipes. Both ponds have eight-foot-wide concrete overflow chutes that discharge to the South BAP. These overflow chutes are at an approximate elevation of 499.5 feet MSL.

It is estimated that approximately 7 acre-feet is the maximum inventory of CCR to be on-site at one time over the active life of each pond. This estimate is based on a conservative assumption of both ponds being completely full of CCR up to the limits of the freeboard as allowed by the Inflow Flood Control Plan.

2.2 *BOTTOM ASH PONDS*

The North and South BAPs contain sluiced CCR from the wet feed process at the J.T. Deely Plant. The BAPs were constructed by CPS Energy in 1977 as part of the original plant construction. The North BAP is approximately 6.1 acres in area, while the South BAP is approximately 6.8 acres. They are located east of the plants, adjacent to the SRH Pond.

The BAPs began receiving CCR before October 14, 2015, however, the J.T. Deely Power Plant ceased operation at the end of December 2018 and sluiced bottom ash is no longer being received at the BAPs. In accordance with 40 CFR §257.53, the BAPs are classified as inactive CCR surface impoundments.

The BAPs share a common embankment that separates the ponds. The ponds are reportedly lined with clay, but the thickness and hydraulic conductivity of the clay are unknown. One 24-inch steel pipe in each pond allows water to be returned to the plant for reuse. Additionally, both ponds have two discharge points. The discharge points consist of an outlet structure with a horizontal 12-inch steel discharge pipe at an approximate elevation of 489 feet MSL (bottom drain used to empty the pond), and a vertical 12-inch steel overflow pipe at an approximate of elevation 499 feet MSL (normal operation level pool drain).

The outfall structure is in one corner of each pond (northeast for North BAP and southeast for South BAP) and is partially surrounded by steel sheet piling. The sheet piling and pond berms create an opening for water to reach the discharge pipes. This opening is typically protected by floating sorbent booms. Water from these outlets discharge to Calaveras Lake through a TPDES permitted outfall.

It is estimated that approximately 118 acre-feet is the maximum inventory of CCR to be on-site over the active life of the North and South BAPs. This estimate is based on a conservative assumption of the BAPs being completely full of CCR up to the limits of the freeboard as allowed by the Inflow Flood Control Plan.

2.3 *EVAPORATION POND*

The EP is located generally northeast of the plants. The EP side and bottom liner consist of a one-foot layer of cohesive soil overlying a 30-mil Polyvinylchloride geomembrane and an additional one-foot of cohesive soil when constructed as a landfill in 1990. The subgrade consists of two-feet of soil, with all large rock removed, and compacted to 90% density. The EP was converted to a fly ash impoundment in 1996.

The EP is a surface impoundment that was constructed and received CCR before October 14, 2015. The EP currently does not receive any CCR but continues to receive non-CCR waste streams. In accordance with 40 CFR §257.53, the EP is classified as an inactive CCR surface impoundment.

The EP received ash washdown water from washing of the air pollution control system and other miscellaneous CCR washdown sources. That waste contained CCR as defined in 40 CFR §257.52.

There are no inlet or outlet structures to the EP. Liquid from ash washdown, boiler chemical cleanouts, and other authorized liquid wastes is trucked to the pond, where it is allowed to evaporate.

It is estimated that approximately 83 acre-feet is the maximum inventory of CCR to be on-site over the active life of the EP. This estimate is based on a conservative assumption of the EP being completely full of CCR up to the limits of the freeboard as allowed by the Inflow Flood Control Plan.

2.4 FLY ASH LANDFILL

The Fly Ash Landfill (FAL) is a Class 2 landfill constructed by CPS Energy in 1990 to increase the on-site disposal storage capacity of CCR wastes, prior to construction of the J.K. Spruce Plant. The FAL is located generally northeast of the plant.

It receives CCR wastes consisting of bottom ash, fly ash, scrubber solids, coal dust, gypsum, fly ash dust bags, and ion exchange resin waste generated by plant operations. Those wastes contain CCR as defined in 40 CFR §257.52.

The FAL has an approximate total area of 23 acres. According to as-built drawings provided by CPS Energy, the bottom of the landfill is lined with a 30-mil High Density Polyethylene (HDPE) with a geotextile cushion and sand drainage layer. A geocomposite drainage net covered by two feet of coarse CCR provides the drainage layer over the liner on the interior embankments of the landfill.

The FAL is a landfill that was constructed and received CCR before October 14, 2015. In addition, the FAL currently receives CCR. In accordance with 40 CFR §257.53, the FAL is classified as an active existing CCR landfill.

It is estimated that approximately 550 acre-feet is the maximum inventory of CCR to be on-site over the active life of the FAL. This estimate is based on a conservative assumption of the FAL being completely full of CCR up to the limits of the freeboard as allowed by the Run-on/Run-off Control Plan.

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 FAL by leaving CCR in place. The closure procedures will comply with requirements in 40 CFR §257.102(d).

This section describes the steps necessary to close the CCR units at any point during the active life of the CCR units consistent with recognized and generally accepted good engineering practices and in accordance with 40 CFR §257.102(b). A written closure plan for each CCR unit is required by 40 CFR §256.102(b).

Each closure plan for CCR units to be closed by removal of CCR is required to include the following:

- Closure performance standard;
- Narrative description of the closure;
- Description of the procedures to remove the CCR and decontaminate the CCR unit;
- Maximum CCR inventory; and
- Closure schedule.

Each closure plan for CCR units to be closed with CCR in place is required to include:

- Closure performance standard;
- Narrative description of the closure;
- Description of the final cover system;
- Maximum CCR inventory;
- Maximum area covered; and
- Closure schedule.

3.1 CLOSURE PERFORMANCE STANDARDS

The performance standards for closure of the CCR units in this closure plan are:

- For the SRH Pond and the North and South BAPs: Removing CCR and decontaminating each area affected by CCR releases for the CCR unit in accordance with 40 CFR §257.102(c)(closure by removal); and
- For the EP and the FAL: Leaving CCR in place in accordance with 40 CFR §257.102(d)(closure in place).

3.1.1 Performance Standards for Closure by Removal

CPS Energy may close any of the CCR units by removing CCR and decontaminating each area affected by releases (if any occurred) from that CCR unit in accordance with 40 CFR §257.102(c) (closure by removal).

CCR removal and decontamination of the CCR unit will be considered completed in accordance with 40 CFR §257.102(c) when each constituent concentration throughout the CCR unit and each area affected by releases from that CCR unit have been removed and groundwater monitoring concentrations do not exceed the groundwater protection standard established in 40 CFR §257.95(h) for each constituent listed in 40 CFR §257, Appendix IV.

In addition, requirements for closure of the CCR unit by removal of CCR may also include using the Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program (TRRP) in accordance with 30 Texas Administrative Code (TAC) §350 and/or the Industrial Solid Waste and Municipal Hazardous Waste rules in 30 TAC §335.

3.1.2 Performance Standards for Closure in Place

CPS Energy may close any of the CCR units by leaving CCR in place and constructing a final cover system in accordance with the performance standards stated in 40 CFR §257.102(d)(1):

(i) Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere;

(ii) Preclude the probability of future impoundment of water, sediment, or slurry;

(iii) Include measures that provide for major slope stability to prevent the sloughing or movement of the final cover system during the closure and post-closure care period;

(iv) Minimize the need for further maintenance of the CCR unit; and

(v) Be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices.

In addition, closure of the FAL may follow the considerations provided in Technical Guideline No. 3 (Texas TG-3) published by the TCEQ. This document provides the general design approaches for landfill covers. In addition, if a potential release is determined to have occurred from the CCR landfill, then the release will be addressed under the TRRP in accordance with 30 TAC §350.

3.2 NARRATIVE DESCRIPTION OF THE CLOSURE

Closure of a CCR unit will be accomplished in steps related to the closure performance standard, the characteristics of the bottom liner, the CCR contained in the CCR unit, and the surrounding area.

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 §257.102(d).

In addition, requirements for closure of the CCR unit using the TRRP in accordance with 30 TAC §350 and/or the Industrial Solid Waste and Municipal Hazardous Waste rules in 30 TAC §335 may also be implemented for the selected closure.

3.2.1 Description of Closure by Removal – SRH Pond

The SRH Pond will be closed by removing and decontaminating each area affected by releases from the CCR units in accordance with 40 CFR §257.102(c) (closure by removal). The closure will be accomplished in steps as follows:

1. Dewater Impoundment: Free liquid in the impoundment will be drained and/or pumped through the permitted outfall until all free liquids have been removed.
2. Remove CCR: CCR and CCR-affected soil will be removed from the CCR unit and from each area affected by release of CCR from that CCR unit. Wet materials will be placed in windrows on an impermeable liner to drain. After free liquids have drained such that the material will pass the paint filter test, recyclable material will be sent off-site for reuse.
3. Demolition and Disposal: Non-recyclable material and the HDPE liner will be excavated and placed in the FAL. The concrete liner, overflow chute, and dividing wall will be demolished and disposed in the FAL.
4. Confirm CCR Removal and Decontamination: CCR removal and decontamination of the CCR unit will be confirmed complete by sampling and analytical testing of representative samples of potentially affected soil and ground water for CCR-related constituents throughout the CCR unit, and each area affected by release from that CCR unit. Completion will be achieved when the analytical results indicate all constituents have removed to the corresponding background concentration or applicable TRRP standards in effect at the time of closure, and ground water monitoring concentrations do not exceed the ground water protection standard established by CPS Energy in accordance with §257.95(h) for each constituent listed in 40 CFR §257, Appendix IV.
5. Site Restoration: CPS Energy may utilize the SRH Pond as impoundments for storm water following removal of CCR. As a result, the impoundments will not be backfilled or graded to prevent ponding of water. New liners, inflow, and outfall structures may be constructed as needed to facilitate reuse of the impoundment. The design criteria for this reuse will be determined by CPS Energy based on regulatory requirements and engineering practices.

6. Completion Report: CPS Energy will prepare, submit to the TCEQ, and obtain TCEQ approval for closure of the CCR unit in accordance with the TRRP and related rules in 30 TAC §350 and/or the Industrial Solid Waste and Municipal Hazardous Waste rules in 30 TAC §335.

3.2.2 Description of Closure by Removal – North and South BAPs

The BAPs will be closed by removing and decontaminating each area affected by releases from the CCR units in accordance with 40 CFR §257.102(c) (closure by removal). The closure will be accomplished in steps as follows:

1. Dewater Impoundment: Free liquid in the impoundment will be drained and/or pumped through the permitted outfall until all free liquids have been removed.
2. Remove CCR: CCR and CCR-affected soil will be removed from the CCR unit and from each area affected by release of CCR from that CCR unit. Wet materials will be placed in windrows on an impermeable liner to drain. After free liquids have drained such that the material will pass the paint filter test, recyclable material will be sent off-site for reuse.
3. Demolition and Disposal: Non-recyclable material will be excavated and placed in the FAL. All inlet and outfall structures will be demolished, with piping and sheet piling cut off at least six inches below ground surface, and capped or filled with concrete. Demolished materials will be placed in the FAL.
4. Confirm CCR Removal and Decontamination: CCR removal and decontamination of the CCR unit will be confirmed complete by sampling and analytical testing of representative samples of potentially affected soil and ground water for CCR related constituents throughout the CCR unit, and each area affected by release from that CCR unit. Completion will be achieved when the analytical results indicate all constituents have removed to the corresponding background concentration or applicable TRRP standards in effect at the time of closure, and ground water monitoring concentrations do not exceed the ground water protection standard established by CPS Energy in accordance with §257.95(h) for each constituent listed in 40 CFR §257, Appendix IV.
5. Site Restoration: CPS Energy may utilize the BAPs as impoundments for storm water following removal of CCR. As a result, the impoundments will not be backfilled or graded to prevent ponding of water. New liners, inflow, and outfall structures may be constructed as needed to facilitate reuse of the impoundments. The design criteria for this reuse will be determined by CPS Energy based on regulatory requirements and engineering practices.
6. Completion Report: CPS Energy will prepare, submit to the TCEQ, and obtain TCEQ approval for closure of the CCR unit in accordance with the TRRP and related rules in 30 TAC §350 and/or the Industrial Solid Waste and Municipal Hazardous Waste rules in 30 TAC §335.

3.2.3 Description of Closure in Place – Evaporation Pond

The EP will be closed by leaving CCR in place (closure in place). The closure will be accomplished in steps as follows:

1. Remove Liquids: Free liquids will be eliminated by removing liquid wastes and/or solidifying the remaining CCR and CCR residues in the CCR unit.
2. Prepare Final Cover System Subgrade: The remaining CCR will be solidified, if necessary, sufficient to support the final cover system, and the surface will be graded and compacted as necessary to support the final cover system. Additional soil fill (i.e., attic fill) will be added if required to achieve subgrade elevations. If excess berm height exists, the extra berm soil may be used (i.e., berms reduced in height) as fill material to achieve the design slopes. Alternatively, interior drainage may be installed with one or more outlets to the unit perimeter.
3. Final Cover System: The final cover system will be constructed in place over the prepared subgrade to achieve the final cover system criteria in 40 CFR §257.102(d)(3) and may follow the guidelines of Texas TG-3.
4. Completion Report: CPS Energy will prepare, submit to the TCEQ, and obtain TCEQ approval for closure of the CCR unit in accordance with the TRRP and related rules in 30 TAC §350 and/or the Industrial Solid Waste and Municipal Hazardous Waste rules in 30 TAC §335.

3.2.4 Description of Closure in Place – Fly Ash Landfill

The FAL will be closed by leaving CCR in place (closure in place). The closure will be accomplished in steps as follows:

1. Remove Liquids: Free liquids will be eliminated by removing liquid wastes and/or solidifying the remaining CCR and CCR residues in the CCR unit.
2. Prepare Final Cover System Subgrade: The remaining CCR will be solidified, if necessary, sufficient to support the final cover system, and the surface will be graded and compacted as necessary to support the final cover system. Additional soil fill (i.e., attic fill) will be added if required to achieve subgrade elevations. If excess berm height exists, the extra berm soil may be used (i.e., berms reduced in height) as fill material to achieve the design slopes. Alternatively, interior drainage may be installed with one or more outlets to the unit perimeter.
3. Final Cover System: The final cover system will be constructed in place over the prepared subgrade to achieve the final cover system criteria in 40 CFR §257.102(d)(3) and may follow the guidelines of Texas TG-3.
4. Completion Report: CPS Energy will prepare, submit to the TCEQ, and obtain TCEQ approval for closure of the CCR unit in accordance with the TRRP and related rules in 30 TAC §350 and/or the Industrial Solid Waste and Municipal Hazardous Waste rules in 30 TAC §335.

3.3 FINAL COVER SYSTEM – EVAPORATION POND AND FLY ASH LANDFILL

The final cover system for the EP and FAL will be as generally described in Section 3.3.1.

3.3.1 Final Cover System Design Criteria

The final cover system constructed for closure of the CCR units will achieve the final cover system design criteria specified in 40 CFR §102(d)(3)(i):

(A) The permeability of the final cover system must be less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than 1×10^{-5} cm/sec, whichever is less.

(B) The infiltration of liquids through the closed CCR unit must be minimized by the use of an infiltration layer that contains a minimum of 18 inches of earthen material.

(C) The erosion of the final cover system must be minimized by the use of an erosion layer that contains a minimum of six inches of earthen material that is capable of sustaining native plant growth.

(D) The disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence.

3.4 ALTERNATIVE FINAL COVER SYSTEM DESIGN CRITERIA

If CPS Energy chooses to construct an alternative final cover system for closure of a CCR unit, the final cover system will achieve the alternative final cover system design criteria specified in 40 CFR §257.102(d)(3)(ii):

(A) The design of the final cover system must include an infiltration layer that achieves an equivalent reduction in infiltration as the infiltration layer specified in [40 CFR §257.102](d)(3)(i)(A) and (B) [i.e. the permeability of the final cover system must be less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than 1×10^{-5} cm/sec, whichever is less; and the infiltration of liquids through the closed CCR unit must be minimized by the use of an infiltration layer that contains a minimum of 18 inches of earthen material].

(B) The design of the final cover system must include an erosion layer that provides equivalent protection from wind or water erosion as the erosion layer specified in [40 CFR §257.102](d)(3)(i)(C) [i.e. the erosion of the final cover system must be minimized by the use of an erosion layer that contains a minimum of six inches of earthen material that is capable of sustaining native plant growth].

(C) The disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence.

3.4.1 Methods and Procedures Used to Install the Final Cover System

If CPS Energy chooses to implement the final cover system design criteria in 40 CFR §257.102(d)(3)(i) for closure of the FAL, the final cover system is anticipated to be as generally described below:

- Cap Topsoil Layer: The Cap Topsoil layer will be a 6-inch thick layer of topsoil suitable for seeding and establishment of cover vegetation and support of each stage of related cap construction and maintenance equipment and materials, with a surface slope of 3% to 5% graded to drain to relief, and with a substantially continuous stand of erosion-resistant native or adapted perennial shortgrass cover vegetation in accordance with 40 CFR §257.102(d) (3)(i)(C).
- Cap Soil Fill Layer: The Cap Soil Fill layer will be an 18-inch thick layer of soil fill suitable for supporting the Cap Topsoil layer and related cap construction and maintenance equipment and materials in accordance with 40 CFR §257.102(d)(3)(i)(B).

Alternate final cover systems that achieve the alternate final cover system performance requirements in 40 CFR §257.102(d)(3)(ii) may be substituted for the final cover system described above. CPS Energy chooses to implement an alternate final cover system for closure of the EP, the final cover system is anticipated to be as generally described below:

- Cap Topsoil Layer: The Cap Topsoil layer will be a 6-inch thick layer of topsoil suitable for seeding and establishment of cover vegetation and support of each stage of related cap construction and maintenance equipment and materials, with a surface slope of 2% to 15% graded to drain to relief, and with a substantially continuous stand of erosion-resistant native or adapted perennial shortgrass cover vegetation in accordance with 40 CFR §257.102(d) (3)(i)(C).
- Cap Protective Cover Layer: The Cap Protective Cover Layer will be a 12-inch thick layer of general fill soil or bottom ash material to protect underlying geocomposite, compacted clay and Flexible Membrane Liner (FML) layers.
- Geocomposite Drainage Layer: The Geocomposite Drainage Layer will be a geonet heat bonded with a geotextile to convey infiltrated stormwater to the perimeter of the unit.
- Cap Compacted Clay Layer: The Cap Compacted Clay Layer will be a 12-inch thick layer of clay rich soil to limit infiltration and protect underlying FML layer.
- FML Layer: The Flexible Membrane Liner (FML) layer will be a 40-mil LLDPE to minimize infiltration of stormwater.

3.5 CCR VOLUME ESTIMATE

As required in 40 CFR §257.102(b)(1)(iv), the following are estimates of the maximum volume of CCR on-site during the active life of each of the CCR units.

- SRH Pond: 23,600 cubic yards of CCR, based on the maximum capacity of the pond while maintaining the freeboard required by the Inflow Flood Control Plan.
- North BAP: 89,600 cubic yards of CCR, based on the maximum capacity of the pond while maintaining the freeboard required by the Inflow Flood Control Plan.
- South BAP: 99,900 cubic yards of CCR, based on the maximum capacity of the pond while maintaining the freeboard required by the Inflow Flood Control Plan.
- EP: 133,700 cubic yards of CCR, based on the maximum capacity of the pond while maintaining the freeboard required by the Inflow Flood Control Plan.
- FAL: 887,300 cubic yards of CCR, based on the maximum capacity of the landfill while maintaining the freeboard required by the Run-on/Run-off Control Plan.

3.6 FINAL COVER AREA

As required in 40 CFR §257.102(b)(1)(v), an estimate of the largest area requiring a final cover in accordance with 40 CFR §257.102(d) (i.e. closure in place) at any time during the active life of a CCR unit is stated below:

- EP: 4.5 acres, based on the total area inside the interior top of bank.
- FAL: 23 acres, based on the total area inside of the interior top of bank.

3.7 CLOSURE SCHEDULE

As required in 40 CFR §257.102(b)(1)(vi), the estimated schedules for closure of the SRH Pond, BAPs, EP, and FAL are shown in Tables 1 through 4, respectively. In accordance with 40 CFR§ 257.102(b)(1)(vi), each of the schedules includes the sequential steps necessary to close the CCR unit, major milestones, and an estimate of the year in which closure activities will be completed.

Due to the anticipated permitting and construction schedule, CPS Energy expects to extend the closure period beyond the six month timeframe for completing closure of the FAL specified in 40 CFR §257.102(f)(1)(i). At the time of closure, CPS Energy will submit extension(s) when and if appropriate.

Owners/operators must commence closure within the following:

- 30 days of final receipt of CCR or non-CCR waste; or
- 30 days of final removal of the known final volume of CCR for beneficial use; and

- Within 2 years of the last receipt of CCR and non-CCR waste streams or the last removal of CCR material for beneficial use.

According to 40 CFR §257.102(e)(3) closure activities have commenced if the CCR unit has ceased receiving waste and owners/operators have:

(i) Taken any steps necessary to implement the written closure plan required by paragraph (b) of 40 CFR §257.102;

(ii) Submitted a completed application for any required state or agency permit or permit modification; or

(iii) Taken any steps necessary to comply with any state or other agency standards that are a prerequisite, or are otherwise applicable, to initiating or completing the closure of a CCR unit.

4.0 CCR UNIT POST-CLOSURE CARE

CPS Energy will implement post-closure care of each CCR unit closed with CCR in place in accordance with 40 CFR §257.104. CPS Energy will also implement if applicable, activities required by the TRRP in accordance with 40 CFR §257 and 30 TAC §350. Goals of the post-closure care are as follows:

- Maintain the integrity and effectiveness of the CCR unit final cover system, including making repairs as necessary to correct the effects of settling, subsidence, erosion, or other events [40 CFR §257.104(b)];
- Maintain the ground water monitoring system and implement each applicable monitoring requirements in 40 CFR §257.90 through 98; and
- Prevent storm water run-on and run-off from eroding or otherwise damaging the final cover [40 CFR §257.104(b)].

CPS Energy will implement the following CCR unit post-closure activities:

- Inspection and maintenance of the CCR unit final cover system and associated groundwater monitoring wells;
- Ground water monitoring sampling, analysis, and reporting;
- Facility Operating Record recordkeeping and reporting posted on the internet site available to the public; and
- Deed recordation.

According to 40 CFR §257.104(d)(3)(i), CPS Energy may amend this written post-closure plan at any time.

Per 40 CFR §257.102(d)(3)(ii), CPS Energy must amend the post-closure plan whenever:

- There is a change in operation of the CCR unit that would substantially affect the written post- closure plan in effect; or
- After post-closure activities have commenced, unanticipated events necessitate a revision of the written post-closure plan.

4.1 POST-CLOSURE PERIOD

In accordance with 40 CFR §257.104(c), the post-closure care period for each CCR unit must be for a period of 30 years following CPS Energy certification of completion of closure of the CCR unit. If at the end of the post-closure care period the CCR unit is operating under assessment monitoring in accordance with 40 CFR §257.95, CPS Energy will continue post-closure care until the CCR unit returns to detection monitoring.

4.2 POST CLOSURE INSPECTION AND MAINTENANCE

CPS Energy will inspect and maintain the final cover system at each CCR unit, each associated ground water monitoring well, and each associated permanent benchmark throughout the post-closure period. The CCR unit post-closure care inspection and maintenance requirements are described below:

- Final cover system will be inspected for damage resulting from natural or unnatural causes. Maintenance activities may include repairing damage caused by settling or erosion; draining and filling areas collecting ponded water; and re-seeding areas with inadequate or inappropriate erosion-resistant cover vegetation as necessary to maintain the effectiveness of the final cover system.
- Storm water run-on and run-off control systems will be inspected for damage resulting from natural causes and non-routine facility operations. Storm water run-on and run-off control berms and drainage channels that drain the CCR unit will be maintained and, as necessary to maintain effectiveness, repaired.
- Ground water monitoring wells that are part of the CCR unit monitor well network will be inspected for condition necessary to provide adequate and representative ground water samples. Maintenance may include the repair or replacement of damaged, degraded, or missing well caps, identification signs, locking devices, perimeter grading, protective barriers, surface casing, surface pads, and, if necessary, the entire well.

CPS Energy will implement ground water monitoring during the CCR unit post-closure care period in accordance with 40 CFR §257.90 through §257.98.

4.3 CONTACT INFORMATION

The name, address, telephone number, and email address of the person to contact about the CCR units at the Calaveras Power Station during the post-closure care period is:

Michael Malone
CPS Energy
500 McCullough Ave.
San Antonio, Texas 78215
210-353-3625
mmmalone@cpsenergy.com

4.4 PLANNED CCR UNIT POST-CLOSURE PROPERTY USE

CPS Energy plans to use the closed SRH Pond, and BAP areas as storm water retention/storage ponds, restoration of native plant life, or redevelopment. The area will be limited to commercial or industrial use if closed under certain TRRP standards.

During the post-closure care period, CPS Energy plans to limit access to the CCR unit to reduce potential for damage of the final cover system and the associated ground water monitoring wells.

If the post-closure period of a CCR unit extends past the date the Calaveras Power Station is decommissioned, the CCR unit will remain closed to the public or limited to compatible commercial or industrial use.

5.0 CCR UNIT CLOSURE AND POST-CLOSURE PLAN AMENDMENT

CPS Energy may amend this CPC Plan at any time.

As specified in 40 CFR §257.102(b)(3)(ii), CPS Energy must amend this CPC Plan for any of the following reasons:

- When there is a change in operation of the CCR unit that would substantially affect the written CPC Plan then in effect; or
- When an unanticipated event necessitates revision of the CPC Plan before or during CCR unit closure activities, or after the CCR unit post-closure care period has commenced.

In addition, as specified in 40 CFR §257.102(b)(3)(iii), CPS Energy must amend this CPC Plan within 60 days prior to a CPS Energy planned change in CCR unit operation or within 60 days after an unplanned CCR unit event (if the change occurs after CCR unit closure activities have been initiated, the CPC Plan must be amended within 30 days following the triggering event).

CPS Energy will provide written certification by a professional engineer that states that the amended CPC Plan meets the requirements of closure and post-closure care required in 40 CFR §257.102(b)(4).

6.0 NOTIFICATION AND RECORD KEEPING

CPS Energy will issue notifications and implement recordkeeping in accordance with 40 CFR §257.105 and 40 CFR §257.106.

6.1 NOTIFICATIONS

CPS Energy will notify the Executive Director of TCEQ, the State Director as defined in 40 CFR §257.105(d), and in accordance with 40 CFR §257.106(g)(1) and (2), when the following documents are made available in the CPS Energy Facility Operating Record:

- Initial CPC Plan;
- Each amendment to the CPC Plan;
- Written demonstration for a time extension for initiating closure;
- Each notice of intent to initiate CCR unit closure;
- Each notice of completion of CCR unit closure;
- Intent to comply with alternative closure requirements;
- Annual progress reports under alternative closure requirements;
- Each notification of completion of the CCR unit post-closure care period; and
- Each CCR unit deed notation.

In accordance with TCEQ instructions related to CCR units in Texas, CPS Energy will send each notification to the TCEQ via internet electronic mail to:

CCRNotify@tceq.texas.gov

6.2 CPS ENERGY CCR WEB SITE

CPS Energy will post the following documents on the CPS Energy internet site accessible to the public in accordance with 40 CFR §257.107(g)(1) and (2) within 30 days of placing the document in the Operating Record and for a period of five years thereafter:

- Initial CPC Plan;
- Each amendment to the CPC Plan;
- Written demonstration for a time extension for initiating closure;
- Each notice of intent to initiate CCR unit closure;
- Each notice of completion of CCR unit closure;
- Intent to comply with alternative closure requirements;
- Annual progress reports under alternative closure requirements;
- Each notification of completion of the CCR unit post-closure care period; and

- Each CCR unit deed notation.

6.3 DEED NOTATION

For CCR units closed under TRRP for commercial or industrial land use, in accordance with requirements specified in 30 TAC §350.111, Institutional Controls, and in 40 CFR §257.102(i), Deed Notations, CPS Energy will record in the permanent deed records of Bexar County, Texas the following information regarding each CCR unit closure:

Remedy Standard A, closure by removal to residential standards:

- No deed notice/institutional controls required.

Remedy Standard A, closure by removal to commercial/industrial standards:

- A deed notice that if any person desires to use the property for residential purposes, they must first notify the TCEQ at least 60 days in advance. Additional response action may be necessary before the property is to be approved for residential use.

Remedy Standard B, closure with CCR left in place:

- A metes and bounds description and a plat map sealed by Registered Professional Land Surveyor licensed by the Texas Board of Professional Land Surveyors of the portion(s) of the tract(s) of land on which a CCR unit has been closed in place;
- A statement describing the appropriate future land use and documenting any property use limitations;
- The class(es) of waste that was disposed and the corresponding waste description(s); and
- The name or permanent address of the person or persons operating the facility where more specific information on the wastes can be obtained.

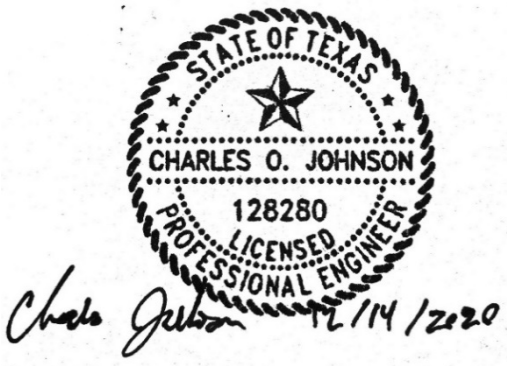
Within 30 days of recording each deed notation, CPS Energy will place a corresponding notification that the notation has been recorded in the CPS Energy Facility Operating Record and the CPS Energy CCR Web Site.

7.0 PROFESSIONAL ENGINEER CERTIFICATION

40 CFR §257.102 and 40 CFR §257.104 require that this CPC Plan meet those requirements. In addition, a professional engineer must certify that any amendments to the CPC Plan meet requirements of those rules, and that closure of the CCR unit has been achieved in accordance with those rules. Certification for this CPC Plan is provided below.

> *"I hereby certify that I have reviewed the CCR unit management practices for the Calaveras Power Station in Bexar County, Texas, and being familiar with the provisions of 40 CFR Part 257.102 and 40 CFR Part 257.104, attest that this CPC Plan has been prepared in accordance with good engineering practices."*

Seal:



Charles O. Johnson
Printed Name of Licensed Professional Engineer

Signature of Licensed Professional Engineer

Date: 12/14/2020

128280
TBPE P.E. License No.

8.0 REFERENCES

Sources of information used in the preparation of this CPC Plan ae listed below:

CDM, 2014a — Assessment of Dam Safety of Coal Combustion Surface Impoundments Final Report, CPS Energy J.T. Deely Power Plant, San Antonio, Texas, CDM Smith, February 2014, revised May 2014 and June 2014.

CDM, 2014b — Assessment of Dam Safety of Coal Combustion Surface Impoundments Final Report, CPS Energy J.K. Spruce Power Plant, San Antonio, Texas, CDM Smith, February 2014, revised May 2014 and June 2014.

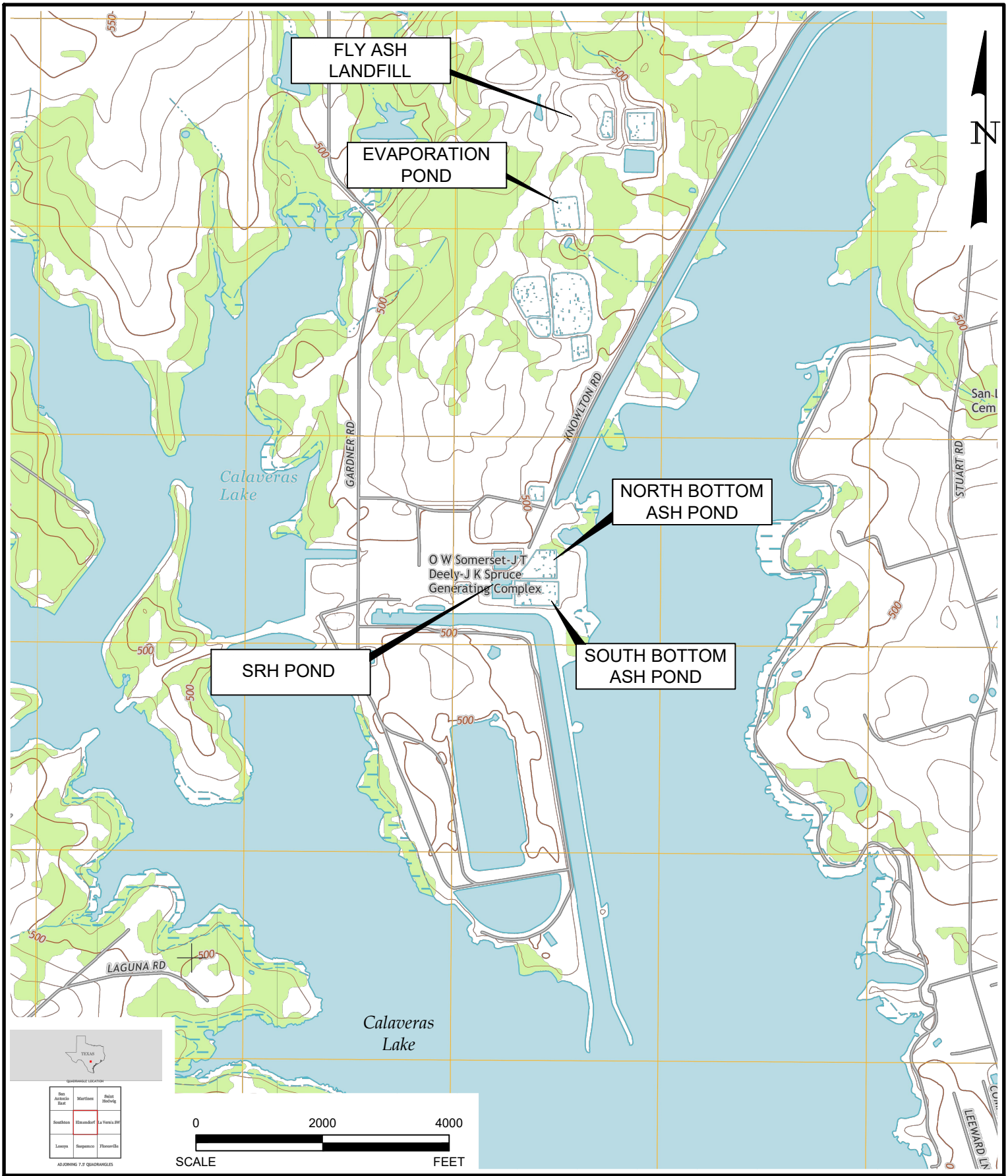
B&V, 1974 — Railroad Turnout Coal Handling Service Area and Ash Disposal Area Drawing, San Antonio, Texas, Black & Veach Consulting Engineering, September 30, 1974.

CPS, 1990 — Ash Disposal Pit #4 Elevation Views Drawing, San Antonio, Texas, City Public Service, July 16, 1990.

Figure

December 2020
Project No. 0503422

Environmental Resources Management
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024
281-600-1000



Environmental Resources Management

DESIGN: CC	DRAWN: RLM	CHKD.: CC
DATE: 9/19/2018	SCALE: AS SHOWN	REV.:
W.O. NO.: T:\DWG\AutoCAD\dwg\0337367\0337367_CCRUnitLocs_topo.dwg		

FIGURE 1
CCR UNIT LOCATION MAP

CPS Energy - Calaveras Power Station
San Antonio, Texas

ERM

ERM-Southwest, Inc. TX PE Firm No. 2393

Tables

December 2020
Project No. 0503422

Environmental Resources Management
840 West Sam Houston Parkway North, Suite 600
Houston, Texas 77024
281-600-1000

TABLE 1
Estimated Closure Schedule

SRH Pond
CCR Unit Closure and Post-Closure Plan
Calaveras Power Station
Bexar County, Texas

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]	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	**36 months from notification date**

NOTES:

1) Closure schedule is provided in months from notification of intent to initiate closure.

2) Closure activities have commenced when owners/operators have submitted applications for state or local permits per 40 CFR 257.102(e)(3).

3) Includes dewatering of pond, excavation and dewatering of CCR, and placement of dewatered CCR into Fly Ash Landfill.

4) Includes removal of associated infrastructure, excavation and disposal of concrete slab and one foot of subgrade liner, and confirmation soil sampling.

TABLE 2
Estimated Closure Schedule

North and South BAPs
CCR Unit Closure and Post-Closure Plan
Calaveras Power Station
Bexar County, Texas

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**

NOTES:

1) Closure schedule is provided in months from notification of intent to initiate closure.

2) Closure activities have commenced when owners/operators have submitted applications for state or local permits per 40 CFR 257.102(e)(3).

3) Includes excavation and dewatering of CCR, and placement of dewatered CCR into Fly Ash Landfill.

4) Includes removal of associated infrastructure, excavation and disposal of one foot of subgrade liner, and confirmation soil sampling.

TABLE 3
Estimated Closure Schedule

Evaporation Pond
CCR Unit Closure and Post-Closure Plan
Calaveras Power Station
Bexar County, Texas

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]	6 months
Contractor bid, selection, and award	8 months
Prepare subgrade[3]	2 months
Construct landfill cap[4]	3 months
Prepare and submit closure certification report	3 months
Estimated Completion of Closure	**34 months from notification date**

NOTES:

1) Closure schedule is provided in months from notification of intent to initiate closure.

2) Closure activities have commenced when owners/operators have submitted applications for state or local permits per 40 CFR 257.102(e)(3).

3) Includes regrading waste, placing borrow fill as required to achieve design grades, and shaping perimeter drainage features.

4) Includes cap components, seeding, and final drainage component installation. Does not include time required for self-sustaining vegetative cover to be established.

TABLE 4
Estimated Closure Schedule

Fly Ash Landfill
CCR Unit Closure and Post-Closure Plan
Calaveras Power Station
Bexar County, Texas

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]	6 months
Contractor bid, selection, and award	10 months
Prepare subgrade[3]	3 months
Construct landfill cap[4]	4 months
Prepare and submit closure certification report	3 months
Estimated Completion of Closure	**38 months from notification date**

NOTES:

1) Closure schedule is provided in months from notification of intent to initiate closure.

2) Closure activities have commenced when owners/operators have submitted applications for state or local permits per 40 CFR 257.102(e)(3).

3) Includes regrading waste, placing borrow fill as required to achieve design grades, and shaping perimeter drainage features.

4) Includes cap components, seeding, and final drainage component installation. Does not include time required for self-sustaining vegetative cover to be established.

Attachment 20 Certifications

Registration No.: XXXXX
Registrant: CPS Energy Calaveras Power Station

Signature Page

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Applicant Signature: _____ Date: _____

Name and Official Title (type or print): _____

Owner or Operator Signature: _____ Date: Jan 21, 2022

Name and Official Title (type or print): Curt D. Brockmann, VP, Compliance, Ethics & Facility Master Planning

To be completed by the owner or operator if the application is signed by an authorized representative for the operator

I, _____ hereby designate _____
(operator) (authorized representative)

as my representative and hereby authorize said representative to sign any application, submit additional information as may be requested by the Commission; and/or appear for me at any hearing or before the Texas Commission on Environmental Quality in conjunction with this request for a CCR waste management registration. I further understand that I am responsible for the contents of this application, for oral statements given by my authorized representative in support of the application, and for compliance with the terms and conditions of any registration which might be issued based upon this application.

_____
Printed or Typed Name of Applicant or Principal Executive Officer

_____
Signature

(Note: Application Must Bear Signature & Seal of Notary Public)

Subscribed and sworn to before me by the said Curt D. Brockmann on this

21st day of January, 2022.

My commission expires on the 4TH day of March, 2023

(Seal) Notary Public in and for Bexar County, Texas

HELEN C MONTOYA
NOTARY PUBLIC
ID# 4901681
State of Texas
Comm. Exp. 03-04-2023

Helen C. Montoya
Notary

Surface Impoundments: Dike Construction

For each surface impoundment dike, complete the following information:

"I, Charles Johnson, Texas P.E. License Number 128280, of Registered Firm Environmental Resources Management (ERM), Registered Engineering Firm F-2393, certify under penalty of law that I have personally examined and am familiar with the design and construction of the dikes that are a portion of the North and South Bottom Ash Ponds.

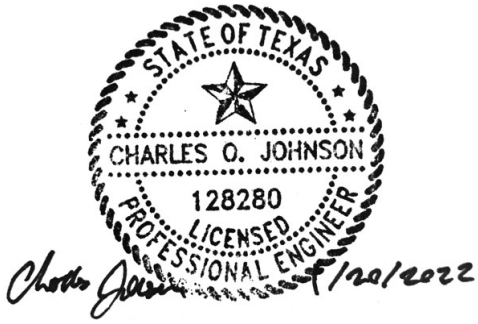
I further certify that I have evaluated the dike design and materials of construction using accepted engineering procedures, and have determined that the dike, including the portion of the dike providing freeboard, has structural integrity, and is constructed in accordance with applicable surface impoundment criteria per the following:

__X__ Existing Diked Surface Impoundment – 40 CFR 257.73(a)(1) through (4) and 30 TAC Section 352.731.

_____ New or Lateral Diked Surface Impoundment – 40 CFR 257.74(a)(1) through (4) and 30 TAC Section 352.741."

Date: January 20, 2022

PE Signature: Charles Johnson



Surface Impoundments: Dike Construction

For each surface impoundment dike, complete the following information:

"I, Charles Johnson, Texas P.E. License Number 128280, of Registered Firm Environmental Resources Management (ERM), Registered Engineering Firm F-2393, certify under penalty of law that I have personally examined and am familiar with the design and construction of the dikes that are a portion of the Evaporation Pond.

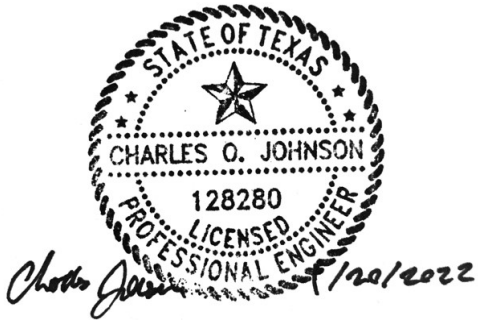
I further certify that I have evaluated the dike design and materials of construction using accepted engineering procedures, and have determined that the dike, including the portion of the dike providing freeboard, has structural integrity, and is constructed in accordance with applicable surface impoundment criteria per the following:

__X__ Existing Diked Surface Impoundment – 40 CFR 257.73(a)(1) through (4) and 30 TAC Section 352.731.

_____ New or Lateral Diked Surface Impoundment – 40 CFR 257.74(a)(1) through (4) and 30 TAC Section 352.741."

Date: January 20, 2022

PE Signature: Charles Johnson



Surface Impoundments: Dike Construction

For each surface impoundment dike, complete the following information:

"I, Charles Johnson, Texas P.E. License Number 128280, of Registered Firm Environmental Resources Management (ERM), Registered Engineering Firm F-2393, certify under penalty of law that I have personally examined and am familiar with the design and construction of the dikes that are a portion of the Sludge Recycle Holding (SRH) Pond.

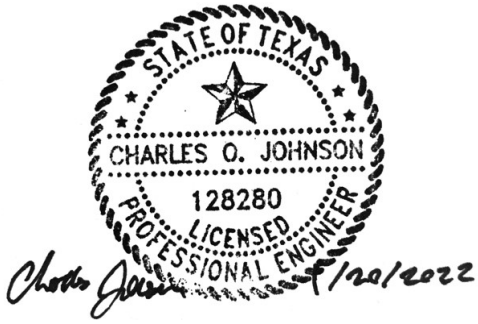
I further certify that I have evaluated the dike design and materials of construction using accepted engineering procedures, and have determined that the dike, including the portion of the dike providing freeboard, has structural integrity, and is constructed in accordance with applicable surface impoundment criteria per the following:

__X__ Existing Diked Surface Impoundment – 40 CFR 257.73(a)(1) through (4) and 30 TAC Section 352.731.

_____ New or Lateral Diked Surface Impoundment – 40 CFR 257.74(a)(1) through (4) and 30 TAC Section 352.741."

Date: January 20, 2022

PE Signature: Charles Johnson



Attachment 21 Plat Survey – Metes and Bounds

JOE MARTINEZ
A-466
CO. BLK. 5139
3 BLK 5139A

M. MENCHACA
A - 502
CO. BLK. 5151

P. L. BOUQUOR
A - 1178
CO. BLK. 5150

JOSE. MA. FLORES PEREZ
A - 583
CO. BLK. 5149

PABLO VILLAPANDO
A-773
CO. BLK. 5148

MANUEL MANJAROS
A-465
CO. BLK. 5146

FERNANDO RUIZ
A-619
CO. BLK. 5165

J.A. Ruble

Schoenfeld Land Co.
1659.7 ac
P-1

Republic National et al
Schoenfeld Land Co.

Laura Campbell et al.
10.83 Ac (192.9 Ac)

J.W. Terrill

Henry J. Meckorsky

Fred Huddleston

Clarence & Earl Stanley

Chester D. Gilmore

Ernest S. Gilmore

Kirkland Cattle Co.

Coyote Ridge

Knowlton

Humphreys

Cemetery

CPSB
REAL ESTATE
SECTION
COPY

CALAVERAS PROJECT
OWNERSHIP

OFFICE
Copy

FIELD NOTE DESCRIPTION OF CALAVERAS LAKE

All that certain tract of land lying and situate about twelve miles in a Southeasterly direction from San Antonio, in Bexar County, Texas, said tract of land containing 7459.256 acres, more or less, and being out of the following surveys:

SURVEY	ORIGINAL GRANTEE	ABSTRACT	COUNTY BLOCK
121	Fernando Ruiz	619	5165
4	Jose De La Garza	4	4008
6	Juan Montez	11	4007
57	Jose Ma. Flores Perez	583	5149
5	Miguel Gortaris	252	5192
142	Pablo Villapando	772	5148
141	Pablo Villapando	773	5147
7	Miguel Gortaris	256	5140
6	Manuel Manjaros	463	5146
120	Edward Brown	58	5164

being more particularly described as follows, TO-WIT:

Beginning at a point in the Northwest right of way line of F. M. Road 1518, in the Fernando Ruiz Survey No. 121, Abstract No. 619, County Block 5165 in Bexar County, Texas; said point of beginning being 71.63 feet South 07° 39' 32" West along the Northwest right of way line of F. M. Road 1518 from its intersection with the Southwest right of way line of Stuart Road;

Thence with the Northwest right of way line of F. M. Road 1518 as follows:

South 07° 39' 32" West, 42.44 feet, to an angle point, which point is left 50.00 feet from and at a right angle to the centerline of said Road at Survey Station 173+53.61;

South 41° 34' 37" West, 3712.74 feet, parallel to the centerline of said Road, to a point in the centerline of Calaveras Creek;

Thence leaving said right of way line and with the centerline of Calaveras Creek upstream as follows:

North 61° 33' 30" West, 48.20 feet;
North 48° 20' 40" West, 117.10 feet;
North 67° 50' 25" West, 34.70 feet;
North 49° 42' 40" West, 60.40 feet;
North 56° 12' 02" West, 189.00 feet;
North 51° 24' 30" West, 64.62 feet;
North 46° 30' 00" West, 115.00 feet;
North 68° 07' 52" West, 67.00 feet;

Thence, leaving the centerline of Calaveras Creek, South 66° 28' 00" West, 2355.00 feet, to the Northeast right of way line of the Laguna Road;

Thence with the Northeast right of way line of the Laguna Road as follows:

North 53° 04' 00" West, 1161.40 feet;
North 53° 29' 00" West, 235.60 feet;
North 53° 25' 00" West, 235.60 feet, to a corner of Laguna Road;

South 60° 38' 27" West, 45.32 feet, with the edge of Laguna Road, to the Southeast right of way line of Laguna Road;

Thence leaving said right of way line, South 65° 15' 18" West, 262.34 feet;

Thence South 66° 18' 09" West, 597.66 feet to a 3/4 inch iron pin for corner of this tract;

Thence North 52° 43' 39" West, 349.50 feet to a 3/4 inch iron pin in fence line;

Thence North 55° 47' 39" West, 300.34 feet to a 3/4 inch iron pin for corner;
Thence North 34° 40'00" East, 399.68 feet to a 3/4 inch iron pin;
Thence North 34° 33' 00" East, 199.80 feet to a 1/2 inch iron pin;
Thence North 56° 35' 24" West, 63.00 feet to a 1/2 inch iron pin in the Southeast right of way line of Adkins-Elmendorf Road;

Thence North 56° 35' 09" West, 36.30 feet with edge of Adkins-Elmendorf Road to a 3/4 inch iron pin in the Northwest right of way line of said Road;

Thence, leaving said Road, North 09° 03' 51" East, 549.30 feet to a 3/4 inch pin in the abandoned Southwest right of way line of Laguna Road;

Thence North 54° 35' 35" West, 89.66 feet to a point on the East right of way line of Kilowatt Road (formerly F.M. Road 1518);

Thence North 63° 39' 21" West, 151.91 feet across the end of said Road, to a point on the West right of way line of said Road;

Thence, leaving said Road, South 59° 00' 02" West, 302.40 feet to a 3/4 inch iron pin for an interior corner;

Thence South 19° 19' 30" West, 607.50 feet to a 3/4 inch iron pin in the Northwest right of way line of Kilowatt Road ;

Thence with said right of way line as follows:

South 34° 27' 49" West, 59.78 feet;

South 33° 40' 27" West, 621.86 feet to the East flare corner of the intersection of Kilowatt Road and U.S. Highway No. 181;

South 73° 34' 16" West, 149.07 feet to the West flare corner of the intersection of Kilowatt Road and U.S. Highway No. 181;

Thence South 28° 30' 00" West, 250.00 feet across U.S. Highway No. 181 to the West flare corner of the intersection of Kilowatt Road and U.S. Highway No. 181;

Thence South 13° 50' 33" East, 103.19 feet to the East flare corner of the intersection of Kilowatt Road and U.S. Highway No. 181;

Thence with the Northwest right of way line of Kilowatt Road South 33° 45' 55" West, 634.99 feet to a corner;

Thence North 12° 33' 29" West, 878.90 feet to an iron pin in the Southwest right of way line of U.S. Highway No. 181;

Thence North 43° 15' 00" East, 259.00 feet across U.S. Highway No. 181 to a corner in the Northeast right of way line of said Highway;

Thence, leaving said Highway, North 02° 55' 23" East, 218.25 feet to an interior corner;

Thence North 62° 04' 23" West, 150.00 feet to a point;

Thence North 62° 10' 00" West, 201.25 feet to a point;

Thence North 62° 04' 23" West, 206.43 feet to a corner;

Thence North 12° 44' 02" West, 318.40 feet to a corner;

Thence North 58° 53' 58" East, 165.00 feet to a point;

Thence North 59° 22' 00" East, 266.33 feet to an interior corner;

Thence North 33° 08' 15" West, 640.28 feet to a corner;

Thence North 58° 32' 41" East, 64.91 feet to an iron pin;

Thence North 56° 57' 00" East, 10.99 feet to an interior corner;

Thence North 31° 23' 22" West, 140.74 feet to an interior corner;

Thence South 58° 35' 43" West, 172.99 feet to an iron pipe for corner;

Thence North 58° 57' 45" West, 471.00 feet to an interior corner;

Thence South 58° 48' 36" West, 538.21 feet to an interior corner;

Thence South 31° 58' 29" East, 97.39 feet to a corner;

Thence South 58° 42' 18" West, 360.00 feet to a corner;

Thence North 31° 58' 29" West, 98.05 feet to a 3/4 inch iron pin;

Thence North 34° 06' 57" West, 231.76 feet to a 3/4 inch iron pin for an interior corner;

Thence South 58° 14' 23" West, 670.90 feet to a 3/4 inch iron pin on the Northeast right of way line of U.S. Highway No. 181;

Thence South 04° 11' 00" West, 265.00 feet across U.S. Highway No. 181 to a 3/4 inch iron pin on the Southwest right of way line of said Highway;

Thence, leaving said Highway, South 58° 45' 59" West, 1339.11 feet to a 3/4 inch iron pin for corner;

Thence North 31° 12' 40" West, 542.91 feet to a 3/4 inch iron pin for corner;

Thence North 57° 48' 05" East, 335.25 feet;

Thence North 58° 20' 43" East, 248.12 feet;

Thence North 59° 30' 47" East, 430.17 feet to a 1/2 inch iron pin on the Southwest right of way of U.S. Highway No. 181;

Thence continuing North 59° 30' 47" East, 280.00 feet across U.S. Highway No. 181 to a 1/2 inch iron pin on the Northeast right of way line of said Highway;

Thence with the Northeast right of way line of U.S. Highway No. 181 as follows:

North 62° 16' 10" West, 243.62 feet to a point;

North 62° 24' 07" West, 386.71 feet to a 4 inch iron pin for corner;

Thence leaving said Highway, North 57° 53' 53" East, 241.12 feet to a 3/4 inch iron pin for an interior corner;

Thence North 51° 31' 04" West, 84.59 feet to a 3/4 inch iron pin;

Thence North 69° 49' 04" West, 127.68 feet to a 3/4 inch iron pin;

Thence North 61° 50' 00" West, 489.00 feet to an interior corner;

Thence South 60° 00' 00" West, 248.39 feet to corner in the Northeast right of way line of U.S. Highway No. 181;

Thence with the Northeast right of way line of said Highway North 61° 50' 00" West, 380.12 feet to a corner;

Thence leaving said Highway North 60° 00' 00" East, 1188.00 feet to an iron pin for an interior corner;

Thence North 29° 42' 41" West, 444.94 feet to an interior corner;

Thence South 58° 33' 50" West, 274.13 feet to a 3/4 inch iron pin for corner;

Thence North 63° 57' 34" West, 655.00 feet to a 3/4 inch iron pin for an interior corner;

Thence South 52° 33' 50" West, 258.22 feet to a corner;

Thence North 38° 23' 29" West, 495.00 feet to a 3/4 inch iron pin for an interior corner;

Thence South 52° 28' 14" West, 1056.34 feet to a 3/4 inch iron pin in the Northeast right of way line of U.S. Highway No. 181 for corner;

Thence with said right of way line North 62° 28' 05" West, 350.57 feet to a 1/2 inch iron pin for corner;

Thence, leaving said Highway, North 51° 29' 19" East, 341.06 feet to a 3/4 inch iron pin for an interior corner;

Thence North 38° 24' 10" West, 414.89 feet to a 3/4 inch iron pin for corner;

Thence North 51° 35' 50" East, 1006.50 feet to a 3/4 inch iron pin for corner;

Thence South 50° 26' 04" East, 94.90 feet to a point for an interior corner;

Thence North 50° 29' 30" East, 799.36 feet to a 3/4 inch iron pin for an interior corner;

Thence North 13° 30' 01" East, 600.08 feet to a 3/4 inch iron pin for corner;

Thence South 82° 29' 17" East, 884.46 feet to a 3/4 inch iron pin in the Southwest right of way line of Laguna Road;

Thence North 82° 40' 00" East, 80.00 feet with the edge of Laguna Road to the Northeast right of way line of said Road;

Thence, leaving said Road, North 70° 28' 20" East, 542.00 feet to an iron pin for corner;

Thence South 60° 28' 35" East, 128.02 feet to an iron pin for an interior corner;

Thence North 10° 35' 58" East, 486.02 feet to an iron pin for an interior corner;

Thence North 81° 58' 48" West, 162.00 feet to an iron pin for corner;

Thence North 28° 55' 16" West, 290.01 feet to an iron pin for an interior corner;

Thence South 44° 40' 39" West, 551.20 feet to a point;

Thence South 44° 55' 12" West, 384.99 feet for corner in the Northeast right of way line of Laguna Road;

Thence North 48° 51' 06" West, 136.95 feet with the Northeast right of way line of Laguna Road to a corner;

Thence, leaving said Road, North 44° 24' 16" East, 1000.22 feet for an interior corner;

Thence North 24° 04' 51" West, 74.58 feet for an interior corner;

Thence South 44° 20' 50" West, 84.42 feet to a corner;

Thence North 45° 42' 39" West, 69.34 feet to a corner;

Thence North 44° 17' 21" East, 89.84 feet for an interior corner;
Thence North 41° 14' 44" West, 127.35 feet for an interior corner;
Thence South 44° 19' 18" West, 130.09 feet to a point;
Thence South 46° 34' 07" West, 74.39 feet to a point;
Thence South 36° 44' 59" West, 18.13 feet to a point;
Thence South 45° 05' 28" West, 445.12 feet to a point;
Thence South 44° 42' 46" West, 390.56 feet to a corner on the Northeast right of way line of Laguna Road;
Thence North 47° 06' 32" West, 774.56 feet to a point;
Thence North 46° 54' 00" West, 289.70 feet to an iron pipe found at the intersection of the Southeast right of way line of Cassiano Road with the Northeast right of way line of Cassiano Road where said Road changes direction from Northeast to Northwest;
Thence continuing North 46° 54' 00" West, 13.08 feet with the Northeast right of way line of Cassiano Road to a corner;
Thence, leaving said Road, North 45° 21' 17" East, 853.02 feet to an iron pin for an interior corner;
Thence North 77° 41' 22" West, 337.91 feet to an iron pin for an interior corner;
Thence South 45° 25' 49" West, 679.94 feet to an iron pin found on the Northeast right of way line of Cassiano Road;
Thence with the edge of Cassiano Road South 18° 20' 02" West, 30.52 feet to the Southwest right of way line of said Road;
Thence with the Southwest right of way line of Cassiano Road, South 48° 03' 40" East, 238.43 feet to the intersection of the Southwest right of way line of Cassiano Road with the Northwest right of way line of Cassiano Road where said road changes direction from Southeast to Southwest;
Thence with the Northwest right of way line of said road, South 48° 05' 58" West, 481.52 feet to a 3/4 inch iron pin for corner;
Thence, leaving said Road, North 36° 07' 22" West, 106.90 feet to a 3/4 inch iron pin for an interior corner;
Thence North 83° 01' 32" West, 1,302.94 feet to a 3/4 inch iron pin for corner;
Thence North 57° 01' 22" East, 896.99 feet to a 3/4 inch iron pin for an interior corner;
Thence North 15° 35' 17" West, 199.99 feet to a 3/4 inch iron pin for an interior corner;
Thence North 26° 21' 02" West, 675.66 feet to a 3/4 inch iron pin for an interior corner;
Thence North 48° 10' 51" West, 137.31 feet to a point;
Thence North 48° 30' 10" West, 604.00 feet to a 3/4 inch iron pin for an interior corner;
Thence South 44° 07' 28" West, 2,638.52 feet to a 3/4 inch iron pin for corner;
Thence South 49° 16' 24" West, 1,685.93 feet to a 3/4 inch iron pin in the Northeast right of way line of U.S. Highway No. 181;
Thence South 74° 00' 00" West, 330.00 feet across U.S. Highway No. 181, to a 3/4 inch iron pin in the Southeast right of way line of said Highway;
Thence leaving said Highway, South 54° 20' 01" West, 1,000.26 feet to a 3/4 inch iron pin for an interior corner;
Thence South 43° 30' 45" West, 1,810.03 feet to a 3/4 inch iron pin for an interior corner;
Thence South 03° 28' 51" East, 890.06 feet to a 3/4 inch iron pin for an interior corner;
Thence South 53° 06' 52" East, 627.60 feet to a 1/2 inch iron pin in the Northeast right of way line of the Southern Pacific Railroad for corner;
Thence with said right of way line of the Southern Pacific Railroad as follows:
North 55° 18' 12" West, 51.95 feet to a point;
North 56° 31' 48" West, 102.56 feet to a point;
North 59° 29' 43" West, 102.72 feet to a point;

North 62° 43' 58" West, 102.54 feet to a point;
North 65° 34' 35" West, 137.03 feet to a point;
North 69° 01' 12" West, 967.51 feet to a 3/4 inch iron pin for corner;
Thence leaving said right of way line of the Southern Pacific Railroad, North 43° 27' 00" East, 888.23 feet to a 1-1/4 inch iron pipe;
Thence North 43° 22' 57" East, 1,199.65 feet to a 1-1/4 inch iron pipe;
Thence North 43° 38' 10" East, 191.89 feet to a 1-1/4 inch iron pipe;
Thence North 43° 36' 48" East, 1,457.84 feet to a 1/2 inch iron pin in the Southeast right of way line of U.S. Highway No. 181;
Thence North 42° 21' 00" East, 245.00 feet across U.S. Highway No. 181, to a 3/4 inch iron pin in the Northeast right of way line of U.S. Highway No. 181;
Thence leaving said Highway, North 42° 30' 44" East, 1595.46 feet to a 3/4 inch iron pin for an interior corner;
Thence North 47° 23' 22" West, 327.92 feet to a 3/4 inch iron pin for corner;
Thence North 27° 10' 09" East, 708.64 feet to a 3/4 inch iron pin for corner;
Thence North 59° 43' 13" East, 979.81 feet to a 3/4 inch iron pin for an interior corner;
Thence North 24° 09' 00" East, 383.65 feet to a 3/4 inch iron pin for an interior corner;
Thence North 45° 47' 32" West, 395.89 feet to a 3/4 inch iron pin;
Thence North 45° 47' 28" West, 804.09 feet to a 3/4 inch iron pin for corner;
Thence North 45° 24' 13" East, 800.08 feet to a 3/4 inch iron pin for corner;
Thence North 81° 29' 13" East, 999.76 feet to a 3/4 inch iron pin for an interior corner;
Thence North 00° 30' 32" West, 1,449.44 feet to a 3/4 inch iron pin for an interior corner;
Thence North 83° 59' 54" West, 1,200.28 feet to a 3/4 inch iron pin for corner;
Thence North 42° 30' 42" West, 1,199.88 feet to a 3/4 inch iron pin for an interior corner;
Thence South 83° 30' 22" West, 755.19 feet to a 3/4 inch iron pin for corner;
Thence North 03° 00' 14" East, 599.77 feet to a 3/4 inch iron pin for corner;
Thence South 85° 59' 32" East, 899.79 feet to a 3/4 inch iron pin for corner;
Thence South 63° 28' 35" East, 1,499.83 feet to a 3/4 inch pin for an interior corner;
Thence North 52° 31' 01" East, 399.88 feet to a 3/4 inch iron pin for an interior corner;
Thence North 28° 29' 55" West, 399.91 feet to a 3/4 inch iron pin for an interior corner;
Thence North 56° 29' 42" West, 1,500.06 feet to a 3/4 inch iron pin for an interior corner;
Thence North 65° 45' 09" West, 992.73 feet to a 3/4 inch iron pin for corner;
Thence North 48° 56' 08" West, 1,105.27 feet to a 1/2 inch iron pin in the Southeast right of way line of Foster Road for corner;
Thence with said right of way line of Foster Road, North 35° 44' 53" East, 468.66 feet to a 3/4 inch iron pin for corner;
Thence leaving said road, South 54° 17' 35" East, 200.02 feet to a 3/4 inch iron pin for an interior corner;
Thence North 35° 43' 05" East, 100.00 feet to a 3/4 inch iron pin for corner;
Thence South 54° 24' 43" East, 899.47 feet to a 3/4 inch iron pin for an interior corner;
Thence South 71° 24' 26" East, 1,844.02 feet to a 1/2 inch iron pin for an interior corner;

Thence North 35° 23' 20" East, 520.30 feet to the Southwest right of way of Hildebrandt Road;

Thence with the edge of Hildebrandt Road, North 43° 26' 22" East, 49.07 feet to the Northeast right of way line of said road for an interior corner;

Thence with the said Northeast right of way line of Hildebrandt Road, North 54° 05' 00" West, 1816.77 feet to a corner;

Thence leaving said road, North 36° 25' 04" East, 808.78 feet to a 3/4 inch iron pin for an interior corner;

Thence North 41° 37' 21" West, 1,055.46 feet to a 3/4 inch iron pin for corner;

Thence North 00° 47' 34" West, 699.50 feet to a 3/4 inch iron pin for an interior corner;

Thence South 80° 06' 48" West, 400.18 feet to a corner in the East right of way line of Foster Road;

Thence with the east right of way line of Foster Road North 00° 04' 54" West, 565.00 feet to a point;

Thence West, 95.00 feet across Foster Road to a 3/4 inch iron pin in the West right of way line of said road;

Thence, leaving said Road, North 65° 24' 13" West, 720.67 feet to a corner;

Thence North 51° 14' 31" West, 1526.83 feet to a 3/4 inch iron pin for corner;

Thence North 41° 14' 41" West, 1,580.04 feet to a 3/4 inch iron pin for corner;

Thence North 03° 09' 19" East, 1,615.74 feet to a 1/2 inch iron pin for an interior corner;

Thence North 06° 24' 17" West, 1,531.85 feet to a 3/4 inch iron pin for corner;

Thence North 46° 51' 34" East, 499.93 feet to a 3/4 inch iron pin for corner;

Thence South 66° 50' 12" East, 299.96 feet to a 3/4 inch iron pin for corner;

Thence South 19° 07' 58" West, 478.46 feet to a 3/4 inch iron pin for an interior corner;

Thence South 08° 16' 11" East, 189.18 feet to a 3/4 inch iron pin for an interior corner;

Thence South 57° 27' 03" East, 1,139.91 feet to a 3/4 inch iron pin for corner;

Thence South 10° 27' 28" East, 2098.58 feet to a 3/4 inch iron pin for an interior corner;

Thence South 51° 27' 20" East, 1,424.90 feet to a 3/4 inch iron pin in the West right of way line of Foster Road;

Thence East 95.00 feet across Foster Road to the East right of way line of said Road;

Thence with the East right of way line of Foster Road North 00° 04' 54" West, 580.00 feet to a corner;

Thence, leaving said Road, South 84° 11' 00" East, 544.55 feet for an interior corner;

Thence North 00° 11' 00" East, 183.80 feet to a corner;

Thence East, 3,444.80 feet to a corner;

Thence South 00° 15' 00" East, 3,755.00 feet to a 3/4 inch iron pin for an interior corner;

Thence South 50° 26' 39" East, 399.94 feet to a 3/4 inch iron pin for corner;

Thence South 01° 27' 42" East, 575.11 feet to a 3/4 inch iron pin for an interior corner;

Thence South 71° 56' 57" East, 898.54 feet to a 3/4 inch iron pin for an interior corner;

Thence North 00° 27' 34" West, 1,379.65 feet to a 3/4 inch iron pin for corner;

Thence North 84° 32' 20" East, 469.57 feet to a 3/4 inch iron pin for an interior corner;

Thence North 01° 32' 37" East, 939.96 feet to a 3/4 inch iron pin for corner;

Thence North 89° 32' 47" East, 500.35 feet to a 3/4 inch iron pin for corner;

Thence South 00° 57' 00" East, 724.91 feet to a 3/4 inch iron pin for an interior corner;

Thence North 52° 31' 53" East, 789.54 feet to a 3/4 inch iron pin for an interior corner;

Thence North 08° 27' 14" West, 1,149.71 feet to a 3/4 inch iron pin for corner;

Thence North 21° 32' 26" East, 749.61 feet to a 3/4 inch iron pin for corner;

Thence South 61° 17' 54" East, 203.44 feet to a 3/4 inch iron pin for corner;

Thence South 43° 24' 19" West, 149.92 feet to a 3/4 inch iron pin for an interior corner;

Thence South 15° 52' 20" West, 100.00 feet to a 3/4 inch iron pin for corner;

Thence South 29° 37' 49" West, 159.91 feet to a 3/4 inch iron pin for an interior corner;

Thence South 72° 24' 16" East, 209.37 feet to a 3/4 inch iron pin for corner;

Thence South 49° 25' 58" East, 805.93 feet to a 3/4 inch iron pin in the West right of way line of Gardner Road;

Thence with the edge of Gardner Road, North 89° 16' 42" East, 50.00 feet to the East right of way line of said Road;

Thence with the East right of way line of Gardner Road, North 00° 33' 00" West, 4,165.00 feet to a corner;

Thence leaving said Road, North 89° 09' 00" East, 2,277.00 feet to a corner;

OR CORRECTION SEE VERETT ROBIN-SEED EXECUTIVE FILES)

Thence South 37° 45' 00" East, 2,905.00 feet to a 3/4 inch iron pin for an interior corner;

Thence North 51° 37' 03" East, 1,050.60 feet to a 3/4 inch iron pin to a point;

Thence North 51° 36' 50" East, 1,463.65 feet to a point;

Thence North 51° 30' 21" East, 52.71 feet to a corner;

Thence North 88° 26' 49" East, 406.59 feet to a 1/2 inch iron pin for an interior corner;

Thence North 00° 32' 25" West, 656.35 feet to a corner;

Thence North 89° 27' 39" East, 1,250.00 feet to a 1/2 inch iron pin for corner;

Thence South 01° 33' 16" East, 634.12 feet to a 1/2 inch iron pin for an interior corner;

Thence North 88° 26' 49" East, 973.77 feet to a 1/2 inch iron pin in the Northwest right of way line of Knowlton Road (formerly Stuart Road),

Thence with the Northwest right of way line of Knowlton Road, South 12° 24' 28" West, 201.35 feet for an interior corner of this tract and a corner of said Road;

Thence with the edge of Knowlton Road, South 77° 24' 17" East, 50.95 feet to a 1/2 inch iron pin in the Southeast right of way line of said Road;

Thence leaving said Road, North 73° 14' 36" East, 1,147.75 feet to a 1/2 inch iron pin for an interior corner;

Thence North 16° 16' 08" West, 800.00 feet to an interior corner;

Thence South 73° 14' 36" West, 708.79 feet to a corner in the Southeast right of way line of Knowlton Road;

Thence with said Southeast right of way line, North 12° 53' 35" East, 46.02 feet to an iron pin set in a 4"x4" concrete monument for corner;

Thence leaving said Road, North 73° 14' 34" East, 686.36 feet to an interior corner;

Thence North 36° 17' 24" East, 672.25 feet to a 3/4 inch iron pin for corner;

Thence North 74° 32' 58" East, 474.95 feet to a 3/4 inch iron pin for corner;

Thence South 11° 26' 54" East, 400.03 feet to a 3/4 inch iron pin;

Thence South 11° 27' 01" East, 1,600.15 feet to a 3/4 inch iron pin for an interior corner;

Thence North 28° 49' 40" East, 1,667.04 feet to a 3/4 inch iron pin for corner;

Thence South 87° 52' 27" East, 780.94 feet to a 3/4 inch iron pin for an interior corner;

Thence North 00° 12' 29" East, 669.91 feet to a 1/2 inch iron pin for corner;

Thence South 89° 47' 29" East, 30.00 feet to a 1/2 inch iron pin for an interior corner;

Thence North 00° 12' 31" East, 268.70 feet to a 1/2 inch iron pin for corner;

Thence North 41° 26' 15" East, 937.91 feet to a 1/2 inch iron pin in the Southwest right of way line of Sulphur Springs Road;

Thence with said right of way line of Sulphur Springs Road as follows:

South 58° 12' 30" East, 110.47 feet to a point;

South 56° 22' 59" East, 128.08 feet to a point;

South 52° 05' 51" East, 200.01 feet to a point;

Thence North 26° 31' 00" East, 73.00 feet across Sulphur Springs Road to a 3/4 inch iron pin in the Northeast right of way line of said Road;

Thence, leaving said Road, North 14° 05' 32" East, 300.02 feet to a 3/4 inch iron pin for an interior corner;

Thence North 23° 17' 58" West, 615.82 feet to a 3/4 inch iron pin for an interior corner;

Thence North 77° 13' 35" West, 624.11 feet to a 3/4 inch iron pin for corner;

Thence North 14° 06' 44" East, 859.23 feet to a 3/4 inch iron pin for corner;

Thence South 65° 40' 34" East, 253.20 feet to a 3/4 inch iron pin for an interior corner;

Thence North 41° 59' 18" East, 628.54 feet to a 3/4 inch iron pin;

Thence North 41° 59' 14" East, 1,445.47 feet to a 3/4 inch iron pin for an interior corner;

Thence North 14° 12' 14" East, 535.03 feet to a 3/4 inch iron pin for an interior corner;

Thence North 34° 10' 08" West, 1424.05 feet to a 3/4 inch iron pin for corner;

Thence North 15° 25' 57" West, 1,016.42 feet to a 3/4 inch iron pin for corner;

Thence South 77° 30' 43" East, 299.85 feet to a 3/4 inch iron pin for corner;

Thence South 26° 00' 41" East, 676.48 feet to a 3/4 inch iron pin;

Thence South 26° 00' 37" East, 1,751.39 feet to a 3/4 inch iron pin for an interior corner;

Thence South 76° 30' 50" East, 389.05 feet to a 3/4 inch iron pin for an interior corner;

Thence North 09° 58' 59" East, 585.21 feet to a 3/4 inch iron pin for corner;

Thence South 78° 13' 09" East, 199.98 feet to a 3/4 inch iron pin for corner;

Thence South 07° 47' 36" West, 669.99 feet to a 3/4 inch iron pin for corner;

Thence South 17° 40' 45" West, 1,343.20 feet to a 3/4 inch iron pin for corner;

Thence South 77° 08' 02" West, 432.03 feet to a 3/4 inch iron pin for an interior corner;

Thence South 36° 05' 50" West, 799.99 feet to a 3/4 inch iron pin for an interior corner;

Thence South 79° 38' 40" East, 749.85 feet to a 3/4 inch iron pin for corner;

Thence South 20° 51' 23" West, 699.89 feet to a 3/4 inch iron pin for an interior corner;

Thence South 04° 24' 49" East, 26.77 feet to a point;

Thence South 04° 24' 06" East, 743.33 feet to a 3/4 inch iron pin for corner;

Thence South 45° 16' 17" West, 388.14 feet to a 3/4 inch iron pin for an interior corner;

Thence South 20° 35' 46" West, 275.15 feet to a 3/4 inch iron pin for an interior corner;

Thence South 01° 15' 58" East, 120.84 feet to a 3/4 inch iron pin in the Northeast right of way line of Sulphur Springs Road;

Thence South 11° 05' 00" West, 120.00 feet across Sulphur Springs Road to a 3/4 inch iron pin in the Southwest right of way line of said Road;

Thence, leaving said Road, South 14° 34' 33" West, 530.08 feet to a 3/4 inch iron pin for corner;

Thence South 60° 01' 54" West, 290.04 feet to a 3/4 inch iron pin for an interior corner;

Thence South 16° 28' 56" West, 410.83 feet to a 3/4 inch iron pin for corner;

Thence South 52° 12' 30" West, 202.03 feet to a 3/4 inch iron pin for an interior corner;

Thence South 16° 18' 17" East, 393.74 feet to a 3/4 inch iron pin for corner;

Thence South 73° 28' 12" West, 580.70 feet to a 3/4 inch iron pin for an interior corner;

Thence South 19° 42' 29" East, 709.79 feet to a 3/4 inch iron pin for corner;

Thence South 83° 03' 09" West, 1,000.32 feet to a 3/4 inch iron pin for an interior corner;

Thence South 45° 23' 28" West, 689.06 feet to a 3/4 inch iron pin for an interior corner;

Thence South 08° 57' 13" West, 581.74 feet to a 3/4 inch iron pin for corner;

Thence South 80° 26' 58" West, 350.05 feet to a 3/4 inch iron pin for an interior corner;

Thence South 11° 56' 42" West, 1,000.07 feet to a 3/4 inch iron pin for an interior corner;

Thence South 29° 33' 33" East, 282.01 feet to a 3/4 inch iron pin in the Northwest right of way line of the relocated Stuart Road;

Thence continuing South 29° 33' 33" East, 101.00 feet across Stuart Road to a point in the Southwest right of way line of said Road;

Thence leaving said Road and continuing South 29° 33' 33" East, 315.39 feet to an iron pin for corner;

Thence South 60° 41' 31" West, 555.07 feet to an iron pin for corner;

Thence North 33° 19' 41" West, 430.78 feet to a point in the Southeast right of way line of the relocated Stuart Road;

Thence continuing North 33° 19' 41" West, 101.00 feet across Stuart Road to a point in the Northwest right of way line of said Road;

Thence leaving said Road and continuing North 33° 19' 41" West, 19.16 feet to an iron pin for an interior corner;

Thence South 73° 09' 18" West, 1781.31 feet to a 3/4 inch iron pin for an interior corner;

Thence South 31° 39' 08" East, 250.02 feet to a 3/4 inch iron pin for corner;

Thence South 06° 16' 23" West, 1480.49 feet to a 3/4 inch iron pin for an interior corner;

Thence South 39° 43' 45" East, 620.55 feet to a 3/4 inch iron pin for an interior corner;

Thence North 74° 01' 48" East, 564.92 feet to a 3/4 inch iron pin in the Northwest right of way line of Stuart Road;

Thence with the Northwest right of way line of Stuart Road as follows:

South 03° 59' 34" West, 842.14 feet to a point;

South 50° 25' 23" West, 14.44 feet to a point;

Thence South 31° 15' 00" East, 99.00 feet across Stuart Road to a 3/4 inch iron pin in the Southwest right of way line of said Road;

Thence leaving said Road, South 70° 17' 11" East, 784.46 feet to a 3/4 inch iron pin for corner;

Thence South 06° 47' 03" West, 386.65 feet to a corner;

Thence South 73° 39' 42" West, 892.22 feet to a corner in the Southeast right of way line of Stuart Road;

Thence with the Southeast right of way line of Stuart Road North 06° 44' 57" East, 198.69 feet to the most westerly corner of the San Lorenzo Cemetery;

Thence South 82° 59' 00" East, with the Southwest line of said Cemetery, 208.40 feet to an interior corner of herein described tract;

Thence North 09° 44' 31" East, 310.79 feet to an interior corner;

Thence North 83° 38' 04" West, 203.70 feet to a 3/4 inch iron pin in the Southeast right of way line of Stuart Road;

Thence North 29° 37' 00" West, 98.00 feet across Stuart Road to a 3/4 inch iron pin in the Northwest right of way line of said Road;

Thence, leaving said Road, North 60° 10' 32" West, 496.41 feet to a 3/4 inch iron pin for an interior corner;

Thence South 73° 43' 26" West, 1100.50 feet to a 3/4 inch iron pin;

Thence South 73° 43' 14" West, 200.02 feet to a 3/4 inch iron pin for an interior corner;

Thence South 33° 59' 04" West, 1,284.12 feet to a 3/4 inch iron pin for an interior corner;

Thence South 85° 28' 15" East, 499.95 feet to a 3/4 inch iron pin for corner;
Thence South 75° 26' 46" East, 470.25 feet to a 3/4 inch iron pin for corner;
Thence South 16° 27' 24" East, 199.98 feet to a 3/4 inch iron pin for corner;
Thence South 73° 36' 13" West, 329.18 feet to a 3/4 inch iron pin for an interior corner;
Thence South 36° 28' 22" West, 390.09 feet to a 3/4 inch iron pin for corner;
Thence South 52° 05' 07" West, 710.51 feet to a 3/4 inch iron pin for an interior corner;
Thence South 14° 38' 41" West, 253.97 feet to a 3/4 inch iron pin for an interior corner;
Thence North 72° 13' 53" East, 207.98 feet to a 3/4 inch iron pin for an interior corner;
Thence North 49° 15' 01" East, 216.10 feet to a 3/4 inch iron pin for corner;
Thence South 59° 24' 32" East, 233.38 feet to a 3/4 inch iron pin for corner;
Thence South 35° 55' 04" East, 639.90 feet to a 3/4 inch iron pin for corner;
Thence South 17° 12' 18" East, 336.66 feet to a 3/4 inch iron pin for corner;
Thence South 49° 07' 15" West, 1,646.47 feet to a 3/4 inch iron pin for an interior corner;
Thence South 00° 49' 14" West, 599.92 feet to a 3/4 inch iron pin for corner;
Thence South 37° 50' 21" West, 599.97 feet to a 3/4 inch iron pin for an interior corner;
Thence South 51° 10' 32" East, 703.38 feet to a 3/4 inch iron pin for an interior corner;
Thence North 76° 53' 51" East, 595.12 feet to a 1/2 inch iron pin for an interior corner;
Thence North 16° 59' 08" West, 37.76 feet to a 1/2 inch iron pin for corner;
Thence North 73° 36' 03" East, 187.70 feet to a 3/4 inch iron pin for corner;
Thence South 16° 51' 43" East, 723.49 feet to a 3/4 inch iron pin for corner;
Thence South 15° 42' 06" East, 695.28 feet to a 3/4 inch iron pin for an interior corner;
Thence North 74° 18' 06" East, 379.66 feet to a point;
Thence North 74° 03' 50" East, 412.33 feet to a 3/4 inch iron pin for corner;
Thence South 01° 46' 16" East, 1,509.97 feet to a 3/4 inch iron pin for an interior corner;
Thence South 17° 06' 48" East, 973.42 feet to a 3/4 inch iron pin in the Northwest right of way line of Bernhardt Road (formerly F.M. Road 1518);
Thence with the edge of Bernhardt Road South 12° 47' 15" East, 80.12 feet to a 3/4 inch iron pin in the Southeast right of way line of said Road;
Thence, leaving said Road, South 13° 11' 27" East, 674.93 feet to a 3/4 inch iron pin for corner;
Thence South 50° 35' 24" West, 416.09 feet to a 3/4 inch iron pin for an interior corner;
Thence South 14° 55' 13" East, 1,730.73 feet to a 3/4 inch iron pin for an interior corner;
Thence North 71° 45' 42" East, 60.77 feet to a corner;
Thence South 16° 20' 18" East, 800.00 feet to a 3/4 inch iron pin for an interior corner;
Thence North 73° 48' 51" East, 996.15 feet to the Point of Beginning.
LESS AND EXCEPT 10.08 acres, more or less, for U.S. Highway No. 181; 3.46 acres, more or less, for Foster Road; 2.29 acres, more or less, for Sulphur Springs Road; and 1.91 acres, more or less, for Stuart Road.

Containing 7,459.256 acres of land, more or less.

I certify that this description as represented by survey notes was prepared under my direction.

Merritt W. Keel, R.P.

Attachment 22 Verification of Legal Status

ORDINANCE AND INDENTURE

Authorizing Issuance of

CITY OF SAN ANTONIO

ELECTRIC AND GAS REVENUE BONDS

IN THE SUM OF $35,000,000

Ordinance Passed on July 25, 1942
As Amended on October 23, 1942
Including Indenture As Amended

THE CLEGG CO. - SAN ANTONIO

ORDINANCE AND INDENTURE

Authorizing Issuance of

City of San Antonio
Electric and Gas Revenue Bonds

in the sum of $35,000,000

San Antonio, Texas
July 25, 1942

Pursuant to ordinance adopted on July 10, 1942, the Commissioners of the City of San Antonio met in regular adjourned session at the regular meeting place of the Board in the City Hall, in the City of San Antonio, Texas, at ten o'clock, A. M., on July 25, 1942. There were present Mayor C. K. Quin and the following Commissioners:

Henry F. Hein
Paul E. Steffler
P. L. Anderson
Absent: C. Ray Davis

There were also present James Simpson, City Clerk, and Victor Keller, City Attorney.

After the meeting had been duly called to order and the roll called, the Mayor announced that one of the purposes of the meeting was the adoption of an ordinance authorizing revenue bonds of the city pursuant to notice of intention directed by ordinance adopted on July 10, 1942. The City Clerk presented a publisher's affidavit evidencing publication of the notice of intention prescribed by said ordinance in the San Antonio Light, a newspaper published and having general circulation in the City of San Antonio, on July 10, 1942, and July 17, 1942. The affidavit was approved by the Commissioners and ordered recorded in the minutes of the meeting.

Thereupon, the following ordinance was introduced in writing by C. K. Quin and was read in full. It was then moved by

Henry F. Hein and seconded by Paul E. Steffler that the ordinance as read be adopted and, after due discussion, the motion was voted upon and carried by the following vote:

Aye: C. K. Quin
Henry F. Hein
Paul E. Steffler
P. L. Anderson
Nay: None.

The ordinance was thereupon declared adopted, was approved and signed in open meeting by the Mayor and was ordered recorded by the City Clerk. The ordinance is as follows:

> "**AN ORDINANCE** authorizing the acquisition by the City of San Antonio of an electric light and power plant and system and a gas distribution system serving the City of San Antonio and its inhabitants and territory adjacent to said city, authorizing the issuance of the revenue bonds of said city for the purpose of paying the cost thereof, fixing the details and providing for the payment and security of such bonds, approving and ratifying the notice of intention to issue such bonds heretofore given, authorizing and providing for the execution of a mortgage on said plant and systems as security for the payment of such bonds, granting a franchise to any purchaser of said properties at any sale which may be held for the enforcement of such mortgage, providing for the management of said plant and systems, entering into certain covenants and agreements in connection with such acquisition and such bonds, and declaring an emergency."

WHEREAS, on the 10th day of July, 1942, the Commissioners of the City of San Antonio adopted an ordinance entitled "An Ordinance directing the City Clerk to give notice of intention to purchase gas and electric properties now serving the City of San Antonio and surrounding territory and to issue electric and gas revenue bonds therefor"; and

WHEREAS, pursuant to the provisions of said ordinance and to the provisions of the "Bond and Warrant Law of 1931," being Article 2368(a) of the Texas Civil Statutes, there was duly published in the San Antonio Light, a newspaper published and having general circulation in the City of San Antonio, on July 10 and July 17, 1942, a notice apprising the qualified electors of the city and all other persons interested of the intention of the

Commissioners of the City of San Antonio at a meeting to be held at ten o'clock, A.M., on July 25, 1942, to pass such ordinances and take such action as might be deemed necessary to authorize the issuance of Thirty-five Million Dollars ($35,000,000) revenue bonds of said city for the purpose of acquiring an electric light and power plant and system and a gas distribution system serving the City of San Antonio and its inhabitants and territory adjacent to said city; and

WHEREAS, more than fourteen days have expired since the first publication of said notice and no petition has been filed requesting that the question of the issuance of bonds for such purpose be submitted to a referendum vote; and

WHEREAS, it is the opinion of the Commissioners that it is necessary and essential to the welfare of the inhabitants of the city that an electric light and power plant and system and a gas distribution system be acquired by the city immediately in the manner for which provision is hereinafter made, and that the revenue bonds of the city be authorized, sold and issued for the purpose of obtaining funds to pay the cost of such acquisition;

NOW, THEREFORE, Be It Ordained by the Commissioners of the City of San Antonio:

SECTION 1. That the ordinance of July 10, 1942, described in the preamble hereto, and the act of the City Clerk in publishing the notice described in said preamble, be and are hereby ratified, approved and confirmed, and that it is hereby formally found by the Commissioners that said notice was given and published in all respects as required by the Bond and Warrant Law of 1931, and that there has not been filed any petition requesting a referendum vote on the question of the issuance of such bonds.

SECTION 2. That the City of San Antonio shall acquire a complete electric light and power plant and system and gas distribution system serving the City of San Antonio and its inhabitants and territory adjacent to said city, such acquisition to be effected through the acquisition of all of the electric and gas properties owned by San Antonio Public Service Company on the date of the acquisition of such properties by the city, excepting only the electric distribution systems owned by said company and located within the corporate limits of municipal corporations other than the City of San Antonio and such distribution facilities immediately contiguous to such other municipal corporations as form an integral part of such systems, and through the making of repairs, improvements and extensions to

such plant and systems. All properties of every nature of San Antonio Public Service Company acquired by the City of San Antonio hereunder, real, personal and incorporeal, including contracts, franchises, leases and choses in action, together with all improvements, additions and extensions which may hereafter be made to said properties while any of the bonds herein authorized remain outstanding, either from the proceeds of such bonds or from any other source, are hereinafter in this ordinance referred to as "the system."

SECTION 3. That in order to pay the cost of acquisition of such electric light and power plant and system and gas distribution system in the manner hereinbefore set out, including the payment of all legal, engineering, accounting, fiscal agents, and other incidental costs and fees incurred in connection with such acquisition and the authorization and issuance of the bonds, there be borrowed upon the credit of the income and revenues of the system the sum of Thirty-five Million Dollars ($35,000,000), and that in evidence thereof there be issued the revenue bonds of the City of San Antonio, under authority of Articles 1111 et seq. of the Texas Revised Civil Statutes, 1925, as amended, which bonds shall be payable as to both principal and interest solely from the revenues of the system and secured by mortgage on the system, all as more specifically hereinafter provided. Such part of the proceeds of the sale of such bonds, other than accrued interest and premium, as is not used to pay the cost of the acquisition of the properties of San Antonio Public Service Company, including the payment of incidental costs and fees as above provided, and any funds which may be received by the city from other sources simultaneously with or subsequent to the issuance of the bonds and by reason of the issuance thereof, shall be used for the purpose of making repairs, improvements and extensions to such properties, in order that the city may have a complete and effective gas and electric system.

SECTION 4. That such bonds shall be denominated "Electric and Gas Revenue Bonds," shall be dated August 1, 1942, shall be in the denomination of $1,000 each, shall be numbered 1 to 35,000, inclusive, shall bear interest until paid at such rate or rates not greater than three and one-half per cent (3½%) per annum, as may prove to be the lowest rate or rates specified in the bids for the purchase of said bonds pursuant to which said bonds shall hereafter be sold by the Commissioners, which interest shall be payable semi-annually on the first days of February and August of each year, shall be payable as to both principal and interest in lawful money of the United States of America at Chemical Bank & Trust Company in the City of New

York, New York, and shall mature serially in numerical order on August 1 of each year as follows:

Year	Amount	Bond Numbers
1944	$ 775,000	1 to 775
1945	800,000	776 to 1575
1946	825,000	1576 to 2400
1947	850,000	2401 to 3250
1948	875,000	3251 to 4125
1949	900,000	4126 to 5025
1950	925,000	5026 to 5950
1951	955,000	5951 to 6905
1952	985,000	6906 to 7890
1953	1,010,000	7891 to 8900
1954	1,040,000	8901 to 9940
1955	1,070,000	9941 to 11010
1956	1,105,000	11011 to 12115
1957	1,140,000	12116 to 13255
1958	1,170,000	13256 to 14425
1959	1,205,000	14426 to 15630
1960	1,240,000	15631 to 16870
1961	1,280,000	16871 to 18150
1962	1,315,000	18151 to 19465
1963	1,355,000	19466 to 20820
1964	1,395,000	20821 to 22215
1965	1,440,000	22216 to 23655
1966	1,480,000	23656 to 25135
1967	1,525,000	25136 to 26660
1968	1,570,000	26661 to 28230
1969	1,620,000	28231 to 29850
1970	1,665,000	29851 to 31515
1971	1,715,000	31516 to 33230
1972	1,770,000	33231 to 35000

Such bonds shall be subject to redemption at the option of the City of San Antonio, to be evidenced by appropriate resolution passed by the Commissioners of the City of San Antonio and approved by the Board of Trustees in charge of the operation of the city's gas and electric properties, either in whole, or in part in inverse numerical order, bonds numbered 33231 to 35000, inclusive, on any interest payment date, and bonds numbered 3251 to 33230, inclusive, on August 1, 1947 and on any interest payment date thereafter, all at the principal amount thereof and accrued interest to the date fixed for redemption, plus such premium not greater than fifty dollars for each bond redeemed as will be equivalent to two dollars fifty cents for each year or fraction thereof intervening between the date fixed for redemption and the stated maturity date of such bond. Notice of redemption is to be given not less than thirty days prior to the date fixed for redemption by registered mail to the registered owner of each bond called for redemption, mailed to the address of such owner shown on the Registrar's registration books. If any bond called for redemption is not at the time registered as to principal, thirty days notice of redemption shall also be given by publication of an appropriate notice at least once in a newspaper published and having general circulation in the City of San Antonio and in a financial newspaper or journal published in the City of New York, New York.

SECTION 5. That each of such bonds shall be signed by the Mayor of the City of San Antonio, shall be attested by the City Clerk, shall have the corporate seal of the city impressed thereon, and shall be authenticated by the Trustee in the manner provided in the trust indenture for which provision is hereinafter made. Interest falling due on and prior to maturity shall be represented by appropriate interest coupons to be attached to such bonds, which coupons shall be signed by the facsimile signatures of said Mayor and City Clerk and said officials, by the execution of such bonds, shall adopt as and for their own proper signatures their respective facsimile signatures appearing on said coupons.

SECTION 6. That such bonds shall be registerable as to principal in the manner for which provision is made in the aforesaid trust indenture.

VII

SECTION 7. That such bonds, the coupons to be thereto attached, and the endorsements to appear on the back thereof, shall be in substantially the following form:

(Form of Bond)

UNITED STATES OF AMERICA
STATE OF TEXAS
COUNTY OF BEXAR

CITY OF SAN ANTONIO
ELECTRIC AND GAS REVENUE BOND

Number..... $1,000

The City of San Antonio, a lawfully created and existing municipal corporation in Bexar County, Texas, solely from the special fund hereinafter specified and from no other source, for value received hereby promises to pay to bearer, or if this bond be registered as to principal then to the registered owner hereof, on the first day of August, 19 .., the principal sum of One Thousand Dollars ($1,000), and to pay, solely from said special fund, interest thereon at the rate of ..... per cent (.....%) per annum, semi-annually on the first days of February and August in each year until payment of the principal amount hereof. Both principal of and interest on this bond are payable in lawful money of the United States of America at Chemical Bank & Trust Company in the City of New York, New York. Interest falling due on and prior to maturity is payable only upon presentation and surrender of the interest coupons hereto attached as they severally become due.

This bond is one of a duly authorized issue of bonds of like date and tenor, except as to interest rate and maturity, issued or to be issued to provide funds for paying in whole or in part the cost of the acquisition of a complete electric light and power plant and system and gas distribution system serving the City of San Antonio and the territory adjacent thereto, pursuant to ordinance adopted by the Commissioners of the City of San Antonio on July 25, 1942, and pursuant to a trust indenture of even date herewith by and between the City of San Antonio and Harris Trust and Savings Bank of Chicago, Illinois (hereinafter referred to as the "corporate trustee"), and Harold Eckhart of Evanston, Illinois, as trustees, an original of which indenture is on file in the office of said corporate trustee in the City of Chicago, Illinois, reference to which ordinance and indenture is hereby made for a description of the funds charged with and

pledged to the payment of the interest on and the principal of the bonds of said issue, the nature and extent of the security thereof, and a statement of the rights, duties and obligations of the city and the trustees and the rights of the holders of the bonds, to all the provisions of which indenture the holder hereof by the acceptance of this bond assents.

This bond shall not be deemed to constitute a debt of the City of San Antonio or a pledge of its faith and credit, but shall be payable as to principal and interest solely from the net revenues derived from the operation of said electric light and power plant and system and said gas distribution system, including all additions, extensions and improvements thereto which may hereafter be made, and the holder hereof shall never have the right to demand payment of this obligation out of any funds raised or to be raised by taxation.

This bond is issued and the above mentioned indenture was made and entered into under and pursuant to the Constitution and Laws of the State of Texas, including particularly Articles 1111 et seq., Texas Revised Civil Statutes, 1925, as amended, and it is required by said laws, and the City of San Antonio hereby covenants and agrees, that it will make and collect rates and charges for all gas, electricity and services supplied by said plant and systems fully sufficient to pay the expenses of operating and maintaining said plant and systems, to provide an adequate depreciation and replacement fund and to pay principal of and interest on all indebtedness payable from such revenues, including this bond and the series of which it is a part.

The bonds of the issue of which this is one may be redeemed at the option of the City of San Antonio, to be evidenced by appropriate resolution passed by the Commissioners of the City of San Antonio and approved by the Board of Trustees in charge of the operation of the city's gas and electric properties, either in whole, or in part in inverse numerical order, bonds numbered 33231 to 35000, inclusive, on any interest payment date, and bonds numbered 3251 to 33230, inclusive, on August 1, 1947, and on any interest payment date thereafter, all at the principal amount thereof and accrued interest to the date fixed for redemption plus such premium not greater than fifty dollars for each bond redeemed as will be equivalent to two dollars fifty cents for each year or fraction thereof intervening between the date fixed for redemption and the stated maturity date of such bond. Notice of the intended redemption of this bond is to be given not less than thirty days prior to the date fixed for redemption by registered mail to the registered owner hereof, mailed to the address of such owner shown on Registrar's regis-

tration books. If this bond is not at the time registered as to principal, thirty days notice of redemption is to be given by publication of an appropriate notice at least once in a newspaper published and having general circulation in the City of San Antonio and in a financial newspaper or journal published in the City of New York, New York. On the date so designated for redemption (unless default shall be made in payment of the redemption price) interest on the bonds so called for redemption shall cease to accrue.

This bond may be registered as to principal in accordance with the provisions endorsed hereon.

Each successive holder of this bond during such time as it is payable to bearer, and each successive holder of each of the coupons hereto attached, is conclusively presumed to forego and renounce his equities in favor of subsequent holders for value without notice, and to agree that this bond while so payable to bearer, and each of the coupons hereto attached, may be negotiated by delivery by any person having possession thereof, howsoever such possession may have been acquired, and that any holder who shall have taken this bond or any of the coupons from any person for value and without notice, thereby has acquired absolute title thereto, free from any defenses enforceable against any prior holder and free from all equities and claims of ownership of any such prior holder. The City of San Antonio and its officials and the hereinabove referred to paying agent and trustees shall not be affected by any notice to the contrary.

To the extent permitted by the aforesaid indenture, modifications or alterations of the indenture and any indenture supplemental thereto may be made, with the consent of the Commissioners of the City of San Antonio and the holders of at least seventy-five per cent in principal amount of the bonds then outstanding, but such modification or alteration is not permitted to affect the maturity, amount or rate of interest of any such outstanding bond.

It is hereby certified and recited that all acts and things required by the Constitution and Laws of the State of Texas and the charter of the City of San Antonio to happen, exist and be performed precedent to and in the issuance of this bond and the adoption of said ordinance and the execution of said trust indenture, have happened, exist and have been performed as so required.

This bond shall not be entitled to any benefit under said trust indenture or become valid or obligatory for any purpose

until it shall have been authenticated by the execution by the corporate trustee of the certificate hereon endorsed.

IN WITNESS WHEREOF, the City of San Antonio has caused this bond to be signed by its Mayor and attested by its City Clerk and the corporate seal of said city to be impressed hereon, and has caused the coupons hereto attached to be executed with the facsimile signatures of said officials, all as of this first day of August, 1942.

.....
Attest: Mayor

.....
City Clerk

(Form of Coupon)

Number..... $.....

On.....1, 19....., the City of San Antonio, Bexar County, Texas, will pay to bearer at Chemical Bank & Trust Company in the City of New York, New York, the sum of .....Dollars ($.....) in lawful money of the United States of America, solely from the special fund referred to in and for the semi-annual interest then due on its Electric and Gas Revenue Bond dated August 1, 1942, and numbered....., unless said bond shall have been called for previous redemption as therein provided and provision for the redemption thereof made. The holder of this coupon shall never have the right to demand payment thereof out of any funds raised or to be raised by taxation.

.....
Attest: Mayor

.....
City Clerk

(Form of Trustee's Certificate)

This bond is one of the bonds described in the within mentioned trust indenture.

HARRIS TRUST AND SAVINGS BANK

By.....
Authorized Officer

(Form of Registration Endorsement)

This bond may be registered as to principal on books kept by the corporate trustee under the within mentioned trust indenture as Bond Registrar, upon presentation hereof to such Bond Registrar, who shall make notation of such registration in the registration blank below, and this bond may thereafter be transferred only upon a written assignment of the registered owner or his attorney thereunto duly authorized, duly acknowledged or proved, such transfer to be made on such books and endorsed hereon by the Bond Registrar. If so registered this bond may thereafter be transferred to bearer and thereby transferability by delivery shall be restored, but this bond shall again be subject to successive registrations and transfers as before. The principal of this bond, if registered, unless registered to bearer, shall be payable only to the registered owner or his legal representatives. Notwithstanding the registration of this bond as to principal, the coupons shall remain payable to bearer and shall continue to be transferable by delivery:

Date of Registration	Name of Registered Owner	Signature of Bond Registrar

(Form of State Comptroller's Certificate)

Office of Comptroller
State of Texas Register Number.....

I hereby certify that there is on file and of record in my office a certificate of the Attorney General of the State of Texas to the effect that this bond has been examined by him as required by law, and that he finds that it has been issued in conformity with the Constitution and Laws of the State of Texas, and that it is a valid and binding special obligation of the City of San Antonio, Texas, payable from the revenues pledged to its payment by and in the ordinance authorizing same, and said bond has this day been registered by me.

WITNESS my hand and seal of office at Austin, Texas, this.....day of....., 1942.

.....
Comptroller of Public Accounts of the State of Texas.

SECTION 8. That after the acquisition of the system or any part thereof, the system or part thereof so acquired shall be operated by the City of San Antonio and the revenues thereof shall be applied and the bonds herein authorized shall be paid in the manner set out and provided in the trust indenture (herein sometimes called the "indenture" and sometimes the "trust indenture") which is hereinafter in this ordinance set out in full, and all of the provisions of said trust indenture shall be effective and shall be applicable to the authorization, issuance and payment of the bonds herein authorized with like force and effect as though all of said provisions were otherwise separately set out in this ordinance.

SECTION 9. That of the bonds herein authorized, there shall be presently sold by the Commissioners of the City of San Antonio bonds to the amount of Thirty-three Million Nine Hundred Fifty Dollars ($33,950,000), of such numbers as may be hereafter fixed by resolution, and after their preparation and execution and approval by the Attorney General and registration by the State Comptroller, the bonds so sold, and sold from time to time hereafter, shall be delivered to the corporate trustee to be authenticated and turned over to the city official who is then performing the duties of City Treasurer, for delivery to the purchaser aforesaid upon payment therefor to be made in accordance with the terms of sale.

SECTION 10. That as soon as may be after the adoption of this ordinance it shall be the duty of the Mayor and City Attorney to submit a complete transcript of proceedings had in connection with the authorization of said bonds, and to submit the printed bonds, to the Attorney General of the State of Texas for his approval and for registration of such bonds by the State Comptroller after they have been so approved. Thereafter, said bonds shall be delivered to the corporate trustee for authentication, after which they shall be delivered to the purchasers as aforesaid.

SECTION 11. That for the purpose of securing the payment of the bonds herein authorized, and for the purpose of providing for and fixing in more detail the rights of the holders thereof, and of the city and of the trustees, and for the purpose of making effective the mortgage lien on the system and the lien of said bonds on the revenues of the system, a trust indenture in the following form and language is hereby authorized to be executed in behalf of the City of San Antonio by the Mayor and City Clerk, after which said indenture shall be recorded in the mortgage records of each county in which any part of the system is located and authenticated copies shall be filed with the corporate trustee and with the City Clerk:

TRUST INDENTURE

THIS INDENTURE, dated the first day of August, 1942, by and between the City of San Antonio, a municipal corporation duly organized and existing under and by virtue of the laws of the State of Texas (for brevity hereinafter called the "city"), acting through its Mayor and City Clerk thereunto duly authorized, party of the first part, and Harris Trust and Savings Bank, a corporation duly organized and existing under the laws of the State of Illinois, and having its principal office in the City of Chicago, Illinois (hereinafter called the "Trustee"), and Harold Eckhart, of the City of Evanston, Illinois (hereinafter called the "Individual Trustee"), parties of the second part, as trustees (the Trustee and Individual Trustee being hereinafter together referred to as the "trustees"),

WITNESSETH:

WHEREAS the city, in order to obtain funds for the purpose of acquiring an electric light and power plant and system and a gas distribution system serving said city and the territory adjacent thereto, has determined to issue a series of bonds under the authority of the Constitution and Laws of the State of Texas, and particularly Articles 1111 et seq., Texas Revised Civil Statutes, 1925, as amended (which bonds are hereinafter sometimes referred to as the "bonds") ; and

WHEREAS the Commissioners of the City of San Antonio, by ordinance duly adopted on July 25, 1942, have provided for the issuance of bonds for said purpose in the total amount of $35,000,000, which bonds are designated as "Electric and Gas Revenue Bonds," are dated August 1, 1942, are in the denomination of $1,000, are numbered 1 to 35000, inclusive, are to bear interest at such rate or rates as may be determined at the time said bonds are sold, which rate or rates shall be specified and made definite by appropriate instrument in writing to be executed by the City Clerk and filed with the Trustee after the sale of said bonds, are payable as to both principal and interest in lawful money of the United States of America at Chemical Bank & Trust Company in the City of New York, New York, are registerable as to principal at the option of the holder, mature serially in numerical order on August 1 of each year as follows:

Amount	Year
$ 775,000	1944
800,000	1945
825,000	1946
850,000	1947
875,000	1948
900,000	1949
925,000	1950
955,000	1951
985,000	1952
1,010,000	1953
1,040,000	1954
1,070,000	1955
1,105,000	1956
1,140,000	1957
1,170,000	1958
1,205,000	1959
1,240,000	1960
1,280,000	1961
1,315,000	1962
1,355,000	1963
1,395,000	1964
1,440,000	1965
1,480,000	1966
1,525,000	1967
1,570,000	1968
1,620,000	1969
1,665,000	1970
1,715,000	1971
1,770,000	1972

and, together with the endorsements to appear thereon, are to be in substantially the following form, and executed as therein indicated:

(Form of Bond)

UNITED STATES OF AMERICA
STATE OF TEXAS
COUNTY OF BEXAR

CITY OF SAN ANTONIO
ELECTRIC AND GAS REVENUE BOND

Number..... $1,000

The City of San Antonio, a lawfully created and existing municipal corporation in Bexar County, Texas, solely from the

special fund hereinafter specified and from no other source, for value received hereby promises to pay to bearer, or if this bond be registered as to principal then to the registered owner hereof, on the first day of August, 19....., the principal sum of One Thousand Dollars ($1,000), and to pay, solely from said special fund, interest thereon at the rate of.....per cent (.....%) per annum, semi-annually on the first days of February and August in each year until payment of the principal amount hereof. Both principal of and interest on this bond are payable in lawful money of the United States of America at Chemical Bank & Trust Company in the City of New York, New York. Interest falling due on and prior to maturity is payable only upon presentation and surrender of the interest coupons hereto attached as they severally become due.

This bond is one of a duly authorized issue of bonds of like date and tenor, except as to interest rate and maturity, issued or to be issued to provide funds for paying in whole or in part the cost of the acquisition of a complete electric light and power plant and system and gas distribution system serving the City of San Antonio and the territory adjacent thereto, pursuant to ordinance adopted by the Commissioners of the City of San Antonio on July 25, 1942, and pursuant to a trust indenture of even date herewith by and between the City of San Antonio and Harris Trust and Savings Bank of Chicago, Illinois (hereinafter referred to as the "corporate trustee"), and Harold Eckhart of Evanston, Illinois, as trustees, an original of which indenture is on file in the office of said corporate trustee in the City of Chicago, Illinois, reference to which ordinance and indenture is hereby made for a description of the funds charged with and pledged to the payment of the interest on and the principal of the bonds of said issue, the nature and extent of the security thereof, and a statement of the rights, duties and obligations of the city and the trustees and the rights of the holders of the bonds, to all the provisions of which indenture the holder hereof by the acceptance of this bond assents.

This bond shall not be deemed to constitute a debt of the City of San Antonio or a pledge of its faith and credit, but shall be payable as to principal and interest solely from the net revenues derived from the operation of said electric light and power plant and system and said gas distribution system, including all additions, extensions and improvements thereto which may hereafter be made, and the holder hereof shall never have the right to demand payment of this obligation out of any funds raised or to be raised by taxation.

This bond is issued and the above mentioned indenture was made and entered into under and pursuant to the Constitution

and Laws of the State of Texas, including particularly Articles 1111 et seq., Texas Revised Civil Statutes, 1925, as amended, and it is required by said laws, and the City of San Antonio hereby covenants and agrees, that it will make and collect rates and charges for all gas, electricity and services supplied by said plant and systems fully sufficient to pay the expenses of operating and maintaining said plant and systems, to provide an adequate depreciation and replacement fund and to pay principal of and interest on all indebtedness payable from such revenues, including this bond and the series of which it is a part.

The bonds of the issue of which this is one may be redeemed at the option of the City of San Antonio, to be evidenced by appropriate resolution passed by the Commissioners of the City of San Antonio and approved by the Board of Trustees in charge of the operation of the city's gas and electric properties, either in whole, or in part in inverse numerical order, bonds numbered 33231 to 35000, inclusive, on any interest payment date, and bonds numbered 3251 to 33230, inclusive, on August 1, 1947, and on any interest payment date thereafter, all at the principal amount thereof and accrued interest to the date fixed for redemption plus such premium not greater than fifty dollars for each bond redeemed as will be equivalent to two dollars fifty cents for each year or fraction thereof intervening between the date fixed for redemption and the stated maturity date of such bond. Notice of the intended redemption of this bond is to be given not less than thirty days prior to the date fixed for redemption by registered mail to the registered owner hereof, mailed to the address of such owner shown on Registrar's registration books. If this bond is not at the time registered as to principal, thirty days notice of redemption is to be given by publication of an appropriate notice at least once in a newspaper published and having general circulation in the City of San Antonio and in a financial newspaper or journal published in the City of New York, New York. On the date so designated for redemption (unless default shall be made in payment of the redemption price) interest on the bonds so called for redemption shall cease to accrue.

This bond may be registered as to principal in accordance with the provisions endorsed hereon.

Each successive holder of this bond during such time as it is payable to bearer, and each successive holder of each of the coupons hereto attached, is conclusively presumed to forego and renounce his equities in favor of subsequent holders for value without notice, and to agree that this bond while so payable to bearer, and each of the coupons hereto attached, may be negotiated by delivery by any person having possession thereof, how-

soever such possession may have been acquired, and that any holder who shall have taken this bond or any of the coupons from any person for value and without notice, thereby has acquired absolute title thereto, free from any defenses enforceable against any prior holder and free from all equities and claims of ownership of any such prior holder. The City of San Antonio and its officials and the hereinabove referred to paying agent and trustees shall not be affected by any notice to the contrary.

To the extent permitted by the aforesaid indenture, modifications or alterations of the indenture and any indenture supplemental thereto may be made, with the consent of the Commissioners of the City of San Antonio and the holders of at least seventy-five per cent in principal amount of the bonds then outstanding, but such modification or alteration is not permitted to affect the maturity, amount or rate of interest of any such outstanding bond.

It is hereby certified and recited that all acts and things required by the Constitution and Laws of the State of Texas and the charter of the City of San Antonio to happen, exist and be performed precedent to and in the issuance of this bond and the adoption of said ordinance and the execution of said trust indenture, have happened, exist and have been performed as so required.

This bond shall not be entitled to any benefit under said trust indenture or become valid or obligatory for any purpose until it shall have been authenticated by the execution by the corporate trustee of the certificate hereon endorsed.

IN WITNESS WHEREOF, the City of San Antonio has caused this bond to be signed by its Mayor and attested by its City Clerk and the corporate seal of said city to be impressed hereon, and has caused the coupons hereto attached to be executed with the facsimile signatures of said officials, all as of this first day of August, 1942.

Attest:

.....
Mayor

.....
City Clerk

(Form of Coupon)

Number..... $.....

On.....1, 19....., the City of San Antonio, Bexar County, Texas, will pay to bearer at Chemical Bank & Trust Company in the City of New York, New York, the sum of ..... Dollars ($.....) in lawful money of the United States of America, solely from the

special fund referred to in and for the semi-annual interest then due on its Electric and Gas Revenue Bond dated August 1, 1942, and numbered....., unless said bond shall have been called for previous redemption as therein provided and provision for the redemption thereof made. The holder of this coupon shall never have the right to demand payment thereof out of any funds raised or to be raised by taxation.

Attest:

....

City Clerk Mayor

(Form of Trustee's Certificate)

This bond is one of the bonds described in the within mentioned trust indenture.

HARRIS TRUST AND SAVINGS BANK

By.....

Authorized Officer

(Form of Registration Endorsement)

This bond may be registered as to principal on books kept by the corporate trustee under the within mentioned trust indenture as Bond Registrar, upon presentation hereof to such Bond Registrar, who shall make notation of such registration in the registration blank below, and this bond may thereafter be transferred only upon a written assignment of the registered owner or his attorney thereunto duly authorized, duly acknowledged or proved, such transfer to be made on such books and endorsed hereon by the Bond Registrar. If so registered this bond may thereafter be transferred to bearer and thereby transferability by delivery shall be restored, but this bond shall again be subject to successive registrations and transfers as before. The principal of this bond, if registered, unless registered to bearer, shall be payable only to the registered owner or his legal representatives. Notwithstanding the registration of this bond as to principal, the coupons shall remain payable to bearer and shall continue to be transferable by delivery:

Date of Registration	Name of Registered Owner	Signature of Bond Registrar

(Form of State Comptroller's Certificate)

Office of Comptroller
State of Texas Register Number.....

I hereby certify that there is on file and of record in my office a certificate of the Attorney General of the State of Texas to the effect that this bond has been examined by him as required by law, and that he finds that it has been issued in conformity with the Constitution and Laws of the State of Texas, and that it is a valid and binding special obligation of the City of San Antonio, Texas, payable from the revenues pledged to its payment by and in the ordinance authorizing the same, and said bond has this day been registered by me.

WITNESS my hand and seal of office at Austin, Texas, this .....day of....., 1942.

.....
Comptroller of Public Accounts of the State of Texas.

and

WHEREAS the execution and delivery of this indenture have been duly authorized by the Commissioners of the City of San Antonio and all acts and things required to be done precedent to and in the execution of this indenture and precedent to and in the execution of said bonds, have been done and performed in regular and due time, form and manner as required by the Constitution and Laws of the State of Texas, and the ordinance hereinbefore mentioned;

NOW, THEREFORE, in order to secure the payment of principal of and interest on the bonds issued under this indenture according to their tenor and effect and the terms of this indenture, and to secure the performance of the covenants and obligations herein contained, and in consideration of the acceptance by the trustees of the trust hereby created, of the purchase and acceptance of the said bonds by the holders thereof, and of one dollar in hand paid by the trustees to the city upon the execution and delivery of this indenture, the receipt whereof is hereby acknowledged, the city has executed and delivered this indenture and has granted, bargained, sold, conveyed, assigned, transferred, warranted, mortgaged, pledged and set over, and by these presents does grant, bargain, sell, convey, assign, transfer, warrant, mortgage, pledge and set over unto the trustees and their successors in said trust forever, subject to the terms of this indenture, the following property (herein sometimes referred to as the "trust estate"), all and singular, its property rights,

privileges, franchises and contracts of every kind and description:

Subject to the exceptions hereinafter set out, all property heretofore owned by San Antonio Public Service Company and now owned by the city, and all property, rights, privileges, franchises and contracts of every kind and description, whether now owned or hereafter acquired by the city, and used or useful in connection with the operation of the city's electric light and power plant and system and the city's gas distribution system, including particularly the following (but reference to or enumeration of any particular kinds, classes or items of property shall not be deemed to exclude, except as otherwise herein expressly provided, from operation of this indenture any kind, class or item not so referred to or enumerated):

ITEM I.

ELECTRIC LIGHT & POWER PLANT & SYSTEM

All lands, rights-of-way, roads, power houses, buildings, dams, waterways, water rights, and other structures, and all office buildings and the contents thereof; all machinery, engines, boilers, turbines, dynamos, electrical machinery, regulators, motors, transformers, generators, meters, electrical and mechanical appliances, condensers, water wheels, overhead and underground conduits, cables, pipes, pole and transmission lines, wires, crossarms, insulators, service sub-stations and sub-structures, generating, distributing and transmitting equipment, tools, implements, apparatus, supplies and all of the electric transmission and distribution systems heretofore owned by San Antonio Public Service Company and located in the City of San Antonio, Texas, and the cities, towns, villages and unincorporated areas of Bexar County, Atascosa County, Caldwell County, Comal County, Guadalupe County, Karnes County, Kendall County, Medina County, Uvalde County, Bandera County and Wilson County, all in the State of Texas.

ITEM II.

GAS SYSTEM.

All gas plants, stations, sub-stations, offices, repair shops, buildings, structures, sub-structures, regulators, holders, purifiers, scrubbers, tanks, retorts, boilers, machinery, engines, pumps, fixtures, apparatus, equipment, dams, instruments, appliances, implements, overhead and underground construction,

pipes, mains, conduits, service meters, supplies and appurtenances, and the gas transmission and distribution systems heretofore owned by the San Antonio Public Service Company, located in the City of San Antonio and the City of Alamo Heights and the suburban areas adjacent to the City of San Antonio and the City of Alamo Heights, all in Bexar County, Texas.

ITEM III.

REAL ESTATE.

All and singular the real estate heretofore owned by the San Antonio Public Service Company situated in the State of Texas in the counties hereinafter mentioned (except as hereinafter specifically excepted and excluded from the lien hereof) and more particularly described as follows:

MAIN OFFICE BUILDING.

That certain piece or parcel of land, situated in the corporate limits of the City of San Antonio, Bexar County, Texas, fronting on the west side of St. Mary's Street, and more particularly described as follows: Being that portion of what is known as the Twohig Homestead, which was set apart to Columbus Upson, Oscar Bergstrom and Thos. H. Franklin by decree of the District Court of Bexar County, Texas, partitioning the Estate of John Twohig, on the 16th day of February, 1894, in cause No. 644, styled Upson and Bergstrom vs. T. L. Johnston, et al., District Court of Bexar County, 37th Judicial District; said decree appearing in the minutes of said Court, Book Q, page 369, et seq., said property being bounded on the north by the portion of the Twohig Homestead set aside by said decree to J. C. Neraz, Catholic Bishop of San Antonio; east by St. Mary's Street, and south and west by the San Antonio River, 4 feet off the north margin of said property having been dedicated by D. J. Woodward and L. Ward as a permanent alley, as set out and fully described and explained in an agreement between Missionary Society of Oblate Fathers of Texas, and D. J. Woodward and L. Ward, of record in Bexar County, in Volume 274, page 394, Deed Records of said county, filed October 12, 1910.

STATION "A" PLANT.

All that parcel of land situated in the City of San Antonio, County of Bexar, State of Texas, known as Lots Nos. 1, 2, 3, 4, of N. C. B. No. 124; bounded on the north by the San An-

tonio River; on the east by an alley for a distance of 166 feet 8 inches, more or less; on the south by Villita Street for a distance of 250 feet 4 inches, more or less; on the west by Presa Street for a distance of 171 feet 8 inches, more or less.

STATION "B" PLANT.

(a) A parcel of land containing 8 acres, more or less, situated in the City of San Antonio, County of Bexar, and State of Texas, on the east side of the San Antonio River, more particularly described as follows: Beginning at a point on the east bank of the San Antonio River where an extension of the south line of Survey of Lot No. 3, according to the plat recorded in Volume VI, page 118, of Bexar County Deed Records, intersects with the said east bank of the San Antonio River, said point being also the intersection of the north side of the right-of-way of the S. A. & A. P. Ry. with the San Antonio River; thence in a southeasterly course along the said S. A. & A. P. right-of-way to the west side of Conception Road; thence in a northeasterly course along the west side of the Conception Road to the San Antonio River opposite the Edmonds Homestead where the river changes its course from south to west; thence meandering along the river to the place of beginning.

(b) A parcel of land containing 12 acres, more or less, situated in the City of San Antonio, County of Bexar, State of Texas, on the west side of San Antonio River, more particularly described as follows: Beginning at a point on the west bank of the San Antonio River where the said west bank intersects with the north boundary line of the San Antonio and Aransas Pass Railroad; thence in a northwesterly direction along the boundary line of the said right-of-way to a point where the said boundary line intersects with the south boundary of the land formerly owned by Henry Elmendorf; thence east with the boundary of the said land owned by said Henry Elmendorf to the San Antonio River; thence in a southerly direction with the meanderings of the San Antonio River to the place of beginning.

TENTH STREET MATERIAL STORAGE.

(a) That parcel of land situated in the City of San Antonio, County of Bexar and State of Texas, being a part of Block "C," or N. C. B. No. 516, and described as follows: Beginning on the south line of Tenth Street at a point 294 feet 7 inches from Austin Street; thence 56 degrees, 45 minutes east with Tenth Street for 76 feet and 10 inches; thence south 32 degrees, 50 minutes west for 308 feet and 4 inches; thence north 57 degrees

west for 117 feet to the Alamo Ditch; thence in a northeasterly direction along the Alamo Ditch to the back line of Somer's property; thence south 56 degrees, 45 minutes east along the back of F. Somer's property for 60½ feet; thence north 32 degrees, 50 minutes east for 153 feet and 1 inch to point of beginning.

(b) All that portion of Lot No. 4, Block "C," in the City of San Antonio, and more particularly described as follows, viz.: Beginning at a point 121 feet east of the west line of the property formerly belonging to the San Antonio Street Railway Company, where it intersects the northwest corner of Lot No. 3; thence east 16 feet to a corner; thence north 16 feet to corner; thence west 16 feet to a corner; thence south 16 feet to the place of beginning.

(c) All that certain tract or parcel of land situated, lying and being in the City limits of San Antonio, County of Bexar, State of Texas, and being the western part of Lot "C" in Block "C," City Block No. 516, on the north side of Ninth Street, said part having a frontage of about 29 feet, together with all and singular, the rights, hereditaments, and appurtenances to the same in any manner belonging.

(d) All that certain piece, parcel or tract of land lying and being situated within the corporate limits of the City of San Antonio, County of Bexar and State of Texas, and more particularly described as follows: Being the western 29 varas, more or less, of Lots 1 and 2 in Block "C" (or 31) on the north side of Ninth Street, said Block "C" (or 31) being now known as City Block 516. Said land herein conveyed begins at a point 85 varas, more or less, west of southeast corner of Lot 1, corner of Ninth and Austin Streets, being the southwest corner of Mrs. M. Schilling's property; thence west along Ninth Street 29 varas, more or less, to property of Wm. Herpel; thence north along said Wm. Herpel's property line to southwest corner of Lot 3 in said block; thence east along the south line of said Lot 3, 32 varas, more or less; thence south 37¾ varas to the place of beginning.

(e) All that certain lot or parcel of land situated in the City of San Antonio, Bexar County, Texas, and described as follows, to-wit: A part of what is known as N. C. B. No. 516; beginning at a point in the southern line of Tenth Street north 57 degrees west, 61 varas from the intersection of the western line of Austin Street with the south line of Tenth Street; thence north 57 degrees west, along with the southern line of said Tenth Street, a distance of 18 varas or 50 feet, for northwest corner of this tract; thence south 33 degrees west, a distance of 52 varas or 144 feet and 5⅓ inches, more or less, to reach what

is known as the property of Mrs. A. de V. Dane, for the southwest corner of these premises; thence south 57 degrees east, 18 varas or 50 feet, for the southeast corner of this tract; thence north 33 degrees east, 54 varas or 144 feet and 5⅓ inches, more or less, to the point of beginning in the southern line of Tenth Street, being the same property conveyed by Geo. F. and Anna E. Blesse, by deed as appears of record in Volume 437, page 82, Deed Records of Bexar County, Texas, to which reference is here made for a more complete description of said property.

NINTH STREET SUBSTATION.

All that certain tract or parcel of land lying and being situated within the corporate limits of the City of San Antonio, Bexar County, Texas, and being the eastern 72 feet of Lots Nos. 1 and 2, Block 31, New City Block No. 453, on the north side of Ninth Street, and more particularly described as follows: Beginning at a point on the north side of Ninth Street at a fence located 174 feet and 2 inches from a line between two city monuments located near the northeast corner of the intersection of Ninth Street and Avenue D, and near the southeast corner of the intersection of Ninth Street and Avenue D, said line being approximately 3 feet west of the property line of Avenue D; thence with said fence in a northerly direction 97.3 feet to another fence; thence with said second fence in an easterly direction 42 feet and 7 inches to the west property line of the property of the San Antonio Public Service Company; thence in a southerly direction with the property line of the San Antonio Public Service Company 102 feet and 4 inches to the intersection of said property line with the north property line of Ninth Street; thence westerly along the north property line of Ninth Street a distance of 72 feet to the place of beginning.

BEACON HILL SUBSTATION.

All that certain lot or parcel of land situated in the City of San Antonio, County of Bexar, State of Texas, described as follows, to-wit:

Being all of Lots Nos. 1 and 8 in Block 37 of Laurel Heights Addition, said block being also known as New City Block 1867.

EAST END SUBSTATION.

All that certain tract or parcel of land situated within the corporate limits of the City of San Antonio, County of Bexar, State of Texas, and described as follows, to-wit:

Lots Nos. 1, 2, 3 and 4, in Block No. 3, Rifle Range Addition, and in New City Block No. 2796, fronting on the south side of Wyoming Street.

ELECTRIC DISTRIBUTION OFFICE.

That certain property situated in San Antonio, Bexar County, Texas, bounded as follows:

Commencing at the intersection of Camden Street and Jones Avenue; thence in a northeasterly direction along the southeast line of Camden Street to the San Antonio River; thence down the San Antonio River to its intersection with the northwest line of the tract of land conveyed by the San Antonio Loan and Trust Company to R. W. Morrison and W. S. McCall, recorded in Book 763, page 480, Deed Records of Bexar County, Texas; thence in a southwesterly direction along the northwest boundary of the said property so conveyed to said Morrison and McCall, and continuing along the northwestern line of the property conveyed to said Morrison and McCall by E. A. DuBose, Receiver of the Lone Star Cotton Mills, by deed recorded in Volume 702, page 544, Deed Records of Bexar County, Texas, to its intersection with Jones Avenue; thence in a northwesterly direction along Jones Avenue to the place of beginning; said property bounded on the northwest by Camden Street, on the northeast by the San Antonio River, on the southeast by the property conveyed to the said Morrison and McCall, and on the southwest by Jones Avenue; being the same property conveyed by San Antonio Loan and Trust Company to San Antonio Public Service Company, by deed recorded on June 3, 1925, in the records of Deeds of said county, in Volume 828, on pages 49-50.

OLMOS SUBSTATION.

All that certain triangular tract or parcel of land lying north of the City of San Antonio, in Bexar County, Texas, out of the Herff and Dittmar land, and out of original City Lot No. 36 in County Block 5248, and Lot No. 38 in County Block 5250, all in Range 3, District 3, bounded as follows: On the north by the Contour Road along a line at elevation of 728 feet above sea level, on the southeast side by the right-of-way of the I. & G. N. Railway Company, and on the west side by the Herff and Dittmar County Road, containing 6½ acres of land, more or less; being the same property conveyed by F. Herff and Adolph Herff individually and as independent executors of the Estate of Dr. F. Herff, Deceased, Chas. H. Herff, August A. Herff, Wm. L. Herff and John B. Herff, and Emmy Dittmar, a feme sole, individually and as independent executrix of the Estate of Albert Dittmar,

Deceased, and San Antonio Loan and Trust Company, a corporation, as trustee, all of the County of Bexar and State of Texas, to San Antonio Public Service Company, by deed recorded November 10, 1926, in the records of Deeds of said county, in Volume 919, on pages 43-44.

CITY VIEW SUBSTATION.

That certain tract of land and parcel of real estate lying and being situate in Bexar County, Texas, and being known, described and designated as Lot or Tract No. 19, Block No. 18 of the Lady of the Lake Gardens, per plat and map thereof duly filed and of record in the Deed Records of Bexar County, Texas, in Book 368, page 143, to which said map and plat and the record thereof reference is here specially made for further and more definite description of said property, said lot containing 1 acre; being the same property conveyed by the Lady of the Lake Gardens Company to Standard Trust Company, by deed dated June 29, 1925, and conveyed by Standard Trust Company to San Antonio Public Service Company by deed dated December 13, 1927.

ALAMO HEIGHTS SUBSTATION.

The following described property, lying and being situated in Bexar County, Texas, and being out of the Wm. E. Howth Survey, more particularly described as follows: A plot of land approximately .89 of an acre in size, and bounded as follows: Beginning at a point on the west side of Broadway, 685 feet and 1 inch south of the intersection of west side of Broadway and east side of Nacogdoches Road; thence south along west side of Broadway 30 feet; thence along a line north 89 degrees, 30 minutes west, 514 feet to east side of Nacogdoches Road; thence northeast along east side of Nacogdoches Road 217 feet; thence along a line south 89 degrees, 30 minutes east, 102 feet and 11 inches; thence along a line south no degrees, 3 minutes east, 160 feet; thence along a line south 89 degrees, 30 minutes east, to starting point on west side of Broadway; being the same property conveyed by Katherine Schuh, a feme sole, to San Antonio Public Service Company, by deed recorded August 19, 1927, in Volume 969, on page 447.

WOODLAWN HILLS SUBSTATION.

One acre of land lying southwest of the Babcock Road, out of a 235-acre tract of land located approximately 5 miles northwest from the center of the City of San Antonio, being a portion of Survey No. 332, Section No. 4, in the name of Cesario Car-

mona, and being the same tract of land conveyed by deed of L. J. Gembler and Eliza Gembler to A. Fiensilber, October 26, 1903, said deed being recorded in Volume 223, page 126, of the Deed Records of Bexar County, Texas, said 1 acre of land being described by metes and bounds as follows: Beginning at a point on the Callahan Road at the northwest corner of said 235-acre tract of land owned by A. Fiensilber, at a stake; thence north 42 degrees east, 208.71 feet to a stake, turn interior angle 91 degrees; thence south 48 degrees east, 208.71 feet to a stake, turn interior angle 89 degrees; thence south 42 degrees west, 208.71 feet to a stake, turn interior angle 91 degrees; thence north 40 degrees west, 208.71 feet to the place of beginning, and containing 1 acre, less a strip of land approximately 11 feet wide off of the northwest side of said tract, conveyed to Bexar County for roadway by deed dated September 14, 1928; being the same property conveyed by A. Fiensilber and Sophia Fiensilber to San Antonio Public Service Company, by deed recorded on June 28, 1927, in the records of Deeds of Bexar County, in Book 964, page 82.

OLD GRANDVIEW SUBSTATION.

All those certain lots or parcels of land situate partly within and partly without the City of San Antonio, County of Bexar, State of Texas, described as follows, to-wit: Being Lots Nos. 8 to 19, inclusive, and Lots Nos. 21 to 34, inclusive, New City Block 1564, said block being also known as Block 7, Section 2, Grandview Addition.

Plat of said Grandview Addition is recorded in Volume 72, page 519, Bexar County Records; being the same property conveyed by W. C. Sullivan to Standard Trust Company, by deed dated July 8, 1925, and conveyed by Standard Trust Company to San Antonio Public Service Company, by deed dated December 13, 1927.

ELMENDORF SUBSTATION.

That certain tract of land out of a 120-acre tract of land, out of Survey No. 7, Jose de la Garza grant, conveyed to Mrs. Lena Koehler by Fred Hildebrandt, et al., by deed dated November 19, 1896, and recorded in Volume 162, page 331, Deed Records of Bexar County, Texas, being described by metes and bounds as follows: Beginning at a stake at the southeast corner of said 120 acres of land; thence north 67 degrees, 12 minutes east, 204.3 feet along the line dividing the property of the said Lena Koehler from the west property line of the Westfall property, a stake; thence north 53 degrees, 30 minutes west, 244.4 feet to the

Elmendorf Road; thence south 4 degrees, 14 minutes, 30 seconds east, 100 feet along the north side of said road to the intersection of said road with the high line of the Comal Power Company; thence south 4 degrees, 14 minutes, 30 seconds east, 131.8 feet to the place of beginning; being the same property conveyed by Oscar Koehler and Lena Koehler, husband and wife, to Comal Power Company, by deed recorded July 13, 1927, in the records of Deeds of said county, in Volume 964, on pages 81 and 82, and conveyed by Comal Power Company (by Liquidating Trustees) to San Antonio Public Service Company, by deed dated January 1, 1928.

GRANDVIEW SUBSTATION NO. 1.

Lots Nos. 1 to 13, inclusive, and 25 to 27, inclusive, Block 8, Section 2, Grandview Addition, said lots comprising the northern part of said block, said Block 8 lying between "I" Street and "J" Street and between Cora Avenue and James Avenue; Lots Nos. 1, 2, 3, 7, 8, 9 and 10, Block 19, Section 5, Grandview Addition, said lots constituting the northern part of said block and said block lying between "I" Street and "J" Street and between James Avenue and Aurelia Avenue; Lots Nos. 1 to 12, inclusive, Block 18, Section 5, Grandview Addition, said lots constituting the northern part of said block, and said

Plat of said Grandview Addition is recorded in Volume 72, page 519, Bexar County Records; being the same property conveyed by W. C. Sullivan to Comal Power Company, by deed recorded July 14, 1925, in the records of Deeds of said county, in Volume 831, on pages 389-90, and conveyed by Comal Power Company (by Liquidating Trustees) to San Antonio Public Service Company, by deed dated January 1, 1928.

GRANDVIEW SUBSTATION NO. 2.

All that certain parcel or tract of land lying in the County of Bexar, Texas, and in Grandview Addition to the City of San Antonio, but wholly outside of the corporate limits of the said city, particularly described as follows: The north 105 feet of Lot 3, in Garden Block 8, of said Grandview Addition, a map and plat of which is of record in the Deed Records of Bexar County, in the County Clerk's office, to which reference is hereby made for further description. The said north 60 feet of said Lot No. 3, in said Garden Block 8, is described by metes and bounds as follows, to-wit: Beginning at the northeast corner of Lot No. 3, Aurelia Avenue and Amanda Avenue.
Garden Block 8, which corner is also the southeast corner of Lot No. 1, same Garden Block, and also is the northwest corner block lying between "I" Street and "J" Street and between

of Lot No. 4, same Garden Block, and also is the southwest corner of Lot No. 2, of said Garden Block 8; thence south along the eastern boundary line of said Lot No. 3, Garden Block 8, 60 feet to a point in said boundary line for the southeast corner of this tract being conveyed; thence west 630 feet to a point in the west boundary of said Lot No. 3, Garden Block 8, for the southwest corner of this tract; thence north along the west boundary line of said Lot No. 3, Garden Block 8, to the northwest corner of said Lot No. 3, for the northwest corner of this tract; thence east along the north boundary line of said Lot No. 3, 630 feet to the place of beginning; being the same property conveyed by John Alexander James to Comal Power Company, by deed recorded September 2, 1925, in the records of Deeds of said county, in Volume 844, on pages 67-68, and conveyed by Comal Power Company (by Liquidating Trustees) to San Antonio Public Service Company, by deed dated January 1, 1928, and by deeds recorded in Volume 944, pages 85-86, and Volume 1397, pages 250-251, of the Deed Records of Bexar County, Texas.

LEHR SAND PIT SUBSTATION.

All that certain tract of land described as follows, to-wit: 1,000 square feet of land out of 565.64-acre tract located approximately one mile from the county line between Bexar and Atascosa Counties, on the Pleasanton Road, in Bexar County, Texas, out of Survey No. 1386½, and being the same tract of land conveyed by deed of the Texas State Bank, July 28, 1926, to J. B. Couric, said deed being recorded in Volume 905, page 152, Deed Records of Bexar County, Texas, said 1,000 square feet of land being described by metes and bounds as follows: Beginning at a stake on the property line between Lots Nos. 4 and 5 of the said Couric property, at a point 1126 feet due west of the west side of the Pleasanton Road and 60 feet due east of a point at the intersection of the high line of the Comal Power Company from San Antonio to Pleasanton and the property line between Lots Nos. 4 and 5 of the said Couric property; thence due south 76 feet and 6 inches to a stake; thence due west 60 feet to the said high line of the Comal Power Company; thence due west 40 feet to a stake; thence due north 76 feet and 6 inches to the property line between Lots Nos. 4 and 5 of the said Couric property; thence due north 23 feet and 6 inches to a stake; thence due east 40 feet to the said high line of the said Comal Power Company; thence due east 60 feet to a stake; thence due south 20 feet and 6 inches, to the place of beginning, and containing 1,000 square feet; being the same property conveyed by J. B. Couric to Comal Power Company, and conveyed by Comal Power Company (by Liquidating Trustees) to San Antonio Public Service Company, by deed dated January 1, 1928.

LYTLE SUBSTATION.

All that certain tract or parcel of land lying and being situated in the County of Bexar, State of Texas, and more particularly described as follows, to-wit:

Two and three-hundredths acres of land in Bexar County, Texas, part of John Garner Survey No. 435, described by metes and bounds as follows: Beginning at a point in the north line of a 100-acre tract conveyed by Roy L. Gillette, et al., to C. H. Kearny, Trustee, by deed recorded in Volume A-47, page 462, Deed Records of Medina County, Texas, said point being at the intersection of the east property line of the road on the Bexar-Medina County line and the south property line of the old Frio City Road; thence in a southerly direction along the east property line of the road on the Bexar-Medina County line, 275 feet, more or less, to the intersection with the Bexar-Atascosa County line; thence south 68 degrees, 18 minutes east, along the Bexar-Atascosa County line, 290.6 feet to a point; thence north 375.15 feet on a line parallel to, and 270 feet east of, the east property line of the road along the Bexar-Medina County Line to a point on the south property line of the old Frio City Road; thence north 88 degrees, 27 minutes west, along the south property line of the old Frio City Road, 270.07 feet, more or less, to the point of beginning; being the same property conveyed by Roy C. Osgood, James D. Armstrong, Charles W. McNear, L. Marquard Forster and George W. Morgan, as Trustees of the Trust known as the "San Antonio Trust," by deed recorded April 29, 1926, in the records of Deeds of said county, in Volume 889, on pages 182-4, and conveyed by Comal Power Company (by Liquidating Trustees) to San Antonio Public Service Company, by deed dated January 1, 1928.

PLEASANTON SUBSTATION.

Beginning at the point where the west side of the Pleasanton-San Antonio Highway crosses the Bexar County-Atascosa County line; thence along the west side of the said highway 1010 feet to the center of the electric transmission line of said Comal Power Company, where the said transmission line crosses the said west side of said road; thence north 66 degrees west, along the center of said electric transmission line, 409 feet, which last mentioned point is the beginning point to the described land hereby conveyed; thence to the right, at approximately a right angle with said transmission line, 19 feet and 10 inches; thence in approximately a right angle to the left, 22 feet and 10 inches; thence in approximately a right angle to the left, 38 feet and 10 inches; thence in approximately a right angle to the left, 22 feet

and 10 inches; thence in approximately a right angle to the left, 19 feet to the center of said transmission line and to the place of beginning of the description of the property hereby conveyed; being part of the same property conveyed by deed recorded in Atascosa County Deed Records in Book E No. 1, pages 477-478, to which reference is hereby made; the land hereby conveyed being inclosed by a fence; being the same property conveyed by T. L. Haiduk to Comal Power Company, by deed recorded October 4, 1926, in the records of Deeds of Bexar County, Texas, in Volume 911, on pages 593-594, and conveyed by Comal Power Company (by Liquidating Trustees) to San Antonio Public Service Company, by deed dated January 1, 1928.

SOMERSET SUBSTATION.

All that certain tract of land described, except the oil and mineral rights therein, out of 4.67-acre tract of land, out of Survey 48, Francisco Rolen grant, conveyed to August F. Ernst and wife by F. M. Hagner, by deed dated December 3, 1917, said deed being recorded in Volume 522, page 310, of the Deed Records of Bexar County, Texas, being described by metes and bounds as follows: Beginning at a stake on the west side of the Somerset Road at a point where the high line of the Comal Power Company crosses the said Somerset Road; thence south 30 degrees, 33 minutes west, 25 feet to a stake on said road; thence south 88 degrees west, 45 feet and 8 inches to a stake; thence north 2 degrees west, 44 feet to a stake; thence north 88 degrees east, 49 feet to the Somerset Road to a stake; thence south 30 degrees, 33 minutes west, 25 feet along the Somerset Road to the place of beginning; provided, however, that all oil and mineral rights in said land are expressly reserved; being the same property conveyed by Comal Power Company (by Liquidating Trustees) to San Antonio Public Service Company, by deed dated January 1, 1928.

ELECTRIC DISTRIBUTION OFFICE ADDITION.

All that certain tract or parcel of land lying and being stiuated in Bexar County, Texas, and within the corporate limits of the City of San Antonio, and described as follows, to-wit: Beginning at a stake on the east bank of the San Antonio River for the northwest corner of F. Velton's 6-acre tract, where his north fence intersects the San Antonio River; thence east with said fence and on a line parallel with Newell Street at 248 feet, center line of the railroad track of the Texas Transportation Company, at 265 feet to a stake, 38 feet south 15 degrees, 40 minutes west, of the north line of Newell Street, and 1137.2 feet

west of the west line of River Avenue; thence south 15 degrees, 40 minutes west, 157.5 feet to a stake on bank of San Antonio River; thence up said river with its meanders north 74 degrees, 20 minutes west, at 140 feet, river, 40 feet to left, at 200 feet, river; thence north 16 degrees, 33 minutes west, 102 feet to place of beginning; being the same property conveyed by Texas Transportation Company to San Antonio Public Service Company, by deed recorded in the record of Deeds of Bexar County, August 14, 1928, in Volume 1045, pages 399-400.

PLEASANTON METER STATION.

All that certain tract or parcel of land situated in Bexar County, Texas, and containing 1 acre, more or less, being described by metes and bounds as follows: Beginning at a point where the east side of the Pleasanton-San Antonio Highway crosses the Bexar County-Atascosa County line; thence along the east side of said highway in a northerly direction, a distance of approximately 1010 feet to the center of the electric transmission line of the San Antonio Public Service Company to a stake, as the beginning point of land to be conveyed; thence north 1 degree, 45 minutes west, 56.2 feet to a corner stake; turn interior angle 67 degrees, 15 minutes; thence south 65 degrees, 30 minutes east, 408.7 feet to a corner stake; turn interior angle 122 degrees, 34 minutes; thence south 8 degrees, 4 minutes east, 123.1 feet to a corner stake; turn interior angle 57 degrees, 26 minutes; thence north 65 degrees, 30 minutes west, 431.7 feet to a corner stake; turn interior angle 112 degrees, 45 minutes; thence north 1 degree, 45 minutes west, 56.2 feet to the electric transmission line and place of beginning, and containing 1 acre, more or less; being part of the same property conveyed by deed recorded in Atascosa County Deed Records, in Book E No. 1, pages 477-478, to which reference is hereby made, and being out of Survey 709, in the name of S. A. Mex. Gulf Ry. Co.; the land hereby conveyed being enclosed by a fence and being located in Bexar County, Texas; being the same property conveyed by T. L. Haiduk to San Antonio Public Service Company by deed recorded in the record of Deeds of Bexar County, August 15, 1927, in Volume 1045, pages 423-424.

SOUTH SAN ANTONIO SUBSTATION NO. 1.

All that certain lot, tract or parcel of land situated in the County of Bexar, State of Texas, and more particularly described as north ½ of Lot No. 41, and the south ½ of Lot No. 40, out of what is known as the Factory Sites of the town of South San Antonio, Bexar County, Texas, as per and as shown on the plat

of Fifth Filing of the said town of South San Antonio, Texas, of record in the office of the County Clerk of said Bexar County, Texas, in Volume 368, page 216, maps and plats records.

Being the same property conveyed by South San Antonio Industrial Company to San Antonio Public Service Company, by deed recorded in the record of Deeds of said Bexar County, on May 23, 1929, in Volume 1121, page 10, and by deed dated August 14, 1923, recorded in Volume 733, pages 314-15, of the Deed Records of Bexar County, Texas.

SOUTH SAN ANTONIO SUBSTATION NO. 2.

All those certain lots, tracts, or parcels of land in Bexar County, Texas, described as follows: Lots Nos. 1, 2, 3 and 4, in Block No. 337, in San Jose Townsite Addition, according to map or plat thereof duly recorded in the records of Deeds and Plats of Bexar County, Texas; being the same property conveyed by Harlandale Properties, Inc., to San Antonio Public Service Company, by deed recorded in the records of Deeds of said Bexar County, on June 14, 1929, in Volume 1117, pages 555-6.

FRATT SUBSTATION.

The following described property: All those certain 2 acres of land out of original Survey No. 309 in the name of Francisco Villereal, approximately 14 miles northeast of the City of San Antonio and being out of a 166.66-acre tract of land conveyed by Oscar Fey and wife, Pearly Fey, to Holland B. Lowndes and Lee Jones, Jr., by deed dated December 17, 1927, and recorded in Volume 997, pages 496-7, Deed Records of Bexar County, Texas, to which deed and record reference is hereby made; said 2 acres being described by metes and bounds as follows: Beginning at the northwest corner of this tract at a stake, which stake is south 63 degrees west, 15 feet from a point on the present northeast boundary line of the Miller Road, which said point on the present northeast boundary line of the Miller Road is north 27 degrees west, 75 feet from the point where the center line of the San Antonio-New Braunfels high line No. 1 passes the present northeast boundary line of the Miller Road; from said stake north 63 degrees east, 250 feet to a stake for the northeast corner of this 2-acre tract; thence south 27 degrees east, 348.48 feet to a stake for the southeast corner of this 2-acre tract; thence south 63 degrees west, 250 feet to a stake set for the southwest corner of this 2-acre tract, said southwest corner being situated north 63 degrees east, 15 feet from the present northeast

boundary line of the Miller Road; thence north 27 degrees west, parallel to, and 15 feet from the present northeast boundary line of the Miller Road 348.48 feet, to the place of beginning, said tract of land containing 2 acres of land, more or less; being the same property conveyed by Holland B. Lowndes and wife, Evelyn Lowndes, and Lee Jones, Jr., and wife, Nan Jones, to San Antonio Public Service Company, by deed recorded in the records of Deeds of said Bexar County, March 27, 1929, in Volume 1101, pages 83-84.

RANDOLPH FIELD METERING STATION.

That certain tract or parcel of land, lying in the County of Bexar and State of Texas, described as follows, to-wit: Being the east 12 feet of Lot No. 7 and the west 13 feet of Lot No. 8, in Block No. 47, of the Universal City Subdivision, as per the map or plat of said Subdivision of record in the Map and Plat Records of Bexar County, Texas; being the same property conveyed by Commercial Loan and Trust Company, Trustee, to San Antonio Public Service Company, by deed recorded in the records of Deeds of said Bexar County, January 26, 1932, in Volume 1287, on pages 513-514.

HIGHLAND PARK SUBSTATION.

All that certain lot or parcel of land situated in the City of San Antonio, County of Bexar, State of Texas, described as follows, to-wit: Lots Nos. 37, 38, 39 and 40, Block No. 3 New City Block No. 6216, in Highland Terrace Addition, in the City of San Antonio, Bexar County, Texas; being the same property conveyed by N. F. S. Vittrup and wife, Bennie Vittrup, to San Antonio Public Service Company, by deed recorded in the records of Deeds, of said Bexar County, Texas, October 22, 1932, in Volume 1329, on page 336.

JEFFERSON SUBSTATION.

All those certain lots or parcels of land situate in the County of Bexar, State of Texas, described as follows, to-wit: Being Lots Nos. 73, 74, 75 and 76, Block No. 19, in Jefferson Manor Addition to the City of San Antonio, according to plat thereof recorded in Volume 980, page 303, Deed and Plat Records of Bexar County, Texas; being the same property conveyed by Jefferson Manor Company, to San Antonio Public Service Company, by deed recorded in the records of Deeds of said Bexar County, January 26, 1934, in Volume 1381, on pages 140-141.

COMAL PLANT.

That property conveyed by Landa Milling Company, et al., to Comal Power Company, by deed dated August 17, 1925, and therein described as follows: "All those certain lots, tracts or parcels of land out of the Juan Martin Veramendi Two-League grant, Survey No. 1, Abstract No. 2, lying and being situated within the corporate limits of the City of New Braunfels, in Comal County, Texas, more particularly described as follows, to-wit:

"Tract No. 1: Beginning at a stake at the northeast corner of the intersection of the Seguin Road and the Fredericksburg Road; thence north 18 degrees, 1 minute west, 1,112.61 feet to a stake set on the east line of the Fredericksburg Road; thence north 69 degrees, 10 minutes east, 1,000.91 feet to a stake; thence south 29 degrees, 49 minutes east, 150.64 feet to a stake; thence south 44 degrees, 27 minutes east, 146.63 feet to a stake; thence south 33 degrees, 37 minutes east, 41.54 feet to a stake; thence south 20 degrees, 36 minutes east, 194.82 feet to a stake; thence south 14 degrees, 21 minutes east, 144.79 feet to a stake; thence south 24 degrees 20 minutes east, 202.08 feet to a stake; thence south 20 degrees, 8 minutes east, 245.70 feet to a stake; thence south 35 degrees, 44 minutes east, 30.10 feet to a stake; thence south 35 degrees, 44 minutes east, 45.42 feet to a stake; thence south 25 degrees, 58 minutes east, 62.42 feet to a stake; thence south 3 degrees, 7 minutes east, 128.51 feet to a stake; thence south 7 degrees, 57 minutes east, 169.51 feet to a stake in the north property line of Seguin Street; thence north 89 degrees, 39 minutes west, 1,165.82 feet to the stake at the point of beginning.

"Tract No. 2: Beginning at a stake set on the north line of Seguin Street at the southeast corner of Tract No. 1; thence north 7 degrees, 57 minutes west, 169.51 feet to a stake; thence north 3 degrees, 7 minutes west, 128.51 feet to a stake; thence north 25 degrees, 58 minutes west, 62.42 feet to a stake; thence north 35 degrees, 44 minutes west, 45.42 feet to a stake; thence south 83 degrees, 54 minutes east, 94.17 feet to a stake; thence north 6 degrees, 49 minutes east, 244.60 feet to a stake; thence south 83 degrees, 9 minutes west, 404.62 feet to a stake; thence south 22 degrees, 50 minutes east, 140.41 feet to a stake; thence south 24 degrees, 24 minutes east, 161.30 feet to a stake; thence north 83 degrees, 9 minutes west, 150 feet to a stake; thence south 73 degrees, 49 minutes west, 141.18 feet to a stake; thence north 87 degrees, 10 minutes west, 16.54 feet to a stake; thence south 56 degrees, 52 minutes west, 35.28 feet to a stake; thence south 3 degrees, 9 minutes west, 140.46

feet to a stake; thence south 80 degrees, 11 minutes west, 15 feet to a stake; thence south 78 degrees, 14 minutes west, 29.08 feet to a stake; thence south 45 degrees, 10 minutes west, 6.90 feet to a stake; thence south 85 degrees, 30 minutes west, 34.95 feet to a stake; thence south 38 degrees, 13 minutes west, 6.98 feet to a stake; thence south 88 degrees, 57 minutes west, 54.38 feet to a stake; thence north 57 degrees, 15 minutes west, 41.51 feet to a stake; thence north 44 degrees, 4 minutes west, 49.48 feet to a stake; thence south 7 degrees, 10 minutes east, 155.30 feet to a stake; thence north 86 degrees, 49 minutes west, 20.81 feet to a stake; thence north 98 degrees, 39 minutes west, 11 feet to a stake at the point of beginning.

"Tract No. 3: This tract shall embrace all those parcels of land and property, together with all, except as hereinafter provided, water rights and water flowage incident thereto, described as follows:

"To the extent that the same are situated within the boundaries of all property and lands now owned by Grantors, all islands and the bed, basin and strips of land 15 feet in width from the water's edge along all banks of all parts of the Comal River, its tributaries, and all springs, lakes and mill race connected or incident thereto, lying and situated within the boundaries of the lands now owned by Grantors, and without the limits of the two preceding tracts described above herein. It is the express intention to hereby convey to Comal Power Company, its successors and assigns, absolutely and without exception or reservation, except as hereinafter provided, all water and water rights of any and every nature whatsoever, and the right to divert, use and appropriate the same, except as hereinafter provided, to its own exclusive use."

Said deed from Landa Milling Company, et al., to Comal Power Company further provides:

(1) "A perpetual easement appurtenant to the lands described hereinabove is hereby granted and conveyed to Comal Power Company, its successors and assigns, and all future owners of the land and premises described hereinabove, to enter upon lands, other than those described hereinabove and which are now owned by Grantors, for the purpose of constructing, maintaining, repairing and operating a spur railroad track running from the present M. K. & T. spur railroad track, situated on property of the Grantor, on a tangent from a point north of the Landa Milling Company oil mill hull warehouse to the lands hereinabove described as Tract No. 1; provided, how-

ever, said spur track must be so constructed that it will be an extension on a straight line of the present track as it runs north of said hull warehouse, or deflected in a southeast direction from such a straight line, and said spur track shall be constructed in such a way so that where it crosses the main entrance park roadway it shall have the top of its rails on a level with the surface of said roadway, or, if necessary to raise the same above the surface of the existing roadway, then Comal Power Company, its successors and assigns, shall raise and reconstruct the roadway on each side of said crossing so that the approaches to the crossing shall never exceed a grade of 5 per cent. at any place, and so that the base and surface of said roadway shall be of the same construction as the adjoining roadway; provided further, Comal Power Company, its successors and assigns, hereby covenant, bind and obligate themselves to at all times maintain said roadway at said crossing in a smooth and serviceable condition for the full width of said roadway, and said Comal Power Company, its successors and assigns, do hereby likewise covenant, bind and obligate themselves to indemnify and hold harmless Grantors, their heirs, assigns and successors, and all future owners of the lands upon which said spur track may be situated, from and against any and all claims or liabilities, of every character, arising by reason of the construction, maintenance and/or out of the use of said spur track, and/or out of the maintenance of said roadway at the crossing of said spur track.

(2) "It is understood that Comal Power Company contemplates the erection of an electric power plant upon the property hereby conveyed, and Grantors, their successors, heirs and assigns do hereby (and this is hereby made a covenant running with all lands situated in Comal County, Texas, now owned by said Grantors, or either of them) release and forever discharge the Comal Power Company, its successors and assigns, from any and all liability of every nature whatsoever, arising on account of any and all damages or injury that may result to any property or land, or interference with the use of any such property or land or depreciation in the value of any such property or land now owned by Grantors, or either of them, and not conveyed hereby, by reason of the fact of the construction, maintenance or operation of said power plant and the diversion or use of the water from the Comal River, its lakes, springs and tributaries.

(3) "Comal Power Company, its successors and assigns, shall have the right to equal use of all railroad spur tracks now located upon any lands owned by Grantors for the purpose of getting cars to and from the property hereby conveyed.

(4) "Perpetual easements, rights and privileges appurtenant to the lands hereby conveyed to Comal Power Company are hereby granted to Comal Power Company, its successors and assigns, to enter upon the lands of Grantors which lie between Seguin Street and the main line of the I. & G. N. RR., and to construct, maintain, repair and operate a spur railroad track across said lands of Grantors; said spur to run from the main line of the I. & G. N. RR. to the land hereby conveyed and described as Tract No. 1; provided, however, that Comal Power Company, its successors and assigns, shall fully compensate Grantors, their successors, heirs and assigns, for any and all damages or injury occasioned to any building or structure on the lands of Grantors by reason of the construction of said spur track.

(5) "Perpetual easements, rights and privileges appurtenant to the lands hereby conveyed to Comal Power Company, its successors and assigns, are hereby created and granted to Comal Power Company, its successors and assigns; such easements, rights and privileges shall be upon, against and for the use of that certain tract or parcel of land described as follows, to-wit:

> Beginning at a stake set for the most northwest corner of Tract No. 2, hereinabove described; thence south 6 degrees, 49 minutes west, 244.60 feet to a stake; thence north 83 degrees, 54 minutes west, 94.17 feet to a stake set on the east boundary line of Tract No. 1 hereinabove described; thence north 35 degrees, 44 minutes west, 30.10 feet to a stake; thence north 20 degrees, 8 minutes west, 245.70 feet; thence on a straight line in an easterly direction to the place of beginning.

Such easements, rights and privileges are to enter, at any and all times, upon the land described above in this paragraph for the purposes of constructing, maintaining, operating, repairing, changing, enlarging or removing underground canals, flumes, and pipes and overhead wires, telephone and electric; it is understood that the enjoyment of the easements, rights and privileges granted in this paragraph may interfere with the free use and enjoyment of the property and land described particularly in this paragraph and all claims for damages, by reason of any such interference, are hereby expressly waived by Grantors, their successors, heirs, and assigns.

(6) "Perpetual easements, rights and privileges appurtenant to the land hereby conveyed are hereby created and granted to Comal Power Company, its successors and assigns,

for the use of that part of the main entrance park roadway which lies east of any part of Tract No. 1, described hereinabove and hereby conveyed.

(7) "Perpetual easements, rights and privileges appurtenant to the property conveyed to Comal Power Company, its successors and assigns, are hereby created and granted to Comal Power Company, its successors and assigns, to control, operate and maintain all spillways that are now located on lands of Grantors, with full privilege and right to use such spillways for the purpose of carrying off water from all water courses herein referred to, and the Comal Power Company, its successors and assigns, are hereby released by Grantors, their heirs, successors and assigns, from all damages that may be occasioned by the overflow of any lands of Grantors caused by any such water passing through such spillways.

(8) "A perpetual easement, rights and privileges appurtenant to Tract No. 2, hereinabove described and hereby conveyed to Comal Power Company, its successors and assigns, are hereby created and granted to Comal Power Company, its successors and assigns; such easement, rights and privileges, shall be upon, against and for the use of that certain tract or parcel of land described as follows, to-wit:

> All that portion of the Juan Martin Veramendi Two-League grant, Comal County, Texas, that is bounded on the north and east by Comal Springs, on the south by Comal Creek and on the west by the main line of the M. K. & T. RR. right-of-way and the Comal Springs.

Such easements, rights and privileges are to enter, at any and all times, upon the land described above in this paragraph for the purpose of constructing, maintaining, operating and repairing such canals, flumes and/or tunnels, and the passage of water through same, as the said Comal Power Company, its successors or assigns, may desire.

(9) "Comal Power Company, its successors and assigns, shall have the right to the equal use of all roadways, as they from time to time exist, on lands now owned by Grantors, and abutting Tract No. 2, hereinabove described.

"To have and to hold, subject to the easements, rights, and privileges hereinafter excepted, retained and provided for, the above granted premises and the easements, appurtenances, rights and privileges hereinbefore described as granted to Comal Power Company, unto the said Comal Power Company, its successors and assigns, forever.

"Grantors do hereby bind themselves, their heirs, assigns, successors, executors and administrators, to warrant and forever defend all and singular the property, premises, easements and rights herein recited above as conveyed to Comal Power Company, unto the said Comal Power Company, its successors and assigns, against every person whomsoever lawfully claiming or to claim the same, or any part thereof, subject only to such easements, rights and privileges as are herein retained, excepted, and reserved as follows, to-wit:

(10) "A perpetual easement appurtenant to each and every part of all lands now owned by Grantors and in the Veramendi grant, in Comal County, Texas, and not conveyed hereby, is hereby expressly reserved and excepted from this conveyance, and is hereby expressly retained by Grantors, their successors, heirs, and assigns, for the perpetual free, and uninterrupted use of the main entrance park roadway, as it now runs across the lands hereby conveyed and as it now exists, or as it may hereafter be widened as provided for herein. It is agreed and understood that this easement, in addition to being appurtenant to said lands as specified above, shall be for the use and benefit of, and in favor of, the present and future owners of said lands now owned by Grantors, and each part thereof, to which the same is appurtenant and, also, in favor of every person rightfully going to or coming from said lands, or any part thereof, Comal Power Company does hereby bind and obligate itself, its successors and assigns, to maintain and keep said roadway, as it now exists or as it may be widened (as herein provided) across the lands hereby conveyed, and all bridges therein, in good repair and in as good a condition as they now are; and, further, to widen and surface said roadway where the same does so cross lands hereby conveyed, to the extent of 6 feet on each side, at such time or times as said roadway is similarly widened and surfaced immediately north of the point where it passes off of the land hereby conveyed and described as Tract No. 2; provided, however, that nothing herein contained shall require the widening of the bridge that crosses the mill race on said road.

(11) "It is agreed and understood that Grantors now own certain lands, other than those hereby conveyed, which abut upon the various parts of the 15-foot strips of land, which are hereby conveyed and described in Tract No. 3, along the banks or margin of said Comal River, its springs, lakes and tributaries; and certain easements, privileges and rights appurtenant respectively to each particular part of said abutting lands are hereby excepted and reserved from this conveyance, and are hereby expressly retained by Grantors for the benefit of the present

and future respective owners of the various parts of said abutting lands; such easements, rights and privileges shall run against and upon the respective and particular parts of the said 15-foot strips of land, and upon and against the respective and particular parts of the Comal River, its lakes, springs and tributaries adjoining said parts of said strips of land and the bed and basin thereof and all water flowing in or through all of same, wherever and to the extent, the various parts of the lands now owned by Grantors, and not hereby conveyed, do so abut upon said 15-foot strips of land; it is agreed and understood, however, that as to that part of the mill race and those parts of the 15-foot strips of land on each side thereof which lie between the north boundary of Tract No. 1 hereby conveyed and the roadway bridge across the mill race, the easements, privileges and rights provided for in this paragraph shall terminate at such time as Comal Power Company, its successors and assigns, desire to use said particular part of the mill race and said particular parts of the 15-foot strips for spray ponds, but as to all other parts of the Comal River, its lakes, springs and tributaries, and the 15-foot strips of land along the margin or banks thereof, the easements, privileges and rights provided for in this paragraph shall be, and are hereby made, in all things perpetual; said easements, rights and privileges shall be for the benefit of the present or future owners of land abutting said strips of land, to the extent hereinbefore defined, and all persons who are permitted by such owners to use the same; said easements, privileges and rights, are as follows:

(a) To enter upon and pass over said 15-foot strips of land to and from the Comal River, its lakes, springs and tributaries.

(b) To freely use said 15-foot strips of land and to fill up gullies and ditches therein and to keep the same smooth, free from brush and weeds, with full right to plant thereon and remove therefrom trees, shade trees, grass, flowers and ornamental shrub and to water, care for and protect the same.

(c) To remove obstructions from said strips of land and to keep the channels of said river, its tributaries, lakes and springs, where they now are, and to remove from such channels and beds all brush, weeds, grass, or other obstruction which may grow or accumulate thereon or therein.

(d) The use of the said Comal River, its lakes, tributaries and springs, for fishing, boating, swimming and other water sports or pleasures.

(e) To construct club houses, cottages, boat buildings, wharves, spring boards and all structures and appliances commonly used in connection with swimming, and boating pools or pools, lakes and streams.

(f) To keep upon said strips of land and the banks and beds of all streams, lakes, springs or pools, all structures and buildings now thereon.

(g) To use water from said river, its springs, lakes and tributaries for drinking purposes.

(h) To construct, repair, and replace cement or concrete walks along, upon and across said 15-foot strips and steps down to and into the water, and to build, repair, and rebuild retaining walls and rails along the banks of the river, springs and tributaries, and to erect and construct, repair and replace bridges over and across the same.

(i) To run water and gas pipes and mains across said 15-foot strips of land and said river, springs, and tributaries, and repair and replace the same, and to excavate and dig such trenches and tunnels as may be proper for such purpose.

(j) To erect, repair and replace on said 15-foot strips drinking fountains, posts or rocks or concrete structures for lights, and run light wires across or over or under the same.

(k) To repair and replace any of the structures now in, along or adjoining such river, springs and tributaries built in connection with or as a part of, or for the purpose of, the swimming pool and fish pond.

(l) To erect screens across any of the springs or tributaries for the purpose of making fish ponds, but the same must be so constructed as to permit the full flow of the water.

(m) Comal Power Company, its successors or assigns, bind themselves not to raise the level of said 15-foot strips of land and not to erect or construct thereon any fences, buildings or structures of any kind, and not to leave upon the same or any part thereof any holes or ditches dug thereon by them.

"It is the express intention that the beneficiaries of said easements, rights and privileges shall have the full and free use of the said parts of the Comal River, its lakes, springs and tributaries, and of the 15-foot strips of land along the margin or

banks thereof, for all park and pleasure purposes; with full power to do such acts and things, with reference to said parts of the Comal River, its lakes, springs and tributaries, and the 15-foot strips of land along the margin or banks thereof, which may be in any way beneficial or instrumental to such use for pleasure and park purposes, and the particular enumeration above of certain acts and things which the beneficiaries of said easements, privileges and rights may do, shall never be construed as limiting the general purpose of the easements, privileges and rights provided for in this paragraph. It is agreed and understood, however, that nothing contained in this paragraph shall ever be construed in such way as to give the beneficiaries of said easements, rights and privileges, the right to use said 15-foot strips of land, the bed and channel of said river, its lakes, springs and tributaries, and the water of same, for any other purpose except that for park and pleasure purposes, as contemplated by the above; it being the express intention that the beneficiaries of said easements, rights and privileges, shall never have the right, except as provided for in this deed of conveyance, to take, pump or divert any of the water of the Comal River, its lakes, springs or tributaries, or to do anything which will affect the natural flow thereof, or to use the same, or any part of the 15-foot strips of land for any business or industrial purposes other than as herein expressly provided. It is agreed and understood, however, that Comal Power Company, its successors and assigns, shall at all times have the right to have their officers, agents and employees to enter in, upon and across all such parts of the Comal River, its lakes, springs and tributaries, and all such 15-foot strips of land, for the purpose of inspecting the same, and doing such things as may be necessary, in their opinion, to maintain the flow of the water, in, through and along all the normal channels of such river, its lakes, springs, and tributaries; so that the same may be available for the uses and purposes of the Comal Power Company, its successors and assigns.

(12) "In addition to the easements, rights and privileges reserved, excepted, and provided for in the preceding paragraph, certain other perpetual easements, rights and privileges, appurtenant exclusively to the following described land, to-wit:

> That certain tract or parcel of land, being a part of the Juan Martin Veramendi Two-League grant, situated in Comal County, Texas, and bounded on the west by the Fredericksburg Road, on the north by Comal Springs, on the east by the mill race leading from Comal Springs to Comal Creek, and on the south by the north boundary line of Tract No. 1, hereinabove conveyed to Comal Power Company.

It is further agreed and understood that the easements provided for in this paragraph shall be appurtenant, also, to such other land as may be included in what is known generally as 'Landa Park,' and which are to be fully described by metes and bounds in a deed from Grantors to J. E. Jarratt, conveying said park.

are hereby expressly excepted and reserved from this conveyance, and are hereby expressly retained by the present and future owners of the land described in this paragraph, their successors, heirs and assigns; said easements, rights, and privileges shall be for the sole and exclusive use and benefit of the present and future owners of the land described above in this paragraph and for the use and benefit of such persons as such owners may permit to enjoy the same; such easements, rights and privileges are as follows:

(a) To have the full and exclusive use, for all the purposes set forth in the preceding paragraph, of the largest island, known generally as 'Pecan Island,' situated in the Comal Springs; said easements, rights and privileges are for the use and enjoyment of said island for all the purposes, and are, in all things and to the full extent, the same as those provided for in the preceding paragraph with reference to the use of certain parts of the Comal River, its lakes, springs and tributaries, and the 15-foot strips of land along the banks or margins thereof;

(b) To have the exclusive possession, control, and use of what is known as the 'swimming pool' in Landa Park, with full and exclusive right to operate the same and charge for admission thereto, and, also, the perpetual right, at all times, to take from the Comal River, its springs, lakes and tributaries, at a point above the mill race, such quantity of water as will flow through a 12-inch pipe under a 2-foot head, such flow to be continuous, for use in said swimming pool, and, between the hours of 12 o'clock midnight and 6 o'clock A. M., to take additional water for the purposes of flushing and refilling said swimming pool (the right to so take water for flushing and refilling said swimming pool shall, at all times, be subject to the needs of Comal Power Company, its successors and assigns, which shall be considered, in this connection, paramount).

(c) To operate trains over the I. & G. N. spur track, which is situated near the west boundary line of the property, described as Tract No. 1, hereby conveyed to Comal Power Company, into 'Landa Park,' provided, however, that

cars shall never be stored on said spur track so as to interfere with the use thereof either by the Comal Power Company, its successors and assigns, or by the owners of said park.

(13) "Perpetual easements, rights and privileges appurtenant to the following described land and property, to-wit:

That certain lot, tract or parcel of land, being a part of the Juan Martin Veramendi Two-League grant, and situated in Comal County, Texas, described as follows, to-wit:

Beginning at a point in the north boundary line of Tract No. 1, hereinabove conveyed to Comal Power Company, 15 feet west of the west water's edge of the mill race; thence south 69 degrees, 10 minutes west, along the north boundary line of said Tract No. 1, hereinabove conveyed to Comal Power Company, for a distance of 200 feet to a point; thence north 20 degrees, 50 minutes west, 100 feet to a point; thence north 69 degrees, 10 minutes east, along a straight line to a point 15 feet west of the west water's edge of the mill race; thence in a southeasterly direction along a line parallel and 15 feet from the west water's edge of the mill race to the place of beginning.

are hereby excepted and reserved from this conveyance and are hereby retained by Grantors for the benefit of the present and future owners of the property described above in this paragraph, their heirs, successors, and assigns; such easements, rights and privileges are:

(a) To have the perpetual and continuous right to take or pump from the mill race such water as they may desire for a water works system; provided, however, that the amount of water so taken or pumped shall in no case exceed 3,000,000 gallons of water in any 24-hour period, and not more than 250,000 gallons of water in any 1 hour period.

(b) To have the perpetual and continuous right at all times to enter upon, and to lay, relay, repair, maintain, and remove water mains and pipes across, along and under:

(1) The park roadway, and bridge on same, and all railroad spur tracks, situated on Tract No. 2 and hereby conveyed to Comal Power Company.

(2) All parts of the Comal River, its lakes, springs and tributaries, and the bed and channel thereof, and all 15-foot strips of land along the banks or margins thereof, hereby conveyed, and which are described above herein as Tract No. 3.

(14) "Grantors, their successors, heirs and assigns, shall have the right to equal use of all railroad spur tracks now located upon Tract No. 2, hereby conveyed to Comal Power Company, for the purpose of getting cars to and from all lands and property of Grantors.

(15) "As to all those parts of the two branches of the Comal River, its lakes, springs and tributaries, and the 15-foot strips of land along the margins or banks thereof, which lie respectively down-stream and below the present swimming pool in Landa Park and below and down-stream from the property described as Tract No. 2, and hereby conveyed to Comal Power Company, perpetual easements, rights and privileges appurtenant respectively to the particular parts of the lands of Grantors, wherever and to the extent the same do so abut, which abut said parts of the Comal River, its lakes, springs and tributaries, or upon said 15-foot strips of land along the margins or banks thereof, are hereby excepted and reserved from this conveyance for the benefit of the present and future owners of each such respective part of the lands of Grantors which does so abut; such easements, rights and privileges are:

(a) To freely use and cross over such 15-foot strips of land and the Comal River, its lakes, springs and tributaries, and to retain, construct, reconstruct, maintain and repair thereon pump houses, pipes and all other structures as the owners of such abutting property may desire.

(b) To take such quantity of water from such parts of the Comal River, its lakes, springs and tributaries (that is, from those parts of the two branches which lie respectively below and down-stream from the swimming pool in Landa Park and below and down-stream from the lands described hereinabove as Tract No. 2 hereby conveyed to Comal Power Company), as may be desired for all and/or any purposes. It is expressly agreed and understood, however, that nothing contained in this paragraph shall ever be construed in such a way as to require more water to be run or let through the swimming pool than is expressly provided for in this deed of conveyance."

The aforesaid property is further subject to an agreement dated October 29, 1927, between the City of New Braunfels and Comal Power Company, copy of which is as follows:

"THE STATE OF TEXAS }
COUNTY OF COMAL }

WHEREAS, a dispute has arisen between the City of New Braunfels and the Comal Power Company, concerning the true location of the Fredericksburg Road and the property line of the Comal Power Company of the properties of said companies abutting on said street, and

WHEREAS, the Comal Power Company has erected a fence on that strip of land claimed by the City of New Braunfels to be part of the Fredericksburg Road, and which said strip of land is also claimed by the Comal Power Company under and by virtue of a deed of Harry Landa conveying said property to said Company, and

WHEREAS, both parties are desirous of settling amicably said dispute,

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS, that this agreement made by and between the City of New Braunfels, acting by and through its Mayor thereunto duly authorized, and the Comal Power Company, acting through its Vice-President, witnesseth:

1. That for and in consideration of the forebearance of said parties to this agreement to bring suit to determine the true location of said property line and the line of Fredericksburg Road, the said Comal Power Company agrees to relinquish unto the City of New Braunfels so much of the property now inclosed by them and claimed by them abutting on this street, as the City may demand, whenever the said City of New Braunfels deems it necessary and advisable to obtain said property and has made adequate money appropriations and is ready to begin work for the purpose of widening Fredericksburg Road; but in no event shall the property so relinquished extend beyond 20 feet easterly from the present fence line into the premises of the Comal Power Company. It is further agreed and understood that formal written notice to the effect that said City intends to widen said street and has appropriated adequate funds and is ready to begin work thereon shall be deemed sufficient notice to the Company, and upon receipt of said notice the Company hereby agrees to move back their fence to such a distance as may be agreed upon by the parties hereto, not to exceed

20 feet as aforesaid, and said Company will execute and deliver to said City a good and sufficient deed to the property so relinquished.

Witness our hand this 29th day of October, A. D. 1927.

CITY OF NEW BRAUNFELS.
H. A. TRIESCH,
Mayor.

COMAL POWER COMPANY.
E. H. KIFER,
Vice-President."

Said property was conveyed, subject to said agreement, by Comal Power Company (by Liquidating Trustees) to San Antonio Public Service Company, by deed dated January 1, 1928.

DITTLINGER SUBSTATION.

That property in Comal County, Texas, conveyed by John Fenske and wife to Comal Power Company by deed recorded June 10, 1927, in Volume 54 on pages 72-73, and conveyed by Comal Power Company (by Liquidating Trustees) to San Antonio Public Service Company, by deed dated January 1, 1928, said property being described in said deed recorded June 10, 1927, as follows: Beginning at a point 998 feet from the center of the I. & G. N. Ry. Track; thence south 28 degrees east, parallel with the Dittlinger Road, for a distance of 100 feet to a point; thence at a 90 degree turn, north 62 degrees east, 100 feet to a point; thence at a turn of 90 degrees north, 28 degrees west, 100 feet to a point; thence at a turn of 90 degrees south, 62 degrees west, 100 feet to the place of beginning; and being part of the old John Fenske Farm, which was conveyed to John Fenske by W. Fenske, by deed dated the 16th day of April, A. D. 1881, and recorded in Book P, page 359, of the Deed Records of Comal County, Texas.

PENSHORN PROPERTY.

All that certain tract, piece or parcel of land situated within the corporate limits of the City of New Braunfels, in Comal County, Texas, being out of the J. Veramendi Survey No. 1, Abstract No. 2, and being part of the certain tract of land conveyed by Chas. Buehler, et al., to Edmund Penshorn, by deed dated November 6, A. D. 1905 recorded in Volume 27, on pages 547-548, Deed Records of Comal County, Texas, and more particularly described as follows, to-wit: Beginning at a point in

the southwest line of the New Braunfels and Blanco Road, same being the north corner of the Hermann Thiele Tract and east corner of the said Edmund Penshorn Tract; thence in a northwesterly direction with the said southwest line of said New Braunfels and Blanco Road, 1,845 feet to a stake; thence in a southwesterly direction at an angle of 86 degrees, 47 minutes with said southwest line of said road to a point which is 30 feet from said road by a straight line drawn at a right angle to said road; thence in a southeasterly direction parallel with, and 30 feet from, the said southwest line of said New Braunfels and Blanco Road to a point in the Hermann Thiele northwest line; thence in an easterly direction with the said Hermann Thiele northwest line to the place of beginning; being the same property conveyed by Meta Penshorn, a feme sole, to Comal Power Company, by deed recorded November 2, 1925, in the records of Deeds of said county, in Volume 51, on pages 572-573, and conveyed by Comal Power Company (by Liquidating Trustees) to San Antonio Public Service Company, by deed dated January 1, 1928.

ADDITION TO COMAL PLANT (NOWOTNY).

All that certain tract or parcel of land lying and being situated within the corporate limits of the City of New Braunfels, Comal County, Texas, being a part of the Juan Martin Veramendi Survey No. 1, and described as follows, to-wit: Beginning at a point on the south line of North Street, which point is south 59 degrees, no minutes east, 165.0 feet from the intersection of the south line of North Street and the west line of River Avenue; thence south 16 degrees, 28 minutes east, 168.5 feet; thence south 2 degrees, 57 minutes east, 387.0 feet; thence south 46 degrees, 8 minutes east, 94.8 feet; thence north 69 degrees, 56 minutes east, 103.6 feet; thence south 72 degrees, 33 minutes east, 139.65 feet to a stake; thence 59 degrees west, to a stake set on the bank of the Comal River; thence up the meanders at the east bank of the Comal River to a point approximately 15 feet from the place of beginning; thence north 59 degrees east, to the place beginning.

The above described property being all that portion of that tract of land conveyed to E. H. Kifer by Albert Nowotny and Minnie Nowotny, by deed dated December 23, 1926, and recorded in Volume 53, pages 260-261, of the Deed Records of Comal County, Texas, save and except that portion of said tract conveyed by E. H. Kifer to South Texas Ice Company, by deed dated the 28th day of February, 1928, and this conveyance is made subject to the rights and easements granted in the aforesaid

deed to South Texas Ice Company; being the same property conveyed by E. H. Kifer to San Antonio Public Service Company, by deed recorded in the records of Deeds of said Comal County, March 19, 1928, in Volume 55, pages 64-65.

KUEHLER POWER STATION SITE.

All those certain tracts or parcels of land lying and being situated in Comal County, Texas, described as follows, to-wit:

First Tract: Thirty acres of land abutting on the Guadalupe River, south of, and adjacent to, the City of New Braunfels, and more particularly described as follows, to-wit: beginning at a concrete monument from which a hackberry 20 inches in diameter bears north 69 degrees east, 54 feet, said monument being 36.8 feet south 39 degrees, 28 minutes east, from the center of the east end of the 30-foot right-of-way this day purchased from W. Kuehler, et al.; thence north 32 degrees, 29 minutes east, 662 feet to a concrete monument; thence north 68 degrees, 9 minutes east, 770 feet to a concrete monument from which a hackberry 6 inches in diameter bears north 72 degrees, 50 minutes east, 63 feet; thence north 6 degrees, 11 minutes west, 1,088 feet to a stake at the water's edge of the Guadalupe River; thence up the river with its meanders 2,000 feet, more or less, to a cypress 8 inches in diameter at the water's edge of the Guadalupe River; thence south 39 degrees, 28 minutes east at 752.2 feet past the center of the east end of the above mentioned 30-foot right-of-way, and in all 789 feet, to the place of beginning.

Three and sixty-two hundredths acres of land, more or less, adjoining the 30 acres of land herein described, being more particularly described as follows, to-wit:

A strip of right-of-way 30 feet wide and 5,259.9 feet long, extending southeasterly from the south line of the city limits of the City of New Braunfels into the Kuehler property, the center line of said strip being described as follows: Beginning at a concrete monument on the south city limit line of the City of New Braunfels, said monument being 1,174.4 feet north 80 degrees, 56 minutes east, from the city monument at the Schumannsville Road, and 1,144 feet south 80 degrees, 56 minutes west, from a new concrete monument established on the city limit line near the Guadalupe River; thence south 29 degrees, 2 minutes east, parallel with, and 165 feet distant from, the southwest line of South Seguin Street, extended, as shown on the plat of the Kuehler Addition as recorded in Volume 46, pages 430-431, of the Deed Records of Comal County, Texas, in all 391.6 feet,

to a stake; thence in a southeasterly direction on a line curving to the left with a radius of 1,433 feet, 344.2 feet to a stake, which is south 42 degrees, 48 minutes east, 172.9 feet from a concrete monument established at the point of intersection of this curve; thence south 42 degrees, 48 minutes east, 1,093.8 feet to a stake; thence in a southeasterly direction on a line curving to the left with a radius of 1,433 feet, 405.8 feet to a stake, which is south 59 degrees, 2 minutes east, 204.3 feet from a concrete monument established at the point of intersection of this curve; thence south 59 degrees, 2 minutes east, 622.1 feet to a stake; thence in an easterly direction on a line curving to the left with a radius of 955 feet, 1,189.2 feet to a stake, which is north 49 degrees, 37 minutes east, 685.6 feet from a concrete monument established at the point of intersection of this curve; thence north 49 degrees, 37 minutes east, 812.2 feet to a stake; thence in a northeasterly direction on a line curving to the left with a radius of 1,343 feet, 401 feet to a stake in the southwest line of the 30-acre tract, 36.8 feet north 39 degrees, 28 minutes west from the concrete monument established at the south corner of said 30-acre tract.

The above described property being that property conveyed by Ludgar Kuehler and wife, Hulda Kuehler, et al., to Comal Power Company, by deed dated June 30, 1924, and duly recorded in Book 49, pages 485-487, Deed of Records of Comal County, Texas.

Second Tract: Fourteen and forty-two hundredths acres of land abutting on the Guadalupe River, and being a part of the Wm. Kuehler Tract out of the John Thompson Survey No. 21 in Comal County, Texas, and more particularly described as follows: Beginning at the east corner of the 30-acre tract heretofore conveyed to the Comal Power Company, a concrete monument from which a hackberry 6 inches in diameter bears north 72 degrees, 50 minutes east, 63 feet; thence south 68 degrees, 9 minutes west along the southeast line of said 30-acre tract, 770 feet to a concrete monument; thence continuing along the southeast line of said 30-acre tract south 32 degrees, 29 minutes west, 662 feet to a concrete monument at the south corner of said 30-acre tract; thence south 39 degrees, 28 minutes east, 31.6 feet to a stake; thence north 32 degrees, 29 minutes east, parallel with, and 30 feet distant from, the southeast line of said 30-acre tract, 662.1 feet to a stake; thence north 68 degrees, 9 minutes east, parallel with, and 30 feet distant from, the southeast line of said 30-acre tract, 415 feet to a stake; thence north 82 degrees, 18 minutes east, 356 feet to a stake, which is 117 feet south 21 degrees, 51 minutes east, from the concrete monument at the

beginning corner; thence north 78 degrees, 20 minutes east at 577 feet a cottonwood tree 30 inches in diameter, and in all 624 feet to the water's edge of the Guadalupe River; thence up the river with its meanders to the north corner of said 30-acre tract; thence south 6 degrees, 11 minutes east along the east line of said 30-acre tract 1,088 feet to the place of beginning, containing 14.42 acres of land.

The above described property being the same property conveyed by Ludgar Kuehler, et al., to Comal Power Company, by deed dated October 1, 1924, and duly recorded in Volume 50, pages 62-64, Deed Records of Comal County, Texas.

Third Tract: All that certain tract of land situated within the corporate limits of the City of New Braunfels, Comal County, Texas, being known as Lot No. 5 of Subdivision of Acre Lot No. 179, and more particularly described by metes and bounds as follows, to-wit: Beginning at the northeast corner of Lot No. 11, said beginning point being on Nacogdoches Road, for a distance of 79 feet to the southeast corner of said Lot No. 5; thence north 52 degrees west for a distance of 181 feet to the northeast corner of said Lot No. 5; thence south 38 degrees west for a distance of 70 feet to the northwest corner of said Lot No. 5; thence south 52 degrees east for a distance of 145 feet to the place of beginning.

The above described property having been conveyed by Willie Kuehler and wife, to Comal Power Company, by deed dated June 30, 1924, and duly recorded in Book 49, pages 477-478, Deed Records of Comal County, Texas, and by Comal Power Company (by Liquidating Trustees) to San Antonio Public Service Company, by deed recorded in the records of Deeds of said Comal County on July 6, 1928, in Volume 55, on pages 310-314.

ADDITION TO COMAL PLANT SITE (LOCKE).

Being all that certain tract or parcel of land situated within the corporate limits of the City of New Braunfels, Comal County, Texas, and more particularly described as follows: Beginning at a point 30 feet south 75 degrees, 30 minutes west, from the west property line of the Fredericksburg Road and on the south property line of a new street cut through the south end of the Penshorn property, this point being also on the west line of the 30-foot right-of-way now owned by the San Antonio Public Service Company and on the south line of the new street at the south end of the Penshorn property; thence south 75 degrees, 30 minutes west, 199.34 feet along the south line of the said new

street to a stake for the northwest corner of this tract; thence south 14 degrees, 30 minutes east, 1,092.6 feet parallel to, and 199.34 feet distant from, the west line of the 30-foot right-of-way, before mentioned, to a stake for the southwest corner of this tract; thence north 75 degrees, 30 minutes east, 199.34 feet to a stake on the west line of the said 30-foot right-of-way, which point is the southeast corner of this tract; thence along the west line of the said 30-foot right-of-way north 14 degrees, 30 minutes west, 1,092.6 feet to the place of beginning; being 5 acres of land out of the tract of land conveyed to Herman C. Locke by Meta Penshorn, by deed dated April 27, 1926, recorded in the Deed Records of Comal County, Texas, in Volume 52, on pages 375-376, to which deed and record thereof reference is particularly made as part of the description of the property herein conveyed; being the same property conveyed by Herman C. Locke and wife, Thekla Locke, to San Antonio Public Service Company, by deed recorded in the records of Deeds of said Comal County, September 17, 1928, in Volume 55, pages 433-435.

P. & M. MILLS PLANT.

The following described property in Comal County, Texas, to-wit:

1. A part of the 6.14-acre tract out of the A. M. Esnaurizar 11-League grant in Comal County, Texas, described in deed from L. Meyer and wife to the Trustees of the P. & M. Mills, dated August 20, 1921, and recorded in Book 43, pages 619-621, of the Deed Records of Comal County, Texas, said part being more particularly described by metes and bounds as follows: Beginning at a stake on the east bank of Guadalupe River at water's edge, at a point which is 15 feet up-stream from the up-stream face of the water power house of the P. & M. Mills; thence north 73 degrees, 18 minutes east, parallel with, and 15 feet distant from, the up-stream face of said power house, 24 feet to a stake for north corner, which stake is south 7 degrees, 12 minutes east, 332.5 feet from the center of the I. & G. N. R. R., at the concrete bulkhead face of the east abutment of said railroad's Guadalupe River bridge; thence south 16 degrees, 42 minutes east, parallel with, and 15 feet distant from, the east face of the power house, 68 feet to a stake; thence south 73 degrees, 18 minutes west, parallel with, and 15 feet distant from, the down-stream face of said power house, 20 feet, more or less, to the water's edge of the Guadalupe River; thence in a northerly direction along the water's edge of the Guadalupe River with its meanders, 15 feet, more or less, to the down-stream face of the power house; thence

north 73 degrees, 18 minutes east, along the down-stream face of said power house, 6 feet, more or less, to its southeast corner; thence north 16 degrees, 42 minutes west, along the east face of said power house, 38 feet to its north corner; thence south 73 degrees, 18 minutes west, along the up-stream face of said power house, 11 feet, more or less, to the water's edge of the Guadalupe River; thence in a northerly direction along the water's edge of the Guadalupe River with its meanders 15 feet, more or less, to the place of beginning.

2. A part of the 6.14-acre tract out of the A. M. Esnaurizar 11-League grant in Comal County, Texas, described in deed from L. Meyer and wife to the Trustees of the P. & M. Mills, dated August 20, 1921, and recorded in Book 43, pages 619-621, of the Deed Records of Comal County, Texas, said part being more particularly described by metes and bounds as follows: Beginning at a point in the east line of the power house tract, 24.5 feet south 16 degrees, 42 minutes east from the north corner of said tract and being 15 feet from the east face of the power house; thence north 73 degrees, 18 minutes east, 76 feet to a point on concrete walk; thence south 16 degrees, 42 minutes east, 19 feet to a stake; thence south 73 degrees, 18 minutes west, 76 feet to a point in the east line of the power house tract; thence north 16 degrees, 42 minutes west, parallel with, and 15 feet distant from, the east face of the power house, 19 feet to the place of beginning.

3. A part of the John Thompson Survey within the corporate limits of the City of New Braunfels, Texas, more particularly described by metes and bounds as follows: Beginning at a stake in the southwest right-of-way line of the P. & M. Mills, same being also the northeast line of Block 1052, of the City of New Braunfels, Texas, said stake being 22.7 feet south 19 degrees, 41 minutes east from the north corner of Lot No. 3, of said Block 1052; thence south 19 degrees, 41 minutes east, along the southwest right-of-way line of the P. & M. Mills and the northeast line of said Block 1052, 40 feet to a point on rock ledge; thence north 73 degrees, 4 minutes east, 30 feet, more or less, to the water's edge of the Guadalupe River; thence in a northwesterly direction along the water's edge of the Guadalupe River with its meanders, passing around the southwest end of the P. & M. Dam to a point 15 feet up-stream from the up-stream face of said dam; thence south 73 degrees, 4 minutes west, parallel with, and 15 feet distant from, the face of said dam, 25 feet, more or less, to the place of beginning.

Which 3 parcels of land were surveyed on August 17 and 18, 1931, by R. S. Jahn, County Surveyor.

4. The dam formerly owned by Planters and Merchants Mills, Inc., extending across the Guadalupe River from a point which bears south 45 degrees, 34 minutes east, 852 feet from the west corner of A. M. Esnaurizar 11-League grant, on the bank of the Guadalupe River in Comal County, Texas, distant in an easterly direction from New Braunfels, Texas, 1½ miles, erected under original Permit No. 590, granted and issued by the Board of Water Engineers to the Planters and Merchants Mills of New Braunfels, Texas, under date of July 31, 1922, together with all riparian rights, rights of flowage, or to back up water by means of said dam or other water rights, all and any easements of any kind formerly owned by Planters and Merchants Mills, Inc., in any lands, or lots or parcels of land in Comal County, Texas, abutting on said Guadalupe and Comal Rivers, across from, above or below the said dam, whether acquired by deed, contract or use, it being the intention herein to convey the complete and entire water and power plant, formerly owned by the Planters and Merchants Mills, Inc., together with all riparian and other rights and appurtenances thereunto in anywise incident or appertaining, and all rights, however acquired, to impound and use water by means of said dam, and reference is here made to all deeds and contracts to Planters and Merchants Mills, Inc., in the Deed Records of Comal County, Texas, conveying riparian or other water rights and easements to the said Planters and Merchants Mills, Inc., or its predecessors in title, and reference is also made to the original Permit No. 590, granted and issued by the Board of Water Engineers to the Planters and Merchants Mills of New Braunfels, Texas, for the appropriation of water from the Guadalupe River in Comal County, Texas, and the amendment thereto, No. 755, granted and issued by the Board of Water Engineers of the State of Texas, and the amendment thereto, No. 755, granted and issued by the Board of Water Engineers of the State of Texas to the Planters and Merchants Mills of New Braunfels, Texas, both of which appear of record in the office of the Board of Water Engineers, at Austin, Texas.

5. An easement right-of-way over, across and upon the present gravel roadway lying between the present west wall of the old Planters and Merchants Mill Building and the Guadalupe River, leading from the Austin-San Antonio Highway to the boiler room of the Old Mill Building, as a permanent and perpetual means of ingress and egress to and from the said power plant and dam site, as hereinabove described; being the same land, property, rights, privileges and easements conveyed by H. A. Wagenfuehr to San Antonio Public Service Company, by deed recorded in the records of Deeds of said Comal County, Texas, November 20, 1931, in Volume 60, pages 248-250.

GUADALUPE POWER SITE.

All those certain tracts or parcels of land lying and being situated in Guadalupe County, Texas, being out of Subdivision No. 88 of the A. M. Esnaurizar Original 11-League grant, which was conveyed by E. J. Laechelin and wife, Hulda Laechelin, to Comal Power Company, by deed dated August 22, 1927, and duly recorded in Book 94, pages 371-373, of the Deed Records of Guadalupe County, Texas, and in which said deed the property hereby conveyed is described as follows:

"First: Beginning at a point on the north fence line of the Southern Pacific Railroad right-of-way, and on the south boundary line of the property of grantors herein, 2,339 feet from the southeast corner of property of E. J. Laechelin and wife; thence north no degrees, 7 minutes west, 1,871.5 feet to Young's Ford Road; thence south 89 degrees, 53 minutes west, 297.87 feet; thence north 73 degrees, 52 minutes west, 98.87 feet; thence south 89 degrees, 12 minutes west, 383.67 feet; thence along the line of the property heretofore sold by E. J. Laechelin and wife to the Texas Power Corporation, south 69 degrees, 9 minutes west, 163 feet; north 89 degrees, 40 minutes west, 146 feet; south 58 degrees, 58 minutes west, 72.25 feet to corner; thence leaving the line of the Texas Power Corporation property and going south 14 degrees, 40 minutes east, 349.30 feet; thence south no degrees, 7 minutes west, 1579.79 feet to a point in fence line between the Southern Pacific Railroad right-of-way and the above property, this line being parallel to, and 1048 feet from, the eastern line of this tract; thence following the north fence line of the railroad right-of-way, in an eastern direction, 1056 feet to the place of beginning, containing 45.92 acres of land.

"Second: Beginning at a point on the western boundary of the above tract, 1467.33 feet north from the north property line of the railroad right-of-way; thence south 62 degrees, 41 minutes west, to the corner of the property of the Texas Power Corporation, this being a corner of that property where a dam is to be erected; thence with the northwest line of said property to the boundary line of the property heretofore sold by E. J. Laechelin and wife to the Texas Power Corporation; thence in a northern direction along the Texas Power Corporation property to a point 100 feet distant from, and at right angles to, the northwest boundary of the Texas Power Corporation land; thence in a northeasterly direction, parallel to the first course of this tract, and 100 feet therefrom, to a point on the western boundary of the above 45.92-acre tract, said point being 1579.79 feet from the northern property line of the Southern Pacific Railroad; thence

south with the west line of said 45.92-acre tract to the place of beginning.

"This tract or strip of land identified as 'Second,' is expected to be used by Comal Power Company as and for a canal, and it is agreed that all dirt removed in the digging of the canal by said company shall be by them spread out evenly to a distance of 200 feet from the edge of the canal. It is further agreed that E. J. Laechelin and wife reserve to themselves, and to their heirs and assigns, the right to cross said strip and canal at as many as three places, with the right to construct bridges across and over said canal at as many as three places so selected by him to cross same, and Comal Power Company agrees that it will pay one half the cost of the construction of any one of said bridges as soon as constructed and when requested to contribute by E. J. Laechelin and wife.

"Third: Also a permanent easement for the construction of a tunnel and the construction and operation of not more than two electric transmission lines. This easement is upon and under the following strip of land: Beginning at a point on the western boundary of the above 45.92-acre tract of land, 716.5 feet from the north boundary of the Southern Pacific right-of-way; thence south 62 degrees, 41 minutes west, to the Guadalupe River; thence with the bank of the river a perpendicular distance of 100 feet; thence in a northeastern direction, parallel to the southeastern boundary of this easement and 100 feet therefrom, to a point on the western boundary of the 45.92 acres, 828.96 feet north of the northern property line of the Southern Pacific Railroad; thence south with the west line of said 45.92-acre tract to the place of beginning.

"It is agreed that no ditch of any kind shall be permanently left open on the above tract for any purpose except the first 250 feet beginning with the river front, and only two transmission lines shall be erected on the easement.

"It is understood that E. J. Laechelin and wife hereby convey to Comal Power Company all riparian and other rights which they own at the points where the conveyed premises touch the river or the property of the Texas Power Corporation, but that notice is taken of such rights as the Texas Power Corporation may own.

"It is also agreed that E. J. Laechelin and wife reserves to himself, and themselves, an easement for the passage of persons, vehicles and stock along the south side of said 45.92-acre tract

above described, so long as they or either of them own land on both sides of said 45.92 acres, said right-of-way not to interfere with the construction and operation of a railroad spur that might be erected across same, but which is to permit a crossing at this point.

"It is further understood and agreed, and there is hereby given and granted to Comal Power Company, an easement for the passage of persons, vehicles and stock from the southwest corner of the 45.92 acres above conveyed, westward along the north boundary of the Southern Pacific railroad to the road going southward under the trestle of the railroad, and thence running with said road under said trestle and to the main road to Seguin, subject, however, to the right of E. J. Laechelin and wife to cross under the right-of-way of the Southern Pacific under said trestle."

The above described property was, as before mentioned, conveyed by E. J. Laechelin and wife, Hulda Laechelin, to Comal Power Company by deed dated August 22, 1927, and recorded in Book 94, pages 371-373, of the Deed Records of said Guadalupe County, and said property was thereafter conveyed by Comal Power Company (by Liquidating Trustees) to San Antonio Public Service Company, by deed recorded in the records of Deeds of said Guadalupe County on July 10, 1928, in Book 98 on pages 361-365.

GERONIMO SUBSTATION.

All that certain tract or parcel of land lying and being situated in the County of Guadalupe, in the State of Texas, described as follows, to wit: Ten thousand square feet of land, more or less, out of an 124-acre tract located approximately two miles from the town of Geronimo in Guadalupe County, Texas, out of Esnaurizar grant, said 10,000 square feet of land being described by metes and bounds as follows: Beginning at a point at the southeast corner of the A. F. Baese property adjoining the public school; thence north 3 degrees east, 247 feet to a stake set for the southeast corner of the land to be described; thence north 87 degrees west, 100 feet to a stake set for the southwest corner; thence north 3 degrees east, 100 feet to a stake set in the northwest corner; thence south 87 degrees east, 100 feet to the northeast corner to a stake set in the west line of the Geronimo road; thence south 3 degrees west, 50 feet to the Luling high line of the San Antonio Public Service Company; thence continuing south 3 degrees west, 50 feet to the place of beginning, containing 10,000 square feet, more or less.

Being the same property conveyed by A. F. Baese and Paula Baese, husband and wife, to San Antonio Public Service Company, by deed recorded in the records of Deeds of said Guadalupe County, July 14, 1928, in Book 97, page 487.

KINGSBURY SUBSTATION.

All that certain tract or parcel of land lying and being situated in the County of Guadalupe, in the State of Texas, described as follows, to-wit: Twenty-two thousand, five hundred square feet of land, more or less, out of a 213 acre tract located approximately one mile northwest of the Town of Kingsbury in Guadalupe County, Texas, out of the J. H. Kuykendall Survey, said 22,500 square feet of land, more or less, being described by metes and bounds as follows: Beginning at a stake set in the north corner of John Schmidt's property on the San Marcos and Kingsbury Road, about one mile northwest of the Town of Kingsbury; thence south 37 degrees, 30 minutes east, 253 feet to a stake set for the beginning point of land to be described, said stake being the west corner; thence north 52 degrees, 30 minutes east, 150 feet to a stake set for the north corner; thence south 37 degrees, 30 minutes east, 126 feet 10 inches to Luling high line; thence continuing south 37 degrees, 30 minutes east, 23 feet 2 inches to a stake set for the east corner; thence south 52 degrees, 30 minutes west, 150 feet to a stake set for the south corner, said stake being on the northeast side of the Kingsbury Road; thence along the northeast side of said road north 37 degrees, 30 minutes west, 100 feet to the Luling high line; and thence continuing north 37 degrees, 30 minutes west, 50 feet to a stake or point of beginning. Said piece of ground containing 22,500 square feet, more or less.

Being the same property conveyed by John Schmidt and wife, Marie Schmidt, to San Antonio Public Service Company by deed recorded in the records of Deeds of said Guadalupe County July 16, 1928, in Book 97, pages 489-490.

OIL FIELD SUBSTATION.

The following tract of land in Guadalupe County, Texas, out of the George Blair labor of 177 acres, which said 177 acres was on the 23rd day of November, 1908, conveyed by R. W. Nickell and wife, Emily A. Nickell, by deed to J. L. Mercer, which said deed is recorded in the Deed Records of Guadalupe County, Texas, in Volume 32, page 47, to which Deed Records reference is hereby made, as follows: Beginning at a stake set

in the fence line at a south corner of the J. L. Mercer tract of land out of said George Blair labor, said stake being situated north 80 degrees, 55 minutes east, 16 feet north, 3 degrees, 31 minutes east, 89.2 feet from the center stake of structure No. 17/9 on Comal Power Company 60 K. W. McQueeney—Luling high line; thence north 88 degrees, 30 minutes west, 17.2 feet with fence line of said J. L. Mercer tract of land to a stake set at corner of said fence; thence north 38 degrees, 54 minutes west, 185.6 feet with said fence line to a stake set in fence line for the west corner of this one-acre tract; thence north 57 degrees east, 218.34 feet to a stake set for the north corner of this one-acre tract; thence south 33 degrees east, 209.92 feet to a stake set in the southeast fence line of said J. L. Mercer tract of land for the east corner of this one-acre tract; thence with said fence line south 53 degrees, 26 minutes west, 125.84 feet to a stake set in a corner of said fence line; and thence continuing with said fence line south 78 degrees, 17 minutes west, 63.9 feet to the place of beginning. Said tract of land as described above contains 1 acre of land.

Being the same property conveyed by J. L. Mercer and wife, Laura A. Mercer, to San Antonio Public Service Company, by deed recorded in the records of Deeds of said Guadalupe County, November 5, 1929, in Volume 116, pages 224-225.

SEGUIN SUBSTATION.

All that certain lot or parcel of land situated in Guadalupe County, State of Texas, and a part of the Humphreys Branch League, and being out of the A. Byler tract, containing one acre, and described more particularly as follows: Beginning at the northwest corner of a plot of ground owned by Frank Wilson; thence north, 210 feet; thence east, 197½ feet; thence south, 210 feet; thence west 197½ feet to the place of beginning. Being the same property conveyed to Abner Jackson by Fannie Jackson, by deed dated September 10, 1924, as appears of record in Volume 79, on page 401, of the Deed Records of Guadalupe County, to which deed and the record thereof reference is here made.

Being the same property conveyed by G. Wallace Smith to San Antonio Public Service Company by deed recorded in the records of Deeds of said Guadalupe County on May 9, 1929, in Volume 106, pages 264-265.

EASEMENT FOR GUADALUPE POWER SITE.

The permanent easement conveyed by Edgar J. Laechelin and wife, Hulda Laechelin, to San Antonio Public Service Company, by warranty deed recorded in the records of Deeds of Guadalupe County on August 26, 1930, in Volume 130 on page 394-395, and therein described as follows:

"A permanent easement and use of that certain parcel and strip of land 40 feet wide, known and designated as lying along the southwestern side of the following tract of land situated about five miles west of Seguin, out of the A. M. Esnaurizar 11-League grant, in Guadalupe County, Texas, beginning at a stake in the east or southeast boundary of a 2.56-acre tract formerly owned by Aug. H. Koehler, said beginning point being about 388 feet south 46 degrees, 37 minutes west, of the most northern corner of said tract (said point being also in the north line of the highway leading from Seguin to San Antonio); thence north 46 degrees, 37 minutes east, with said road, 80 feet to a stake for corner, said stake being the southwest corner of a tract of land conveyed by Aug. H. Koehler to John P. Stuard by deed dated June 28, 1930; thence north 43 degrees, 11 minutes west, 133.5 feet to a stake set for corner, said stake being the northwest corner of said tract conveyed by Aug. H. Koehler to John P. Stuard, and to the south line of a right-of-way owned by San Antonio Public Service Company; thence south 65 degrees, 49 minutes west, 75 feet to a stake for corner; thence south 39 degrees, 55 minutes east, 158½ feet to the place of beginning, and being the western part of a strip of land conveyed to E. J. Laechelin and wife, Hulda Laechelin, by Aug. H. Koehler.

"It is the intention of this instrument to give to the San Antonio Public Service Company the permanent right of use of and over a strip of land 40 feet wide (which use shall at all times permit an open right-of-way), leading from the Seguin-San Antonio highway (immediately east of the McQueeney Bridge over the Guadalupe River) in a northerly direction to a right-of-way owned by San Antonio Public Service Company; along the south side of the Southern Pacific Railroad right-of-way, conveyed by deed from E. J. Laechelin and wife, Hulda Laechelin, to the Comal Power Company, dated August 22, 1927, of record in Volume 94, page 371, of the Deed Records of Guadalupe County, Texas, to which reference is here made. It is understood and agreed that the easement and right-of-way granted in that deed of conveyance for the passage of persons, vehicles and stock from the southwest corner of the 45.92-acre tract therein described, westward along the north boundary line of the Southern Pacific Railroad, to the road going southward un-

der the trestle of the railroad; thence along the road under said trestle to the main road to Seguin, Texas, which easement and right-of-way is and shall be over a strip of land 30 feet wide along its entire course, extending from the boundary line of the Southern Pacific Railroad right-of-way."

Being as aforesaid the same permanent easement conveyed by Edgar J. Laechelin and wife, Hulda Laechelin, to San Antonio Public Service Company by warranty deed, recorded in the records of Deeds of said Guadalupe County on August 26, 1930, in Volume 130, pages 394-395.

SEGUIN OFFICE BUILDING.

All of that certain lot and parcel of land situated in Seguin, Guadalupe County, Texas, described as follows, to-wit:

Being part of original Inner or Building Block No. 25, now known as New City Block No. 163, and being all of Lots Nos. 5 and 6, and a small part of Lot No. 7, in said Block, so as to include the brick and rock or gravel and concrete building on the northeast corner of said Block: Beginning at the northwest corner of said Block; thence east with the south line of East Center Street, 106 feet to the northeast corner of the brick portion of the said building thereon; thence south 66⅔ feet to a stake; thence west 106 feet to a stake in the east line of South River Street; thence north 66⅔ feet to the place of beginning.

Being the same property conveyed by the South Texas Ice Company to San Antonio Public Service Company by deed recorded in the records of Deeds of said Guadalupe County on February 15, 1930, in Volume 121, page 457.

D'HANIS SUBSTATION.

All that certain piece of land in the town of D'Hanis, in Medina County, Texas, conveyed by Comal Power Company (by Liquidating Trustees) to San Antonio Public Service Company by deed dated January 1, 1928, and recorded in the records of Deeds of said County in Volume 97, at page 574, and which is described in said deed as follows:

All that certain piece, parcel and block of land lying and being situated in the town of D'Hanis, in Medina County, Texas, Abstract No. 49, Certificate No. 296, Survey No. 441, Burnett D. G., being out of a 15-acre homestead tract owned by Chas. Boog and wife, Helena Boog, the part hereby conveyed being

described by metes and bounds as follows, to-wit: Beginning at the southeast corner of said Boog 15-acre tract for the southeast corner of this piece; thence north along the Boog east line for a distance of 100 feet, turn interior angle of 89 degrees; thence due west for 100 feet, a stake for the northwest corner of this piece, turn interior angle of 91 degrees; thence due south for 100 feet, a stake, set for the southwest corner, interior angle 89 degrees; thence east for 100 feet along Boog south line to place of beginning; being the same land conveyed by Charles Boog and wife, Helena Boog, to Comal Power Company by deed dated November 22, 1927, and recorded in Volume 85, pages 467 and 468, of the Deed Records of Medina County, Texas.

FLORESVILLE PLANT SITE.

The following described property situated in Wilson County, Texas, and within the corporate limits of the City of Floresville, more particularly described as follows, to-wit:

The east half of Lot No. 11, and all of Lots Nos. 12, 13 and 14, Block C of the Railroad Addition to the City of Floresville, as shown by map or plat of said City, of record in the office of the County Clerk in Wilson County, Texas.

Being the same property conveyed by the Lone Star State Power Company to the South Texas Public Service Company, recorded on the 4th day of November, 1927, in Deed Records Book 144, pages 3 to 6, Wilson County, Texas, and by the said South Texas Public Service Company conveyed to the South Texas Ice Company by deed dated the 1st day of February, A. D. 1928, and recorded in Deed Records Book 144, pages 419-421, of Wilson County, Texas, said property being known as the Floresville Power and Ice Plant site, Wilson County, Texas.

Being the same property conveyed by South Texas Ice Company to San Antonio Public Service Company, by deed recorded in the records of Deeds of said Wilson County, January 9, 1930, in Volume 163, pages 167-168.

FENTRESS PLANT AND SYSTEM.

All that land, property, property rights, franchises, privileges and easements conveyed by G. Wallace Smith to San Antonio Public Service Company by deed recorded in the records of Deeds of Caldwell County, Texas, in Volume 137, page 601 (and in Guadalupe County in Volume 106, pages 338-340),

wherein said land, property, rights, franchises, privileges and easements are described as follows:—

"No. 1. All that certain tract or parcel of land lying and being situated in Caldwell County, Texas, more particularly described as follows, to-wit:

Beginning at an iron pin set at the northeast corner of the property owned by the Fentress Gin and Power Company, located on the east side of the San Marcos River, said northeast corner of said property being located approximately as follows: Beginning at a cypress tree on the north bank of the San Marcos River, at the upper northwest corner of the M. Gillan League; thence north 50 degrees east 4162 feet along said league line; thence south 40 degrees east, 5428 feet to the aforementioned iron pin set in the northeast corner of the property of the Fentress Gin and Power Company; thence south 3 degrees, 30 minutes east, 50 feet to a stake for a corner of this tract; thence south 86 degrees, 30 minutes west, 50 feet to a corner of this tract; thence north 3 degrees, 30 minutes west, 50 feet to a corner of this tract; thence north 86 degrees, 30 minutes east, 50 feet to the place of beginning.

"No. 2. All that certain tract or parcel of land lying and being situated in Caldwell County, Texas, on the east side of the San Marcos River, described as follows, to-wit: Beginning at an iron pin set in the property of the Fentress Gin and Power Company, on the east bank of the San Marcos River, the location of said iron pin being determined approximately as follows: Beginning at the iron pin set as the beginning point of Tract No. 1, above described; thence south 86 degrees, 30 minutes west, 103 feet and 10 inches; thence south 3 degrees, 30 minutes east, 296 feet; thence north 73 degrees, 30 minutes west, 94 feet 10 inches to a point where said iron pin is set for the beginning point of this tract; thence from said beginning point, south 73 degrees, 30 minutes east, 64 feet 2 inches to a point for a corner of this tract; thence south 15 degrees, 30 minutes west, 30 feet to a corner of this tract; thence south 52 degrees, 30 minutes west, 28 feet 6 inches to a corner of this tract; thence south 10 degrees, 30 minutes west, 27 feet to a corner of this tract; thence south 68 degrees, west, 5 feet 9 inches to a corner of this tract; thence south 79 degrees, 30 minutes west, 19 feet 3 inches to an iron pin driven in the east bank of the San Marcos River; thence north, along the east bank of the San Marcos River with its meanders, to the place of beginning.

"No. 3. All that certain tract or parcel of land lying and being situated in Guadalupe County, Texas, more particularly described as follows, to-wit:

Beginning at an iron pin set in the property of the Fentress Gin and Power Company on the west bank of the San Marcos River, the location of said iron pin so set as a beginning point of this tract being determined approximately as follows, to-wit: Beginning at the extreme southwest corner of Tract No. 2, above described, which said extreme southwest corner is located on the east bank of the San Marcos River; thence north 79 degrees, 30 minutes east, 19 feet 3 inches; thence south 16 degrees, 30 minutes west, 112 feet 6 inches to a cross-cut in a wooden bridge; thence due west approximately 200 feet, crossing the San Marcos River to said iron pin set on the west bank of the San Marcos River as the beginning point of this tract; from said beginning point so located, thence west 165 feet to a point, a corner of this tract, which said point is on the west bank of a slough; thence along the west bank of said slough, north 10 degrees west, 175 feet to a stake; thence north 15 degrees west, 200 feet to a stake; thence north 44 degrees west, 100 feet to a stake set for a corner of this tract, said point being on the J. H. Fleming southeast line; thence north 50 degrees east, along the said J. H. Fleming line to the west bank of the San Marcos River; thence south, along the west bank of the San Marcos River with the meanders of said river, to the place of beginning.

"No. 4. That certain concrete dam crossing the San Marcos River at a point between and abutting Tracts Nos. 2 and 3, above described, together with a forebay, two water wheels and the gates located at the east end of said dam.

"No. 5. All rights, privileges and easements of every nature whatsoever, with reference to the right of G. Wallace Smith to maintain said dam, forebay, water wheels and gates, and to operate same.

"No. 6. All improvements of any and every nature whatsoever located upon the above three tracts of land, together with all generators, machinery, tools and equipment of any and every nature located in and on the above described tracts.

"No. 7. The entire electric distribution system radiating from the power plant located on Tract No. 2 and serving the towns of Fentress, Prairie Lea and intermediate and adjacent territory, together with all rights, privileges and franchises of any and every nature whatsoever, owned and possessed by G. Wallace Smith in connection with the construction and maintenance of said electric distribution system, together with all tools, appliances and equipment of any and every nature whatsoever used and useful in connection with said electric distribution system.

"No. 8. A perpetual easement appurtenant to, and running in favor of, the title to Tracts Nos. 2 and 3, above described; said easement being of such nature as to at all times give to the said San Antonio Public Service Company, its successors and assigns, complete, free and uninterrupted ingress and egress for all purposes to the aforesaid Tracts Nos. 2 and 3, above described, and for the maintenance of such pole lines as are this day purchased by said San Antonio Public Service Company from G. Wallace Smith, and such additional pole lines as San Antonio Public Service Company, its successors or assigns, may hereafter, from time to time, desire to construct; all such easements to be on, over and along property now owned by the Fentress Gin and Power Company that is not covered by this conveyance; it being understood, however, that insofar as the same is practicable to the said San Antonio Public Service Company, its successors or assigns, such easements will coincide with the present driveways which are at this time maintained by said G. Wallace Smith, but in the event the same are not found to be practicable to the said San Antonio Public Service Company, its successors or assigns, then said easements shall run in such manner as to give to the said San Antonio Public Service Company, its successors or assigns, a direct line from the aforesaid Tracts Nos. 2 and 3, to the nearest public highway and also to Tract No. 1, and in addition to the aforementioned easements, an easement is also hereby given unto the said San Antonio Public Service Company, its successors and assigns, over and along the north end of the property owned by the Fentress Gin and Power Company on both the east and west sides of the San Marcos River, so as to enable the said San Antonio Public Service Company, its successors and assigns, to connect Tract No. 1, above described, with a transmission or power line now running between Luling and McQueeney, Texas.

"All of which property is more fully described in a deed of conveyance executed by the Fentress Gin & Power Company, a corporation, joined by its stockholders, individually, in favor of G. Wallace Smith, under date of December 31, 1928, which deed appears of record in the Deed Records of Caldwell County, Texas, in Volume 135, at page 591; it being the intention of G. Wallace Smith to convey and transfer to the San Antonio Public Service Company, its successors and assigns, all the right, title and interest to all properties of whatsoever nature and description acquired and held under that deed of conveyance, which deed and the record thereof is hereby referred to for all purposes. Said deed is also recorded in Guadalupe County in Volume 139, pages 561-565."

Being as aforesaid, the same land, property, rights, franchises, privileges and easements conveyed by G. Wallace Smith to San Antonio Public Service Company, by deed recorded in the records of Deeds of said Caldwell County on May 14, 1929, in Volume 106, pages 338-340.

McQUEENEY SUBSTATION.

The following parcel of land situated in the County of Guadalupe, State of Texas, viz.:

All that certain tract of land and parcel of real estate lying, being and situated in the County of Guadalupe, State of Texas, known and described as follows, to-wit: Beginning at a point 94 feet 4 inches south 45 degrees west, of a point in the south boundary line of the right-of-way belonging to the Galveston, Harrisburg & San Antonio Railway Company, said beginning point being 94 feet 4 inches south 45 degrees west of the northwest corner of a tract of land conveyed to Ed. W. Wuest by August Blumberg and wife, Anna Blumberg, by deed dated the 6th day of March, A. D. 1909; thence east 180 feet along the O. S. T. highway to a point; thence south 49 degrees, 52 minutes west, 251 feet 9 inches to a point on the south boundary line of said tract of land; thence west 45 degrees north, 125 feet 5 inches to a point; thence north 45 degrees east, 115 feet to the place of beginning.

Being the same property conveyed by Ed. W. Wuest and wife, Julia Wuest, to the Comal Power Company by deed recorded August 6, 1925, in Guadalupe County records of Deeds Book 86, pages 18-19, and conveyed by Comal Power Company (by Liquidating Trustees) to San Antonio Public Service Company by deed dated January 1, 1928.

BOERNE SUBSTATION (KAUFMAN).

All that certain tract of land described as follows, to-wit: Lot No. 11 in Block No. 2 Sunrise Addition, in the City of Boerne, Kendall County, Texas.

Being the same property conveyed by Nathan Kaufman and L. Kaufman to Comal Power Company by deed recorded May 17, 1927, in Deed Records of said County, in Volume 42 on pages 455-456, and conveyed by Comal Power Company (by Liquidating Trustees) to San Antonio Public Service Company by deed dated January 1, 1928.

BOERNE SUBSTATION SITE (WALKER).

All that certain tract or parcel of land out of Survey 180, conveyed to L. Walker and wife by Emil P. Stegner by deed recorded in Volume 30, page 298, situated and lying in Kendall County, Texas, and described as follows: Beginning at the southeast corner of L. Walker tract; thence north along the east fence line 392 feet to a stake placed for the southeast corner of said land to be used for a substation site; thence north along the east fence line for a distance of 100 feet to a stake; thence west by describing an interior angle of 90 degrees a distance of 75 feet to a stake, thence south by describing an interior angle of 90 degrees 100 feet to a stake; thence east 75 feet by describing an interior angle of 90 degrees to the place of beginning.

Being the same property conveyed by L. Walker and wife, to Comal Power Company by deed recorded June 7, 1926, in the Deed Records of said County in Volume 41 on pages 547-548, and conveyed by Comal Power Company (by Liquidating Trustees) to San Antonio Public Service Company by deed dated January 1, 1928.

HONDO SUBSTATION.

That property conveyed by J. W. Heath, et al., to Comal Power Company by deed recorded June 25, 1926, in Deed Records of Medina County in Volume A-79, on pages 425-427, and therein described as follows:

All that certain piece, parcel and tract of land lying and being situated in Medina County, Texas, described as follows, to-wit: Being out of the east half of Survey No. 183, originally granted to Francios Sybelle, beginning at the southwest corner of the J. W. Heath 35 acres out of said Survey No. 183; thence in a northerly direction along the east side of a proposed road for a distance of 439 feet to a stake for the place of beginning of this substation site; thence along the same road in a northerly direction for a distance of 75 feet; thence in an easterly direction by describing an exterior angle of 90 degrees, a distance of 130 feet; thence in a southerly direction by describing an exterior angle of 90 degrees, a distance of 75 feet; thence in a westerly direction by describing an exterior angle of 90 degrees, a distance of 130 feet, to the place of beginning. The property hereby conveyed appears more fully on the plat of same hereto attached and made a part of this instrument. Reference is also made to deed from Jack Fusselman, et al., to J. W. Heath, bearing date of November 8, 1911, duly recorded in the Deed Records of

Medina County, Texas, in Volume A-46, pages 443-444, which conveyance is made a part hereof; being same property conveyed by Comal Power Company (by Liquidating Trustees) to San Antonio Public Service Company, by deed dated January 1, 1928.

That property conveyed by James W. Heath and wife to Comal Power Company, by deed recorded April 28, 1927, in the Deed Records of Medina County, in Volume 83, on pages 264-265, and therein described as follows:

All that certain piece, parcel and strip of land, lying and being situated in Medina County, Texas, out of the east half of Survey No. 183, originally granted to Francios Sybelle, and being further described as follows: Beginning at the southwest corner of the J. W. Heath 35 acres out of Survey No. 183; thence in a northerly direction along the east side of a proposed road for a distance of 439 feet to a stake for the place of beginning, said point being the southwest corner of a substation site purchased by Comal Power Company from James W. Heath and wife, by deed dated June 19, 1926, and duly recorded in the Deed Records of Medina County, Texas, in Volume A-79, pages 425 to 427, to which deed reference is made for all purposes; thence east along the south line of said substation site for a distance of 130 feet for the northeast corner of the strip hereby conveyed, and being the southeast corner of said substation site; thence south for a distance of 25 feet to a stake for the southeast corner of this strip; thence west for a distance of 130 feet to the east line of said proposed road for the southwest corner of this strip, said south line to run parallel with the north line; thence north to the place of beginning, the strip of land hereby conveyed being 130 feet in length by 130 feet wide or east to west; being same property conveyed by Comal Power Company (by Liquidating Trustees) to San Antonio Public Service Company, by deed dated January 1, 1928.

FLORESVILLE SUBSTATION.

All that certain tract or parcel of land out of the S. and J. Arosha grant, in Wilson County, Texas, containing 2 acres of land and described by metes and bounds as follows, to-wit: Beginning at a stake on the northwest side of the elongation of A. Street of the town of Floresville, south 48¾ degrees west, 64½ varas from the southwest corner of the Fairgrounds, the southwest corner of the upper or northeast one-half of said 4-acre tract for Konrad Lux and the northeast corner of this survey; thence with the center line of said 4-acre tract, north 41¼ degrees west, 164 varas to the northwest corner of the 2-

acre tract for Konrad Lux; thence south 48¾ degrees west, 64½ varas to the northwest corner of said 4-acre tract; thence south 41¼ degrees east, 164 varas to its southwest corner on the northwest side of elongation of A. Street; and thence with said street north 48¾ degrees east, 64½ varas to the place of beginning; being the same property conveyed by Mrs. M. V. Franklin to the Comal Power Company, by deed recorded on September 22, 1927, in Deed Records Book, Volume 143, pages 212-214, and conveyed by Comal Power Company (by Liquidating Trustees) to San Antonio Public Service Company, by deed dated January 1, 1928.

CIBOLO SUBSTATION.

That property conveyed by Henry Uhr and wife to South Texas Public Service Company, by deed recorded January 16, 1926 in Deed Records Book, Volume 87, on pages 601-603, and therein described as follows:

"All that certain parcel of real estate lying, being and situated in the County of Guadalupe, State of Texas, out of Survey No. 65 in the name of W. Bracken, our entire tract containing 66 acres of land, and being the same land conveyed to Henry Uhr and wife by Hy Schueler, said deed being of record in Volume 63, page 367, of the Deed Records of Guadalupe County, Texas, to which said deed and the record thereof reference is here had for all pertinent purposes, and more particularly described as follows, to-wit: Beginning at a point in the southwest corner of land of Henry Uhr and wife, same being on the north side of the old Seguin Public Road; thence north 30 degrees 30 minutes west, 463 feet to a point, for the southwest corner of the tract of land herein conveyed; thence north 30 degrees 30 minutes west, 60 feet to a point for corner of the tract of land herein conveyed; thence, after making interior angle of 90 degrees to the right, 50 feet to a corner of the tract of land herein conveyed; thence, after making interior angle of 90 degrees to the right, 60 feet to a corner of the tract of land herein conveyed; and thence, after making interior angle of 90 degrees, 50 feet to the place of beginning."

The tract of land therein conveyed being a rectangular tract 50 feet by 60 feet in size, a blue print of said tract of land being attached to deed of Henry Uhr, and wife, recorded January 6, 1926, in Deed Records Book, Volume 87, on pages 601-603, being designated "Cibolo Substation Site," and made a part thereof for the purpose of aiding in the location and description of the tract of land therein conveyed.

Being the same property conveyed by South Texas Public Service Company (by Liquidating Trustees), to San Antonio Public Service Company, by deed dated January 1, 1928.

MARION SUBSTATION.

That property conveyed by Herman Bulgerin and wife to South Texas Public Service Company by deed recorded January 16, 1926, in Deed Records Book, Volume 87, on pages 600-601, and therein described as follows, to-wit: "All that certain parcel of real estate, lying, being and situated in the County of Guadalupe, State of Texas, out of Survey No.....in the name of C. Rector, the entire tract containing 105 acres of land, and being the same land conveyed to Herman Bulgerin and wife by Elword G. Bulgerin, said deed being of record in Volume 35 at pages 478-9-10, and Volume 65 at page 28, of the Deed Records of Guadalupe County, Texas, to which said deed and the record thereof reference is here had for all pertinent purposes, and more particularly described as follows, to-wit: Beginning at a point in the southwest corner of land of Herman Bulgerin and wife; thence north 11 degrees, 5 minutes west, 141 feet 7 inches to the southwest corner of the tract of land herein conveyed; thence north 11 degrees, 6 minutes west, 50 feet to corner of the tract of land herein described; thence, after making an interior angle to the right of 90 degrees, 50 feet to a point for corner of the tract herein conveyed; thence, after making an interior angle of 90 degrees, 50 feet to a point for corner of the tract of land herein conveyed; and thence, after making an interior angle of 90 degrees, 50 feet to the place of beginning."

The parcel of land therein conveyed being a body of land 50 feet square, a blue-print of which is attached to deed of Herman Bulgerin, and wife, recorded January 16, 1926, in Deed Records, Volume 87, at pages 600-601, and designated "Marion Substation Site," and made part thereof for the purpose of aiding in the location and description of the tract of land therein conveyed; being the same property conveyed by South Texas Public Service Company (by Liquidating Trustees) to San Antonio Public Service Company, by deed dated January 1, 1928.

SCHERTZ SUBSTATION.

That property conveyed by Mrs. Elizabeth Schneider, a feme sole, to South Texas Public Service Company, by deed recorded January 15, 1926, in Deed Records Book, Volume 87, at pages 598-599, and therein described as follows:

"All that certain parcel of real estate, lying, being and situated in the County of Guadalupe, State of Texas, out of Survey No. 67, in the name of G. Malpoz, the entire tract containing 243-3/5 acres of land, and being the same land conveyed to W. A. Schneider by Chris Schneider, said deed being of record in Volume 21, page 201, Deed Records of Guadalupe County, Texas, to which said deed and the record thereof reference is here had for all pertinent purposes, and more particularly described as follows, to-wit: Being a rectangular tract of land, 150 feet long and 50 feet wide out of the property belonging to Elizabeth Schneider, and lying immediately northeast from the point where First Street in Schertz, Guadalupe County, Texas, abuts against the property of Elizabeth Schneider"; being the same property conveyed by South Texas Public Service Company (by Liquidating Trustees) to San Antonio Public Service Company, by deed dated January 1, 1928.

BOERNE SUBSTATION (DALY).

All that certain tract or parcel of land lying and being situated in the Town of Boerne, Kendall County, Tex., in the Wendler and Shrader Addition to said Town, and known and described as Lot No. 4, according to a plat of said addition recorded in the office of the County Clerk of Kendall County, Texas, in Volume 24, page 405; being a part of the property conveyed by Richard E. Daly to South Texas Public Service Company, by deed recorded June 3, 1926, in Deed Records of said County, in Volume 41, at pages 543-544, and being the same property conveyed by South Texas Public Service Company (by Liquidating Trustees) to San Antonio Public Service Company, by deed dated January 1, 1928.

LOS ANGELES HEIGHTS SUBSTATION.

All that certain tract or parcel of land located in the City of San Antonio, Bexar County, Texas, and being more fully described as follows, to-wit:

Lot No. 11 of a resubdivision of Lots Nos. 5 and 6, Block No. 1, City Block No. 6172, out of the southern portion of old City Lot No. 1, Range No. 6, District No. 3 of Old City Tract; being the same premises conveyed to San Antonio Public Service Company by William Bollier (unmarried), by deed dated May 11, 1937, and recorded May 13, 1937, in the records of Deeds of Bexar County in Volume 1577, page 626.

CASTROVILLE POWER PLANT.

That certain tract and parcel of land situated in the town of Castroville, Medina County, Texas, hereinafter referred to as the power plant site, described and bounded as follows: Beginning at a point 247.7 feet south 45 degrees east, from southeast corner of Florence and Main Streets, in the Town of Castroville, south 45 degrees west, 143 feet to a concrete monument; thence south 45 degrees east, 279 feet to the edge of the Medina River; thence from a concrete monument 42 feet from the river's edge along survey line north 69 degrees east, 156.2 feet to concrete monument; and thence along a line north 45 degrees west from the Medina River's edge 332.5 feet to the place of beginning; being the same property conveyed by Jordan T. Lawler to San Antonio Public Service Company, by deed recorded in the record of Deeds of said Medina County, on August 10, 1936, in Volume 106, at pages 309-310.

BERG'S MILL GENERATING STATION.

First: 2.25 acres of land, more or less, out of the Juan Francisco Gomez Suerte, being on the south side of the South Loop Road situated in Bexar County, Texas, conveyed to H. B. Tennant by deed dated November 21, 1933, from Robert Wensley, Bertha Hattenbach and V. L. Hattenbach, said deed being recorded in the record of Deeds of Bexar County in Volume 1379, pages 173-174, said 2.25 acres of land, more or less, being more particularly described as follows:

Beginning at the intersection of the southerly line of the South Loop Road with the center line of the San Antonio River, running thence north 72 degrees 15 minutes west, 320 feet along the southerly line of said road to corner of a fence, said corner being 67 feet from the center of the Espada Ditch; thence south 8½ degrees west, 290 feet along a fence to corner of a fence; thence south 72 degrees 45 minutes east, 386 feet along a fence to the bank of the San Antonio River, and continuing the same course to the center of said River; thence up the center line of said River, north 8½ degrees west, 165 feet; and thence north 1½ degrees east, 140 feet to the place of beginning; according to a survey and plat made by Louis Polk, County Surveyor of Bexar County, Texas, on November 16, 1933, and being all lying south of said Road, of the land described in deed from Sarah Dickenson et al., to F. F. Collins, dated May 18, 1900, recorded in the record of Deeds of Bexar County in Volume 192, page 175.

Second: Also all rights and privileges mentioned in said deed as having been reserved to the grantors therein by deed from Frank Ashley, dated July 15, 1898, and recorded in the record of Deeds of Bexar County in Volume 177, page 415; also all rights reserved in deed from F. F. Collins to Frank Ashley et al., dated April 16, 1906, and recorded in the record of Deeds of Bexar County in Volume 242, page 617; also all rights established, created or acquired by that certain instrument executed by F. F. Collins, dated June 27, 1914, and recorded Water Right Records of Bexar County in Volume 1, page 225. It being understood that this conveyance shall include all and every right, privilege, easement and title of whatever nature at any time owned or acquired by the said J. J. Wensley, R. Wensley or Bertha Hattenbach in connection with, or appurtenant to, the land conveyed hereby.

Third: All land, real estate, improvements, hydro-electric plants, riparian and water rights, easements, highway permits, franchises, rights, privileges, things of value, poles, wires, generators, water wheels, water dams, and property of every kind and character now on the premises, whether real, personal or mixed, heretofore conveyed to D. F. Youngblood by deed executed by Herbert B. Tennant and wife, Esther Tennant, and Berg's Mill Utilities Company, a corporation, which deed is dated July 23, 1936, and recorded in the deed Records of the County Clerk of Bexar County, Texas.

GAS PLANT PROPERTY.

1. All that portion of land situated in the City of San Antonio, County of Bexar, State of Texas, known as New City Block No. 229. This block is bounded on the north by Matamoras Street; on the south by Durango Street; on the east by Salado Street; on the west by Comal Street. There are 333.6 feet from east to west, and 337.4 feet from north to south.

2. All that portion of land situated in the City of San Antonio, County of Bexar, State of Texas, known as New City Block No. 230. This block is bounded on the north by Durango Street, on the east by Salado Street, on the south by San Luis Street, and on the west by Comal Street.

COLLINS GARDENS RIGHT-OF-WAY.

A right-of-way to construct, maintain and operate pipe lines and underground appurtenances thereto on and along a strip of land 15 feet in width, situated in what is known as "Collins

Gardens," in the City of San Antonio, Bexar County, Texas, described as follows, to-wit: Beginning at a stake set on the west side of Marian Street at the southeast corner of Lot No. 2, Block No. 41, City Block No. 6284; thence in an easterly direction 15 feet; thence in a northerly direction, parallel to and 15 feet from, the west line of Marian Street, along Marian Street, and through Lots Nos. 10 and 4, Block No. 11, City Block No. 6254, to a stake set on the southeast line of the right-of-way of the I. & G. N. Railway Company; thence in a southwesterly direction along the southeast line of the said right-of-way of the I. & G. N. Railway Company to the west line of Lot No. 4, Block No. 11, City Block No. 6254; and thence in a southerly direction parallel to, and 15 feet distant from, the line running in a northerly direction, hereinbefore mentioned, to the place of beginning; said Marian Street being the street over which the said San Antonio Public Service Company now operates a line of street railway; being the same property conveyed to San Antonio Public Service Company by San Antonio Loan and Trust Company, acting as Trustee for F. F. Collins and by F. F. Collins, by deed signed and recorded December 11, 1922, in the records of Deeds of Bexar County, Texas, in Volume 697, at pages 540-542.

WALKER AVENUE METER STATION.

All that certain property situated in the County of Bexar, State of Texas, described as follows, to-wit: Being a part of Lots Nos. 18 and 19, Block No. 4, in Artesian Gardens, an addition to the City of San Antonio, lying west of the right-of-way of the S. A. U. & G. R. R. Co., fully described as follows: Beginning at a stake set 4,256 feet east of the west line of Artesian Gardens Subdivision; thence north 290.4 feet to a stake; thence east 83 feet along the north line of Lot No. 18 to a stake at its intersection with the west line of the right-of-way of the S. A. U. & G. R. R. Co.; thence in a southerly direction 296.4 feet along the west line of said right-of-way to a stake, at its intersection with the north line of Walker Avenue; thence west 140 feet along the north line of Walker Avenue to the place of beginning, and being the same property as that conveyed by J. N. Bradley and wife, Artie Bradley, to Hart W. Donnell, by deed dated September 25, 1928, and recorded in Volume 1053, pages 608-609, of the Deed Records of Bexar County, Texas; being the same property conveyed by Hart W. Donnell and wife, Hortense Donnell, to San Antonio Public Service Company, by deed recorded in the records of Deeds of said Bexar County, November 14, 1928, in Volume 1051, pages 615-16.

AVONDALE REGULATOR STATION.

All that certain tract, lot and parcel of land situated in the Temple Hill Addition to the City of San Antonio, Bexar County, Texas, and described as follows: Being all of Lot No. 22, Block No. 1, of said addition, County Block No. 5575, and also that part of Lot No. 21, Block No. 1, of said addition, described as follows: Beginning at a stake set for the northeast corner of the intersection of South Presa Street and Avondale Street; thence northwest along South Presa Street 67 feet to a stake set for the dividing line between the J. A. McDaniel tract and the tract of land herein conveyed; thence in an easterly direction 63.1 feet along the dividing line between the said J. A. McDaniel tract and the tract of land herein conveyed, to a stake set on the property line between Lots Nos. 21 and 22, which said stake is situated 50 feet south of the northwest corner of Lot No. 22; thence south along the boundary line between Lots Nos. 21 and 22, to Avondale Street, to a stake; and thence west along the north boundary of Avondale Street, 23.5 feet to the place of beginning; being the same property conveyed by Jas. A. McDaniel and wife, Alice B. McDaniel, to San Antonio Public Service Company, by deed recorded in the records of Deeds of said Bexar County on June 13, 1929, in Vol. 1113, pages 519-520.

CAMP BULLIS SUBSTATION SITE.

All that certain tract or parcel of land situated approximately three and one-half miles southeast of Leon Springs Railroad Station, Bexar County, Texas, being more particularly described as follows:

Beginning at a point known as the S.W. corner of the John B. Muesser tract, which point is 46 feet from east rail of the San Antonio & Aransas Pass Railroad; thence N 16°33′ W for a distance of 5.8 feet; thence N 65°51′ E for a distance of 45.0 feet; thence N 82°52′ E for a distance of 113.0 feet; thence S. 25°45′ E for a distance of 38.5 feet; thence S 89°25′ W for a distance of approximately 155 feet to the place of beginning.

Being the same property conveyed by James F. Jackson, and wife, Virginia A. Jackson, to San Antonio Public Service Company by deed dated October 31, 1938, recorded November 15, 1938, in the deed records of Bexar County, in book Volume 1667, page 56.

UNDERGROUND RIGHT-OF-WAY — STATION "B" TO GRANDVIEW SUBSTATION.

All of the following described real estate lying and being situate in San Antonio, the County of Bexar, State of Texas, to-wit:

Being part of Lot Six (6), New City Block Three Thousand and Fifty-seven (3057), Roberts Subdivision, according to plat thereof recorded in Vol. 368, page 175, Deed and Plat Records of Bexar County, Texas, being more fully described as follows:

Beginning at a point on the West line of Roosevelt Avenue 165 feet South from the Southwest intersection of Roosevelt Avenue and Fairplay Avenue; Thence West along the South line of Lot 6, New City Block 3057 to the Southwest corner of said Lot 6; Thence north along the West line of said Lot 6, 4 feet to a point; Thence East along a line parallel to the South line of Lot 6 to a point in the West line of Roosevelt Avenue, same being the east line of said Lot 6; Thence in a southeasterly direction along the East line of Lot 6 to the place of beginning.

Being the same property conveyed by William Buchholtz to San Antonio Public Service Company by deed dated July 31, 1939, recorded August 16, 1939, in the deed records of Bexar County, in book volume 1711, pages 166-67.

MARKET STREET — COMMERCE STREET PROPERTY.

The following described real estate, situated in the county of Bexar and the State of Texas, to-wit:

Beginning at a point in the south line of Commerce Street at the intersection of the south line of Commerce Street with the west line of the cut-off river channel, said point being the northeast corner of this tract of land; thence south along east line of concrete wall forming the western boundary line of said cut-off river channel, the entire length thereof, to a point where the western boundary line of said cut-off river channel intersects the north line of Market Street for the southeast corner of this tract of land; thence in a westerly direction along the north line of Market Street, a distance of 27.61 feet to a point in the east line of an alley for the most southerly southwest corner of this tract of land; thence in a northerly direction along the east line of said alley, a distance of 63.5 feet to a corner; thence in a northeasterly direction approximately 21 feet to the southeast corner of Lot 23 and the southwest corner of Lot A-25 in said City Block; thence in a northeasterly direction along the exterior

face of a rock wall, a distance of 27.01 feet to a point for corner; thence turning from left to right at an angle of 87 deg. 8 min. and continuing a distance of 3.9 feet along the exterior face of a rock wall to a point for corner; thence in a northeasterly direction along the outside face of a rock wall a distance of 44.3 feet to a point in the south line of West Commerce Street for the most northerly northwest corner of this tract; thence east along the south line of West Commerce Street, a distance of 18.66 feet to the place of beginning; said tract of land comprising Lots 4, A-25 and A-27 and a strip of land lying between Lots A-25 and A-27, all in City Block 101 as shown on the block map of the city assessor of the City of San Antonio, Bexar County, Texas.

Being the same property conveyed by the City of San Antonio to San Antonio Public Service Company by deed dated March 30, 1940, recorded April 3, 1940, in the deed records of Bexar County, in book Volume 1759, pages 37-38.

WEST COMMERCE STREET PROPERTY.

The following described real estate, situated in the County of Bexar and the State of Texas, to-wit:

Beginning at the intersection of the west line of stone wall along the east line of cut-off river channel with the north line of West Commerce Street; thence in a northerly direction along the west line of said stone wall, forming the east line of said cut-off river channel, the full length thereof, to the intersection with the north line of retaining wall on south bank of the San Antonio River; thence in an easterly direction along the north line of said retaining wall on the south bank of the San Antonio River, a distance of 16.9 feet to a lead point on the line of party wall as agreed on February 7, 1873, for the northeast corner; thence in a southerly direction with party wall as per agreement February 7, 1873, to the north line of West Commerce Street; thence in a westerly direction along West Commerce Street a distance of 15.9 feet to the place of beginning; said tract of land being all that tract of land owned by the City of San Antonio and lying between the cut-off river channel and the George Witte property; subject, however, to party wall agreement between Charles F. Fischer and George Witte, dated February 10, 1873, duly recorded in Volume X-1, page 259 of the Deed Records of Bexar County, Texas, but including all of the right, title and interest of the City of San Antonio in the Witte building wall; and subject, however, to a perpetual right of the City of San Antonio to attach to and abut on the west side of said stone wall of said property a cantilever sidewalk for public use, together with the

right and privilege, at its own cost, to maintain and repair the same in such manner as said city may from time to time see fit.

This conveyance is made subject to the terms and stipulations of a certain party wall agreement between Charles F. Fischer and George Witte, dated February 10, 1873, recorded in Volume X-1, page 259 of the Deed Records of Bexar County, Texas, but it is expressly intended that all right, title and interest owned by the City of San Antonio in and to said party wall be and the same is hereby conveyed to the Grantee herein.

The City of San Antonio expressly reserves a perpetual right to attach to and abut on the west side of said stone wall of said property a cantilever sidewalk for public use, together with the right and privilege, at its own cost, to maintain and repair the same in such manner as said city may from time to time see fit, which said perpetual right and easement is hereby expressly reserved in this conveyance by the City of San Antonio.

Being the same property conveyed by the City of San Antonio to San Antonio Public Service Company by deed dated March 30, 1940, recorded April 3, 1940, in the deed records of Bexar County, in book volume 1749, pages 569-70.

CAMP TRAVIS HIGHLINE RIGHT-OF-WAY.

The following described and situated real estate, to-wit:

Lot Six (6) and Twenty-three (23), and the East ten (E 10) feet of Lot Five (5), and the East ten (E 10) feet of Lot Twenty-two (22), in Block Two (2), City Block Fifteen Hundred Fifty-eight (1558), in GRANDVIEW ADDITION, Section Two (2), situated just outside of the city limits of San Antonio, in Bexar County, Texas.

Being the same property conveyed by John Cottor Sullivan, to San Antonio Public Service Company by deed dated April 4, 1940, recorded April 9, 1940, in the deed records of Bexar County, in book volume 1753, pages 212-13.

CLEVELAND COURTS SUBSTATION SITE.

All that certain property located in the City of Alamo Heights, Bexar County, Texas, described as follows, to-wit:

The southwest 17 feet, more or less, of Lot 19, and all of Lot 20, and the northeast 33 feet, more or less, of Lot 21, (excluding

a certain parcel or strip of land 10 feet in width off the entire southwest side of said northeast 33 feet of lot 21) in block 8 of the Madeliene Terrace Subdivision in said City of Alamo Heights, Bexar County, Texas, said property fronting on Cleveland Court, being the property conveyed by the living heirs of Sam Maverick, deceased, to San Antonio Public Service Company by deed dated April 3rd, 1940, recorded May 29th, 1940, in the deed records of Bexar County in book volume 1759, pages 622-624.

GAS DISTRIBUTION PARCEL.

Beginning at the intersection of the south line in Durango Street with the west line of South Salado Street, same being the northeast corner of City Block 230 situated within the corporate limits of the City of San Antonio, in Bexar County, Texas;

Thence westerly along the north line of said City Block 230, the full length thereof, same being the south line of Durango Street to the northwest corner of said City Block 230, same being at the intersection of the south line of Durango Street with the east line of South Comal Street;

Thence northerly along the east line of South Comal Street (extended) to the intersection of the east line of South Comal Street with the north line of Durango Street, same being the southwest corner of City Block 229 situated within the corporate limits of the City of San Antonio, in Bexar County, Texas;

Thence easterly along the south line of said City Block 229, the full length thereof, the same being the north line of Durango Street to the southeast corner of said City Block 229, same being at the intersection of the north line of Durango Street with the west line of South Salado Street;

Thence in a southerly direction along the west line of South Salado Street (extended) to the place of beginning; and comprising that portion of Durango Street lying between said City Blocks 229 and 230, and extending from the west line of South Salado Street to the east line of South Comal Street within the corporate limits of the City of San Antonio, in Bexar County, Texas.

Being the same property conveyed by the City of San Antonio to San Antonio Public Service Company by deed dated March 30th, 1940, recorded April 3rd, 1940, in the deed records of Bexar County, in book volume 1759, pages 38-39.

SOUTH SAN ANTONIO SUBSTATION SITE

All that certain tract of land described as follows: Lots Nos. twenty-seven (27) and twenty-eight (28) Block No. eight (8) in Columbia Heights, a subdivision in Bexar County, Texas, as shown by the map or plat of said subdivision of record in the records of Deeds and Plats of Bexar County, Texas, in Volume 105, pages 14 and 15.

All the following described land, to-wit: Lots One (1) to Eight (8), inclusive, and Lot Eleven (11) in Block Eight (8) County Block 4028, Columbia Heights Addition to the City of San Antonio, Bexar County, Texas, as shown by plat recorded in Volume 105, page 14, of the Plat Records of Bexar County, Texas.

All that certain tract or parcel of land more particularly described as follows: to-wit: All of Lots 24, 25 and 26, in Block 8 in Columbia Heights Addition, in Bexar County, Texas, according to Plat Recorded in Volume 105, pages 14 and 15, of the Plat Records of said County, except the south 75-feet of said lots 24, 25 and 26.

HARLANDALE SUBSTATION SITE

All that certain property known as lot 10 of Block 36 in Harlandale Gardens Addition to the City of San Antonio (third filing), said lot being situated in the County of Bexar and State of Texas.

That certain strip and parcel of land out of Tract E of the Harlandale Gardens, a subdivision in Bexar County, Texas, as shown by the map and plat thereof of record in Volume 642, page 192 of the Map and Plat Records of Bexar County, Texas, lying between the south line of Lot 10, Block 36, of said subdivision and the Pyron Road, being a portion of said Tract E as would be cut off and included between an extension of the East and West line of said Lot 10, to an intersection with the said Pyron Road, said strip and parcel of land being in Bexar County, Texas.

HOT WELLS SUBSTATION SITE.

All that certain tract or parcel of land described as follows, to-wit:

Lot Ten (10), Block One (1), in Temple Hills Addition to the City of San Antonio, according to plat recorded in Volume 368, page 180, Plat Records of Bexar County, Texas, being situated in County Block 5575.

All that certain tract or parcel of land described as follows, to-wit:

Lot Eleven (11), Block One (1) in Temple Hills Addition to the City of San Antonio, according to Plat Recorded in Vol. 368, page 180, Plat Records of Bexar County, Texas, being situated in County Block 5575.

RIGHT-OF-WAY — GRANDVIEW SUBSTATION TO SOUTH SAN ANTONIO

All the following tracts of land in Bexar County, Texas, to-wit:

FIRST TRACT:

A tract of land 50 feet in width in City Block 1568, being on the southeast side of property owned by the San Antonio Belt & Terminal Railroad Company and having a frontage of 50.3 feet on Roland or Ogden Street and a frontage of 66.6 feet on K. Street.

SECOND TRACT:

A triangular tract of land out of Lots 1 and 2, City Block 1571, within the corporate limits of the City of San Antonio, beginning at the southeast intersection of Hallie Street and K Street; thence east 78.25 feet; thence in a southwesterly direction 117.4 feet to a point on the east side of Hallie Street 90.0 feet from the place of beginning; thence 90.0 feet from Hallie Street to the place of beginning.

THIRD TRACT:

A portion of Lots 1, 2 and 3 in City Block 1573, beginning at a point on the east side of Clark Avenue 3.96 feet north of the southwest corner of said Lot 1; thence north along the east side of Clark Avenue 146.04 feet to the southeast intersection of Clark Avenue and Swanee Street; thence east along Swanee Street 128.6 feet; thence in a southwesterly direction 192.9 feet to the place of beginning.

All that certain strip and parcel of land out of City Block No. 1572 in the City of San Antonio, Bexar County, Texas, particularly described as follows:

A strip of land running in a southwesterly direction through Block 1572 cutting Lots 10, 9, 8 and 7, the south line of this

strip beginning on west P. L. Hallie Street at a point 142.9′ north of the S. E. Corner of Block 1572 and ending at a point on the north P. L. of Swanee at a point 127.8′ west of the S. E. corner of Block 1572, and being more fully described as follows:

Beginning at a point in the west property line of Hallie Street at a distance of 142.9′ north of the S. E. corner of Block 1572. Thence in a southwesterly direction 191.7′ to a point on the north property line of Swanee Street 127.8′ west of the S. E. corner of Block 1572.

Thence continuing west along the north property line of Swanee Street a distance of 66.6′ to a point which is 115.6′ east of the southwest corner of Block 1572.

Thence in a northeasterly direction parallel to and 50′ distant from the first mentioned line a distance of 180.6′ to intersect the S. E. property line of the S. A. B. & T. Co. property. This intersection point being 86.6 in a southwesterly direction from the intersection of the S. A. B. & T. Co's S. E. line and the west property line of Hallie Street.

Thence in a northeasterly direction 86.6 feet along the S. E. property line of the S. A. B. & T. Co's property to the intersection of this line with the west property line of Hallie Street.

Thence south along the west property line of Hallie Street 76.7′ to the place of beginning; together with all rights and incidents thereunto appertaining.

RIGHT-OF-WAY — SAN ANTONIO TO NEW BRAUNFELS

All the following described land, to-wit:

Out of the R. Patton Survey No. 1, Bexar County Block No. 5011, and being 35 feet in width along the west line of a tract of land containing 44.44 acres of land conveyed by Deborah B. Talcott, et al, to Albert Grona by deed dated December 20th, 1935, recorded in the Deed Records of Bexar County, Texas, in Volume 1507, at page 501, said tract of land being described as follows:

Beginning at a point on the south side of the Sommers Road in Bexar County, Texas, (which said Sommers Road is also known as the North Loop Road) where the west boundary line of said tract of 44.44 acres meets the south line of said Sommers Road; Thence south 48° 35′ east 36.65 feet with the south boundary line of said Sommers Road; Thence south 24° 10′ west,

approximately 1,892 feet to the south line of said 44.44 acre tract of land; Thence south 89° 30′ west 385 feet with the south property line of said 44.44 acre tract to its southwest corner; Thence north 24° 10′ east 1892 feet to the place of beginning and containing 1.50387 acres of land.

LAUREL HEIGHTS TERRACE PROPERTY.

All that certain tract or parcel of land more particularly described as follows, to-wit:

The north 100 feet of Lots Twenty (20) twenty-one (21) and twenty-two (22) in block twelve (12) in New City Block Three Thousand Ninety-six (3096) in Laurel Heights Terrace, situated in the City of San Antonio, in Bexar County, Texas, according to plat recorded in Vol. 105, pages 170-171 of the deed and plat records of said County; the line dividing the north 100 feet of said lots from the remaining portion of said lots runs parallel with the north line of Lot 19 in said City Block.

CITY VIEW PROPERTY.

All the following described property, to-wit: Lot Twelve (12) Block Nineteen (19), City Block 4026, in City View Addition to the City of San Antonio, Bexar County, Texas.

ITEM IV.

GENERAL.

Also all other physical property of whatsoever kind or character and all appurtenances thereto, now owned or which may hereafter be acquired by the city and wheresoever situated, including (without in anywise limiting or impairing by the enumeration of the same the scope and intent of the foregoing or of any general description contained in this Indenture):

(1) All lands, rights-of-way, roads, power houses, buildings, dams, waterways, water rights, and other structures, and all offices, buildings and the contents thereof; all machinery, engines, boilers, turbines, condensers, water wheels, dynamos, electrical machinery, regulators, motors, transformers, generators, meters, electrical and mechanical appliances, conduits, cables, pole and transmission lines, wires, cross-arms, insulators, services, substations and substructures, generating, distributing and transmitting equipment, tools, implements, apparatus and supplies, now owned or hereafter acquired by the city;

(2) Also all gas plants, stations, substations, offices, repair shops, buildings, structures, substructures, regulators, holders, purifiers, scrubbers, tanks, retorts, boilers, machinery, engines, pumps, fixtures, apparatus, equipment, tools, instruments, appliances, implements, overhead and underground construction, pipes, mains, conduits, services, meters, supplies and appurtenances; whether appertaining to any existing or future system of the city or otherwise, and including all other property now used or provided for use or hereafter acquired for use in the construction, repair, maintenance and operation of the electric and gas systems of the city, both those now owned and those which may hereafter be acquired by the city.

(3) Also all contracts between the San Antonio Public Service Company and the suppliers of electricity and of gas which were in force on the date hereof and which have been or may hereafter be assigned to or acquired by the city.

(4) Also, to the full extent permitted by law and by their terms, the city hereby mortgages and pledges all corporate, municipal and other franchises, grants, rights, permits, consents, privileges, easements, licenses, ordinances, rights-of-way, and immunities of the city of every kind, description and character, howsoever conferred or acquired and whether now owned or hereafter acquired; provided, however, that as to any and all franchises which by their terms may be assigned only upon some consent or special condition, given or met at the time of assignment, and not in advance thereof, the city

(a) Hereby mortgages all such franchises, subject to the terms of this indenture;

(b) Intends hereby to assign such franchises to the trustees hereunder only to the extent that it may legally assign the same, without forfeiture or other penalty;

(c) Covenants that if and whenever under the terms hereof the trustees, or any purchaser or purchasers at any sale of the mortgaged property, made under the terms of this indenture or in any proceeding for the foreclosure of the lien of this indenture, shall be entitled to possession of or to title to the mortgaged property, the city will request such consent or will attempt in good faith to meet such condition, and, subject to the procurement of such consent or the meeting of such condition the city will by proper instrument convey, transfer and assign such franchise to the trustees, or to their nominee or to such purchasers, as the case may be;

(5) Also all real property, interests in real property, lands, rights-of-way, easements, licenses, leaseholds, consents, permits, and all power and gas contracts, street lighting contracts, and other rights with respect to the construction, maintenance, repair and operation of any system now owned or hereafter acquired by the city, and any additions thereto or extensions thereof;

(6) And also all property which at any time hereafter, by delivery or by an indenture supplemental hereto, may be expressly conveyed, mortgaged or pledged to the trustees or either of them hereunder by the city or by a successor thereto, or by anyone in its behalf or with its written consent as and for additional security hereunder; the trustees and each of them being hereby authorized at any and all times to receive any such conveyance, mortgage, pledge or delivery and to hold and apply any such property upon and subject to the terms and provisions hereof or of any such supplemental indenture; and

(7) Together with all and singular the buildings, improvements, additions, accretions, ways, alleys, passages, rights-of-way, waters, water-courses, easements, rights, liberties, privileges, licenses, tenements, hereditaments and appurtenances, whatsoever belonging or in anywise appertaining, or hereafter to belong or appertain, unto any and all of the premises hereby granted or intended so to be; and the reversion and reversions, remainder and remainders, and the incomes, rents, issues and profits thereof, and of every part and parcel thereof; and all of the estate, right, title, interest, property, claim and demand of every nature and kind whatsoever of the city at law, in equity or otherwise howsoever, of, in and to the same and every part and parcel thereof.

ITEM V

EXCEPTED PROPERTY.

Expressly excepting and excluding, however, from this indenture and from the lien and operation thereof the following property (herein called "Excepted Property")

(A) All shares of stock and certificates or evidences of interest therein, all bonds, notes, and other evidences of indebtedness or certificates of interest therein, all other securities, all bills, notes, accounts receivable, cash on hand or in banks, choses in action and all contracts (other than leases and agreements connected with leases), now owned or hereafter acquired or possessed by the city and not here-

by or hereafter specifically mortgaged and pledged hereunder or required so to be.

(B) All property and franchises of any other corporation of whatever character, securities whereof, or obligations secured by lien upon which the properties and franchises whereof may be now owned or hereafter acquired or possessed by the city, notwithstanding the fact that the city may own or hereafter acquire all or substantially all of the securities issued by or secured by lien upon property of any such corporation or that any such corporation may be incorporated or organized at the instance of, or for the account of, the city.

(C) Materials and merchandise acquired for the purpose of resale in the ordinary course and conduct of business, and consumable supplies.

(D) All gas in manufacture, mains, pipes, holders or elsewhere.

(E) All bus transportation properties formerly owned by the San Antonio Public Service Company.

(F) All of the electric distribution properties formerly owned by the San Antonio Public Service Company comprising 4,000 volt and 2,400 volt primary pole lines and circuits and appurtenant secondary pole lines and secondary circuits, conduits, cables, wires, distribution transformers, services, meters and street lighting systems located within the limits of the Cities of Alamo Heights, Olmos Park and Terrell Hills, Bexar County, Texas.

(G) All of the electric distribution properties formerly owned by the San Antonio Public Service Company comprising 2,400 volt primary pole lines and circuits and appurtenant secondary pole lines and circuits, conduits, cables, wires, distribution transformers, services, meters and street lighting systems in the City of Boerne, Kendall County, Texas, and adjacent territory included within the following bounds:

Beginning at a point north on Sisterdale Road, 14 spans north of the S. A. A. P. R.R. (Southern Pacific System) including B. B. Smith Service, thence to northeast corner of city limits, thence southeast to School Street, 6 spans east to Plant Street, being the pole serving C. Phfeiffer, thence southeast to northeast corner of Fair Grounds, thence south to pole 2/8 on the Boerne-old San Antonio Highway

(this pole serving Ferdinand Herff and Borchers) thence west to Russ Street, 7 spans south off Bandera Road and serving L. Lamm, thence northwest to Bandera Road, 7 spans west to Russ Street and including services to (1) Dr. Noce, (2) Rad Spencer (3) W. Simpson, thence northwest to private property of Bill Vogt, 3 spans west of San Antonio Avenue, including service to Bill Vogt, thence north to High Street, 11 spans west off Russ Street and including 3 spans to serve Schuchard, thence northeast to northwest corner of city limits, thence east along city limits to pole 1/1 of the Boerne-Popo Line located on Fredericksburg Road, thence north to point of beginning.

(H) All of the distribution properties formerly owned by the San Antonio Public Service Company comprising 2,400 volt primary pole lines and circuits and appurtenant secondary pole lines and circuits, conduits, cables, wires, distribution transformers, services, meters and street lighting system in the City of Floresville, Wilson County, Texas, and adjacent territory included in the following bounds:

From a point 8 spans northwest of city limits line on San Antonio Highway No. 181 on the San Antonio side of customer Victor Zuniger, thence northeast to the north corner of old Fair Grounds property now owned by Floresville Independent School District, thence southeast to the intersection of a line parallel with the streets of Floresville and the Sunnyside-Floresville Road to include customers H. Ridoudt, Joe Donaho and Gus Hill, thence south by west to a point twelve spans southeast of city limits line on State Highway No. 181 to Poth to include all customers served from transformer set eight spans southeast of city limits on Highway No. 181, thence west to the intersection of such westerly line with the Northwest-Southwest city limits line, thence northwest to the west corner of city sewage plant property, thence north by east to the point of beginning.

(I) All of the distribution properties formerly owned by San Antonio Public Service Company comprising 13,000 volt and 2,400 volt primary pole lines and circuits and appurtenant secondary pole lines and circuits, conduits, cables, wires, distribution transformers, services, meters and street lighting systems in the City of Hondo, Medina County, Texas, and adjacent territory included in the following bounds:

The new city limits of the City of Hondo, and in addition thereto: (1) the pole line extending 4 spans from the

66,000 volt Hondo High Line Substation to the city limits, 360′ south of old D'Hanis Road, (2) an extension eastward of approximately 17 spans, principally on U. S. Highway No. 90 serving Dr. W. H. Smith, (3) an extension westward on U. S. Highway No. 90, thence along Taylor Road and Batot Lane, approximately 51 spans, serving rural customers including W. O. Scott and Henry Batot and Hugh Batot.

(J) All of the electric distribution properties formerly owned by the San Antonio Public Service Company, comprising 2,400 volt primary pole lines and circuits and appurtenant secondary pole lines and circuits, conduits, cables, wires, distribution transformers, services, meters and street lighting system in the City of Poth, Wilson County, Texas, and adjacent territory included in the following bounds:

All property in city limits, including 2,300 volt line extending approximately 4 spans south by east to and including the C. V. Ploch residence and including the Catholic Church line on road to Schneider Gin to the southwest to and including the Catholic Church, and also including 13 KV to 120 volt transformer serving customers Anton Stevenoga and son's residences.

(K) All of the electric distribution properties formerly owned by San Antonio Public Service Company, comprising 2,400 volt primary pole lines and circuits, appurtenant secondary lines and circuits, conduits, cables, wires, distribution transformers, services and meters extending from the 2,400 volt terminals of the transformers at the Marion substation to and through the corporate limits of the City of Marion, Guadalupe County, Texas, and adjacent territory.

(L) All of the electric distribution properties formerly owned by the San Antonio Public Service Company, comprising 13,000 volt, 4,000 volt and 2,400 volt primary pole lines and circuits and appurtenant secondary pole lines and circuits, conduits, cables, wires, distribution transformers, services, meters and street lighting system in the City of New Braunfels, Comal County, Texas, and adjacent territory included in the following bounds:

Beginning at Pole 3/5, Comal Creek and Sipple Farm, thence air line south to distribution pole at end of line on Old Marion Road opposite residence of Emil Neuse, thence east by north to end of line at L. Kuehler on Koehler Road near City Disposal Plant, thence northeast to the intersec-

tion of center line of Guadalupe River and the south boundary line of Dr. M. C. Hagler's camp property, thence north to the intersection of north boundary line of Lake Front Addition with East bank of Guadalupe River, thence northeast to pole 1/1 on Highway No. 46, south of New Braunfels, thence northeast to end of line on Highway No. 81, five spans northeast of junction with Highway No. 46, to residence Wm. H. Weil, thence southwest on U. S. Highway No. 81 to pole on northwest corner of junction of Highways No. 81 and No. 46, thence north by west to intersection of the Guadalupe River and the boundary line between city blocks 5011 and 5012, thence up Guadalupe River to pole 1/13 on New Braunfels-Gruene 13 KV line, thence up Guadalupe River to M. K. T. R. R. Bridge over the Guadalupe River, thence northwest to intersection of California Boulevard and Ohio Avenue in Landa Highlands, No. 2, thence south of west to pole 2/2 on Highway No. 46, Smithson Valley 2,400 volt line, thence southwest to McQueeney hi-line structure 2/9 on Wald Road near crossing of Missouri Pacific R. R. thence along hi-line south by east to point of beginning. From hi-line structure 2/13 a dairy customer is served and is to be included within the New Braunfels boundaries.

✓ (M) All of the electric distribution properties formerly owned by San Antonio Public Service Company comprising 2,400 volt primary poles and circuits and appurtenant secondary poles and circuits, conduits, cables, wires, distribution transformers, services, meters, located within the corporate limits of the City of Stockdale, Wilson County, Texas, and including transformers, services and meters serving customers located along the Bandera Road as far east and including service to Leroy R. Smith's residence and also including transformers, services and meters along the 13,000 volt transmission lines of the City of San Antonio serving Otto Webber, Burk Carr and Mrs. Stoudt near intersection of old Floresville-Stockdale Road and the highway to San Antonio and also including the so-called Smith line running north from the city limits for about one mile to and including the services to George Johnson chicken farm and Joe Taller residence.

(N) All that certain tract, piece or parcel of land situated within the corporate limits of the City of New Braunfels, Comal County, Texas, and being the northwest portion of Lot No. 36 in Block No. 1005 more particularly described by metes and bounds as follows, to-wit: Beginning

at the west corner of Lot 36 at the intersection of the southwest line of East San Antonio Street and the northeast line of the Main Plaza; thence north 38 degrees, 42 minutes east along the southeast line of East San Antonio Street 95.7 feet to the north corner of said Lot No. 36; thence south 52 degrees east, along the division line between Lot No. 36 and Lot No. 37, 65 feet to a stake; thence south 38 degrees, 42 minutes west 95.7 feet to a stake in the northeast line of the Main Plaza; thence north 52 degrees west along the northeast line of the Main Plaza 65 feet to the place of beginning; being the same property conveyed by Eiband and Fischer, Inc., to San Antonio Public Service Company by deed recorded in the records of deeds of said Comal County on December 2, 1929, in Volume 57, pages 307-309, and the building and contents thereof located thereon.

(O) All furniture and fixtures located in the electric distribution offices in the Cities of Boerne, Hondo, Floresville, Stockdale, Poth, Marion and New Braunfels, Texas.

(P) All of the right, title and interest of the City of San Antonio in and to the bridge across the Comal Canal in the extension of Seguin Street in the City of New Braunfels, Comal County, Texas, together with the abutments and adjacent roadway areas described as follows:

Beginning at a stake "W" on the north property line of Seguin Street at point of its intersection by a line running along the east side of the stone base of fence along the division line of Tract No. 1 and Tract No. 2 (approximately); thence N 5° 36' W 174.69 feet to a stake "N" located 15.0 feet south of the water's edge; thence S 56° 07′ E 38.0 feet to a monument "P" near the east end of the south abutment of the bridge crossing the Comal and 15.0 feet south of the water's edge. This monument is one in the original survey of Tract No. 2 and is N 7° 10′ W 155.3 feet from north property line of Seguin Street; thence S 7° 10′ E 155.3 feet to a stake "Q" in the north property line of Seguin Street; thence N 86° 49′ W 20.81 feet along the north property line of Seguin Street to a stake "R"; thence N 89° 39′ W 13.05 feet to the point of beginning.

Beginning at monument "A" on the most westerly corner of Tract No. 2 described in the deed from Landa Milling Company, et al., to Comal Power Company dated August 17th, 1925, this monument being also in the east line of Tract No. 1 described in said deed near the east end of the suspension foot bridge across the canal; thence S 35°

44′ E 45.42 feet to a stake "B"; thence S 25° 58′ E 62.42 feet to a stake "C" on the north bank of the canal 1 foot from the water's edge; thence S 55° 42′ E 45.75 feet to a stake "D" set 15.0 feet from the water's edge on the north bank of the Comal; thence N 4° 58′ W 36.02 feet to stake "E" at the intersection of this line with a line running N 25° 58′ W parallel to and 35.0 feet distant from the line "BC"; thence N 25° 58′ W 72.0 feet on the line parallel to and 35.0 feet distant from line "BC" to a stake "F" at the intersection of this line with a line running N 35° 44′ W parallel to and 35.0 feet distant from the line "AB"; thence N 35° 44′ W 17.12 feet on the line parallel to and 35.0 feet distant from line "AB" to stake "G" at the point of intersection of this line with a line running S 83° 54′ E from the monument "A"; thence N 83° 54′ W 46.95 feet to monument "A" the point of beginning.

together with all and singular the tenements, hereditaments and appurtenances belonging or in any wise appertaining to the aforesaid properties or any part thereof, and with the reversion or reversions, remainder or remainders, rents, income and profits of all such properties, and all of the estate, right, title, interest and claim whatsoever, at law, as well as in equity, which the city acquired in and to the aforesaid properties and every part thereof under and by virtue of the conveyance thereof to the city by San Antonio Public Service Company, it being understood and provided, however, that the cash on hand and bills and accounts receivable included in Items I and II above are not to be delivered to the trustees but are to be delivered to the Board of Trustees hereinafter created and that the Board of Trustees and not the trustees shall be accountable for the proper use and application of said cash, bills and accounts receivable under the terms and provisions of this indenture.

TO HAVE AND TO HOLD all and singular the said premises and property, real, personal and mixed, with all and singular their revenues, rents, issues, profits, privileges and appurtenances, and all the estate, right, title and interest of the city therein and thereto, unto the trustees and their successors in trust forever;

IN TRUST NEVERTHELESS, subject to the provisions of this indenture, for the equal and proportionate benefit, security and protection of all holders of the bonds and interest coupons issued or to be issued under and secured by this indenture, without preference, priority or distinction as to lien or otherwise of any bond over any other bond of the series by reason of priority in the issuance or negotiation thereof or by reason of the date or dates of maturity thereof, or for any other reason whatsoever, so that each and all of said bonds shall have the same rights, lien and privileges under this indenture; PROVIDED HOWEVER, and these presents are upon the express condition, that if the city, its successors and assigns shall well and truly pay or cause to be paid unto the holders of said bonds the principal and interest due thereon at the times and in the manner stipulated therein and shall well and truly keep, perform and observe all the covenants and conditions in said bonds and in this indenture expressed to be kept, performed and observed by the city and shall pay to the trustees all sums of money due or to become due to them in accordance with the terms and provisions hereof, then this indenture and the rights and estate hereby granted shall cease, determine and be void, and the trustees in such case on demand of the city, upon payment by the city to the trustees of their reasonable fees, costs and expenses, shall execute and deliver to the city such deeds as shall be requisite to discharge the lien hereof and to reconvey or revest in the city the properties hereby conveyed or intended to be conveyed; OTHERWISE this indenture is to be and shall remain in full force and effect.

THIS INDENTURE FURTHER WITNESSETH that the city has agreed and convenanted and does hereby agree and covenant with the trustees and respective holders from time to time of such bonds and coupons that is to say:

ARTICLE I

FORM, AUTHENTICATION, REGISTRATION AND ISSUANCE OF BONDS

SECTION 1. The bonds and the coupons attached thereto shall be in substantially the forms hereinbefore recited, and shall be limited to the aggregate principal amount of Thirty-

five Million Dollars ($35,000,000). All bonds to be secured hereby shall be signed by the Mayor of the city, shall be attested by the City Clerk, shall have the corporate seal of the city impressed thereon, and when so signed and sealed, the bonds shall be submitted to the Attorney General of the State of Texas for approval and to the State Comptroller for registration. After the said bonds have been approved by the Attorney General and registered by the State Comptroller, they shall be delivered to the Trustee for signature and authentication as herein provided.

In case any officer or officers who shall have signed any of the bonds shall cease to be such officer or officers of the city after delivery of such bonds to the Trustee, but before the bonds so signed shall have been actually authenticated and delivered to the purchasers thereof, such bonds may nevertheless be authenticated and delivered as though the person or persons who signed and sealed such bonds had not ceased to be such officer or officers of the city.

The coupons to be attached to the bonds shall be signed by the facsimile signatures of the Mayor and City Clerk in office at the time of the preparation of the bonds, and delivery of such bonds thereafter shall be valid for all purposes even though one or both of said officials shall have ceased to hold office at the time of delivery.

Prior to the authentication of bonds under this indenture all matured coupons thereto attached shall be detached and cancelled and such cancelled coupons shall be delivered to the City Auditor.

SECTION 2. Only such of the bonds as shall have endorsed thereon the duly executed certificate of the Trustee substantially in the form hereinabove set forth shall be entitled to any lien or benefit hereunder, but such certificate of the Trustee upon any bond shall be conclusive evidence that such bond has been duly authenticated and delivered hereunder and that the holder is entitled to the benefit of the trust hereby created.

SECTION 3. The bonds shall be transferable by delivery unless registered as to principal by the Trustee as Bond Registrar. The Trustee shall maintain at its office a registration book in which shall be entered the name and address of any owner of a bond or bonds who shall present his bond or bonds with a request that such bond or bonds be registered as to principal, and such registration shall also be noted on such bond or bonds by the Trustee. On presentation to the Trustee of any bond registered pursuant to the provisions of this section, ac-

companied by a written instrument of transfer in form approved by the Trustee and executed by the registered owner in person or by his attorney thereunto duly authorized, transfer thereof shall be made on the registration book and noted on such bond by the Trustee, and after registration of any bond as aforesaid no transfer shall be valid unless made as above provided. The registered owner of any bond so registered as to principal shall be entitled to have such bond discharged from registration by being in like manner transferred to bearer and thereupon transferability by delivery shall be restored, but any such bond shall continue subject to successive registrations and transfers as before. Registration of any bond as to principal shall not affect the negotiability of the coupons appertaining to such bond and all coupons shall continue to be transferable by delivery merely and shall remain payable to bearer.

SECTION 4. In case any bond issued hereunder with the coupons appertaining shall become mutilated or be lost, stolen or destroyed prior to the payment thereof, a new bond, including coupons, of like tenor and date and bearing the same number may at the discretion of the city and the Trustee be executed, certified and delivered either in exchange for and upon cancellation of the mutilated bond and its coupons, or in substitution for the bond or coupons lost, stolen or destroyed, but such exchange or substitution shall be made only upon receipt of satisfactory evidence of the loss, theft, or destruction of such bond and its coupons, proof of ownership thereof, satisfactory indemnity to the Trustee and the city, and payment of the cost of preparing such bond and coupons.

ARTICLE II.

SPECIAL COVENANTS

The city hereby covenants as follows:

SECTION 1. The city is duly authorized under the laws of the State of Texas to create and issue the bonds and to execute and deliver this indenture and to mortgage and pledge the property conveyed and mortgaged hereunder and to pledge the revenues pledged hereunder, and all necessary action on the part of the city and its Commissioners for the creation and issue of the bonds and the execution and delivery of this indenture has been duly and effectively taken, and the bonds in the hands of the holders thereof are and will be valid and enforceable obligations of the city in accordance with their terms.

SECTION 2. The city is lawfully seized and possessed of the trust estate, free and clear of all liens or encumbrances; it has a good right and lawful authority to mortgage and pledge the trust estate as provided in this indenture; and it will warrant and defend unto the trustees, their respective successors and assigns, for the benefit of the holders for the time being of the bonds, the trust estate and the lien and interest of the trustees thereon and therein under this indenture, against all claims and demands of any persons whomsoever.

SECTION 3. At any and all times the city will duly execute, acknowledge and deliver, or will cause to be done, executed and delivered, all and every such further acts, deeds, conveyances, mortgages, transfers and assurances in law as the Trustee shall reasonably require for the better conveying, transferring, mortgaging and pledging and confirming unto the trustees, all and singular the hereditaments, premises, estates and property hereby conveyed, transferred, mortgaged, pledged or assigned, or intended so to be.

SECTION 4. The city will not avail itself of the provisions of the Federal Bankruptcy Act or avail itself of the provisions of any similar federal or state bankruptcy or debt readjustment act, now or hereafter existing, in such manner that the liability of the city to pay the bonds secured hereby in accordance with their terms and in accordance with the terms of this indenture will be in anywise affected or impaired.

SECTION 5. The city will not create or voluntarily permit to be created any debt, lien or charge which would be on a parity with or prior to the lien of this indenture on the trust estate or any part thereof or on the income to be derived from the trust estate and from the operation of the city's complete electric light and power system and gas distribution system or any part thereof; and will not do or omit to do or suffer to be done or omitted to be done any matter or thing whatsoever whereby the lien of this indenture or the priority of such lien or the bonds hereby secured might or could be lost or impaired; and that it will pay or cause to be paid or will make adequate provision for the satisfaction and discharge of all lawful claims and demands for labor, materials, supplies or other objects which if unpaid might by law be given precedence to or an equality with this indenture as a lien or charge upon the trust estate or any part thereof or the income and profits thereof; provided that nothing in this section shall require the city to pay, discharge or make provision for any such lien, charge, claim or demand so long as the validity

thereof shall be by it in good faith contested, unless thereby, in the opinion of the Trustee, the trust estate or some material part thereof will be lost, forfeited or materially endangered.

The provisions of this section are subject to the exception that the Board of Trustees may borrow from time to time on a purely temporary basis, such sums as would ordinarily be borrowed by private companies engaged in similar business in connection with current operations, and expected to be paid and retired from current revenues received during the operating year in which such sums are borrowed, and are subject to the further exception that if, prior to the payment of all of the bonds, it shall be found desirable to refund part of said bonds under the provisions of any law then available, said bonds may be refunded (with the consent of the holders thereof, unless the bonds so refunded are then optional for redemption and provision for the call and redemption thereof is duly made) and the refunding bonds so issued shall enjoy complete equality of lien with the portion of the bonds which is not refunded, and the refunding bonds in like principal amount shall continue to enjoy in all respects the lien and right to security under this indenture enjoyed by the bonds refunded thereby, including the priorities enjoyed by such refunded bonds; provided, however, that if such bonds are refunded in such manner that the interest rate of the bonds is increased or the refunding bonds mature at a date earlier than the maturity date of any of the bonds not refunded, then such bonds may not be refunded without the consent of the holders of the unrefunded portion of the bonds, to be evidenced as provided in Section 1 of Article XI hereof. The Trustee shall, subject to the provisions of this section, authenticate and deliver any refunding bonds so authorized, upon the written order of the Mayor of the city and upon receipt by the Trustee of:

(a) A certified copy of the ordinance of the Commissioners of the City of San Antonio authorizing the issuance of such refunding bonds;

(b) A copy of an opinion of the Attorney General of the State of Texas approving the validity of such refunding bonds, if such opinion shall then be required by the laws of Texas;

(c) A certificate by the State Comptroller evidencing registration of such refunding bonds in his office, if such registration shall then be required by the laws of Texas;

(d) The outstanding bonds authorized to be refunded thereby, in principal amount equal to that of the bonds to

be authenticated, which outstanding bonds shall be presented to the Trustee to be delivered, either by the Trustee or through the State Comptroller, in exchange for the refunding bonds and simultaneous cancellation and retirement, provided however, that in lieu of outstanding bonds properly called for redemption or then matured it shall be sufficient if the proceeds of the sale of the refunding bonds, together with other funds available for such purpose, in an amount sufficient to redeem or pay a like principal amount of such outstanding bonds so called for redemption or matured, including all accrued interest and redemption premiums, shall have been deposited with the Trustee, or deposited to the Trustee's satisfaction with the paying agent for such outstanding bonds, to be held solely for the payment of such bonds, accrued interest and redemption premiums;

(e) If required by the Trustee, an opinion by counsel acceptable to the Trustee that such refunding bonds have been legally authorized and, upon delivery thereof pursuant to the terms of this section, will have become effectively subrogated to the rights of the bonds refunded thereby and entitled to be secured by the lien of this indenture.

All bonds received by the Trustee in exchange for refunding bonds and all bonds redeemed and paid under the provisions of this section shall be by the Trustee cancelled and delivered to the City Auditor of said city.

SECTION 6. The city will cause this indenture and any and all supplemental indentures and instruments of further assurance at all times to be recorded and filed in such manner and in such places as may in the opinion of counsel for the Trustee be required by law in order fully to preserve and protect the rights of the bondholders and the Trustee hereunder, and upon the request of the Trustee it will furnish to the Trustee promptly after the execution and delivery of this indenture an opinion of counsel satisfactory to the Trustee stating that in the opinion of such counsel this indenture has been properly recorded and filed so as to make effective the lien intended to be created thereby, and reciting the details of such action, or stating that in the opinion of such counsel no such action is necessary to make such lien effective.

SECTION 7. The city will from time to time promptly pay and discharge all taxes, assessments and other governmental charges, the lien whereof would be prior to the lien hereof, lawfully imposed upon the trust estate or any part thereof or upon the income and proceeds thereof, so that the lien of this indenture

and the priority of such lien shall at all times be wholly preserved at the cost of the city and without expense to the trustees or the holders of the bonds, provided however, that nothing in this section contained shall require the city to pay or discharge any such tax, assessment or governmental charge so long as the validity thereof be by it in good faith contested, unless thereby in the opinion of the Trustee or its counsel the trust estate or some material part thereof will be lost, forfeited or materially endangered.

SECTION 8. The city will maintain, preserve and keep the trust estate in a state of good repair, working order and condition and will not dispose of the trust estate in whole or in part except in the manner and upon the terms provided in Sections 2 and 3 of Article VII hereof.

SECTION 9. The city will duly and punctually keep, observe and perform each and every term, covenant and condition on its part to be kept, observed and performed, contained in this indenture, and will punctually perform all duties with reference to the trust estate required by the Constitution and Laws of the State of Texas, including particularly the making and collecting of such reasonable and sufficient rates and charges for electricity, gas and services supplied by its electric light and power plant and system and gas distribution system, to the city and to all other consumers, as will be fully sufficient to meet all the requirements of this indenture, and including the proper segregation and application of the revenues of said plant and systems, it being expressly hereby covenanted and agreed that such rates and charges will be so fixed that the revenues derived therefrom will be sufficient at all times to pay for all operating, maintenance, depreciation, replacement, betterment, and interest charges and to provide an interest and sinking fund sufficient to pay all indebtedness outstanding against the trust estate and fully to carry out all of the agreements contained in this indenture.

SECTION 10. The city will not grant a franchise for the operation of any competing electric system or gas system in the City of San Antonio until all bonds issued hereunder shall have been retired.

ARTICLE III.

ACCOUNTS AND RECORDS.

SECTION 1. The Board of Trustees hereinafter created shall be required to keep full and proper books of record and account, in which full, true and proper entries will be made of all dealings, business and affairs of the city which in any way

affect or pertain to the operation of the trust estate and the city's electric light and power plant and system and gas distribution system, and will furnish to the Trustee and to such bondholders as may request such statement, at least once every six months and at such other times as the Trustee may reasonably request, statements in reasonable detail showing the earnings and expenditures of the city's electric light and power plant and system and gas distribution system, including the trust estate, and the application of funds in the Revenue Fund hereinafter established, for the preceding six months period. Said board will also furnish to the Trustee from time to time such other data as to the plants, properties and equipment comprising a part of the trust estate, as the Trustee shall reasonably request.

As soon after the close of each operating year as may reasonably be done, said board will furnish to the Trustee and to all bondholders who may so request full audits and reports covering the operations of the city's electric light and power plant and system and gas distribution system, including the trust estate, for the preceding operating year, and showing the earnings and expenses of the properties and the disposition made of all revenues for said operating year, the amounts available for the purposes set forth in Article V hereof, and, in such detail as the Trustee may request, the assets, liabilities and financial condition of the city's electric light and power plant and system and gas distribution system at the close of such operating year. The Board of Trustees at the same time shall furnish to the Trustee an estimate of cash receipts and disbursements for the ensuing year in sufficient detail to indicate the probable total net income from operations and amounts available for the several fund accounts established herein. If any such audit discloses any discrepancies or misapplication of funds, the Board of Trustees shall be charged with the duty of rectifying such misapplications as far as possible and of remedying any deficiencies in payments hereunder from the first funds available for such purpose.

The Board of Trustees will at the expense of the Board of Trustees, upon written request of the City Commissioners or the Trustee, permit the City Commissioners and the Trustee at all reasonable times, by their agents, engineers, accountants and attorneys, to examine and inspect the plants, property, books of account, records, reports and other data relating to the trust estate and to take copies and extracts therefrom, and will afford a reasonable opportunity to make any such examination and inspection and will furnish the Trustee and the City Commissioners any and all such other information as they may reasonably request. The Trustee shall be under no duty to make any

such examination unless requested so to do by the holders of twenty-five per cent in principal amount of the bonds at the time outstanding and unless such holders shall have offered the Trustee security and indemnity satisfactory to it against any costs, expenses and liabilities which might be incurred thereby.

The Board of Trustees shall as nearly as possible keep its books and records in the manner prescribed in the Uniform System of Accounts for Electric Utilities adopted by the National Association of Railroad and Utilities Commissioners on November 10, 1936, and in the Uniform System of Accounts for Gas Utilities adopted by said Association on November 10, 1936.

ARTICLE IV.

INSURANCE.

SECTION 1. The city covenants and agrees that at all times it will insure and keep insured through the Board of Trustees all properties subject to the lien hereof which are of a character usually insured by companies operating like properties, in good and responsible insurance companies, against risks customarily insured against by companies engaged in a similar business, and in the same manner and to the same extent, all loss therefrom (except any single loss which does not exceed $25,000) being payable to the trustees as their interests shall appear, by the customary mortgagee or trustee clauses to be attached to or inserted in the policies. The Board of Trustees shall furnish to the Trustee a list of such policies, showing the character of the insurance, the property and risk covered, the name of the insurance company, and other pertinent details, and shall keep the Trustee fully informed of any change in or addition to such list. Upon the written request of the Trustee such policies will be deposited with it. The Trustee, subject to the provisions of Article IX hereof, shall be under no obligation or duty to obtain any such schedule and shall have no duty or responsibility with respect to the sufficiency or effect of any of such policies of insurance, the renewal thereof, or the responsibility of the insurers, or with respect to any such schedule or the matters shown therein, except to display any such schedule to any holder of bonds desiring to inspect the same.

In case of loss or damage to any of the insured property, the proceeds of any such insurance on any one loss amounting to

not more than $25,000 shall either be promptly applied by the Board of Trustees to the repair or replacement of the property destroyed or damaged, or otherwise to the improvement of the mortgaged property, or if not so applied within one year of the date of receipt thereof by the Board of Trustees, such proceeds shall be deposited in the Reserve Account created by Article V hereof. In any case where the proceeds of any such insurance shall amount to a sum in excess of $25,000 on account of any one loss, all such moneys shall be promptly deposited with the Trustee and shall be paid out from time to time to the Board of Trustees upon written request of the board, signed by its Chairman and Secretary, and accompanied by a certified copy of the resolution of the board directing such request, and specifying that certain expenditures have been made or incurred in repairing or replacing the property so impaired or destroyed, and the amount thereof, and requesting the payment by the Trustee to the Board of Trustees of an amount not in excess of the amount of such expenditures. If in the judgment of the Board of Trustees and of a recognized public utility engineer selected by the Board of Trustees and approved by the Trustee, the interests of the Board of Trustees and the bondholders will be best served through the application of all or part of such insurance proceeds to improvements to the mortgaged property which do not constitute the repair or replacement of the property for the destruction or impairment of which the insurance proceeds are so paid, the amount of such proceeds may be applied by the Board of Trustees to the making of such improvements, and payment thereof shall be made to the Board of Trustees by the Trustee as expended in the manner provided in the last preceding sentence hereof. The Trustee may in its discretion require such additional proof of the matters certified in such resolution as it may consider necessary or desirable. Any insurance proceeds not so paid out by the Trustee within a period of two years from the date of the receipt thereof shall be used for the redemption of as many bonds as may be redeemed with the amount available and the city agrees that it will take such steps as may be necessary to call such bonds for redemption pursuant to the procedure therefor herein established.

Any adjustment of any loss under any policy of insurance made by the Board of Trustees may be consented to by the Trustee without investigation as to the fairness thereof. The payments of premiums for all insurance policies required under the provisions of this section shall be considered to be a maintenance and operation expense within the provisions of Article V hereof.

ARTICLE V.

APPLICATION OF REVENUES.

SECTION 1. From and after the issuance of any of the bonds all of the city's gas and electric facilities and properties, including the trust estate and including all additions and extensions to such properties which may be made while any of the bonds remain outstanding (all of which properties and facilities are in this and the following sections of this indenture sometimes referred to as "the system") shall be operated on the basis of an operating year commencing on August 2 of each year and ending on August 1 of the following year.

SECTION 2. All revenues of every nature received through the operation of the system shall be deposited as received in a special fund or account to be known as "City of San Antonio Electric and Gas Systems Revenue Fund" and which is hereinafter in this indenture referred to as the "Revenue Fund." The Revenue Fund shall be deposited from time to time in such bank or banks as may be selected for such purpose by the Board of Trustees, and such bank or banks are hereinafter collectively referred to as the "depositary." The bank or banks in which the Revenue Fund is kept on deposit shall always be a bank or banks located in the City of San Antonio unless there is no bank in the City of San Antonio qualified and willing to serve as depositary, in which case the depositary may be any bank or banks in the State of Texas. The Board of Trustees shall advise the Trustee of the names of the bank or banks initially selected as depositary and shall thereafter promptly advise the Trustee of all changes which are made in the depositary banks. If for any reason, in its sole discretion, the Trustee shall disapprove the appointment of any bank for such purpose and shall so advise the Board of Trustees, the Board of Trustees shall promptly appoint some other bank or banks which meet with the approval of the Trustee.

SECTION 3. The money in the Revenue Fund shall be used first from day to day and month to month to pay the current expenses of operating, maintaining and repairing the system, including the cost of insurance, the purchase of supplies, the purchase or manufacture of gas and the purchase and production of electricity for distribution and resale, the payment of salaries and the payment of all other expenses properly incurred in operating and maintaining the system and keeping it in good repair and operating condition. In determining whether any particular expenditure represents a proper maintenance and operating expense as distinguished from a capital expenditure for improve-

ments and extensions to the system, the accounting classifications provided to be followed in Article III hereof shall be accepted for such determination. In the event that at any time hereafter taxes of any nature shall be lawfully imposed on the system or any part thereof or any income or revenues thereof by the United States of America or any governmental body or taxing subdivision other than the City of San Antonio, and such taxes are paid under the provisions of Section 7, Article II hereof, all such payments shall be made from the Revenue Fund as an expense of maintenance and operation under the provisions of this section.

SECTION 4. After the costs of maintenance and operation have been paid from the Revenue Fund as provided in the last preceding section of this article, the next available money therein shall be used for, and are hereby pledged to the payment of principal of and interest on the bonds and the accumulation of a reserve fund for such purpose, and the Board of Trustees shall cause to be paid to the Trustee in due season in each year such amounts as will be fully sufficient promptly to pay all principal of and interest on the bonds which will become due during such year.

The payments which are made to the Trustee for current principal and interest shall be increased in each year by an amount equivalent to twenty per cent (20%) of the total payments so otherwise to be made to the Trustee in such year. Such additional payments shall be held by the Trustee in an account to be known as the "San Antonio Electric and Gas Revenue Bonds Reserve Account" (hereinafter referred to as the "Reserve Account") and shall be used by the Trustee solely for the payment of principal of and interest on the bonds falling due at any time as to which there would be a default if money in the Reserve Account were not used for such purpose. The additional payments shall continue to be made into the Reserve Account until such time as there shall be in that account (as distinguished from the fund held by the Trustee for the payment of principal and interest falling due during the current year) money fully sufficient to pay all principal of and interest on the bonds which will become due during the eighteen (18) months immediately succeeding the close of the current operating year, and shall be thereafter made into the Reserve Account at all times when it shall be necessary in order to keep the money in the Reserve Account up to such minimum.

The payments required to be made to the Trustee in this section shall be made as nearly as possible in equal monthly installments in each year and shall be made on the tenth day of each month, except that when the tenth day of any month shall

be a Sunday or a holiday the payment shall be made on the next preceding secular day.

The first operating year shall consist of the period elapsing between the date of the delivery of the first of the bonds delivered hereunder and August 2 next succeeding, and the payments herein required to be made to the various funds during such operating year shall be made proportionately in such manner as to place therein the full amounts required for such year. All money received by the city as accrued interest on the bonds at the date of delivery shall be paid to the Trustee under the provisions of this paragraph, to be used for the payment of interest first falling due on the bonds.

SECTION 5. From the next available money in the Revenue Fund after all payments contemplated by Sections 3 and 4 of this article have been made, there shall be paid to the bank which is at the time acting as depositary of general city funds, to be used for such general city purposes as may from time to time be approved by the Commissioners of the City of San Antonio, the annual sum of $210,300, and there shall also be paid to the treasurer of the Independent School District of the City of San Antonio, subject to approval as to allocation by the Commissioners of the City of San Antonio, the annual sum of $113,750, both sums to be paid as reimbursement to the City of San Antonio and Independent School District for the loss of taxes which would have been imposed on the properties of the system had the system remained under private ownership. To the extent that such remaining revenues are sufficient such payments shall be made in equal monthly installments. The obligation to pay such annual sums to the city and to the Independent School District shall be cumulative and if in any year the money in the Revenue Fund after making the payments required by Sections 3 and 4 of this article shall be insufficient to pay in full the sums so due for such year, so much thereof as possible shall be so paid and the deficiency shall be paid from the first revenues available in the succeeding year or years after the payments required by Sections 3 and 4 of this article shall have been made in such year or years.

SECTION 6. From the next available money in the Revenue Fund after the payments contemplated by Sections 3, 4 and 5 of this article have been made, there shall be paid into a separate fund to be held by the depositary and to be known as the "San Antonio Electric and Gas Systems Renewal and Replacement Fund" (hereinafter referred to as the "Renewal and Replacement Fund") an annual sum equal to not less than twelve and one-half per cent (12½%) of the receipts from the sale of

electricity during the previous operating year and ten per cent (10%) of the receipts from the sale of gas during the previous operating year. The sums to be paid into such fund during the partial operating year ending on August 1, 1943, shall be in such proportion as is borne by the length of the partial operating year to that of a full operating year, and shall be computed on the basis of the gross revenues received by San Antonio Public Service Company from such sources during the last complete twelve-months period prior to acquisition of the system by the city. The money in such fund shall be used solely for the making of such improvements and extensions to the system not properly classified as maintenance and operation expenses as may be from time to time directed to be made by the Board of Trustees. To the extent that the money in the Revenue Fund is sufficient after the making of the payments required by Sections 3, 4 and 5 of this article, the payments into the Renewal and Replacement Fund shall be made in approximately equal monthly installments. If any payment herein required to be made into the Renewal and Replacement Fund shall at any time cause that fund to exceed the sum of Three Million Dollars ($3,000,000), any such payment shall be regarded and used as surplus for the purposes of the next succeeding section of this article.

SECTION 7. The money remaining in the Revenue Fund in each year after all payments required by the preceding sections of this article, including all payments necessary to be made by reason of deficiencies carried over from any preceding year or years, have been made, shall be regarded as surplus. (There shall first be paid from such surplus existing at the end of each operating year, to the bank which is then acting as depositary of general city funds, a sum sufficient to reimburse the city for all money which has been paid to the Board of Trustees during such operating year for gas, electricity and the services of the system used by the city during such year.) If the surplus which then remains in any year shall exceed $1,250,000, the money so in excess of $1,250,000 shall be applied to the redemption prior to maturity of as many of the bonds as can be retired with the sum so available. There shall next be taken from such remaining surplus (whether or not the surplus so remaining is in the amount of $1,250,000) the sum of $500,000, or if less than $500,000 remains, then all of the sum which so remains, and such sum of $500,000 or lesser remaining sum shall be placed by the Board of Trustees in a special fund to be known as a "Contingencies Fund" until the money in such fund shall equal $3,000,000. The money in the Contingencies Fund may be used from time to time pursuant to the direction of the Board of Trustees, either for the payment of principal of or interest

on the bonds for which no money is available in the Reserve Account and as to which there would otherwise be a default, or for the making of such renewals or replacements to the properties of the system as are made necessary by reason of some unexpected calamity or act of God and for the making of which there is no money available either from the proceeds of insurance or in the Renewal and Replacement Fund. After the expenditure of any money from the Contingencies Fund reimbursement therefor shall be made from the first surplus money thereafter available for such purpose under the provisions of this section. In any year in which the Contingencies Fund is in its full specified amount, then such $500,000 sum, or such smaller remaining sum if the surplus available in such year is less than $500,000, or so much of such $500,000 sum or smaller sum as may not be needed to bring the money in the Contingencies Fund to its full $3,000,000 amount, shall be used by the Board of Trustees for the redemption of bonds prior to maturity as above provided for the use of surplus in excess of $1,250,000. Any surplus money remaining at the end of each operating year after all payments from surplus hereinabove in this section required have been made, shall be paid to the bank which is at the time acting as depositary of general city funds, to be used for such lawful purpose or purposes as may be prescribed by the Board of Commissioners, provided, however, that the Board of Commissioners may, by proper resolution adopted prior to the making of such payment, require the Board of Trustees to use such money in the reduction of rates for the ensuing operating year.

SECTION 8. All money held in the Revenue Fund, the Reserve Account, the Renewal and Replacement Fund and the Contingencies Fund shall be held as trust accounts for the benefit of the holders of the bonds and shall at all times be adequately secured by or, as to money in the Reserve Account, invested in, United States Government bonds or other marketable securities eligible as security for the deposit of trust funds under regulations of the Board of Governors of the Federal Reserve System, or by indemnity bonds of surety companies qualified as surety for United States Government deposits. All securities and indemnity bonds so standing as security for the money in such funds shall be approved by the Board of Trustees. The Board of Trustees shall make a monthly report to the Trustee specifying the amounts held in each of the two funds on deposit in the depositary and listing the securities and indemnity bonds standing as security for such deposits and the Trustee may, but need not, require such additions and substitutions to be made in such securities and indemnity bonds as in its opinion is necessary to protect the interests of the holders of the bonds. The money at

any time held in the Renewal and Replacement Fund and Contingencies Fund may, at the discretion of the Board of Trustees, be invested in securities which are either direct obligations of the United States of America or direct obligations of any state or municipality thereof which are eligible for the investment of trust funds under the laws of the State of New York then in force, or which are direct obligations of Bexar County, Texas, the City of San Antonio, Texas, or the Independent School District of the City of San Antonio, Texas.

ARTICLE VI.

MANAGEMENT

SECTION 1. Pursuant to authority contained in Article 1115, Texas Revised Civil Statutes of 1925, the complete management and control of the system during such time as any of the bonds herein authorized are outstanding and unpaid, shall be in the hands of a Board of Trustees to consist of five citizens of the United States of America permanently residing in Bexar County, Texas, to be known as the "Board of Trustees of the San Antonio Electric and Gas System." Said board is hereinafter and hereinbefore in this indenture referred to as the "Board of Trustees." The Mayor of the City of San Antonio shall ex-officio be one member of the Board of Trustees and the remaining members of the Board of Trustees shall consist of D. F. Youngblood, to serve for a term ending December 31, 1944, W. B. Tuttle to serve for a term ending December 31, 1946, Franz C. Groos to serve for a term ending December 31, 1948, and Walter P. Napier to serve for a term ending December 31, 1950, each term of office to commence on the date of this indenture. After the expiration of each of the above prescribed terms of office, each member of the Board of Trustees, other than the Mayor, shall serve for a term of five years. All vacancies in membership, whether occasioned by expiration of office or otherwise, shall be filled by a majority vote of the members of the Board of Trustees. Permanent removal of any member of the Board from Bexar County shall vacate his membership. Members shall be eligible to be reelected for one additional term, and one only. If there shall hereafter be enacted by the Legislature of Texas an act making legal a seven person membership for the Board of Trustees, two additional members shall be elected for regular five year terms by the Board of Trustees in the manner hereinabove provided for filling vacancies.

Subject to the provisions and restrictions contained in this indenture, all of which shall be binding upon the Board of Trustees, the Board of Trustees shall have complete authority

and control of the management and operation of the system and the expenditure and application of the revenues of the system.

The members of the Board of Trustees shall meet for the purpose of organization as soon as may be after the execution of this indenture and shall organize through the election of one of its members as Chairman and one as Vice-Chairman and through the appointment of a Secretary and a Treasurer or a Secretary-Treasurer, who may, but need not be, a member or members. If a member of the Board of Trustees is not appointed as Secretary or Treasurer, or Secretary-Treasurer, then the employee of the Board of Trustees whose duties in the operation of the system require him to perform similar duties may be appointed as such Secretary or such Treasurer or such Secretary-Treasurer. The Board of Trustees may make such regulations and by-laws for the orderly handling of its affairs as it may in its discretion see fit and shall thereafter operate and manage the system with the same freedom and in the same manner as are ordinarily enjoyed and followed by the Board of Directors of a private corporation operating properties of a similar nature.

The Board of Trustees shall obtain and keep continually in force an employees' fidelity and indemnity bond of the so-called "blanket" type, written by a solvent and recognized indemnity company and covering losses to the amount of not less than One Hundred Thousand Dollars ($100,000).

The Board of Trustees shall elect and appoint all officers and employees which it may consider desirable, including a general manager of the system and an attorney or attorneys. No officer or employee may be employed by the Board of Trustees who shall be related within the second degree of consanguinity to any member of the Board of Trustees, nor shall the Board of Trustees be permitted to fill a vacancy in its membership by any person so related to any member of the Board, or by any person who shall have been so related within a period of five years prior to his election. The members of the Board other than the Mayor of the city shall receive an annual compensation of Two Thousand Dollars ($2,000), except that the Chairman of the Board shall receive an annual compensation of Two Thousand Five Hundred ($2,500). With the consent of all remaining members of the Board, one member of the Board may be made general manager of the system, and in such event the member so acting as general manager may receive an annual compensation not in excess of Twelve Thousand Dollars ($12,000). The members of the Board of Trustees, either singly or collectively, shall not be personally liable for any act or omission not wilfully fraudulent or mala fide. Any member of

the Board of Trustees other than the Mayor of the city who shall be continuously absent from all meetings of the Board for a period of four consecutive months shall, unless he shall have been granted leave of absence by the unanimous vote of the remaining members of the Board, be considered to have vacated his office. Any member of the Board other than the Mayor of the city may, by unanimous vote of the remaining members of the Board, be removed from office, but only for adequate cause.

ARTICLE VII.

POSSESSION OF MORTGAGED PROPERTY

SECTION 1. While not in default in the payment of principal of or interest on any of the bonds secured hereby, or in respect of any of the covenants, agreements or conditions in this indenture contained, the city through the Board of Trustees shall be permitted and suffered to possess, use and enjoy the trust estate and all property and appurtenances, franchises and rights conveyed by this indenture (except money or property, if any, expressly required to be deposited with the Trustee) and to receive and use the revenues, rents, issues, income, produce and profits thereof with power in the ordinary course of business freely and without let or hindrance on the part of the Trustee or of the holders of the bonds, to use and consume supplies; to alter, repair, dismantle and change the position of any of its buildings and structures, plants, mains, pipe lines, poles, wires, conduits or other property whatsoever (provided that no such change shall impair the lien of this indenture upon any such building, structure, plant, main, pipe line, pole, wire, conduit, or other property); to replace and renew any of its equipment, machinery or other property; and to acquire any and all rights under choses in action and contracts.

SECTION 2. The city from time to time, through the Board of Trustees, while in possession of the trust estate shall be suffered and permitted without any release from or action by the trustees or either of them to sell, exchange or otherwise dispose of, free from the lien of this indenture, (1) any of its equipment, machinery, fixtures, apparatus, appliances, tools, implements, or other chattels at any time subject to the lien hereof which may have become worn out or unserviceable, disused, undesirable or unnecessary for use in the conduct of its business, replacing the same by, or substituting for the same, other property of equal value to the city, which shall forthwith become, without further action, subject to the lien of this indenture, and (2) any materials, merchandise, equipment and supplies in the ordinary

course and conduct of its business; provided however, that upon the sale or other disposition of such property to the value of $10,000 or more in any one calendar month, the Board of Trustees shall cause to be filed with the Trustee a certificate describing such property, stating that such property has become worn out, unserviceable, undesirable or unnecessary for use in the conduct of its properties and that such disposition thereof will not impair the operating integrity of the properties, and stating also the consideration received from such sale or other disposition thereof and the use made of such consideration.

SECTION 3. So long as the city is not in default hereunder to the knowledge of the Trustee, the city may sell or otherwise dispose of any property mortgaged hereunder not exceeding in the period ending December 31, 1942, the sum of $200,000, in the two-year period ending December 31, 1944, the sum of $1,150,000 (of which any amount over $400,000 must represent the sale of electric distribution systems and transmission lines lying outside of Bexar County, Texas), and in any calendar year thereafter the sum of $200,000, all in aggregate sale price or fair value (whichever is greater), without deduction for any liens on such property, and obtain the release of, and the trustees shall release from the lien hereof, such property, but only upon the receipt by the Trustee of a certificate signed by a majority of the Board of Trustees and by a licensed engineer stating in substance:

(1) The then fair value, in the opinion of the signers, of the property to be released, which property shall be described in such certificate in reasonable detail;

(2) That the aggregate sale price or fair value (whichever is greater) of such property, and of all property theretofore released by the trustees pursuant to the provisions hereof during the period in which the request for the release is made, does not exceed the amount hereinabove authorized to be released during such period, and, if such release is requested after the expiration of the third year from the date of this indenture, that all property released hereunder by the trustees from the date of this indenture to the date of the request of said additional release does not exceed ten per cent (10%) of the bonds of the issue secured hereby theretofore paid or otherwise retired; and

(3) That the city is not, to the knowledge of the signers, in default in the performance of any of the terms or covenants of this indenture or of the bonds secured hereby, and that such release will not be, in the opinion of the signers, prejudicial to the interest of the bondholders, and that the property to be released is not, in the opinion of the

signers, necessary to the proper and economical operation of the electric and gas systems.

The money received from the sale of such released property shall be held by the Board of Trustees as a special fund for the purchase of additional property deemed by them necessary or advantageous to the system, and unless such money is used in such purchase of property within eighteen months of the time received, the same shall be used in the redemption prior to maturity of as many of the bonds as may be redeemed with such money in the manner provided in Section 7, Article V, above, for the redemption of bonds with surplus funds. All additional property purchased or acquired under the provisions of this section shall immediately upon such purchase or acquisition become subject to the lien of this indenture.

ARTICLE VIII.

DEFAULTS AND REMEDIES

SECTION 1. For the purpose of this indenture the following events are hereby defined as and are declared to be "events of default":

(a) Default in the due and punctual payment of any interest on any of the bonds and the continuance thereof for a period of ninety (90) days after written notice thereof by the Trustee to each member of the Board of Commissioners of the City of San Antonio and to each member of the Board of Trustees, stating that payment has been demanded and default made.

(b) Default in the due and punctual payment of the principal of any of the bonds at maturity thereof and the continuance thereof for a period of ninety (90) days after written notice thereof by the Trustee to each member of the Board of Commissioners of the City of San Antonio and to each member of the Board of Trustees, stating that payment has been demanded and default made.

(c) Default in the performance or observance of any other of the covenants, agreements or conditions on the part of the city and the Board of Trustees to be kept, observed and performed contained in this indenture or in the bonds, and continuation of such default for a period of ninety (90) days after written notice thereof by the Trustee to each member of the Board of Commissioners of the City of San Antonio and to each member of the Board of Trustees.

(d) The institution of bankruptcy proceedings, either voluntary or involuntary, under any state or federal statute, whereby the city's duty to carry out all of the covenants and agreements in this indenture contained might be in anywise affected.

Any notice herein provided to be given to a member of the Board of Commissioners and the City Clerk and to a member of or the Secretary of the Board of Trustees shall be deemed sufficiently given if sent by registered mail with postage prepaid to the person to be notified, addressed to him at the post office in the City of San Antonio. The Trustee may give any such notice in its discretion and shall give such notice if requested so to do by the holders of not less than twenty per cent (20%) in principal amount of the bonds at the time outstanding.

Wherever "bonds" are referred to in this article and in Article XI hereof, the term shall be understood to mean not only all outstanding bonds of the issue of $35,000,000 originally secured hereby, but also all outstanding refunding bonds which may be issued under the provisions of this indenture in such manner as to be entitled to the security of this indenture on an equality with the bonds of said original issue.

SECTION 2. Upon the happening of any event of default as defined in Section 1 of this article, the Trustee shall, but only upon the written request of the holders of not less than sixty per cent (60%) in principal amount of the bonds then outstanding hereunder, and upon being indemnified to its satisfaction, by notice in writing to the Secretary of the Board of Trustees and to the City Clerk to be sent as provided in Section 1 hereof, declare the principal of all bonds then outstanding hereunder to be due and payable immediately, and upon any such declaration the said principal shall become and be due and payable immediately, anything in this indenture or in the said bonds to the contrary notwithstanding. This provision, however, is subject to the condition that if at any time after the principal of said bonds shall have been declared due and payable and before any sale of the trust estate shall have been made, all arrears of interest upon all such bonds, with interest upon all past due installments of interest at the rate borne by the bonds, and all past due principal of the bonds, together with the reasonable charges and expenses of the trustees, their agents, attorneys and counsel, shall be paid by the city and after all other defaults which may have occurred shall have been remedied or cured to the satisfaction of the Trustee, then and in every such case, the holders of sixty per cent (60%) in principal amount of the bonds then outstanding may, by notice in writing given to the Trustee, and to the City Clerk and the Secretary of the Board of Trustees in the manner provided in Section 1 of this article, waive such default and its consequences, and rescind such declaration, but no such waiver or rescission shall extend to or affect any subsequent default or impair or exhaust any right or power consequent thereon.

SECTION 3. Upon the happening of any event of default as defined in Section 1 of this article, the trustees or either of them, personally or by their attorneys or agents, may to the extent permitted by law enter into and upon and take possession of all the trust estate and each and every part thereof and exclude the city or its agents, servants and employees wholly therefrom, and have, hold, use, operate, manage and control the same and each and every part thereof, and in the name of the city or otherwise, as they shall deem best, conduct the business thereof and exercise the franchises pertaining thereto and all the rights and powers of the city and use all of the then existing property, materials, current supplies, stores, and other assets for that purpose, and at the expense of the trust estate from time to time maintain, restore, insure and keep insured, the properties, plants, equipment and apparatus provided or required for use in connection with such business, and likewise from time to time, at the expense of the trust estate, make all such necessary or proper repairs, renewals and replacements and all such useful alterations, additions, betterments and improvements as to them may seem judicious, and collect and receive all tolls, earnings, income, rents, issues, profits and revenues of the same and of every part thereof, and after deducting therefrom the expenses of operation and all expenses incurred hereunder and all other proper outlays herein authorized, and all payments which may be made as just and reasonable compensation for their own services, and for the services of their attorneys, agents, and assistants, the Trustee shall apply the rest and residue of the moneys received by the trustees or either of them as follows:

(a) In case the principal of none of the bonds shall have become due, to the payment of the interest in default, in order of the maturity of the installments of such interest, with interest on the overdue installments thereof at the same rates, respectively, as were borne by the bonds on which such interest shall be in default, such payments to be made ratably to the parties entitled thereto without discrimination or preference.

(b) In case the principal of any of the bonds shall have become due by declaration or otherwise, first to the payment of the interest in default, in the order of the maturity of the installments thereof, with interest on overdue installments thereof at the same rates, respectively, as were borne by the bonds on which such interest shall be in default, and next to the payment of the principal of all bonds then due, such payments to be made ratably to the parties entitled thereto without discrimination or preference.

In case all of such payments, and payment of whatever may be payable for any other purpose required by any provision of this indenture, shall have been made in full and no suit to foreclose or enforce this indenture shall have been begun or sale made as hereinafter provided, and upon compliance with all other provisions of this indenture as to which the city shall be in default, the trustees after making such provision as to them may seem advisable for the payment of the next maturing installment of interest to fall due upon the bonds, shall restore the possession of the trust estate (other than any cash at the time required to be held by the Trustee hereunder) to the city.

SECTION 4. Upon the happening of any event of default as defined in Section 1 of this article, if the principal of all of the bonds outstanding hereunder shall have been properly declared due and payable as provided in Section 2 of this article, and whether or not the remedies authorized by Section 3 of this article shall have been pursued in whole or in part, the trustees, or either of them, may cause this indenture to be foreclosed and the trust estate to be sold, and may proceed to protect and enforce the rights of the trustees and the bondholders hereunder in such manner as counsel for the trustees shall advise, whether for the specific performance of any covenant, condition, agreement or undertaking herein contained, or in aid of the execution of any power herein granted, or for the enforcement of such other appropriate legal or equitable remedies as may in the opinion of such counsel be more effectual to protect and enforce the rights aforesaid. The Trustee shall take any such action or actions if requested so to do by the holders of at least sixty per cent (60%) in principal amount of the bonds then outstanding hereunder.

SECTION 5. Upon the happening of any event of default as defined in Section 1 of this article, and if the principal of all of the outstanding bonds shall have been declared due and payable as provided in Section 2 of this article, then and in every such case, and whether or not the remedies authorized by Section 3 of this article shall have been pursued in whole or in part, the trustees, or either of them, shall, but only upon the written request of the holders of not less than sixty per cent (60%) in principal amount of the bonds then outstanding hereunder, with or without entry, sell to the highest bidder the trust estate and all right, title, interest, claim and demand thereto and the right of redemption thereof, at any such place or places, and at such time or times and upon such notice and terms as the Trustee may fix and specify and as may be required by law. In case of such sale of any of the property subject to this indenture, notice of such sale shall first be given by publication in at least one daily

newspaper published in the city in which the sale is to be made, at least once a week for four successive weeks next preceding such sale, and by like publication in at least one daily newspaper published in the City of New York, New York, and by the giving of any other notices which may be required by law, and upon such sale the trustees may make and deliver to the purchaser or purchasers a good and sufficient deed or deeds for the same, which sale shall be a perpetual bar both at law and in equity against the city and all persons and corporations lawfully claiming or to claim by, through or under it. No purchaser at any such sale shall be bound to see to the application of the purchase money or to inquire as to the authorization, necessity, expediency or regularity of any such sale. Nevertheless, the city if so requested by the Trustee, shall ratify and confirm any sale or sales by executing and delivering to the Trustee or to such purchaser or purchasers all such instruments as may be necessary or in the judgment of the Trustee proper for the purposes which may be designated in such request.

Such notice of sale shall state that the city has granted to the purchaser of the mortgaged property a franchise for the operation thereof for a period of twenty years dating from such purchase.

SECTION 6. In the event of any sale, whether made under the power of sale hereby granted and conferred or under or by virtue of judicial proceedings or of a judgment or decree of foreclosure and sale, the whole of the trust estate shall be sold in one lot and as an entirety, unless such sale as an entirety is impossible or impracticable by reason of some statute or otherwise.

SECTION 7. The trustees may from time to time adjourn any sale to be made by them hereunder by announcement at the time and place of such adjourned sale, and without further notice or publication except as otherwise required by law may make such sale at the time and place to which the same may be so adjourned.

SECTION 8. In case an event of default as defined in Section 1 of this article occurs, and if all of the bonds outstanding hereunder shall have been declared due and payable as provided in Section 2 hereof, and in case a bill in equity shall be filed or any other judicial proceeding commenced to enforce any right of the trustees or of the bondholders under this indenture or otherwise, then as a matter of right, the Trustee shall be entitled to the appointment of a receiver of the trust estate and of the earnings, income or revenues, rents, issues and profits thereof

with such powers as the court making such appointment may confer.

SECTION 9. In case the trustees or either of them shall have proceeded to enforce any rights under this indenture by foreclosure, sale, or otherwise, and such proceedings shall have been discontinued or appealed, or shall have been determined adversely to the trustees, then and in every such case, the city and the trustees shall be restored to their former respective positions and rights hereunder in respect of the trust estate, and all rights, remedies and powers of the trustees and the bondholders shall continue as though no such proceedings had been taken.

SECTION 10. In case of any such sale of the trust estate, any bondholder or bondholders or committee of bondholders, or either trustee, may bid for and purchase such property and upon compliance with the terms of sale may hold, retain possession and dispose of such property as the absolute right of the purchaser or purchasers without further accountability and shall be entitled, for the purposes of making settlement or payment for the property purchased, to use and apply any bonds hereby secured and any interest thereon due and unpaid, whether or not such interest be evidenced by coupons, by presenting such bonds and coupons in order that there may be credited thereon the sum apportionable and applicable thereto out of the net proceeds of such sale, and thereupon such purchaser or purchasers shall be credited on account of such purchase price payable by him or them with the sum apportionable and applicable out of such net proceeds to the payment of or as credit on the bonds and coupons so presented.

SECTION 11. The proceeds of any judicial or other sale of the trust estate, together with any funds at the time held by the Trustee and not otherwise appropriated, shall be applied by the Trustee as follows:

First: To the payment of the costs, expenses, fees and other charges of such sale and a reasonable compensation to the trustees, their agents and attorneys, and to the discharge of all expenses and liabilities incurred and advances or disbursements made by the trustees hereunder.

Second: Any surplus then remaining to the payment of the whole amount then due or unpaid upon the bonds issued hereunder and then outstanding for principal and interest, with interest on overdue principal and overdue installments of interest

at the same rates, respectively, as were borne by the bonds whereof the principal or installments of interest may be overdue, and in case such proceeds shall be insufficient to pay in full the whole amount so due and unpaid, then to the payment of such principal and interest ratably according to the aggregate amount due on all bonds then outstanding without preference or priority of principal over interest or of interest over principal.

Third: Any surplus then remaining to the city or whomsoever shall be lawfully entitled thereto.

SECTION 12. In case of a sale under any of the foregoing provisions of this article, whether made under the power of sale herein granted, or under or by virtue of judicial proceedings, the principal of all bonds issued hereunder and then outstanding, if not previously due, shall immediately thereupon become due and payable, anything in said bonds or in this indenture to the contrary notwithstanding.

SECTION 13. The remedies herein conferred upon or reserved to the trustees or to the holders of bonds hereby secured are not intended to be exclusive of any other remedy, but each remedy herein provided shall be cumulative and shall be in addition to every other remedy given hereunder or now or hereafter existing, and every power and remedy hereby given to the trustees or to the holders of bonds issued hereunder may be exercised from time to time as often as may be deemed expedient. No delay or omission of the trustees or of any holder of bonds issued hereunder to exercise any power or right arising from any default hereunder shall impair any such right or power (unless the exercise of such right or power shall become barred by law) or shall be construed to be a waiver of any such default or to be acquiescence therein.

SECTION 14. Anything in this indenture contained notwithstanding, the holders of sixty per cent (60%) in principal amount of the bonds hereby secured and then outstanding, shall have the right by an instrument or instruments in writing delivered to the Trustee to direct and control the trustees as to the method of taking any and all proceedings for any sale of any or all of the trust estate, or for the foreclosure of this indenture, or for the appointment of a receiver, and may at any time cause any proceedings authorized by the terms hereof to be so taken or to be discontinued or delayed, provided however, that such holders shall not be entitled to cause the Trustee to take any proceedings which in its opinion would be unjustly prejudicial to non-assenting bondholders.

SECTION 15. No holder of any bond or coupon issued hereunder shall have any right as such holder to institute any suit, action or proceeding for the foreclosure of this indenture or for the execution of any trust hereunder or for the appointment of a receiver or for any other remedy hereunder, all rights of action hereunder being vested exclusively in the trustees, unless and until such holder shall have previously given to the Trustee written notice of a default hereunder and of the continuance thereof, and also unless the holders of the requisite principal amount of the bonds then outstanding shall have made written request upon the Trustee and shall have afforded it a reasonable opportunity to institute such action, suit or proceeding in its own name, and unless the trustees shall have been offered reasonable indemnity satisfactory to them against the costs, expenses and liabilities to be incurred therein or thereby, and the Trustee for thirty (30) days after receipt of such notification, request or offer of indemnity shall have failed to institute any such action, suit or proceeding, it being understood and intended that no one or more holders of the bonds shall have the right in any manner whatever by his or their action to affect, disturb or prejudice the lien of this indenture or to enforce any right hereunder except in the manner herein provided and for the equal benefit of all holders of such outstanding bonds.

SECTION 16. In any suit or action by the trustees, or either of them, arising under this indenture or on all or any of the bonds or coupons issued hereunder, the Trustee or trustees shall not be required to produce such bonds or coupons, but shall be entitled in all things to maintain any such suit or action without their production.

SECTION 17. If any covenant, agreement, waiver or part thereof in this article or elsewhere in this indenture contained be forbidden by any pertinent law, or under any pertinent law be effective to render this indenture invalid or unenforceable or to impair the lien hereof, then each such covenant, agreement, waiver or part thereof shall itself be and is hereby declared to be wholly ineffective and this indenture shall be construed as if the same were not included herein.

ARTICLE IX.

THE TRUSTEES

SECTION 1. The trustees accept the trusts herein created, but only upon the terms and conditions set forth in this Article IX.

SECTION 2. The recitals of fact herein and in said bonds contained shall be taken as the statements of the city and the trustees assume no responsibility for the correctness of the same. The trustees make no representations as to the value of the mortgaged and pledged property or any part thereof, or as to the title of the city thereto, or as to the security afforded thereby and hereby, or as to the validity of this indenture or of the bonds or coupons issued hereunder, and the trustees shall incur no responsibility in respect of such matters.

SECTION 3. The trustees shall be under no duty to file or record or cause to filed or recorded this indenture or any instrument supplemental thereto as a mortgage, conveyance or transfer of real or personal property or otherwise, or to re-file or re-record or renew the same, or to procure any further, other or additional instruments of further assurance, or to see to the delivery to them of any personal property intended to be mortgaged or pledged hereunder, or to do any act which may be suitable to be done for the better maintenance or continuance of the lien or security hereof, or for giving notice of the existence of such lien, or for extending or supplementing the same or to see that any property intended now or hereafter to be conveyed in trust hereunder is subjected to the lien hereof. The trustees shall not be liable for failure of the Board of Trustees to insure or renew insurance or for responsibilities of insurers, or for the amount of insurance carried by the Board of Trustees on any part of the trust estate, or for the failure of the city to pay any tax or taxes in respect of the mortgaged and pledged property, or any part thereof, or the income therefrom or otherwise, nor shall the trustees be under any duty in respect of any tax which may be assessed against them or the owners of the bonds in respect of the mortgaged and pledged property.

SECTION 4. The trustees may execute any of the trusts or powers hereof and perform any duty hereunder, either themselves or by or through their attorneys, agents, or employees, and they shall not be answerable or accountable for any act, default, neglect or misconduct of any such attorneys, agents or employees, if reasonable care has been exercised in the appointment and retention thereof, nor shall the trustees be otherwise answerable or accountable under any circumstances whatsoever, except for their own gross negligence or bad faith.

SECTION 5. The trustees shall be under no obligation or duty to perform any act hereunder or to institute or defend any suit in respect hereof, unless properly indemnified to their satisfaction. The trustees shall not be required to take notice, or

be deemed to have knowledge, of any default of the city or the Board of Trustees hereunder and may conclusively assume that there has been no such default unless and until they shall have been specifically notified in writing of such default by the holders of the percentages in principal amount of the bonds then outstanding hereinabove specified.

SECTION 6. Neither of the trustees shall be bound to recognize any person as the holder of a bond unless and until his bond is submitted to such trustee for inspection, if required, and his title thereto satisfactorily established, if disputed, or unless his bond is registered.

SECTION 7. The trustees shall be protected in acting upon any notice, resolution, request, consent, order, certificate, report, appraisal, opinion, bond, or other paper or document believed by them to be genuine and to have been signed or presented by the proper party or parties. The trustees may consult with counsel (who may be of counsel for the city or for a bondholder), and with other experts, and the opinion of such counsel or other experts shall be full and complete authorization and protection in respect of any action taken or suffered and in respect of any determination made by them hereunder in good faith and in accordance with the opinion of such counsel.

SECTION 8. The Trustee shall not be obligated or liable to allow to the city interest on any moneys received by it hereunder, except that the Trustee shall pay the Board of Trustees interest on money in the Reserve Account at the rate or rates it is currently paying its depositors on checking account balances of similar amounts, if interest on balances is then being so paid.

SECTION 9. The Board of Trustees shall pay to the trustees from time to time a reasonable compensation for all services rendered by them hereunder, and also all their reasonable expenses, charges and other disbursements and those of their attorneys, agents, and employees, incurred in and about the administration and execution of the trusts hereby created. All payments so made to the trustees by way of compensation, expenses, charges and other disbursements shall be regarded as a maintenance and operation expense and paid from the Revenue Fund accordingly. In default of such payments by the city or the Board of Trustees, and as security for such payment, the trustees shall have a lien therefor on the trust estate and the proceeds thereof prior to any rights of the holders of the bonds and coupons.

SECTION 10. Any trustee hereunder may become the owner of bonds and coupons with the same rights he or it would have if not a trustee. The Trustee may act as depositary for, and permit any of its officers or directors to act as a member of, or in any other capacity in respect of any committee formed to protect the rights of the holders of bonds or to effect or aid in any reorganization growing out of the enforcement of the said bonds or of this indenture, whether or not any such committee shall represent the holders of more than fifty per cent (50%) in principal amount of the bonds.

SECTION 11. The Trustee and any successor to the Trustee may resign and be discharged from the trust created by this indenture by giving to the City Clerk and to the Secretary of the Board of Trustees notice in writing and by giving the bondholders notice through publication thereof at least once a week for three successive calendar weeks, the first publication to be not less than thirty and not more than sixty days prior to the effective date of such resignation, in one newspaper published and having general circulation in the City of San Antonio and in a financial newspaper or journal published in the City of New York, New York. Each of such notices shall specify the date on which such resignation is to take effect. Such resignation shall take effect on the day specified in such notice, unless previously a successor trustee shall have been appointed, either by the bondholders or by the city as hereinafter provided, in which event such resignation shall take effect immediately upon the appointment of such successor Trustee. The Individual Trustee and any successor to the Individual Trustee may resign at any time and be discharged from the trusts created by this indenture by giving the City Clerk, the Secretary of the Board of Trustees and the Trustee notice in writing of such resignation, specifying a date when such resignation shall take effect, which shall be at least thirty days after the giving of such notice.

SECTION 12. Either of the trustees or any successor trustee may be removed at any time by the holders of a majority in principal amount of the bonds secured hereby and at the time outstanding, upon payment to the trustee so removed of all moneys then due to it or him hereunder, by an instrument or concurrent instruments in writing in duplicate by such holders. One copy shall be filed with the Secretary of the Board of Trustees and the other with the trustee so removed.

The Individual Trustee and any successor to the Individual Trustee may be removed at any time upon payment to him of all moneys then due to him hereunder by an instrument in writing

signed in duplicate by the Trustee, one copy of which shall be filed with Secretary of the Board of Trustees and the other delivered to the Individual Trustee so removed.

SECTION 13. In case at any time either of the trustees or any successor trustee shall resign, die, be dissolved, or be removed, or otherwise shall become disqualified to act or incapable of acting, or in case control of the Trustee or of any successor Trustee or of its officers shall be taken over by any public officer or officers, a successor trustee may be appointed by the holders of a majority in principal amount of the bonds secured hereby and at the time outstanding, by an instrument or concurrent instruments in writing signed and duly acknowledged by such bondholders or by their attorneys-in-fact duly authorized, and filed, one copy with the retiring trustee, and the other with the successor trustee, notification thereof being given to the Secretary of the Board of Trustees by such successor trustee; but until a successor trustee shall be so appointed by the bondholders as herein authorized the Board of Trustees by an instrument in writing duly authorized by resolution shall in such case appoint a successor to the Trustee and the Trustee shall by an instrument in writing in any such case appoint a successor to the Individual Trustee. In the case of any such appointment by the Board of Trustees of a successor to the Trustee, the board shall forthwith cause notice to be published once in each week for two consecutive calendar weeks in one newspaper published and having general circulation in the City of San Antonio and in one financial newspaper or journal published in the City of New York, New York. Every such successor Trustee so appointed by the bondholders, by a court of competent jurisdiction, or by the Board of Trustees shall be a bank or trust company in good standing, organized and doing business under the laws of the United States or of any state, and having its principal office in the Borough of Manhattan, the City of New York, New York, or in the City of Chicago, Illinois, and having a combined capital and surplus of not less than $5,000,000, which is authorized under the laws of the jurisdiction of incorporation to exercise corporate trust powers and is subject to supervision or examination by a Federal or State authority. Every successor trustee appointed by the bondholders or by the Trustee in succession to the Individual Trustee, shall always be an individual, a citizen of the United States of America, unless otherwise required by law.

If in a proper case no appointment of a successor Trustee or of a successor Individual Trustee shall be made pursuant to the foregoing provisions of this article within six months after a vacancy shall have occurred in the office of trustee, the holder

of any bond or the retiring Trustee or Individual Trustee may apply to any court of competent jurisdiction to appoint a successor trustee. Said court may thereupon after such notice, if any, as such court may deem proper and prescribe, appoint a successor Trustee or Individual Trustee as the case may be.

SECTION 14. Any successor trustee appointed hereunder shall execute, acknowledge and deliver to its or his predecessor trustee, and also to the city, an instrument accepting such appointment hereunder, and thereupon such successor trustee, without any further act, deed or conveyance shall become fully vested with all the estate, properties, rights, powers, trusts, duties and obligations of its or his predecessor in trust hereunder, with like effect as if originally named as trustee herein; but the trustee ceasing to act, shall nevertheless, on the written request of the city, or of the successor trustee, execute, acknowledge and deliver such instruments of conveyance and further assurance and do such other things as may reasonably be required for more fully and certainly vesting and confirming in such successor trustee all the right, title and interest of the trustee which it or he succeeds, in and to the mortgaged and pledged property and such rights, powers, trusts, duties and obligations, and the trustee ceasing to act shall also, upon like request, pay over, assign and deliver to the successor trustee any money or other property subject to the lien of this indenture, including any pledged securities which may then be in its possession. Should any deed, conveyance or instrument in writing from the city be required by the new trustee for more fully and certainly vesting in and confirming to such new trustee such estate, properties, rights, powers and duties, any and all such deeds, conveyances and instruments in writing shall, on request, be executed, acknowledged and delivered by the city.

In case any of the bonds to be issued hereunder shall have been authenticated but not delivered, any successor Trustee may adopt the certificate of authentication of the Trustee or of any successor to the Trustee; and in case any of the bonds shall not have been authenticated any successor to the Trustee may authenticate such bonds in its own name; and in all such cases such certificate shall have the full force which it is anywhere in the bonds or in this indenture provided that the certificate of the Trustee shall have.

SECTION 15. Any notice, request or other instrument required by this indenture to be served on the city or sent to the city shall, unless otherwise expressly provided, be considered to have been sufficiently given when sent by registered mail to the Secretary of the Board of Trustees addressed to the office of said

board in the City of San Antonio and to the City Clerk addressed to the City Hall in the City of San Antonio. Any notice, request or other writing by or in behalf of the city or any of the bondholders delivered solely to the Trustee shall be deemed to have been delivered to both of the trustees hereunder as effectually as if delivered to each of them.

SECTION 16. All the estate, right, title and interest in and to the trust estate by this indenture conveyed or assigned or transferred to the trustees is conveyed, assigned and transferred to them as joint tenants and not as tenants in common.

SECTION 17. The Trustee shall authenticate and turn over to the city official then performing the duties of City Treasurer for delivery, bonds in an aggregate principal amount not to exceed $35,000,000 when and as directed to do so upon written order of the city signed by its Mayor and its Clerk, which order shall specify the official to whom the bonds are to be so delivered.

SECTION 18. The Secretary of the Board of Trustees shall file with the Trustee annually a certificate showing the names of the then members of the Board of Commissioners of the City of San Antonio and the then members of the Board of Trustees and the names of the City Clerk and of the Secretary of the Board of Trustees. The Trustee shall be entitled for all purposes of this indenture to assume that the persons whose names appear on the latest list filed with it continue to hold their offices until it is notified to the contrary by the Secretary of the Board of Trustees.

SECTION 19. The trustees shall not be accountable or responsible in any manner whatsoever for any action of the Board of Trustees, or of the depositary of funds of such Board of Trustees, or for application of revenues from the trust estate by the Board of Trustees, and shall have no duty to make any inquiry into disposition of the Revenue Fund.

SECTION 20. All cash collected by, or payable to, the trustees or either of them shall be paid to, and deposited with, and all bonds and other obligations or securities shall be held by the Trustee, except as otherwise required by law. Any moneys at any time coming into the hands of the Individual Trustee shall be at once paid over to the Trustee.

Whenever any moneys, bonds, or other obligations or securities are, under any provision of this indenture, paid or delivered to, or deposited with, the Trustee, title to the same shall be deemed to be vested in both trustees hereunder, but nothing in this section contained shall be deemed to affect or impair any power or right conferred by any provision of this indenture upon the

Trustee to apply, disburse or otherwise act or deal with respect to any moneys, bonds or other obligations or securities received or held by it as aforesaid.

Any request in writing by the Trustee to the Individual Trustee shall be a sufficient warrant for the Individual Trustee to take such action as may be requested.

The Individual Trustee or any successor, so far as permitted by law, may delegate to the Trustee or any successor the right to exercise any and all power, discretionary or otherwise, conferred by any of the provisions of this Indenture.

Said Harold Eckhart has been joined as Individual Trustee in order to comply with any legal requirements respecting trustees under deeds of trust to property in the State of Texas, and shall as such trustee possess such powers, and such powers only, as may be necessary to comply with such requirements. In the event of the incapacity or lack of authority of the Trustee by reason of any present or future law of the State of Texas to exercise any of the powers, rights or remedies herein granted to the Trustee, or to hold title to the mortgaged property in trust as herein granted, or to take any other action which may be necessary or desirable in connection therewith, each and every remedy, power, right, claim, demand, cause of action, immunity, estate, right, title, interest, and lien expressed or intended by this indenture to be exercised by or vested in or conveyed to the Trustee with respect thereto, shall be exercisable by and vest in the Individual Trustee to the extent necessary to enable the Individual Trustee to exercise such powers, rights and remedies, and every conveyance and obligation necessary to the exercise thereof by the Individual Trustee shall run to and be enforceable by the Individual Trustee and the Individual Trustee shall take such action in respect thereof as may be directed in writing by the Trustee. Any such direction in writing by the Trustee shall be full protection to the Individual Trustee for any action taken by him pursuant thereto, and shall be competent evidence, and the only necessary evidence of the necessity for the taking of such action by the Individual Trustee. Except to the extent that, under any law of the State of Texas, the Trustee shall be incompetent or unqualified to perform any particular act or acts, the rights, powers, duties, and obligations conferred or imposed upon the trustees or either of them, shall be conferred or imposed upon and exercised or performed by the Trustee.

In the event that it may be necessary for the Trustee to enforce any of the provisions of this indenture in the State of Texas or in any other state, by court proceedings or in any other man-

ner, the Trustee may, in writing, authorize the Individual Trustee in his name as trustee to take such action or institute such proceedings as may be appropriate under the provisions of the indenture, without joining the Trustee as a party thereto, and in such event the Individual Trustee shall be vested with all the rights, powers and duties of the Trustee hereunder, and may enforce the same in his name as Individual Trustee in the manner provided in the indenture without joinder of the Trustee in any action or proceeding so taken.

Any and all rights, powers or duties by any provisions of this indenture conferred or imposed upon the trustees may be exercised and performed by the Trustee alone without reference to the Individual Trustee in so far as permitted by law, and the Individual Trustee hereby irrevocably constitutes and appoints the Trustee his true and lawful attorney-in-fact with full power and authority, in so far as permitted by law, either in the name and on behalf of the Individual Trustee alone, or of the trustees jointly, to exercise any and all rights or powers conferred upon the Individual Trustee alone, or upon the trustees jointly, by any of the provisions of this indenture, but subject to the duties hereby imposed upon the Individual Trustee, with full power of substitution and revocation, hereby ratifying and confirming all and singular the acts and things lawfully done by the Trustee or any substitute by virtue of this power of attorney. Any and all rights, powers or duties by any provisions of this indenture conferred or imposed upon the trustees or the Trustee which may not be exercised and performed by the Trustee alone, or by the Individual Trustee and the Trustee jointly, may and shall be exercised and performed by the Individual Trustee without reference to the Trustee, in so far as permitted by law.

ARTICLE X.

FRANCHISE

SECTION 1. In the event that any sale of the trust estate shall be made under any of the provisions of this indenture for the enforcement of the lien of this indenture, the City of San Antonio hereby grants to the purchaser or purchasers at such sale a franchise to operate the property so purchased for a term of twenty years dating from such purchase, subject to all laws regulating same then in force. The properties so purchased, in the event they are operated by the purchaser pursuant to such franchise, shall be operated, conducted and maintained in such manner as to be a benefit to the City of San Antonio and its inhabitants, and such purchaser shall be pledged to render efficient public service.

ARTICLE XI.

MODIFICATION OF THIS INDENTURE

SECTION 1. The holders of seventy-five per cent (75%) in principal amount of the bonds at any time outstanding (not including in any case any bonds which may then be held or owned by or for the account of the city, but including such refunding bonds as are specified in Section 1 of Article VIII hereof and are not owned by the city) shall have the right from time to time to consent to and approve the execution by the city and the trustees of such indenture or indentures supplemental hereto as shall be deemed necessary or desirable by the city for the purpose of modifying or amending any of the terms or provisions contained in this indenture or in any indenture or indentures supplemental thereto or contained in the ordinance authorizing the bonds secured by this indenture, provided however, that nothing herein contained shall permit or be construed as permitting the modification or amendment of the terms and conditions contained in this indenture or in said ordinance or in the bonds so as to:

(a) Make any change in the maturity of the bonds.

(b) Reduce the rate of interest borne by any of the bonds.

(c) Reduce the amount of the principal or premium, if any, payable on the bonds.

(d) Modify the terms of payment of principal or of interest or premium upon the bonds or any of them or impose any conditions with respect to such payment.

(e) Affect the rights of the holders of less than all of the bonds then outstanding.

If at any time the city shall request the trustees to enter into such supplemental indenture, the trustees, unless they shall deem that such proposed supplemental indenture shall contain provisions which affect their rights or obligations and to which they are unwilling to assent, shall, at the expense of the Board of Trustees, cause notice of the proposed execution of such supplemental indenture to be published in a financial newspaper or journal published in the City of New York, New York, and in a newspaper of general circulation published in the City of San Antonio, once during each calendar week for at least four successive calendar weeks, and on or before the date of the first publication of such notice, the Trustee shall also mail a copy thereof to each registered owner of bonds at his address appearing on the Trustee's registry books, but failure to mail any such notice or any defect therein shall not affect the validity of the proceedings for obtaining consents to the execution and delivery of

such supplemental indenture. Such notice shall briefly set forth the nature of such proposed supplemental indenture and shall state that a copy thereof is on file at the principal office of the Trustee for inspection by all holders of bonds.

Whenever at any time within one year from the date of the first publication of said notice, the city shall deliver to the Trustee an instrument or instruments executed by the holders of at least seventy-five percent (75%) in aggregate principal amount of the bonds then outstanding as in this section defined, which instrument or instruments shall refer to the proposed supplemental indenture described in said notice and shall specifically consent to and approve the execution thereof in substantially the form of the copy thereof on file with the Trustee, thereupon, but not otherwise, the trustees shall execute the said supplemental indenture in substantially the said form without liability or responsibility to any holder of any bond, whether or not such holder shall have consented thereto.

If the holders of at least seventy-five per cent (75%) in aggregate principal amount of the bonds outstanding as in this section defined at the time of execution of any such supplemental indenture, or the predecessors in title of such holders, shall have consented to and approved the execution thereof as herein provided, no holder of any bond, whether or not such holder shall have consented to or shall have revoked any consent as in this section provided, shall have any right or interest to object to the execution of such supplemental indenture or to object to any of the terms or provisions therein contained, or to the operation thereof, or to enjoin or restrain the trustees or the city from executing the same or from taking any action pursuant to the provisions thereof.

Upon the execution of any supplemental indenture pursuant to the provisions of this section, this indenture and the ordinance authorizing the bonds shall be and be deemed to be modified and amended in accordance with such supplemental indenture, and the respective rights, duties and obligations under this indenture of the city, the trustees and all the holders of outstanding bonds shall thereafter be determined, exercised and enforced hereunder, subject in all respects to such modifications and amendments.

Any consent given by the holder of a bond pursuant to the provisions of this section shall be irrevocable for a period of six months from the date of the first publication of the notice provided for in this section, and shall be conclusive and binding upon all future holders of the same bond during such period. Such consent may be revoked at any time after six months from the

date of the first publication of such notice by the holder who gave such consent, or by a successor in title, by filing notice with the trustees in form satisfactory to them of such revocation of consent, but such revocation shall not be effective if the holders of seventy-five per cent (75%) aggregate principal amount of the bonds outstanding as in this section defined have, prior to the attempted revocation, consented to and approved the supplemental indenture referred to in such revocation. For the purposes of this section, ownership of bonds shall be established in the manner provided in Section 1 of Article XII of this indenture.

Any supplemental indenture executed in accordance with the provisions of this article shall thereafter form a part of this indenture and all the terms and conditions in any such supplemental indenture as to any provision authorized to be contained therein shall be and be deemed to be part of the terms and conditions of this indenture for any and all purposes.

ARTICLE XII.

MISCELLANEOUS

SECTION 1. Any notice, request or other instrument required by this indenture to be signed or executed by bondholders may be executed by the execution of any number of concurren' instruments of similar tenor, and may be signed or executed by such bondholders in person or by agent appointed in writing. As a condition for acting thereunder the trustees may demand proof of the execution of any such instrument and of the fact that any person claiming to be the owner of any of said bonds is such owner and may further require the actual deposit of such bond or bonds with the Trustee. The fact and date of the execution of such instrument may be proven by the certificate of any officer in any jurisdiction who by the laws thereof is authorized to take acknowledgments of deeds within such jurisdiction, that the person signing such instrument acknowledged before him the execution thereof, or may be proven by any affidavit of a witness to such execution sworn to before such officer.

The amount of bonds transferable by delivery held by any person executing such instrument as a bondholder and the fact,

amount and numbers of the bonds held by such person and the date of his holding the same may be proven by a certificate executed by any responsible trust company, bank, bankers, or other depositary in a form approved by the Trustee, showing that at the date therein mentioned such person had on deposit with such depositary the bonds described in such certificate; provided, however, that at all times the Trustee may require the actual deposit of such bond or bonds with the Trustee.

SECTION 2. The covenants, agreements, conditions, promises and undertakings in this indenture shall extend to and be binding upon the successors and assigns of the city and all of the covenants hereof shall bind such successors and assigns, and each of them, jointly and severally. All the covenants, conditions and provisions hereof shall be held to be for the sole and exclusive benefit of the parties hereto and their successors and assigns and of the holders from time to time of said bonds and coupons.

No transfer of the trust estate, or any part thereof, by the city and no extension of the time of payment of any of said bonds or coupons after such transfer shall operate to release or discharge the city, it being agreed that the liability of the city shall continue as principal until all of said bonds and coupons are paid in full, notwithstanding any transfer of said property or subsequent extension of time to the then owner, or other act which might serve as a legal or equitable discharge of a surety.

SECTION 3. This indenture shall operate effectually as a lien on all property conveyed, mortgaged or pledged hereby, whether real, personal or mixed. Failure to file said instrument in the office of the County Clerk of any county in which part of the trust estate is situated shall in nowise invalidate such lien, but this instrument may be filed and recorded in the records of each county in which part of the trust estate is situated in the manner in which a deed of trust on real estate is filed and recorded, and it may also be recorded in the office of the County Clerk of each such county and may remain in his office on file as a chattel mortgage covering the personal property encumbered hereby. The city covenants and agrees that this indenture will

be so filed as a deed of trust and as a chattel mortgage in every county in which any part of the trust estate is situated.

SECTION 4. If the lien of this indenture shall be or shall ever become ineffectual, invalid or unenforceable against any property hereby mortgaged or pledged because of want of power or title in the city, the inclusion of any such property described herein shall not in any way affect or invalidate the mortgage or lien hereof against such property as the city had the right to mortgage or pledge.

SECTION 5. No holder of bonds issued under this indenture nor of any coupons representing interest on such bonds shall ever have the right to demand payment of such bonds or coupons out of funds raised or to be raised by taxation.

SECTION 6. Any request or consent of the holder of any bonds secured hereby given for any of the purposes of this indenture shall bind all future holders of the same bond or any bonds issued in exchange therefor or in substitution thereof in respect of anything done or suffered by the city or the trustees in pursuance of such request or consent.

SECTION 7. Although this indenture for convenience and for the purpose of reference is dated as of August 1, 1942, the actual dates of execution by the city and by the trustees are as indicated by their respective acknowledgments hereto annexed.

SECTION 8. If deemed necessary or expedient by the city and the purchasers of the bonds secured hereby, interim certificates in such form as may be mutually satisfactory to the city and to such purchasers may be issued in anticipation of the bonds, and until such interim certificates are surrendered in exchange for the definitive bonds they shall be secured in every respect as the definitive bonds are secured by the provisions of this indenture and the holders of such interim certificates shall be entitled to all rights and privileges herein provided for the holders of the definitive bonds.

SECTION 9. To the extent permitted by laws presently existing or hereafter enacted, the Board of Trustees shall be considered authorized to make such provision for a Pension Fund

for its employees as it may in its discretion determine, and if so determined, may continue in existence the Pension Fund which has heretofore been established by San Antonio Public Service Company for its employees.

ARTICLE XIII.

DEFEASANCE

SECTION 1. When all of the bonds and coupons hereby secured shall have been paid or redeemed, or, all of the bonds having become due by reason of maturity or proper call for redemption, the city shall have provided for such payment or redemption by depositing in cash with the Trustee the amount necessary for such payment or redemption and shall also have paid, or caused to be paid, all sums accrued and payable hereunder by the city, then and in that case the city shall be entitled to have all of the trust estate revert to it and to have the estate, right, title and interest of the trustees in respect thereof cease, determine and become void. Then, if the city shall so request in writing, the trustees upon the cancellation of all bonds and coupons for the payment of which money shall not have been deposited in accordance with the provisions of this indenture, shall at the cost and expense of the city execute and deliver to the city proper instruments acknowledging satisfaction of this indenture. Money deposited for the payment of bonds and coupons under the provisions hereof shall be held by the Trustee as a special trust fund for the account of the holder or holders of such bonds and coupons and so far as necessary for such purposes shall be applied to the payment of such bonds and coupons upon presentation and surrender thereof.

IN WITNESS WHEREOF the City of San Antonio, Texas, acting through and being duly authorized thereunto by its governing body, the Commissioners of the City of San Antonio, has caused this indenture in four originals to be signed in its name by C. K. Quin, its Mayor, and its corporate seal to be hereunto affixed, and to be attested by J. M. Woods, its City Clerk, and said Harris Trust and Savings Bank, to evidence its acceptance of the trusts hereby created, has caused its corporate name and

seal to be hereunto affixed and this indenture to be signed by Donald C. Miller, its Vice President, and to be countersigned and said seal to be attested by G. A. Glow, its Assistant Secretary, andsaid Harold Eckhart, to evidence his acceptance of the trust hereby created and in him reposed, has hereunto subscribed his name and affixed his seal, all as of the day and year first above written.

CITY OF SAN ANTONIO, TEXAS

By C. K. QUIN
Mayor

Attest:

J. W. WOODS
City Clerk

(SEAL)

Witnesses as to City of San Antonio:

E. J. ALLISON

MRS. KATHRYN ROBBINS

HARRIS TRUST AND SAVINGS BANK

By DONALD C. MILLER
Its Vice President

Attest:

G. A. GLOW
Its Assistant Secretary

HAROLD ECKHART (SEAL)

Witnesses as to Harris Trust and Savings Bank and Harold Eckhart:

H. O. PALM

G. H. ASKEW

STATE OF TEXAS }
COUNTY OF BEXAR } ss

Before me, the undersigned authority in and for Bexar County, Texas, on this day personally appeared C. K. Quin, Mayor, and J. M. Woods, City Clerk, respectively, of the City of San Antonio, Texas, known to me to be the persons whose names are subscribed to the foregoing instrument and known to me to be, respectively, the Mayor and City Clerk of the City of San Antonio, a municipal corporation, and each acknowledged to me that he executed the same for the purposes and consideration therein expressed and in the capacity therein stated as the act and deed of said City of San Antonio, Texas.

GIVEN under my hand and seal of office this 9th day of October, 1942.

E. J. ALLISON
Notary Public in and for Bexar County, Texas.

(SEAL)

STATE OF ILLINOIS }
COUNTY OF COOK } ss

Before me, the undersigned authority in and for Cook County, Illinois, on this day personally appeared Donald C. Miller, Vice President, and G. A. Glow, Assistant Secretary, respectively, of Harris Trust and Savings Bank, known to me to be the persons whose names are subscribed to the foregoing instrument and known to me to be, respectively, the Vice President and Assistant Secretary of Harris Trust and Savings Bank, a corporation, and each acknowledged to me that he executed the same for the purposes and consideration therein expressed and in the capacity therein stated as the act and deed of said Harris Trust and Savings Bank.

GIVEN under my hand and seal of office this 13th day of October, 1942.

GRANT M. DRYER
Notary Public in and for Cook County, Illinois.

(SEAL)

My Commission Expires March 19, 1943.

STATE OF ILLINOIS }
COUNTY OF COOK } ss

Before me, the undersigned authority in and for Cook County, Illinois, on this day personally appeared Harold Eckhart, known to me to be the identical person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same as his free and voluntary act for the purposes and consideration therein expressed and set forth.

GIVEN under my hand and seal of office this 13th day of October, 1942.

GRANT M. DRYER
Notary Public in and for Cook County, Illinois.

(SEAL)

My Commission Expires March 19, 1943.

SECTION 12. That in the event of judicial sale or other sale of the properties encumbered by the indenture which is set out in the preceding section hereof in order to enforce the payment of the bonds secured thereby, the City of San Antonio herein and hereby grants to the purchaser or purchasers at any such sale which may be so held under the provisions of such indenture the exclusive right, privilege and franchise to operate the properties and facilities so purchased for a term of twenty years dating from such purchase, subject to all laws regulating same then in force, as is provided in Article 1111, Texas Revised Civil Statutes of 1925, as amended, it being the intent hereof to grant a franchise which shall become operative and effective only in the event that said mortgaged properties are sold under the provisions of said indenture.

In addition to the consideration expressed in said indenture and which is the basis for this franchise, the grantee of such franchise shall pay annually to the City of San Antonio the sum of Five Dollars ($5.00) for each year such franchise shall be operative.

If the grantee during the life of this franchise shall fail to furnish efficient public service or to maintain the properties in good order, such failure or refusal shall subject the franchise and all rights thereunder to forfeiture at the suit of the city upon judicial ascertainment of such facts, provided the city shall give the grantee sixty days notice of the intention to institute such proceedings.

When this franchise becomes effective by reason of sale as hereinabove provided, if the grantee desires to accept and operate under this franchise it shall file a written acceptance thereof with the City Clerk of the City of San Antonio.

SECTION 13. That the procedural details to be followed in the acquisition of the system and the issuance of the bonds, to the extent that further and more specific provision for such procedural details may prove to be needed, shall be prescribed and provided for by ordinance or ordinances or resolution or resolutions to be hereafter adopted by the Commissioners of the City of San Antonio, and in that connection, it is hereby expressly provided that such ordinances or resolutions may, if considered necessary or desirable by the Commissioners, provide that the proceeds of the bonds herein authorized may be utilized in such manner not inconsistent with the provisions of this ordinance as is necessary to the accomplishment of the purposes of this ordinance, provided always that the properties to which title is acquired by the city by virtue of the proceeds of the sale of the

bonds herein authorized shall be the property hereinabove described for the acquisition of which the bonds are herein authorized.

SECTION 14. That all ordinances, resolutions and orders or parts thereof in conflict herewith are, to the extent of such conflict, hereby repealed.

SECTION 15. That if any section, provision or part hereof shall be held to be invalid or ineffective for any reason, the remainder hereof shall nevertheless remain in full force and effect.

SECTION 16. That by reason of the fact that the properties herein authorized to be acquired by the City of San Antonio can be acquired only within a limited period and that the consummation of such acquisition can be effected within such period only if this ordinance becomes immediately effective, it is necessary to the immediate preservation of the public peace, health and safety of the City of San Antonio that this ordinance shall become effective immediately upon its passage and approval, and four of the five Commissioners having voted in favor thereof, it is so ordained.

ADOPTED AND APPROVED July 25, 1942.

C. K. QUIN
Mayor

Attest:

JAMES SIMPSON
City Clerk

(Other proceedings not pertinent to the above appear in the minutes.)

Pursuant to motion duly made and carried, the Commissioners adjourned.

C. K. QUIN
Mayor

ATTEST:

JAMES SIMPSON
City Clerk

XV

Amendment of October 23, 1942

San Antonio, Texas
October 23rd, 1942

The Commissioners of the City of San Antonio met in Special session at the regular meeting place of the Commissioners in the City Hall in the City of San Antonio, Texas, at 8:00 o'clock, P.M., on October 23, 1942. There were present Mayor C. K. Quin and the following Commissioners:

HENRY F. HEIN
PAUL E. STEFFLER
P. L. ANDERSON
Absent: C. RAY DAVIS

There was also present James M. Woods, City Clerk.

After the meeting had been duly called to order, the roll called, and the minutes of the preceding meeting approved, the following ordinance was introduced in writing by Mayor Quin, and was read in full. It was then moved by Com. Steffler and seconded by Com. Hein that the ordinance as read be adopted and, after due discussion, the motion was voted upon and carried by the following votes:

Aye: QUIN
STEFFLER
HEIN
ANDERSON

Nay: None

The ordinance was thereupon declared adopted, was approved and signed in open meeting by the Mayor and was ordered recorded by the City Clerk. The ordinance is as follows:

> "An ORDINANCE confirming, ratifying, approving, and declaring effective an ordinance entitled 'An ordinance authorizing the acquisition by the City of San Antonio of an electric light and power plant and system and a gas distribution system serving the City of San Antonio and its inhabitants and territory adjacent to said city, authorizing the issuance of the revenue bonds of said City for the purpose of paying the cost thereof, fixing the details and providing for the payment and security of such bonds, approving and

ratifying the notice of intention to issue such bonds heretofore given, authorizing and providing for the execution of a mortgage on said plant and systems as security for the payment of such bonds, granting a franchise to any purchaser of said properties at any sale which may be held for the enforcement of such mortgage, providing for the management of said plant and systems, entering into certain covenants and agreements in connection with such acquisition and such bonds, and declaring an emergency,' confirming the sale and fixing the interest rates of bonds authorized by said ordinance to the amount of $33,950,000, approving changes in the form provided for such bonds, and declaring an emergency."

WHEREAS, on the 25th day of July, 1942, the Commissioners of the City of San Antonio adopted an ordinance entitled "An Ordinance authorizing the acquisition by the City of San Antonio of an electric light and power plant and system and a gas distribution system serving the City of San Antonio and its inhabitants and territory adjacent to said city, authorizing the issuance of the revenue bonds of said city for the purpose of paying the cost thereof, fixing the details and providing for the payment and security of such bonds, approving and ratifying the notice of intention to issue such bonds heretofore given, authorizing and providing for the execution of a mortgage on said plant and systems as security for the payment of such bonds, granting a franchise to any purchaser of said properties at any sale which may be held for the enforcement of such mortgage, providing for the management of said plant and system, entering into certain covenants and agreements in connection with such acquisition and such bonds, and declaring an emergency"; and

WHEREAS, it has been ascertained that certain changes in the language of said ordinance are desirable in order to correct certain typographical errors which apepar in the ordinance as it was adopted, and in order to clarify and make more certain the actual intent of said ordinance; and

WHEREAS, it is desired to amend one section of said ordinance in order to provide for the release of certain properties to be encumbered under the terms of the indenture which is set forth in said ordinance; and

WHEREAS, in printing the bonds authorized by said ordinance two changes have been made in the bond form in order to clarify and make more certain the intention of said ordinance, and it is desired to ratify and approve the changes so made; and

WHEREAS, on the 24th day of August, 1942, bonds authorized by said ordinance to the amount of $33,950,000 were by the Commissioners of the City of San Antonio sold to A. C. Allyn and Company of Chicago, Illinois, and associates, at the price of par plus accrued interest to the date of delivery plus a premium of $3,157.00, and it is desired to confirm said sale and provide for the delivery of the bonds to said purchasers;

NOW, THEREFORE, Be It Ordained by the Commissioners of the City of San Antonio:

SECTION 1. That Section 3 of Article VII of the form of indenture set out in Section 11 of the ordinance described in the preamble hereto shall read as follows:

Section 3. So long as the city is not in default hereunder to the knowledge of the Trustee, the city may sell or otherwise dispose of any property mortgaged hereunder not exceeding in the period ending December 31, 1942, the sum of $200,000, in the two-year period ending December 31, 1944, the sum of $1,150,000 (of which any amount over $400,000 must represent the sale of electric distribution systems and transmission lines lying outside of Bexar County, Texas), and in any calendar year thereafter the sum of $200,000, all in aggregate sale price or fair value (whichever is greater), without deduction for any liens on such property, and obtain the release of, and the trustees shall release from the lien hereof, such property, but only upon the receipt by the Trustee of a certificate signed by a majority of the Board of Trustees and by a licensed engineer stating in substance:

(1) The then fair value, in the opinion of the signers, of the property to be released, which property shall be described in such certificate in reasonable detail;

(2) That the aggregate sale price or fair value (whichever is greater) of such property, and of all property theretofore released by the trustees pursuant to the provisions hereof during the period in which the request for the release is made, does not exceed the amount hereinabove authorized to be released during such period, and, if such release is requested after the expiration of the third year from the date of this indenture, that all property released hereunder by the trustees from the date of this indenture to the date of the request of said additional release does not exceed ten per cent (10%) of the bonds of the issue secured hereby theretofore paid or otherwise retired; and

(3) That the City is not, to the knowledge of the signers, in default in the performance of any of the terms or covenants of

this indenture or of the bonds secured hereby, and that such release will not be, in the opinion of the signers, prejudicial to the interest of the bondholders, and that the property to be released is not, in the opinion of the signers, necessary to the proper and economical operation of the electric and gas systems.

The money received from the sale of such released property shall be held by the Board of Trustees as a special fund for the purchase of additional property deemed by them necessary or advantageous to the system, and unless such money is used in such purchase of property within eighteen months of the time received, the same shall be used in the redemption prior to maturity of as many of the bonds as may be redeemed with such money in the manner provided in Section 7 Article V, above, for the redemption of bonds with surplus funds. All additional property purchased or acquired under the provisions of this section shall immediately upon such purchase or acquisition become subject to the lien of this indenture.

SECTION 2. That bonds authorized by said ordinance to the amount of Thirty Three Million Nine Hundred Fifty Thousand Dollars ($33,950,000.00) of the following numbers shall bear interest at the following rates:

Bond Numbers	Maturity Date	Interest Rate
1 to 750	1944	3%
776 to 1550	1945	3%
1576 to 2375	1946	3%
2401 to 3225	1947	3%
3251 to 4100	1948	3%
4126 to 5000	1949	3%
5026 to 5925	1950	3%
5951 to 6875	1951	3%
6906 to 7860	1952	3%
7891 to 8870	1953	3%
8901 to 9910	1954	3%
9941 to 10980	1955	2¾%
11011 to 12080	1956	2¾%
12116 to 13215	1957	2¾%
13256 to 14390	1958	2¾%
14426 to 15595	1959	2½%
15631 to 16835	1960	2½%
16871 to 18110	1961	2¾%
18151 to 19425	1962	2¾%
19466 to 20780	1963	2¾%
20821 to 22175	1964	2¾%
22216 to 23610	1965	3%

Bond Numbers	Maturity Date	Interest Rate
23656 to 25090	1966	3%
25136 to 26615	1967	3%
26661 to 28185	1968	3%
28231 to 29800	1969	3%
29851 to 31465	1970	3%
31516 to 33180	1971	3%
33231 to 34945	1972	2½%

SECTION 3. That the sale of the bonds described in Section 2 hereof to A. C. Allyn and Company, of Chicago, Illinois, and associates, at the price of par and accrued interest to the date of delivery, plus a premium of Three Thousand One Hundred Fifty-seven Dollars ($3,157.00) is hereby ratified and confirmed and said bonds shall be delivered to said purchasers in accordance with the terms of sale and the provisions of the above described ordinance.

SECTION 4. That the printed copy of the ordinance described in the preamble hereto which is attached hereto and marked "Exhibit A," and which copy contains the corrections described in the preamble hereto and contains the change authorized in Section 1 hereof, is hereby approved and ratified and declared to be fully effective, all with like force and effect as though said copy were herein set out in full, and the action of the Mayor and Clerk of the City of San Antonio in executing the indenture in the form set out in said "Exhibit A" is hereby confirmed, ratified and approved.

SECTION 5. That two variations which appear in the above described bonds as they have been printed and executed and which variations were made in order to make more certain the original intention of the above described ordinance, which changes consist of the insertion of the parenthetical expression "except as otherwise provided in the above mentioned indenture" after the word "solely" in the third paragraph of the bond, and substitution of the words "Bonds numbered 3251 to 35000" for the words "The Bonds" in the first line of paragraph 5 of the bond, are hereby ratified and approved.

SECTION 6. That if any section, provision, or part hereof shall be held to be invalid or ineffective for any reason, the remainder hereof shall, nevertheless, remain in full force and effect.

SECTION 7. That by reason of the fact that the sale of the bonds authorized by the above mentioned ordinance is effective only until October 24, 1942, and that the purchasers of said

bonds can be compelled to take delivery of said bonds only if the bonds are delivered on or prior to that date, and that the Commissioners are of the opinion that it would be impossible to find other purchasers for said bonds at the very favorable interest rates which are specified in the existing sales contract, it is necessary to the immediate preservation of the public peace, health and safety of the City of San Antonio that this ordinance shall become effective immediately upon its passage and approval and it is so ordained.

ADOPTED AND APPROVED October 23rd, 1942.

C. K. QUIN
Mayor

ATTEST:
J. M. WOODS,
City Clerk

AMENDMENT OF OCTOBER 23, 1942

The form of indenture set out in the Ordinance of July 25, 1942, has in this printed copy been conformed to the amendments provided for in the foregoing ordinance of October 23, 1942, and the indenture, as printed herein, has been conformed to show its execution.

CERTIFICATION

THE STATE OF TEXAS
COUNTY OF BEXAR
CITY OF SAN ANTONIO.

I, J. M. Woods, City Clerk of the City of San Antonio in the State and County aforesaid, do hereby certify that the "Ordinance and Indenture, Authorizing Issuance of City of San Antonio Electric and Gas Revenue Bonds, in the sum of $35,000,000, San Antonio, Texas, July 25, 1942" and "Amendment of October 23, 1942, is a true and correct copy of papers, books and records of the City of San Antonio.

And that I am the lawful possessor and custodian of such papers, books and records.

GIVEN under my hand and seal of the City of San Antonio, this..... day of ....., A. D. 19.....

J. M. WOODS,
City Clerk.

(SEAL)

Attachment 23 Core Data Form

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions regarding completion of this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (*If other is checked please describe in space provided.*)

☒ New Permit, Registration or Authorization (*Core Data Form should be submitted with the program application.*)

☐ Renewal (*Core Data Form should be submitted with the renewal form*) ☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 603174244		RN 100217975

SECTION II: Customer Information

4. General Customer Information | **5. Effective Date for Customer Information Updates** (mm/dd/yyyy)

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name (*If an individual, print last name first: eg: Doe, John*) *If new Customer, enter previous Customer below:*

City Public Service of San Antonio

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*
	17460020716	746002071	

11. Type of Customer: ☐ Corporation ☐ Individual Partnership: ☐ General ☐ Limited

Government: ☒ City ☐ County ☐ Federal ☐ State ☐ Other ☐ Sole Proprietorship ☒ Other: Municipally Owned

12. Number of Employees
☐ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☒ 501 and higher

13. Independently Owned and Operated?
☒ Yes ☐ No

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☐ Owner ☐ Operator ☒ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other:

15. Mailing Address:

PO Box 1771

City	State	ZIP	ZIP + 4
San Antonio	TX	78296	

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*
	elspeed@cpsenergy.com

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(210) 353-5010		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information (*If 'New Regulated Entity" is selected below this form should be accompanied by a permit application*)

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated in order to meet TCEQ Agency Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name (*Enter name of the site where the regulated action is taking place.*)

Calaveras Power Station

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	Bexar							

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:					
26. Nearest City			**State**	**Nearest ZIP Code**	
Elmendorf			TX	78112	
27. Latitude (N) In Decimal:	29.308727		**28. Longitude (W) In Decimal:**	-98.321996	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	18	31.53	98	19	19.12

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
4911	4931	22111	2211

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

Electric Generation

34. Mailing Address:	**PO Box 1771**							
	City	**San Antonio**	**State**	**TX**	**ZIP**	**78296**	**ZIP + 4**	

35. E-Mail Address:	

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(210) 353-5010		**( ) -**

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☒ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☒ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☒ Petroleum Storage Tank	☐ PWS
☐ Sludge	☒ Storm Water	☐ Title V Air	☒ Tires	☒ Used Oil
☐ Voluntary Cleanup	☒ Waste Water	☐ Wastewater Agriculture	☒ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Emily Speed	**41. Title:**	Environmental Analyst

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(210) 353-5010		( ) -	elspeed@cpsenergy.com

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	CPS Energy	**Job Title:**	Senior Manager, Environmental Operations
Name *(In Print):*	Gregg Tieken	**Phone:**	(210) 353- **2158**
Signature:	Gregg R Tieken Digitally signed by Gregg R Tieken Date: 2022.01.20 13:14:29 -06'00'	**Date:**	January 20, 2022

Attachment 24 TCEQ ePay Receipt

Your transaction is complete. Thank you for using TCEQ ePay.

Note: It may take up to 3 working days for this electronic payment to be processed and be reflected in the TCEQ ePay system. Print this receipt and the vouchers for your records. An email receipt has also been sent.

Transaction Information

Trace Number:	582EA000470805
Date:	01/19/2022 09:13 PM
Payment Method:	CC - Authorization 0000019615
ePay Actor:	WALLY ZVERINA
Actor Email:	wally.zverina@erm.com
IP:	165.225.217.47
TCEQ Amount:	$150.00
Texas.gov Price:	$153.64*

* This service is provided by Texas.gov, the official website of Texas. The price of this service includes funds that support the ongoing operations and enhancements of Texas.gov, which is provided by a third party in partnership with the State.

Payment Contact Information

Name:	WALTER ZVERINA
Company:	ENVIRONMENTAL RESOURCES MANAGEMENT
Address:	111 CONGRESS AVENUE SUITE 500, AUSTIN, TX 78701
Phone:	512-994-7094

Cart Items

Click on the voucher number to see the voucher details.

Voucher	Fee Description	AR Number	Amount
554747	COAL COMBUSTION RESIDUALS-NEW OR AMENDMENT		$100.00
554748	30 TAC 305.53B CCR NOTIFICATION FEE		$50.00
		TCEQ Amount:	$150.00

ePay Again | Exit ePay

Note: It may take up to 3 working days for this electronic payment to be processed and be reflected in the TCEQ ePay system. Print this receipt for your records.