November 21, 2022

Ruben Meza, P.E.
Project Manager
Industrial and Hazardous Waste Permits Section
Coal Combustion Residuals Program, MC-130
Waste Permits Division
Texas Commission on Environmental Quality
P. O. Box 13087
Austin, Texas 78711-3087

RE: Monticello Steam Electric Station – CCR114 – New Registration – Technical NOD #2 - Tracking No. 27262899; RN102285921/CN605736982

Dear Mr. Meza:
On behalf of Golden Eagle Development, LLC, Gemini Engineering (Gemini) is submitting responses to the deficiencies identified in the CCR Registration Application, dated September 22, 2022, to the Texas Commission on Environmental Quality for the former Monticello Steam Electric Station (MOSES) facility.

Deficiency #1: *Revise to explain why W-31 and W 33 are designated as background Groundwater Monitoring wells (GWMWs). W-31 and W-33 appear to be side-gradient GWMWs.*

Response: W-31 & W-33 are upgradient of the former CCR units – NE Ash Water Retention Pond, West Ash Settling Pond, and SW Ash Settling Pond. The fourth pond, Stormwater Collection Pond, is not a CCR unit. See the attached potentiometric surface map in the revised Attachment #10 and in the revised groundwater report.

Deficiency #2: *Revise the Groundwater (GW) Potentiometric Surface Maps to ensure that each map depicts the GW flow direction.*

Response: Additional figures are in the revised 2021 Annual Groundwater Monitoring Report illustrate the groundwater gradient.

Deficiency #3: *Revise Table VI.A, in Att. 10 to ensure it is consistent with Att. 7, Section 2.3, with respect to whether the GWMWs are point of compliance or background wells, and whether they are upgradient or downgradient.*

Response: Table VI.A (Attachment 10) has been revised to match the other application attachments.

Deficiency #4: *Revise to address the cited rules relating to GW Sampling & Analysis Requirements.*

Response: A new Sample and Analysis Plan was developed to address these issues and included in the revised Attachment 11.

Deficiency #5: *a. Add and complete attached "Table VI.C-1 – Groundwater Detection Monitoring Parameters," if applicable. This table was inadvertently omitted in the application form.*

Response: Table VI.C-1 – Groundwater Detection Monitoring Parameters is included as an revise Attachment #12 and Table VI.D-2 was updated.

Deficiency #6: *Provide a background evaluation report which includes a narrative to explain how background groundwater concentrations were evaluated in W-29 through W-35, the statistical methods used, whether any data was removed and justification for removal, copies of charts or graphs that were used, and any other information used to perform the calculations.*

Response: A new background evaluation report was developed and is included as Attachment 15.

Deficiency #7: *Revise to explain how the constituents in each GWMW were evaluated for an SSI for the GW sampled during 2021. Include the specific statistical methods used, whether any data was removed and justification for removal, copies of charts or graphs that were used, and any other information used to perform the evaluation.*

Response: See Attachment 15 – Updated Background Evaluation.

Deficiency #8: *Revise to indicate that all Alternate Source Demonstrations associated with detection and assessment monitoring will require a certification from a Texas Licensed Professional Engineer.*

Response: See Attachment 11 – CCR Groundwater Sample and Analysis Plan.

Deficiency #9: *Revise to address cited rules relating to notification for off-site releases***.**

Response: See Attachment 11 – CCR Groundwater Sample and Analysis Plan.

Deficiency #10: *Replace title of "Table VI.D.2 – Groundwater Detection Monitoring Parameters" with "Table VI.D-2 – Groundwater Assessment Monitoring Parameters" and complete if applicable.*

Response: Section VI.30 is not applicable to this site because there are no units in Assessment Monitoring.

Deficiency #11: *Revise to provide an estimate of the maximum inventory of CCR ever on-site over the active life of the CCR units.*

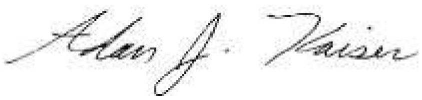
Response: See Attachment 13 – Updated CCR Closure Plan

Deficiency #12: *Provide information to explain how the beneficial reuse of CCR meets the definition of beneficial use per 40 CFR §257.53. Add a statement to indicate that beneficial reuse determination records will be kept on-site.*

Response: See Attachment 13 – Updated CCR Closure Plan

Please contact me at (512) 566-6878 or at A.Kaiser@GeminiSTL.com if you have any questions or comments.

Sincerely,



Adam Kaiser, PE
Senior Project Engineer
Gemini Engineering LLC

CC:
Golden Eagle Development

Attachment #10 (Revised) for Item #27 – Groundwater Monitoring Systems

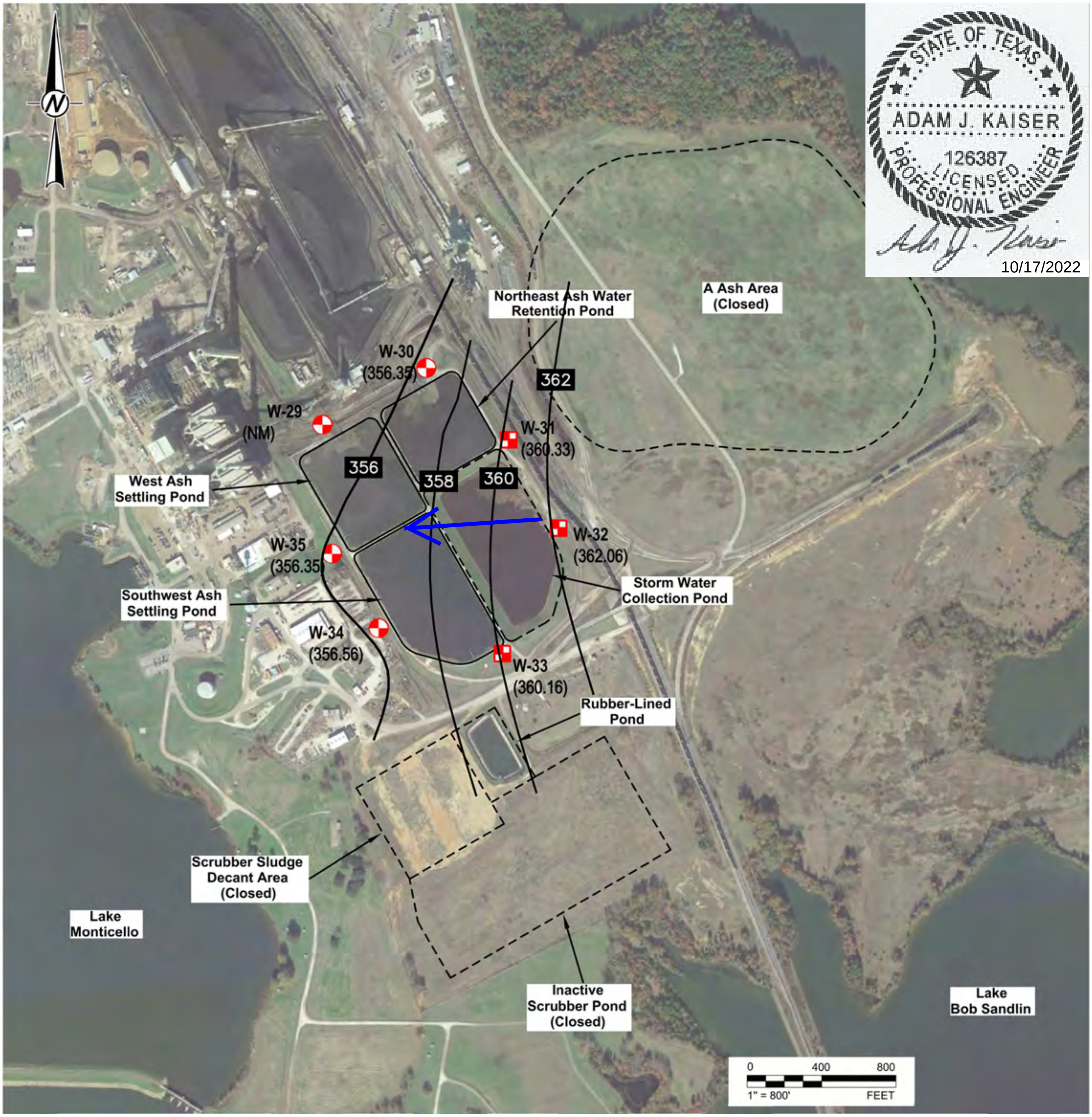
NODs #1, #2, #3 – November 21, 2022

MOSES Detection Monitoring (November 2022)

The MOSES CCR Bottom Ash Ponds are currently in the Detection Monitoring Program. Luminant collected the initial Detection Monitoring Program groundwater samples from the Bottom Ash Ponds CCR monitoring well network in September 2017. Detection groundwater samples have been collected from the CCR groundwater monitoring network on a semi-annual basis in 2018 through 2022, as required by the CCR Rule. All CCR groundwater monitoring wells were sampled for Appendix III constituents during the detection monitoring sampling events.

There were no SSIs of Appendix III parameters in 2017 through 2021; therefore, the CCR units remained in Detection Monitoring in 2022. The analytical data from the 2021 detection monitoring sampling events were evaluated using procedures described in the Statistical Analysis Plan to identify Statistically Significant Increases (SSIs) of Appendix III parameters over background concentrations.

Groundwater elevations are generally higher on the east side of the ash settling ponds, with an inferred groundwater gradient flow direction to the west toward Lake Monticello.



LEGEND

(symbol)	DOWNGRADIENT CCR MONITORING WELL	*(357.26)*	Groundwater Potentiometric Surface (ft. AMSL)
(symbol)	UPGRADIENT CCR MONITORING WELL	— 358 —	Groundwater Potentiometric Surface Contour (C.I. = 2 ft.)
←	Estimated GW flow direction		

C:\Users\worcc\OneDrive\Documents\DWG\Gemini\Projects\Monticello\dwg\Site_Plan.dwg

GEMINI ENGINEERING

Figure 7
Ash Water Ponds Potentiometric Surface Map - May 2022
Site: Golden Eagle Development

Chkd:	AK
Drawn:	RLK
Page:	1 of 1
Date:	10/14/2022
Scale:	As Shown

Table VI.A. - Unit Groundwater Detection Monitoring System

For each unit/area which requires groundwater monitoring, specify the number and type of wells which will comprise the groundwater monitoring system for the unit/area. Prepare additional tables as necessary.

Waste Management Unit/Area Name[1] – Bottom Ash Ponds

Well Number(s)	W-29	W-30	W-31	W-32	W-33	W-34
Hydrogeologic Unit Monitored	Shallow Sand	Shallow Sand	Shallow Sand	Shallow Sand	Shallow Sand	Shallow Sand
Type (e.g.,. point of compliance, background, observation, etc.)	POC	POC	BKGD	BKGD	BKGD	POC
Up or Down Gradient	Down	Down	Up	Up	Up	Down
Casing Diameter and Material	2” PVC	2” PVC	2” PVC	2” PVC	2” PVC	2” PVC
Screen Diameter and Material	2” PVC	2” PVC	2” PVC	2” PVC	2” PVC	2” PVC
Screen Slot Size (in.)	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014
Top of Casing Elevation (ft, MSL)	377.59	376.95	376.33	378.96	387.16	379.16
Grade or Surface Elevation (ft, MSL)	374.94	373.53	372.99	375.41	383.69	375.84
Well Depth (ft)	37	42	43	33	30	27
Screen Interval, From(ft) To(ft)	27-37	32-42	33-43	23-33	20-30	17-27
Facility Coordinates (e.g., lat/long or company coordinates)	527058	527358	526969	526491	525819	525962
	2754498	2755059	2755498	2755763	2755454	2754790

[1]From Tables in Section V.

For each unit/area which requires groundwater monitoring, specify the number and type of wells which will comprise the groundwater monitoring system for the unit/area. Prepare additional tables as necessary.

Waste Management Unit/Area Name[1]

Well Number(s)	W-35					
Hydrogeologic Unit Monitored	Shallow Sand					
Type (e.g.,. point of compliance, background, observation, etc.)	POC					
Up or Down Gradient	Down					
Casing Diameter and Material	2" PVC					
Screen Diameter and Material	2" PVC					
Screen Slot Size (in.)	0.0014					
Top of Casing Elevation (ft, MSL)	381.15					
Grade or Surface Elevation (ft, MSL)	377.86					
Well Depth (ft,)	35					
Screen Interval, From(ft) To(ft)	25-35					
Facility Coordinates (e.g., lat/long or company coordinates)	526365					
	2754542					

[1]From Tables in Section V.

Attachment #11 (Revised) for VI.28 – Detection Monitoring Program/Sample and Analysis Plan

NODs #4, #8, & #9 – November 21, 2022

Coal Combustion Residual
Groundwater Sampling and Analysis Plan

Former Monticello Steam Electric Station
FM 127, Mt. Pleasant, Titus County, Texas
CCR114

Prepared for:

GOLDEN EAGLE DEVELOPMENT LLC

Prepared by:

Gemini Engineering LLC
2275 Cassens Drive, Suite 118
Fenton, Missouri 63026

November 2022

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FIGURES

APPENDICES

1.0 INTRODUCTION

Golden Eagle Development (Golden Eagle) owns the former Monticello Steam Electric Station (MOSES) in Mount Pleasant, Texas. at the former Monticello Steam Electric Station (MOSES) (Figure 1). The MOSES is a former coal/lignite-fired power plant located approximately nine miles southwest of Mount Pleasant in Titus County. The three power units at the facility operated from the early 1970s until they were retired in February 2018 by Luminant Energy . The property was acquired by Golden Eagle in December 2019 and the dismantling of the units began in January 2020.

The site contains three Bottom Ash Ponds (BAPs) subject to CCR closure requirements, Northeast Ash Water Retention Pond (WMU 11), West Ash Settling Pond (WMU 12), and Southwest Ash Settling Pond (WMU 22) that comprise of approximately 19-acres (Figure 1). The adjacent Stormwater Collection Pond (WMU 9) is not subject to CCR regulations. These surface impoundments became subject to 40 CFR Part 257, Subpart D – Standards for the Disposal of Coal Combustion Residuals (CCR) in Landfills and Surface Impoundments upon promulgation on April 17, 2015.

The CCR rules under 30 TAC §352.901 primarily adopts by reference the groundwater monitoring and corrective actions included in 40 CFR §257.90 (Applicability), which gives the general requirements for establishing and implementing a groundwater monitoring program and corrective action for releases from a CCR unit. The commission adopts by reference 40 CFR §257.90 as amended through the August 5, 2016, issue of the Federal Register (81 FR 51802). 40 CFR Part 257 requires the preparation of a Groundwater Sampling and Analysis Plan (SAP) to evaluate background and downgradient groundwater quality within the MOSES and confirm compliance with the groundwater monitoring and corrective action requirements. The methodologies outlined in this SAP are consistent with the regulations, general federal and state guidance, and industry standards.

2.0 PURPOSE AND OBJECTIVES

The groundwater monitoring and corrective action compliance requirements for existing CCR units are set forth in 40 CFR §257.90 through §257.98. The groundwater sampling and analysis requirements are established in 40 CFR §257.93, and require the development of a SAP that details the sampling and analysis procedures that will be utilized to provide an accurate representation of groundwater quality at the background and downgradient wells. Per 40 CFR

§257.93(a) this SAP includes a description of the procedures and techniques that will be implemented for:

- Sample collection
- Sample preservation and shipment
- Analytical procedures
- Chain-of-custody control
- Quality assurance and quality control

3.0 BACKGROUND INFORMATION

The MOSES CCR Bottom Ash Settling Ponds are currently in the Detection Monitoring Program. Luminant collected the initial Detection Monitoring Program groundwater samples from the Bottom Ash Settling Ponds CCR monitoring well network in September 2017. Detection groundwater samples have been collected from the CCR groundwater monitoring network on a semi-annual basis in 2018 through 2022, as required by the CCR Rule. All CCR groundwater monitoring wells were sampled for Appendix III constituents during the detection monitoring sampling events. Closure by removal of the ash settling ponds was completed in the Fall of 2022.

4.0 SAMPLE COLLECTION & HANDLING PROCEDURES

The following sections address the methods and procedures associated with the collection and handling of groundwater samples at the site.

4.1 Groundwater Elevations

Groundwater level data will be collected from each monitoring well during each sampling event, prior to sample collection. Upon arrival at the site, each monitoring well will be opened and allowed to equilibrate with ambient air pressures prior to measuring the depths to water.

Groundwater level measurements will then be taken to the nearest 0.01 foot from the entire monitoring well network prior to sampling. The entire monitoring well network will be gauged on the same day in order to provide an interpretative groundwater flow map and to minimize temporal bias of measured groundwater elevation changes for the monitoring well network.

Depth to water will be measured from established top of casing reference points as referenced in the record survey drawing. Groundwater levels, well conditions, and any pertinent observations will be recorded on a groundwater-sampling log, provided in Appendix A.

The calculated hydraulic gradient will be used along with previously completed hydraulic conductivity testing to determine the estimated groundwater direction during each sampling event.

4.2 Groundwater Sample Collection

Groundwater samples will be collected from the monitoring wells using low-flow (minimal drawdown) groundwater sampling procedures (US EPA, 1996). Low-flow sampling will commence with the installation of either a peristaltic, stainless-steel 12-volt submersible impeller pump, or bladder pump to a depth representing the middle of the saturated screen interval. An appropriate length of polyethylene tubing will be connected to the pump discharge prior to pump placement. The discharge line will be connected to a flow-cell and multi-meter to collect water quality indicator parameters (described below) during well purging to determine water quality stabilization.

The pump will be operated at a flow rate that ensures low volatilization and low well disturbance. Water quality indicator parameters and depth to water will be recorded at 3 to 5 minute intervals during the purging process and recorded on the groundwater sampling log provided in Appendix A. Purging and sampling will proceed at a low pumping rate, expected to be between approximately 0.1 and 0.5 liters per minute or less, such that the water column in the well is not lowered more than 0.3 feet (4 inches) below the initial static depth to water measurement. The well will be considered ready to sample when three consecutive water quality measurements meet the stabilization criteria for pH, conductivity, temperature, and turbidity presented below.

Parameter	Stabilization Criteria
pH	3 readings within +/- 0.1 standard units (SU)
Specific Conductance (mS/cm) Temperature	3 readings within +/- 3% milli-siemens per centimeter +/-0.2 degrees
Turbidity	+/- 10% Nephelometric Turbidity Unit (NTU)

Additional field measured parameters, (oxygen reduction potential and dissolved oxygen), may be collected to assist in data evaluation. Prior to use, all equipment will be calibrated in accordance with the manufacturer's recommendations.

4.3 Sample Preservation and Shipment

Samples will be collected immediately following stabilization of field parameters. Groundwater samples will be collected into laboratory provided sample containers required for the analyses specified in the following section. The groundwater samples will be collected from the discharge tubing upstream of the water quality meter flow cell. Care will be taken to allow for a non- turbulent filling of laboratory containers.

The samples will be labelled, stored, and transported to the laboratory under proper chain-of- custody. Following collection, samples will be immediately labelled, logged on the chain-of- custody, and placed in a cooler with ice. Sample coolers transported to the laboratory via overnight or next day airfreight will be sealed with packing tape and a signed Chain-of-Custody seal. Sample coolers transported to the laboratory directly must be secured to ensure sample integrity is maintained. The use of chain-of-custody procedures will provide documentation of actual sample storage and transport. A laboratory provided chain-of-custody record will contain the dates and times of collection, laboratory receipt, and acknowledgment of analyses to be completed on a particular set of samples. The laboratory will return a copy of the chain-of-custody with the analytical report.

4.4 Quality Assurance/Quality Control (QA/QC)

Quality assurance/quality control (QA/QC) samples will be collected to ensure sample containers are free of analytes of interest, assess the variability of the sampling and laboratory methods, and monitor the effectiveness of decontamination protocols. The following QA/QC samples will be collected during each groundwater-sampling event:

- Field duplicates will be collected at a frequency of one duplicate sample per 10 groundwater samples. The field duplicates will be collected at the same time and in the same manner as the original sample. The duplicates will be labeled as a blind sample and noted on the sampling form of the designated well.
- Matrix spike/matrix spike duplicate (MS/MSD) samples will be collected at a frequency of one MS/MSD sample per event.
- Field blanks will be collected at a frequency of one field blank per event.

The QA/QC samples will be submitted to the laboratory for the routine analyses specified in Section 5. The laboratory will provide adequate documentation of laboratory reporting and QA/QC procedures.

4.5 Equipment Decontamination Procedures

All non-dedicated equipment will be decontaminated prior to use and between samples. Non- dedicated equipment includes a water level meter and low flow sampling pump (submersible). Each item will be cleaned using distilled or deionized water, and when necessary, non-phosphate detergent wash followed by a distilled or deionized water rinse. When a peristaltic pump is used for low flow sampling, decontamination is not required; only replacement of the pump head tubing is required.

The flow-cell and water quality multi-meter will be decontaminated at the completion of low-flow sampling. All sample collection will occur upstream of this device and will not affect groundwater sample analytical results.

4.6 Investigation Derived Waste (IDW)

Waste created during monitoring well sampling will remain on site. Purge water from wells installed within the CCR Units will be discharged back onto the ground near the well that is being purged. Purge water from wells installed outside of a CCR Units will be discharged to the ground in a manner that it does not directly enter a surface water or drain.

4.7 Field Documentation

Information pertinent to the field activities and sampling efforts will be recorded in the groundwater-sampling log or notebook, following appropriate documentation procedures. At a minimum, entries in the sample logs will include the following:

- Property location
- Purge rate and volume
- Date and time of collection
- Sample identification number(s)
- Field observations including weather
- Any field and low flow parameter measurements made (for example, pH, temperature, water depth, etc.)
- Personnel present

Records shall contain sufficient information so that the sampling activity can be reconstructed without relying on the collector's memory. The sample logs will be preserved in electronic format.

5.0 CONSTITUENT LIST AND PROCEDURES FOR ANALYSIS

Groundwater samples collected at the site will be submitted to a qualified and accredited environmental laboratory, for the analyses specified in Appendix III and IV to Part 257. The analytical methods and practical quantitation limits for each constituent are summarized below. If required, and in consultation with the laboratory, a comparable analytical method may be substituted for the analytical method recommended below. Analytical methods may also be modified to incorporate newer versions of the stated methods. If any analyses are subsequently subcontracted to another accredited laboratory, the samples will be shipped using appropriate methods and COC documentation. Routine samples will not be filtered in the field to provide a measure of total recoverable metals that will include both the dissolved and particulate fractions of metals in natural waters, consistent with 40 CFR §257.93 (i). All analyses will be performed within required hold times and consistent with the data quality objectives of this SAP.

Appendix III to Part 257—Constituents for Detection Monitoring

Boron, Calcium, Chloride, Fluoride, pH, Sulfate, & Total Dissolved Solids (TDS

Appendix IV to Part 257—Constituents for Assessment Monitoring

Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium

Mercury, Molybdenum, Selenium, Thallium, & Radium 226 and 228 combined

Parameter	Sampling Frequency	Analytical Method	Practical Quantification Limit (units)	Concentration Limt[1]
Boron	Semi-Annual	EPA 6020	<0.03 mg/L	8.52
Calcium	Semi-Annual	EPA 6020	<1.0 mg/L	311
Chloride	Semi-Annual	EPA 9056A	<1.0 mg/L	184
Fluoride	Semi-Annual	EPA 9056A	<0.15 mg/L	2.93
Sulfate	Semi-Annual	EPA 9056A	<25.0 mg/L	1,190
Total Dissolved Solids	Semi-Annual	EPA 2540	<10.0 mg/L	2,150

6.0 DATA EVALUATION

In accordance with 40 CFR §257.93, data collected from eight samples from each background monitoring well will be used to calculate background concentrations for each constituent. If appropriate and supported by the data distribution, fewer samples may be utilized. Background concentrations for each constituent will be calculated using an appropriate statistical method for each background monitoring well, selected based on the distribution of the data in accordance with 40 CFR §257.93.

The data collected from background and downgradient monitoring wells will be compared using an appropriate statistical method. The statistical method will be determined based on the data distribution for each constituent at each location, to assess whether downgradient concentrations are consistent with background concentrations. The statistical method used for this analysis will be one, or a combination, of the four statistical methods described below and in 40 CFR §257.93(f) and will meet the performance standards outlined in 40 CFR §257.93(g).

A combination of statistical methods may be applied depending on the statistical distribution observed for each specified constituent in each monitoring well. The four specific statistical procedures provided in 40 CFR §257.93(f) are: (1) a parametric analysis of variance followed by multiple comparison procedures to identify statistically significant evidence of contamination; (2) an analysis of variance based on ranks followed by multiple comparison procedures to identify statistically significant evidence of contamination; (3) a tolerance or prediction interval procedure; and (4) a control chart approach.

The potential for seasonal and spatial variability as well as temporal trends will be considered when selecting the statistical method for comparison. If merited, adjustment of the data for seasonal variation may be completed prior to statistical analysis. Data may also be displayed graphically to aid in interpretation of the statistical analysis.

To select the appropriate method for statistical analysis for each constituent at each monitoring well, the distribution type for each constituent/well pair will be calculated. Normally distributed data will use parametric methods for comparisons, and non-normally distributed data will use non-parametric methods, consistent with the requirements outlined in 40 CFR §257.93(g). Where merited, data transformation may be completed.

Statistical comparisons will be performed using a confidence level of 99 percent (alpha of 0.01) for comparisons of individual data point to background concentrations, and a confidence level of 95 percent (alpha of 0.05) where multiple data points will be compared to background, consistent with 40 CFR §257.93 (g).

7.0 ANNUAL REPORTING

In accordance with 40 CFR §257.90 (e), a groundwater monitoring and corrective action report will be prepared for the site no later than January 31; and placed in the facility's operating record, as required by §257.105(h)(1). The annual report will document the status of the groundwater monitoring and corrective action program for the CCR units, will provide a summary of activities completed, and describe activities proposed for the upcoming year.

8.0 RECORDKEEPING, NOTIFICATION, AND POSTING TO THE INTERNET

Consistent with the requirements of 40 CFR §257.105 (h), this SAP, which documents the design of the groundwater monitoring system, and details the monitoring events will be placed in the site's operating record. In accordance with 40 CFR §257.106 (h), and that the information will be placed in the operating record and on the owner or operator's publicly accessible internet site, in accordance with 40 CFR §257.107 (h).

9.0 DETECTION MONITORING

After the completion of background monitoring sample collection will be completed on all monitoring wells on a semiannual basis for the constituents listed in Appendix III adopted by reference in 30 TAC §352.1421, unless another sampling schedule is approved by the TCEQ. The goal of detection monitoring is to identify changes in groundwater chemistry that may indicate a release from the CCR unit. Changes in groundwater chemistry are identified by statistically comparing the detection monitoring result for each constituent in each well to the established background statistical limit for that constituent. No later than 60 days after each sampling event, the facility must determine if there has been an initial exceedance over the background limit for any tested constituent. If an initial exceedance is determined at the point of compliance, the facility must notify the TCEQ and any local pollution agency with jurisdiction that has requested to be notified, in writing within 14 days. The term “initial exceedance” refers to a monitoring result that exceeds a statistical limit but has not yet been verified by resampling.

9.1 Verification Resampling

If an initial exceedance over a background limit is determined, Golden Eagle may conduct verification resampling and submit the results within 60 days of the initial exceedance determination. The verification resampling results will confirm or disprove the initial exceedance. If an initial exceedance is verified, an SSI is declared, and assessment monitoring is triggered unless an “alternative source demonstration” is submitted and approved. If a verification resample does not confirm an exceedance, routine detection monitoring may continue.

9.2 Alternative Source Demonstration

If a statistically significant increase over a background limit of any tested constituent at any monitoring well has occurred and the Owner/Operator has reasonable cause to think that a source other than a CCR unit caused the contamination or that the statistically significant increase resulted from error in sampling, analysis, or statistical evaluation, or from natural variation in groundwater quality, then the Owner/Operator may submit a report providing documentation to this effect (40 CFR §257.94 (e)(2)). The report is commonly referred to as an “alternative source demonstration" (ASD) but may be a demonstration of an error or of natural variation, instead of a source other than the CCR unit. An Owner/Operator pursuing an ASD must first notify the executive director of the TCEQ (and any local pollution agency with jurisdiction that has requested to be notified) in writing, within 14 days of determining an SSI over a background limit, that Owner/Operator intends to make the demonstration. The ASD must be submitted within 90 days of determining an SSI. Any such demonstration must be supported by a report that includes the factual or evidentiary basis for any conclusions and must be certified to be accurate by a qualified professional engineer (40 CFR §257.95 (g)(ii)).

10.0 ASSESSMENT MONITORING PROGRAM

Assessment monitoring is required if a facility determines there has been an SSI over a background limit for one or more of the constituents listed in Appendix III adopted by reference in 40 CFR §257.95 (30 TAC §352.1421).

The CCR rules under 30 TAC §352.951 requires that within 90 days of triggering an assessment monitoring program, and annually thereafter, the Owner/Operator sample and analyze the groundwater for all Appendix IV constituents adopted by reference in 30 TAC §352.1431. The Owner/Operator must resample all wells and conduct analyses for all Appendix III parameters adopted by reference in 30 TAC §352.1421, and the Appendix IV constituents adopted by reference in 30 TAC §352.1431 detected during the initial assessment monitoring sampling, within 90 days of obtaining the initial results, and on at least a semiannual basis thereafter.

The Owner/Operator must establish groundwater protection standards (GWPS) for all detected Appendix IV constituents adopted by reference in 30 TAC §352.1431 within 90 days of obtaining the initial results. The GWPS for a constituent shall be the higher of either the maximum contaminant level established under 40 CFR §141.62 (Maximum contaminant levels for inorganic contaminants) and 40 CFR §141.66 (Maximum contaminant levels for radionuclides) or the background concentration. If the concentration of any Appendix IV constituent is above its respective background limit, but below its GWPS, the facility must continue assessment monitoring. If the concentrations of all Appendix IV constituents are shown to be at or below background values for two consecutive sampling events, the Owner/Operator may return the well to detection monitoring status, after notifying the executive director and receiving approval. If any Appendix IV constituents were detected at statistically significant levels above the GWPS, the facility must notify the executive director and appropriate local government officials within 14 days of the determination.

The Owner/Operator may conduct an ASD as described in Section 9.2, but the Owner/Operator must initiate assessment of corrective measures within 90 days of finding any constituent listed in Appendix IV at a statistically significant level. The Owner/Operator will also need to characterize the nature and extent of the release and any relevant site conditions that may affect the remedy ultimately selected. The characterization must be sufficient to support a complete and accurate assessment of the corrective measures necessary to effectively clean up all releases from the CCR unit pursuant to 40 CFR §257.96. Characterization of the release includes the following minimum measures:

- Install additional monitoring wells necessary to define the contaminant plume(s);
- Collect data on the nature and estimated quantity of material released including specific information on the constituents listed in Appendix IV of this part and the levels at which they are present in the material released;
- Install at least one additional monitoring well at the facility boundary in the direction of contaminant migration and sample this well; and
- Sample all wells to characterize the nature and extent of the release.

Notify all persons who own the land or reside on the land that directly overlies any part of the plume of contamination if contaminants have migrated off-site if indicated by sampling of wells of this section. The Owner/Operator has completed the notifications when they are placed in the facility's operating record as required by 40 CFR §257.105(h)(8).

Within 90 days of finding that any of the constituents listed in Appendix IV have been detected at a statistically significant level exceeding the GWPS, the Owner/Operator must initiate assessment of corrective measures as required by 40 CFR §257.96.

11.0 STATEMENT OF CERTIFICATION

I, Adam J. Kaiser, a Registered Professional Engineer in the State of Texas, has prepared this sampling and analysis plan (SAP) for Golden Eagle Development, LLC for the former MOSES in accordance Federal and State of Texas CCR rules. I do hereby certify to the best of my knowledge, information, and belief, that the information contained herein is true and correct and has been prepared in accordance with generally accepted good engineering practices.

Adam J. Kaiser, P.E.
Senior Project Engineer
Gemini Engineering, LLC
Texas PE No 126387, Expires 3/31/2023
Texas Engineering Firm F-23183

STATE OF TEXAS
ADAM J. KAISER
126387
LICENSED
PROFESSIONAL ENGINEER

11/21/2022

FIGURES

LEGEND

DOWNGRADIENT CCR MONITORING WELL

UPGRADIENT CCR MONITORING WELL

C:\Users\worcc\OneDrive\Documents\DWG\Gemini\Projects\Monticello\dwg\Site_Plan.dwg

GEMINI ENGINEERING

Detailed Site Plan
Site: Golden Eagle Development

Chkd:	AK
Drawn:	EFC
Page:	1 of 1
Date:	1/25/2022
Scale:	As Shown

APPENDIX A – Field Form

GROUNDWATER SAMPLING RECORD

PAGE ____ of ____

Project Number: Project Name: Date:

Sample Number: Starting Water Level (ft. BMP):

Sampling Location (well ID, etc.): Casing Stickup (ft.):

Sampled by: Starting Water Level (ft. BGL):

Measuring Point (MP) of Well: Total Depth (ft. BGL):

Screened Interval (ft. BGL): Casing Diameter (In ID):

Filter Pack Interval (ft. BGL): Casing Volume (gal.):

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, i.d.)

Water Level: Thermometer:

pH Meter: Field Calibration:

Conductivity Meter: Field Calibration:

Filter / Filter Size: Other:

SAMPLING MEASUREMENTS

Time	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	pH	Spec. Cond. (mmhos/cm)	Dissolved Oxygen	ORP	Remarks

Water Level (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration	Preserved	Remarks
Time	Volume	Composition (G, P)	No.	(Y / N)	(type)	(quality control sample, other)

Comments:

Attachment #12 (Revised) for Item #29 – Detection Monitoring Program

NODs #5 – November 21, 2022

Table VI.C. – CCR Units Under Detection Monitoring

N.O.R. Unit No.	Unit Description[1,2]	Well(s)	Constituent(s)	Date of SSI Determination	Date of Assessment Monitoring Notification[3]
1	Surface Impoundment	W29,W30,W31,W32, W33, W34, W35	B, Ca, Cl, F, pH, SO4, TDS	1/31/2018	NA
2	Surface Impoundment	W29,W30,W31,W32, W33, W34, W35	B, Ca, Cl, F, pH, SO4, TDS	1/31/2018	NA
3	Surface Impoundment	W29,W30,W31,W32, W33, W34, W35	B, Ca, Cl, F, pH, SO4, TDS	1/31/2018	NA

1 Indicates a unit for which a 30 TAC Chapter 352/40 CFR Part 257, Subpart D alternative closure determination has been requested pursuant to 40 CFR §257.103.
2 Indicates a unit for which a 30 TAC Chapter 352/40 CFR Part 257, Subpart D alternative closure determination has been made pursuant to 40 CFR §257.103.
3 Enter month, day, and year.

Table VI.D-2. – Groundwater Detection Monitoring Parameters

Parameter	Sampling Frequency	Analytical Method	Practical Quantification Limit (units)	Concentration Limt[1]
Boron	Semi-Annual	EPA 6020	<0.03 mg/L	8.52 mg/L
Calcium	Semi-Annual	EPA 6020	<1.0 mg/L	311 mg/L
Chloride	Semi-Annual	EPA 9056A	<1.0 mg/L	184 mg/L
Fluoride	Semi-Annual	EPA 9056A	<0.15 mg/L	2.93 mg/L
Sulfate	Semi-Annual	EPA 9056A	<25.0 mg/L	1,190 mg/L
Total Dissolved Solids	Semi-Annual	EPA 2540	<10.0 mg/L	2,150 mg/L

1 The concentration limit is the basis for determining whether a release has occurred from the CCR unit/area.

Attachment #15 for VI.29 – CCR Groundwater Background Evaluation

NODs #6 & #7 – November 21, 2022

Updated CCR Groundwater Background Evaluation Report

Bottom Ash Ponds

Former Monticello Steam Electric Station
Titus County, Texas

Prepared for:
GOLDEN EAGLE DEVELOPMENT LLC

Prepared by:
Gemini Engineering, LLC
2275 Cassens Drive, Suite 118
Fenton, Missouri 63026

November 2022

1.0 INTRODUCTION

On behalf of Golden Eagle Development, LLC (Golden Eagle), Gemini Engineering has prepared this Updated Coal Combustion Residue (CCR) Groundwater Background Evaluation (30 TAC 352.281(b)) for the Bottom Ash Ponds (BAPs) at the Monticello Steam Electric Station (MOSES). This evaluation is an update to the background values previously provided, following the procedures detailed in the 2017 CCR Statistical Analysis Plan (SAP) (PBW, 2017) and 2017 Annual Groundwater Monitoring Report (PBW, 2018).

The MOSES CCR Bottom Ash Settling Ponds are currently in the Detection Monitoring Program. Luminant collected the initial Detection Monitoring Program groundwater samples from the Bottom Ash Settling Ponds CCR monitoring well network in September 2017. Detection groundwater samples have been collected from the CCR groundwater monitoring network on a semi-annual basis in 2018 through 2022, as required by the CCR Rule. All CCR groundwater monitoring wells were sampled for Appendix III constituents during the detection monitoring sampling events. Closure by removal of the ash settling ponds was completed in the Fall of 2022.

2.0 INITIAL DATA EVALUATION

Following the steps described in the SAP, Chapter 2 (PBW, 2017), was to evaluate duplicate data and data rejected based on data validation. The first step was to identify the background sampling period versus the post-background sampling event. Eight (8) background samples were obtained between October 2015 and December 2016. Nine (9) post-background samples were taken between September 2017 and August 2021.

The initial data evaluation considered reviewing the laboratory data reports for any comments relating to the samples from when the laboratory received the sample through analyses of the sample. One duplicate sample (Well W-35, October 30, 2019) was found in the post-background sampling period (2017 to 2021). This duplicate sample was removed from the data set used in this statistical analysis. No data were rejected based on the data validation included with the laboratory-provided results.

The next evaluation was to determine whether "J-flagged" data (estimated concentrations between the sample detection limit and the reporting limit) were identified. The only "J-flagged" data was found in the results for the constituent of concern (CoC) Fluoride in all the wells except for well W-34. A total of 10 "J-flagged" data were identified in the background sample period and a total of 21 in the post-background sample period. As specified in the SAP (Chapter 2.2, Page 7) 2 (PBW, 2017), these "J-flagged" data were defined as detected concentrations and not considered "non-detects".

The next step in the data evaluation was to determine the percentage of non-detected concentrations and which approach to use to manage these non-detects. As with the "J-flagged" data, the only CoC exhibiting non-detects was Fluoride in all the wells except for well W-33. A total of thirteen (13) samples were identified as non-detect samples for the background sampling period, and ten (10) samples from the post-background sampling period. In the evaluation of the non-detect data, there were 76.8% detected samples (23.2% non-detects) in the background sampling period, and 84.1% detected samples (15.9% non-detects) in the post-background sampling period. Therefore, these two datasets lie within the "*at least 50% but no more than 85% of the samples detected*" (SAP, Chapter 2.2, page 7) (PBW, 2017) and are considered as requiring a robust regression order statistical analysis for the CoC Fluoride. All other CoCs will employ the "*half of the sample detection limit*" (SAP, Chapter 2.2, page 7) (PBW, 2017) substituted as a proxy concentration. The new background values are summarized on Table 1.

3.0 SPATIAL & TEMPORAL STATIONARITY

Spatial stationarity is defined as the lack of variability across well locations. Spatial variation may be naturally occurring and unaffected by human activity or may be caused by human activity. Temporal stationarity is the lack of temporal variability. Temporal variability refers to the concept that concentration measurements vary over time.

Two methods were employed to review spatial and temporal stationarity. The two methods employed were:

1. Time series plots of the ground water data for each parameter over all sampling events by well to look at temporal variability.
2. Box plots (also identified as Box and Whisker plots) of the data separated into background and post-background for each parameter to look at both spatial and temporal variability.

The time series plots are attached in Appendix A. The box plots are attached in Appendix B.

To evaluate the temporal stationarity of the ground water sampling results, a review of time series charts (see Appendix A) by CoC, the following observations were noted:

1. Boron – the time series charts indicate a decreasing or flat trend for all wells throughout the post-background sampling events.
2. Calcium - the time series charts indicate wells W-29, W-30, and W-31 with a decreasing trend. Wells W-32 and W-33 exhibited an increasing trend in the early sampling events of the post-background time and then a dramatically decreasing trend. Well W-35 has a flat trend.
3. Chloride - the time series charts indicate wells W-29, W-31, and W-34 indicate a flat trend with wells W-30, W-32, and W-33 exhibiting an overall decreasing trend. Well W-35 shows an increasing trend.
4. Fluoride - the time series charts indicate a flat trend for all wells except for wells W-32 and W-33 which exhibit an increasing trend.
5. pH - the time series charts indicate a flat trend for all wells.
6. Sulfate - the time series charts indicate a decreasing trend for all wells except for wells W-34 and W-35 which exhibit a flat trend.
7. TDS - the time series charts indicate a decreasing trend for all wells except for wells W-34 and W-35 which exhibit a flat trend.

To continue the temporal stationarity review, an evaluation of the time series charts by wells was also conducted. The following observations were noted:

1. W-29 – the time series charts indicate a decreasing or flat trend for all CoCs.
2. W-30 - the time series charts indicate a decreasing or flat trend for all CoCs.
3. W-31 -the time series charts indicate a decreasing or flat trend for all CoCs.
4. W-32 - the time series charts indicate a decreasing or flat trend for all CoCs except for Fluoride which has an increasing trend.
5. W-33 - the time series charts indicate a decreasing or flat trend for all CoCs except for Fluoride which has an increasing trend.
6. W-34 - the time series charts indicate a decreasing or flat trend for all CoCs except for Calcium which exhibits an increasing trend.
7. W-35 - the time series charts indicate a decreasing or flat trend for all CoCs except for Chloride which has an increasing trend.

Based upon the evaluation of the time series charts, the temporal stationarity shows a lack of variability (i.e. a sense of uniformity) for all wells except for the CoC Fluoride in wells W-32 and W-33 which are due to the presence of non-detect values over time.

To evaluate spatial and temporal stationarity, a review of box plots (see Appendix B) by CoC divided into background and post-background comparisons was conducted. The following observations were noted:

1. Boron –Differences were noted between the background and post-background data for the upgradient condition. The primary difference was a wider range of results and typically the upper results were lower for the post-background as compared to the background sampling events. For the downgradient condition, a decrease was seen in wells W-29 and W-30 with an increase in well W-34 and a stable result for well W-35.
2. Calcium - Differences were noted between the background and post-background data for the upgradient condition. The primary difference was a wider range of results and typically the upper results were minimally higher for the post-background as compared to the background sampling events. For the downgradient condition, a decrease was seen in well W-29 with an increase in wells W-34 and W-35 with a stable result for well W-30.
3. Chloride - Differences were noted between the background and post-background data for the upgradient condition. The primary difference was a wider range of results for wells W-32 and W-33 and typically the upper results were lower for the post-background as compared to the background sampling events. For the downgradient condition, increases were seen in all wells.
4. Fluoride - Differences were noted between the background and post-background data for the upgradient condition. The primary difference was a wider range of results for wells W-32 and W-33, and the upper results were higher for the post-background as compared to the background sampling events for the same two (2) wells. For the downgradient condition, small increases were seen in wells W-30 and W-35 with small decreases in wells W-29 and W-35.

5. pH - Differences were noted between the background and post-background data for the upgradient condition. The primary difference was a wider range of results for all wells, and the upper results were higher for the post-background as compared to the background sampling events. For the downgradient condition, no increases were seen, however, a spread to the results in lower results was noted.
6. Sulfate - Differences were noted between the background and post-background data for the upgradient condition. The primary difference was a wider range of results for all wells, and the upper results were higher at wells W-32 and W-33 for the post-background as compared to the background sampling events. For the downgradient condition, a decrease was seen in wells W-29 and W-30 with an increase in wells W-34 and W-35.
7. TDS - Differences were noted between the background and post-background data for the upgradient condition with the post-background condition being significantly lower than the background condition with typically a wider range of results. For the downgradient condition, a decrease was seen in wells W-29 and W-30 with stable results for wells W-34 and W-35.

As indicated previously, this box plot review was further evaluated based on a review of the box plots by wells comparing the background to post-background conditions. The following observations were noted:

1. W-29 – A decreasing trend was seen for Boron, calcium, pH, sulfate, and TDS. A stable (no discernable change) was seen for fluoride, and a significant increase was seen for chloride.
2. W-30 – A decreasing trend was seen for Boron, calcium, pH, sulfate, and TDS. A stable (no discernable change) was seen for fluoride, and a significant increase was seen for chloride.
3. W-31 – A decreasing trend was seen for Boron, calcium, pH, sulfate, and TDS. A stable (no discernable change) was seen for fluoride, and a significant increase was seen for chloride.
4. W-32 – A decreasing trend was seen for Boron, calcium, pH, sulfate, and TDS. A stable (no discernable change) was seen for fluoride, and a significant increase was seen for chloride.
5. W-33 – A decreasing trend was seen for Boron, calcium, pH, sulfate, and TDS. A stable (no discernable change) was seen for fluoride, and a significant increase was seen for chloride.
6. W-34 – A decreasing trend was seen for Boron, calcium, pH, sulfate, and TDS. A stable (no discernable change) was seen for fluoride, and a significant increase was seen for chloride.
7. W-35 – A decreasing trend was seen for Boron, calcium, pH, sulfate, and TDS. A stable (no discernable change) was seen for fluoride, and a significant increase was seen for chloride.

As with the time-series charts, temporal variability was minor to non-discernable except for fluoride due to the number of non-detects in the post-background sampling events.

To determine statistically rather than observationally, whether any temporal patterns emerge from analysis of the ground water data, which can invalidate the results of statistical testing, Mann-Kendall analyses (see Appendix C) was conducted of the ground water data looking at background upgradient and downgradient and post-background upgradient and downgradient. The GSI Environmental Mann-Kendall spreadsheets (GSI, 2012) were utilized for this effort.

The background conditions were compared from upgradient to downgradient by parameter. The following trends were identified:

1. Boron – All three (3) upgradient wells (W-31, W-32, and W-33) are identified as having stable trends, Although, well W-31 has an outlier identified in the box plot for this well. Two (2) of the four (4) downgradient wells (W-30 and W-34) have no discernable trends due to the high variability of the ground water results. The remaining two (2) wells (W-29 and W-35) exhibit an increasing trend.
2. Calcium - All three (3) upgradient wells are identified as having a decreasing (W-31) or a stable (W-32 and W-33) trend. The downgradient well (W-29) has an increasing trend, and well W-30 has no trend as it is a straight line. Downgradient well W-34 has a stable trend, and well W-35 has a decreasing trend.
3. Chloride - All three (3) upgradient wells are identified as having stable (W-31) or decreasing (W-32 and W-33) trends. Three (3) of the four (4) downgradient wells (W-29, W-34, and W-35) have no discernable trends due to outliers to the low concentrations and a decreasing trend (W-30).
4. Fluoride - All three (3) upgradient wells are identified as having a stable or decreasing trend. All four (4) of the downgradient wells exhibit a stable trend.
5. pH - All three (3) upgradient wells are identified as having no trend (W-31) due to one very low reading or decreasing (W-32 and W-33) trends. Two (2) of the four (4) downgradient wells (W-29 and W-34) exhibit stable trends with the remaining two (2) wells (W-30 and W-35) showing no trend due to the most recent results being lower and on the verge of being outliers.
6. Sulfate – All three (3) upgradient wells exhibited both low and high outliers as shown on the box plots. This has resulted in the trends being either stable, decreasing or no trend. Two (2) of the four (4) downgradient wells (W-30 and W-35) exhibit decreasing trends with well W-34 showing no trend. Well W-29 exhibits an increasing trend due to a significant increase of results in the last three (3) sampling events of 2016.
7. TDS - All three (3) upgradient wells exhibited all trends including decreasing, no trend, or a stable trend. Three (3) of the four (4) downgradient wells (W-30, W-34, and W-35) exhibit stable, no trend or decreasing trends. Well W-29 exhibits an increasing trend due to a highly variable data over the background sampling event.

The post-background conditions were compared from upgradient to downgradient by parameter. The following trends were identified:

1. Boron – All three (3) upgradient wells (W-31, W-32, and W-33) are identified as having stable (W-31) or decreasing (W-32 and W-33) trends. Two (2) of the four (4) downgradient wells have decreasing trends, a stable trend (W-35) or no discernable trend due to an outlier as identified in the box plot for well W-34.
2. Calcium - All three (3) upgradient wells (W-31, W-32, and W-33) are identified as having stable (W-31) or decreasing (W-32 and W-33) trends. One downgradient well (W-29) has a decreasing trend, a stable trend was noted for well W-30 and well W-35 has an increasing trend with an outlier identified for well W-34 which yielded a probable increasing trend. The

increasing trends are relatively flat.

3. Chloride – All three (3) upgradient wells (W-31, W-32, and W-33) are identified as having stable (W-31) or decreasing (W-32 and W-33) trends. One downgradient well (W-30) has a decreasing trend, and all other wells yielded a no trend. The no trends are relatively flat.
4. Fluoride – Two (2) of the three (3) upgradient wells (W-32, and W-33) are identified as having probable increasing trends with well W-31 having a decreasing trend. All downgradient wells have a stable or decreasing trend. These trends are relatively flat with a slight undulation in the recent sampling events.
5. pH – Two (2) of the three (3) upgradient wells (W-32, and W-33) are identified as having increasing trends with well W-31 having a stable trend. All downgradient wells have a stable or no trend. These trends are relatively flat with a slight undulation in the recent sampling events.
6. Sulfate – Two (2) of the three (3) upgradient wells (W-32, and W-33) are identified as having decreasing trends with well W-31 having a stable trend. Two (2) downgradient wells (W-29 and W-30) has an increasing trend, and all other wells yielded a decreasing, stable, or no trend. The no trend is due to a high outlier.
7. TDS - Two (2) of the three (3) upgradient wells (W-32, and W-33) are identified as having probable increasing trends with well W-31 having a decreasing trend. All downgradient wells have a stable or decreasing trend.

Based upon the use of the Mann-Kendall analysis, no distinctive temporal variations were identified which rise to the level of a statistically significant variation.

4.0 CERTIFICATION STATEMENT

This closure plan and all attachments were prepared by Gemini Engineering LLC under my direction and supervision. This closure plans meets the requirements of 30 TAC 352.281(b) and been prepared in a manner consistent with recognized and generally accepted good engineering practices.

Adam J. Kaiser, PE
Senior Project Engineer
Gemini Engineering, LLC
Texas PE No 126387, Expires 3/31/2023
Texas Engineering Firm F-23183

11/21/2022

5.0 REFERENCES

GSI Environmental, 2012. *GSI Mann-Kendall Toolkit, Version 1.0*, November 2012.

Pastor, Behling & Wheeler, LLC (PBW), 2017. *CCR* Statistical Analysis Plan*, Monticello Steam Electric Station, Bottom Ash Ponds.* October 11.

PBW, LLC, 2018. 2017 *CCR Annual Groundwater Monitoring Report*, *Monticello Steam Electric Station*, *Bottom Ash Ponds.* January 31.

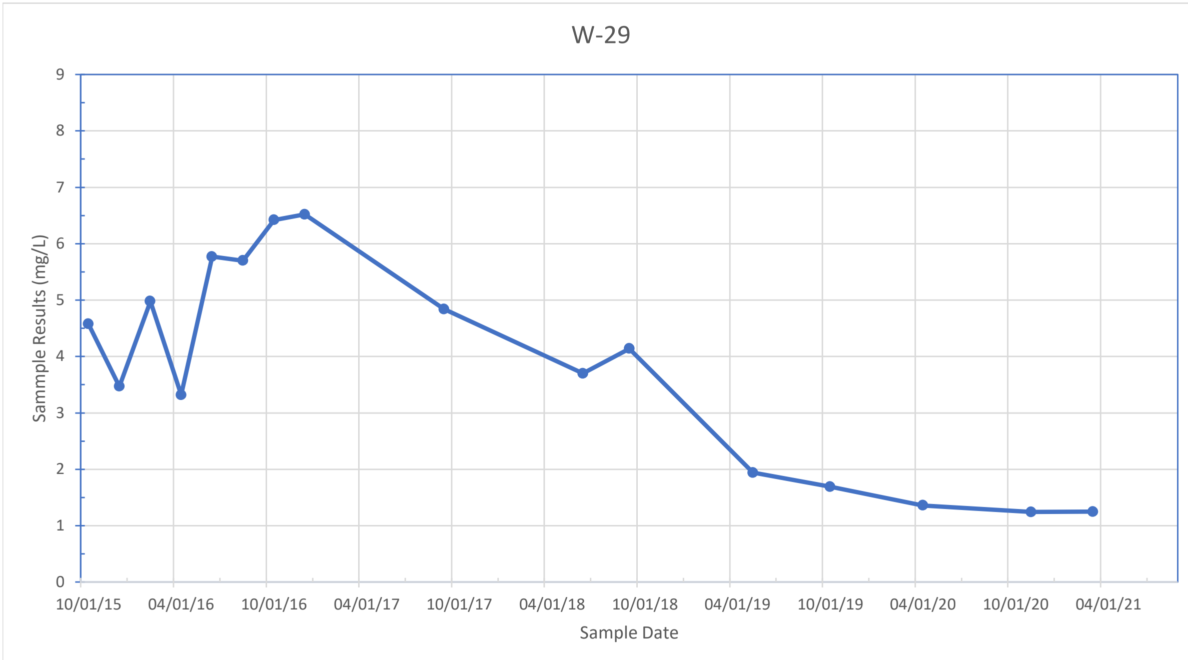
TABLES

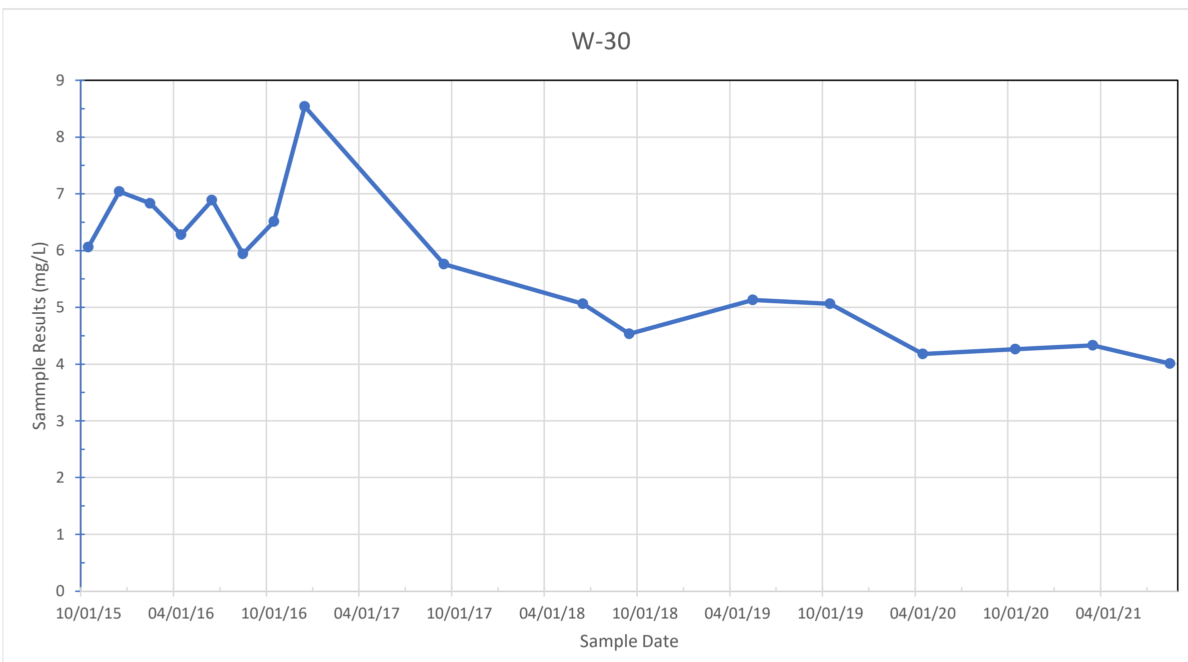
Table 1
Statistical Background Values (2022 Update)
MOSES Bottom Ash Ponds

Parameter	**Statistical Background Value**
Boron (B) (mg/L)	8.52
Calcium (Ca) (mg/L)	310
Chloride (Cl) (mg/L)	184
Fluoride (F) (mg/L)	2.91
field pH (s.u.)	4.99 - 7.14
Sulfate ($S0_4$) (mg/L)	1,187
Total Dissolved Solids (TDS) (mg/L)	2,151

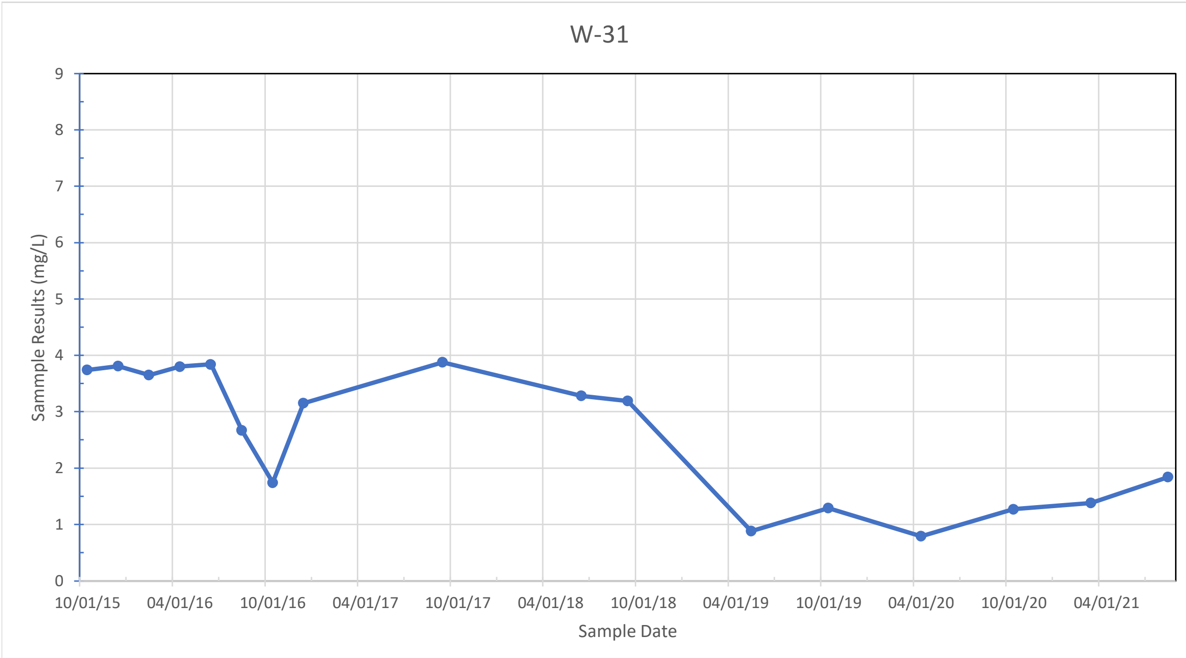
Appendix A
Time Series Plots

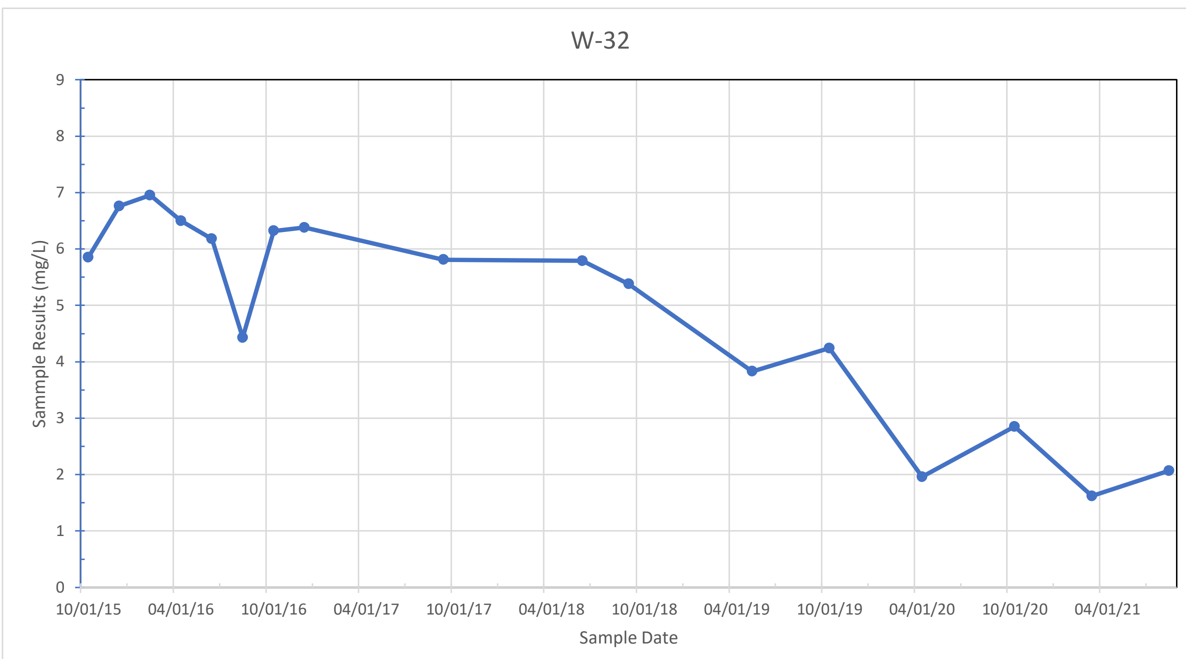
Statistical Analysis of Ground Water Data
Time Series Chart - Barium
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas



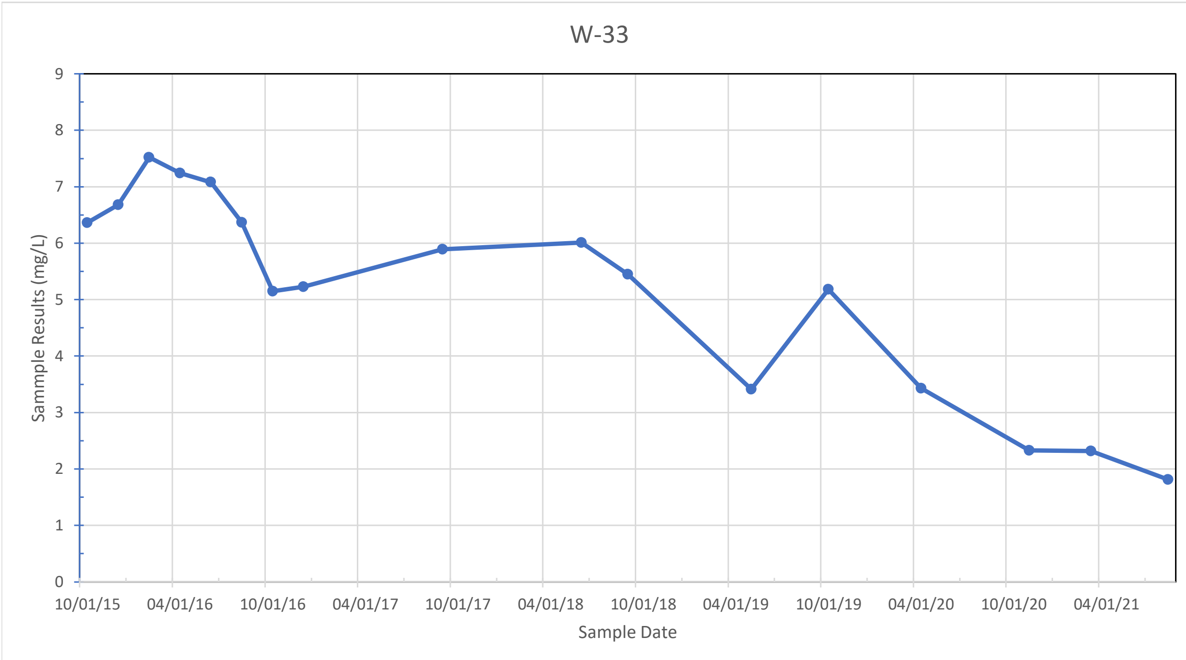


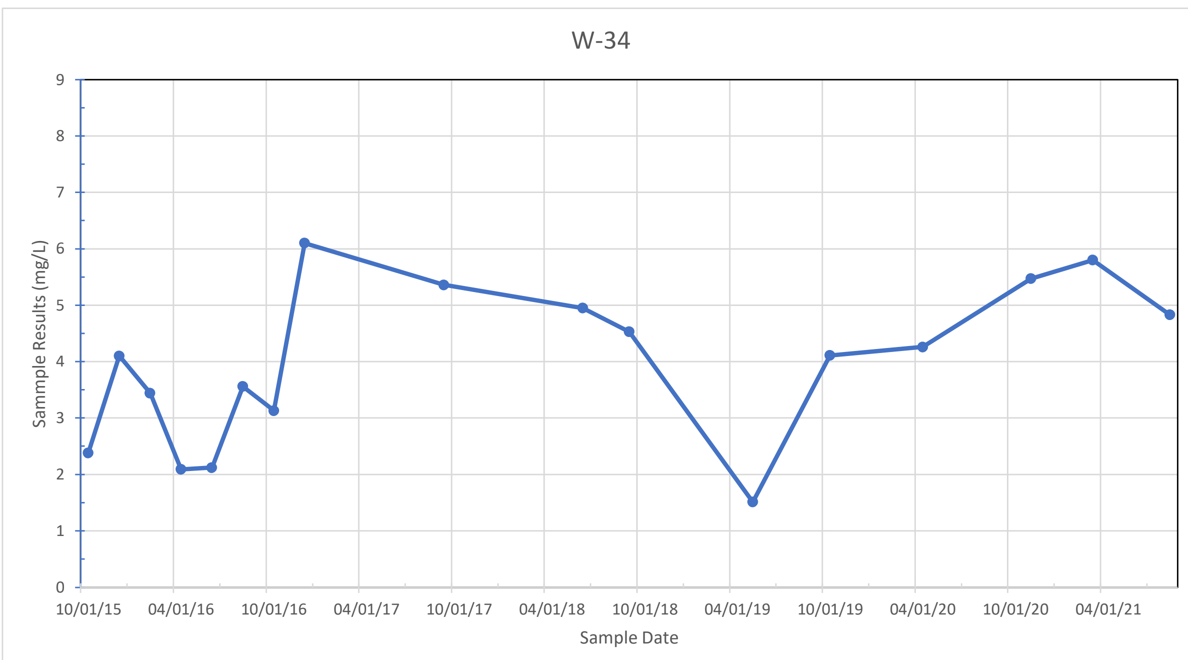
Statistical Analysis of Ground Water Data
Time Series Chart - Barium
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas



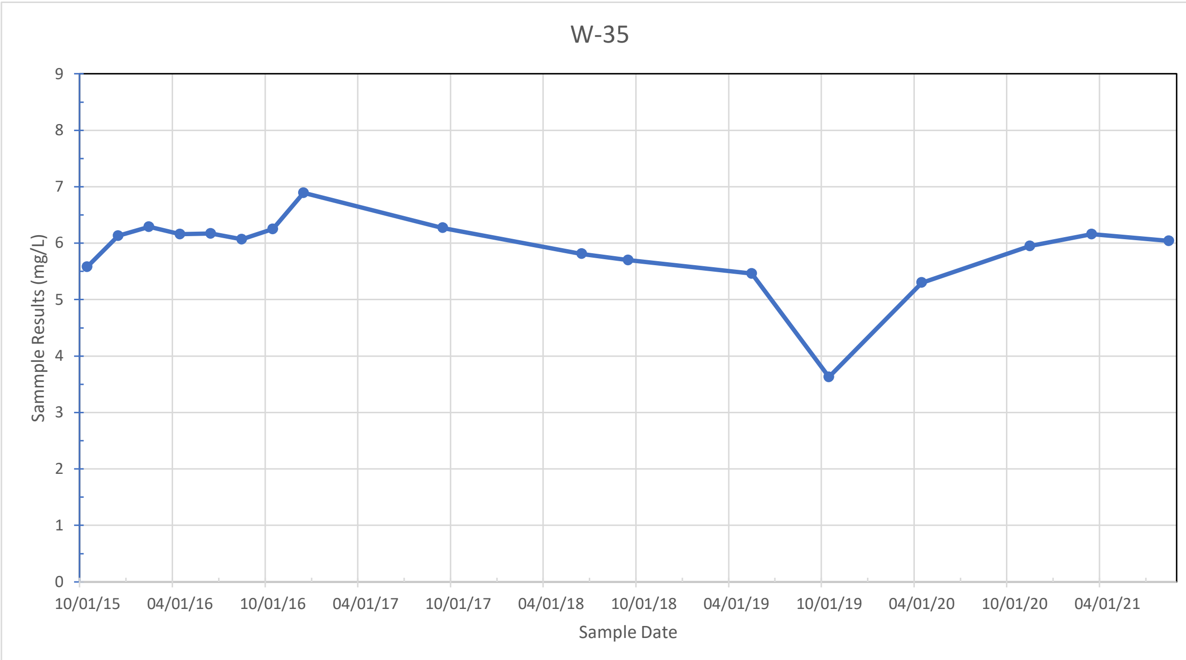


Statistical Analysis of Ground Water Data
Time Series Chart - Barium
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas

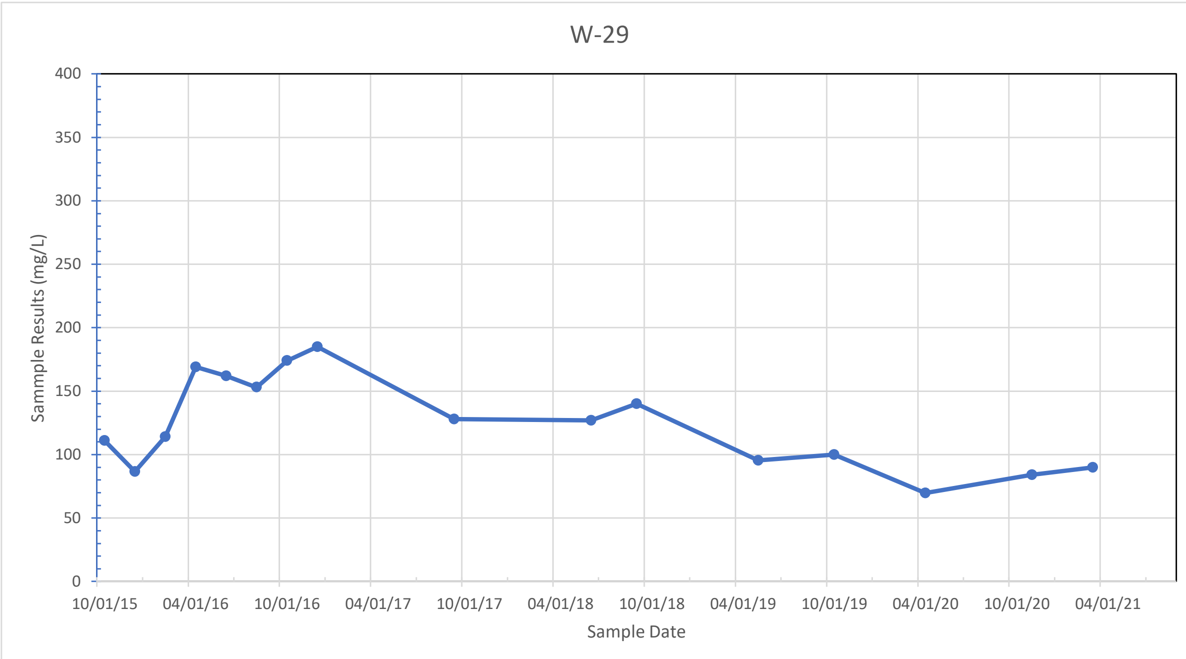


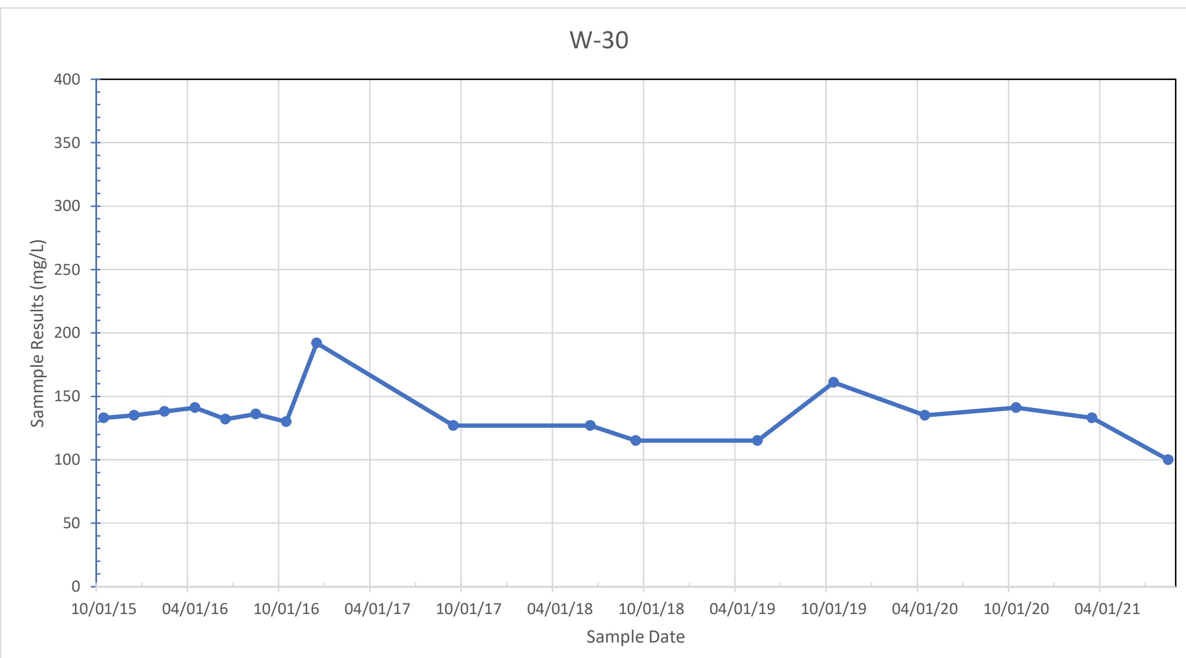


Statistical Analysis of Ground Water Data
Time Series Chart - Barium
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas

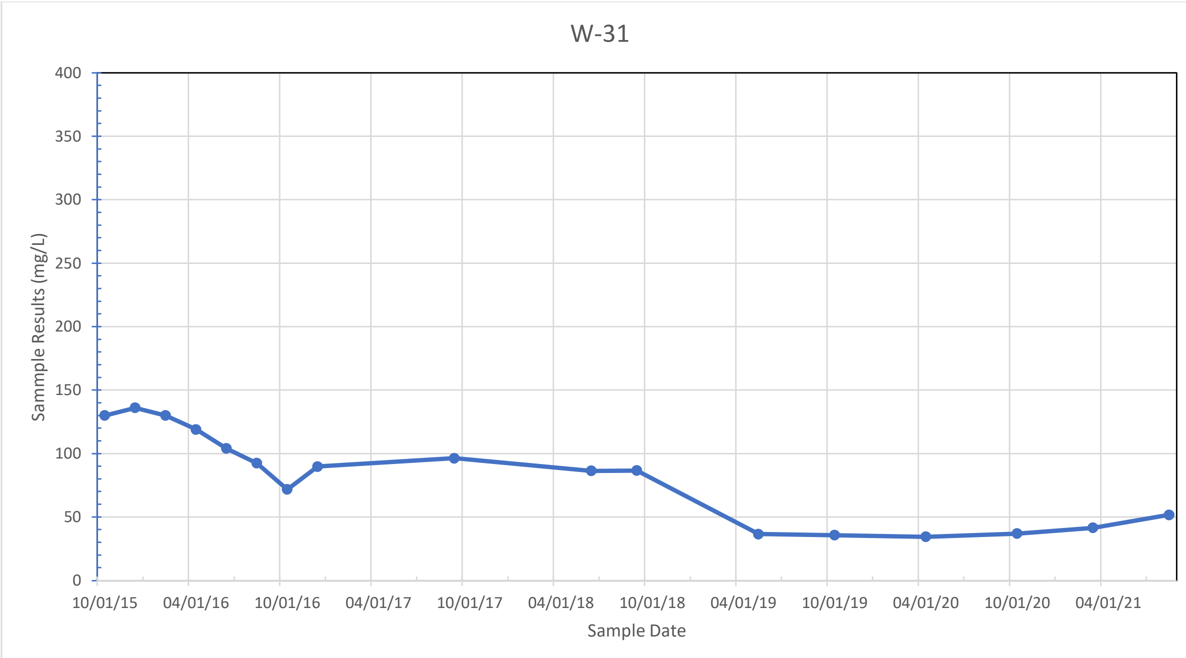


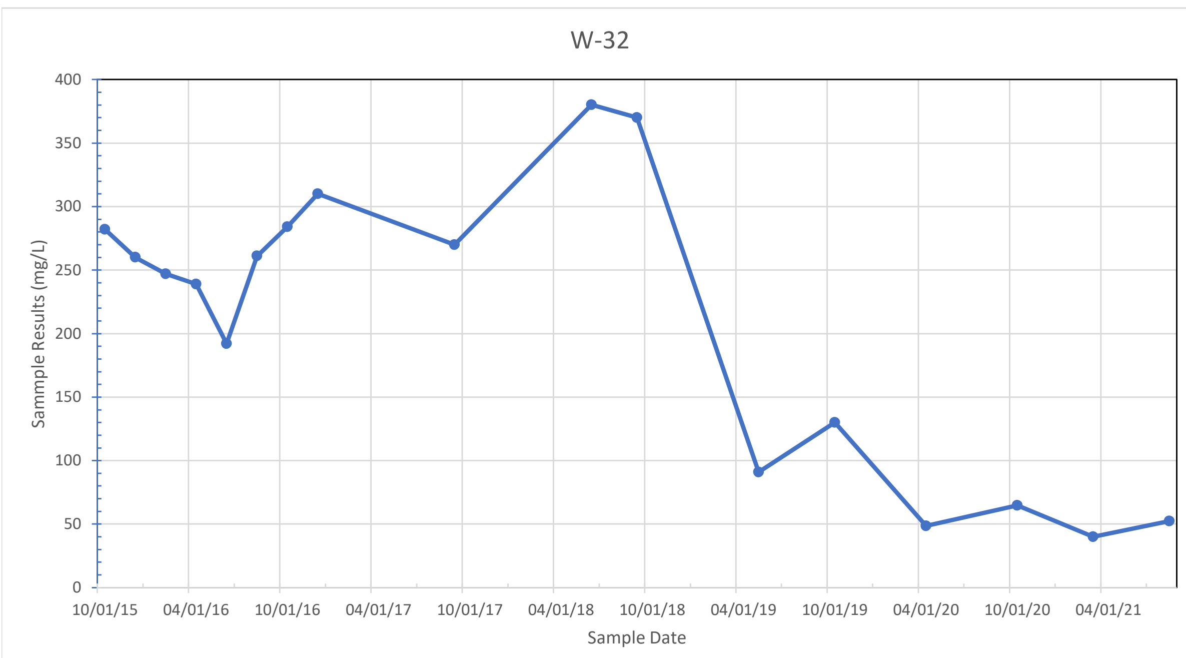
Statistical Analysis of Ground Water Data
Time Series Chart - Calcium
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas



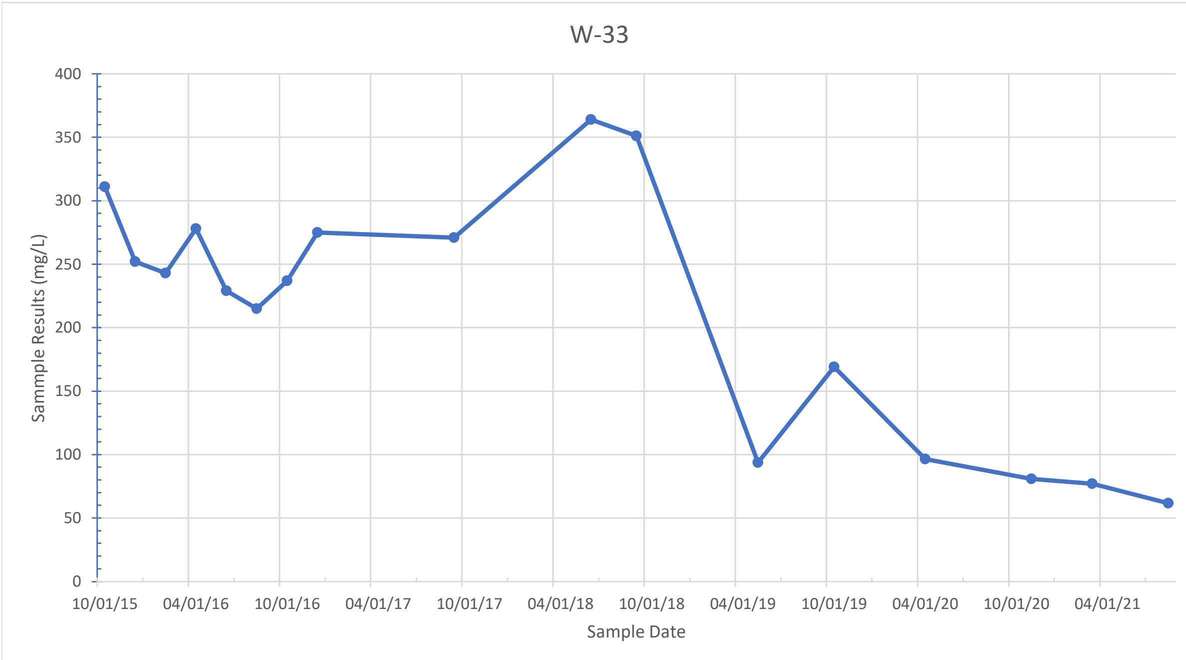


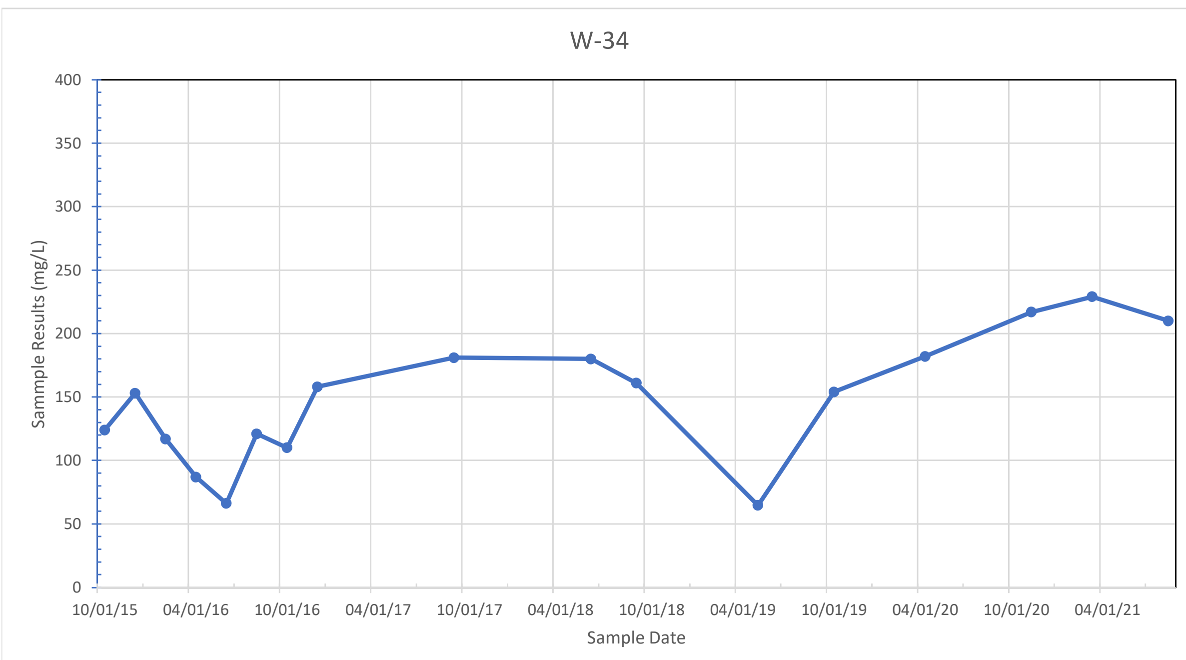
Statistical Analysis of Ground Water Data
Time Series Chart - Calcium
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas



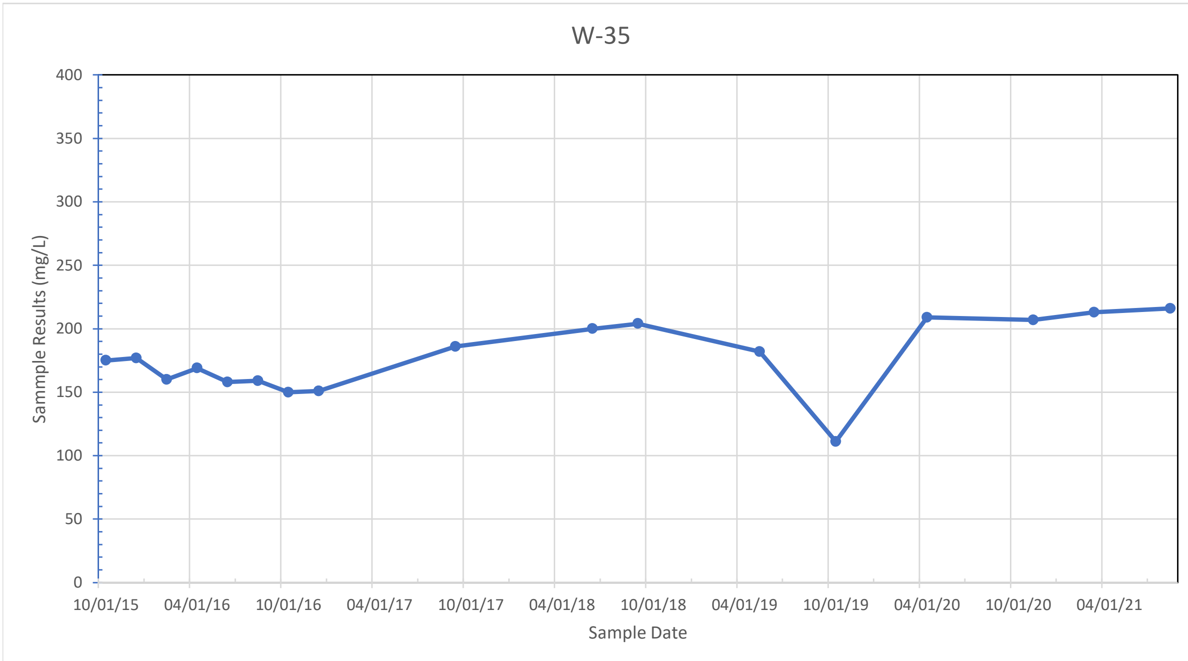


Statistical Analysis of Ground Water Data
Time Series Chart - Calcium
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas

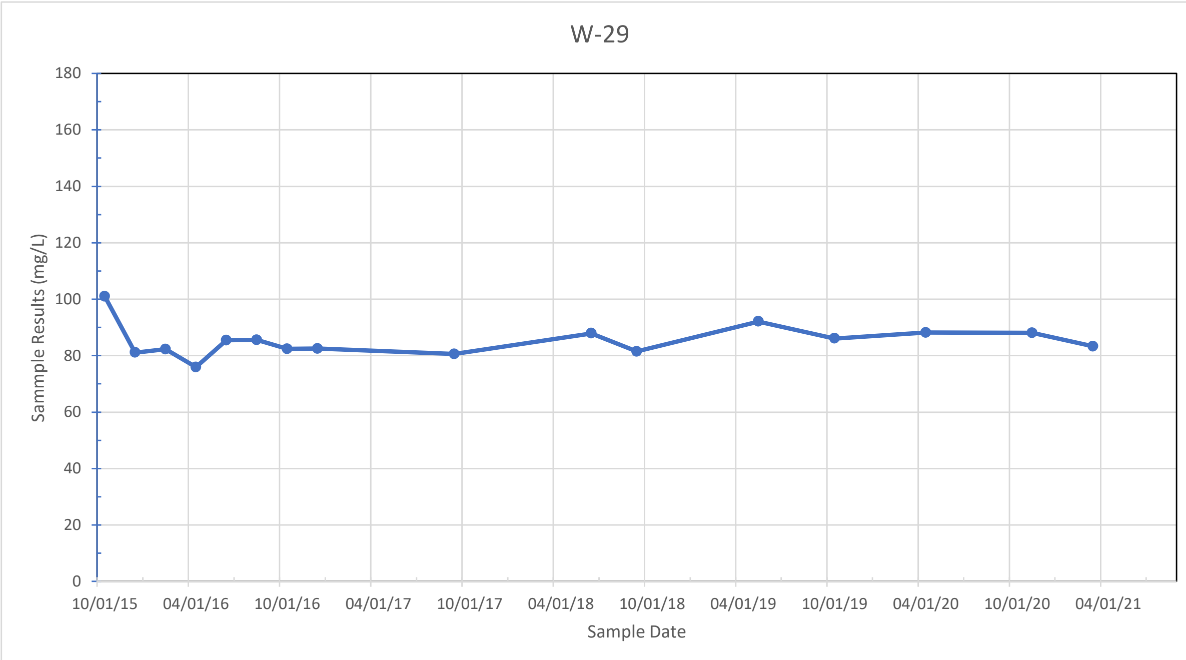


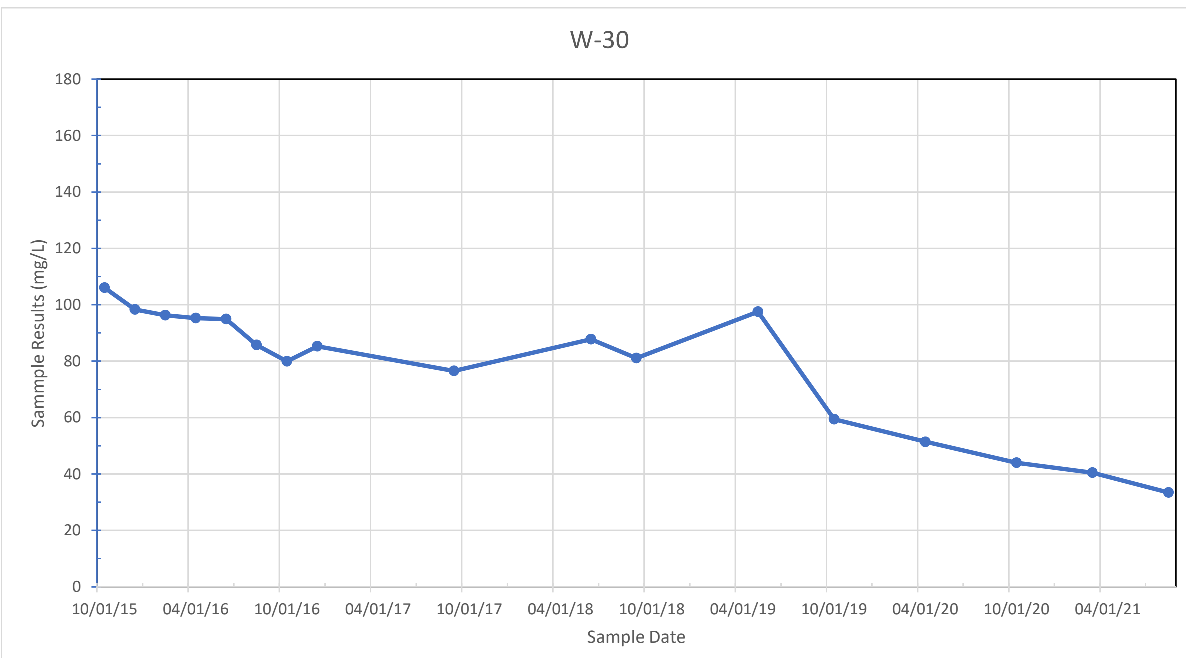


Statistical Analysis of Ground Water Data
Time Series Chart - Calcium
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas

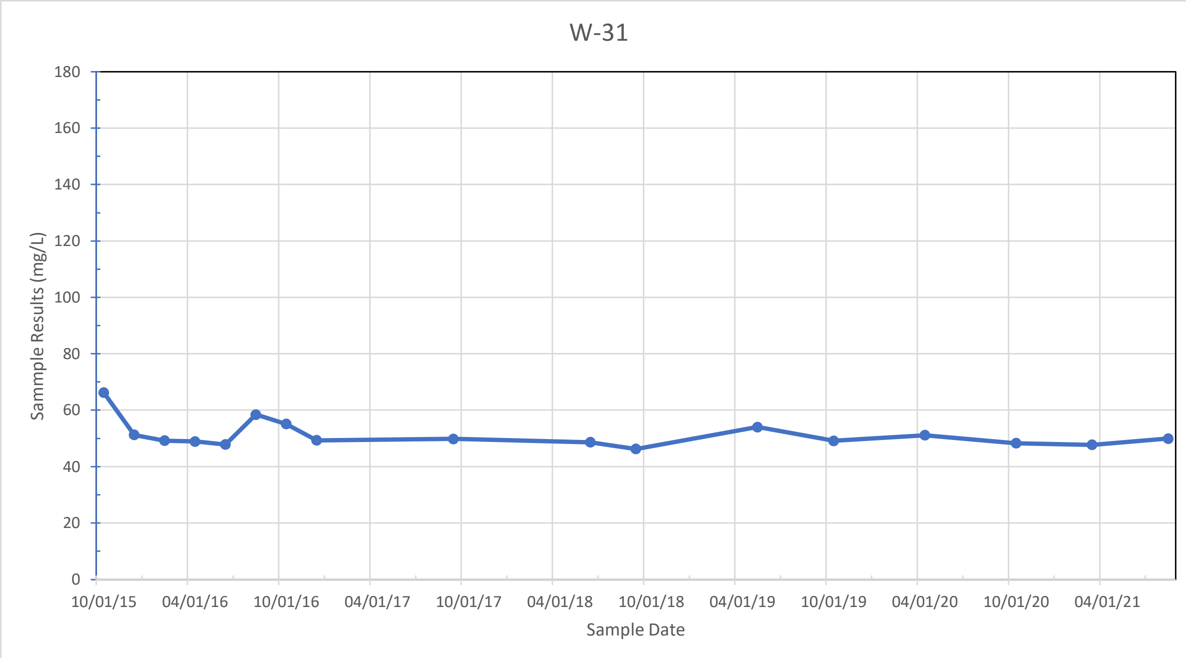


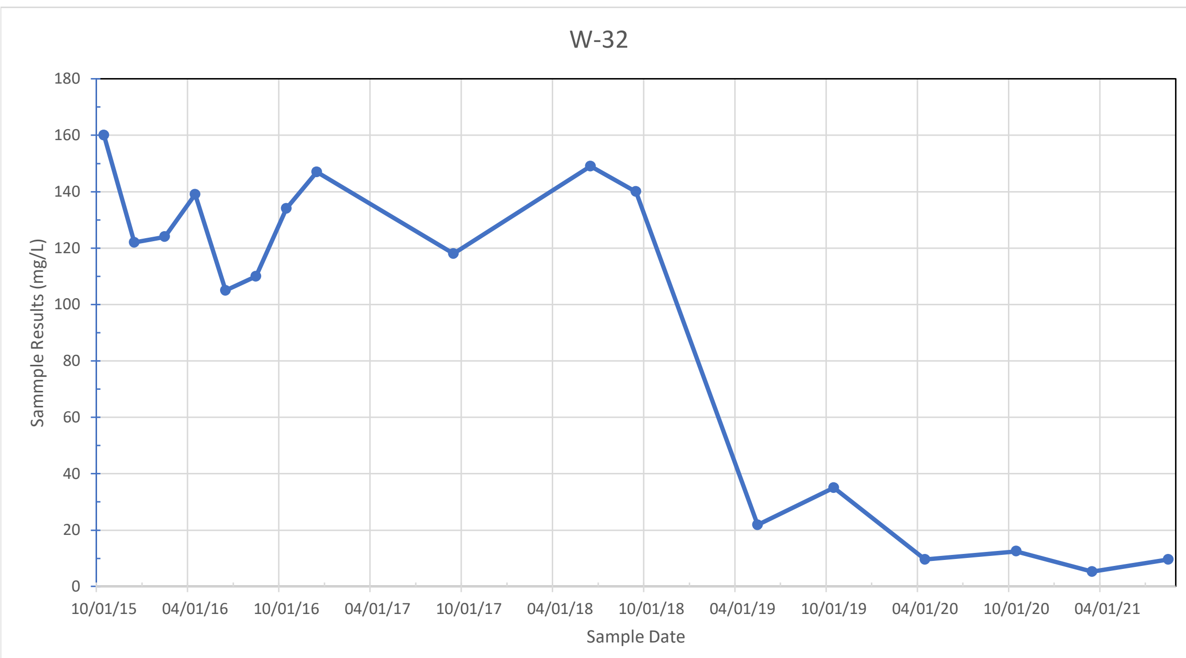
Statistical Analysis of Ground Water Data
Time Series Chart - Chloride
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas



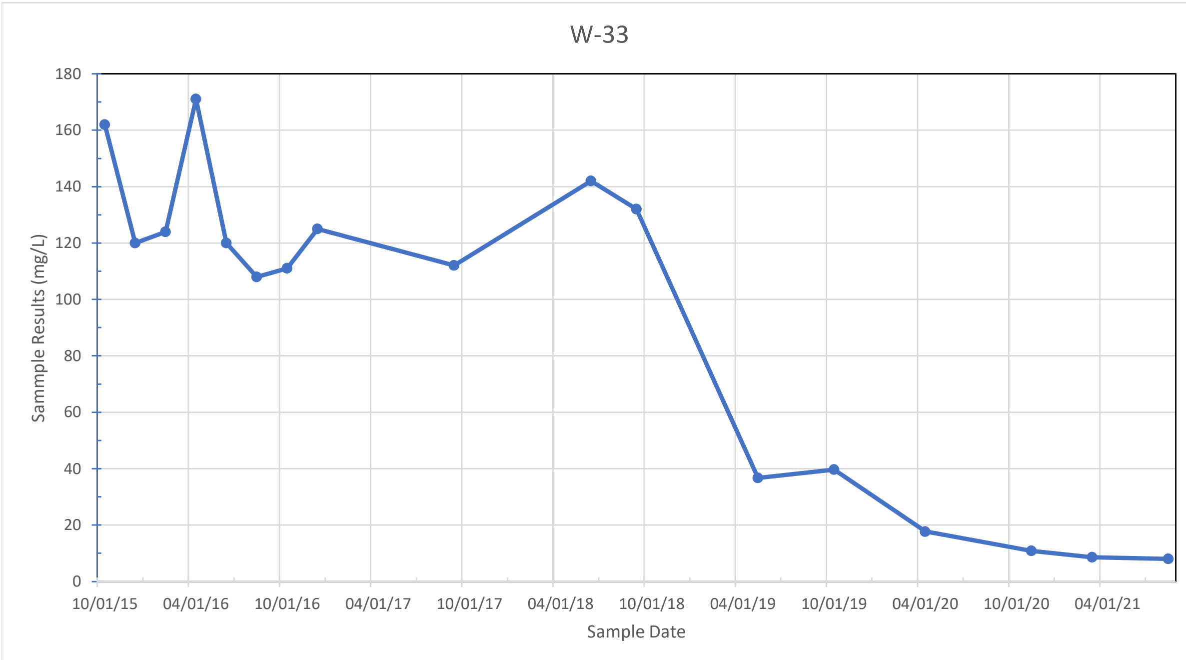


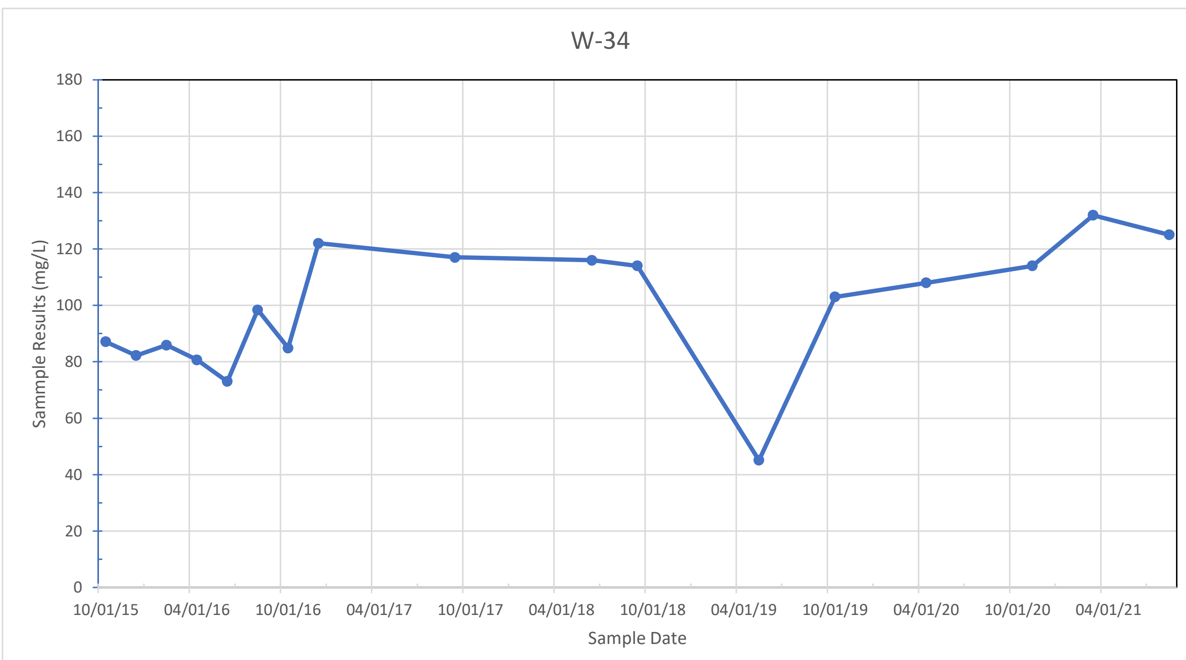
Statistical Analysis of Ground Water Data
Time Series Chart - Chloride
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas



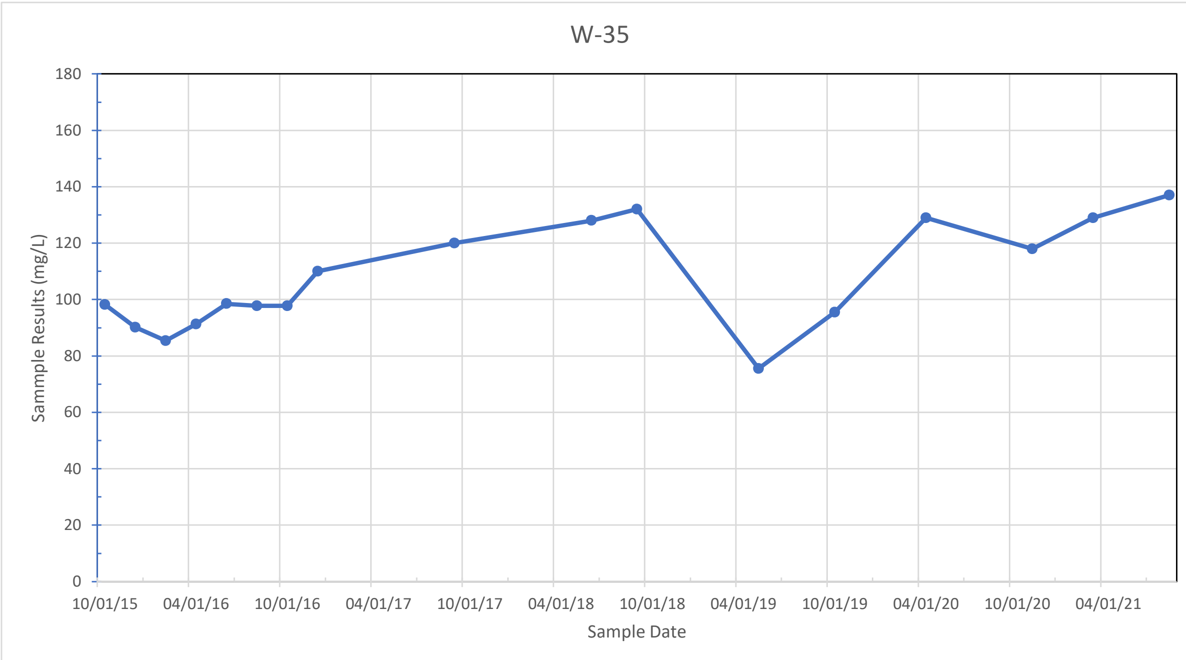


Statistical Analysis of Ground Water Data
Time Series Chart - Chloride
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas

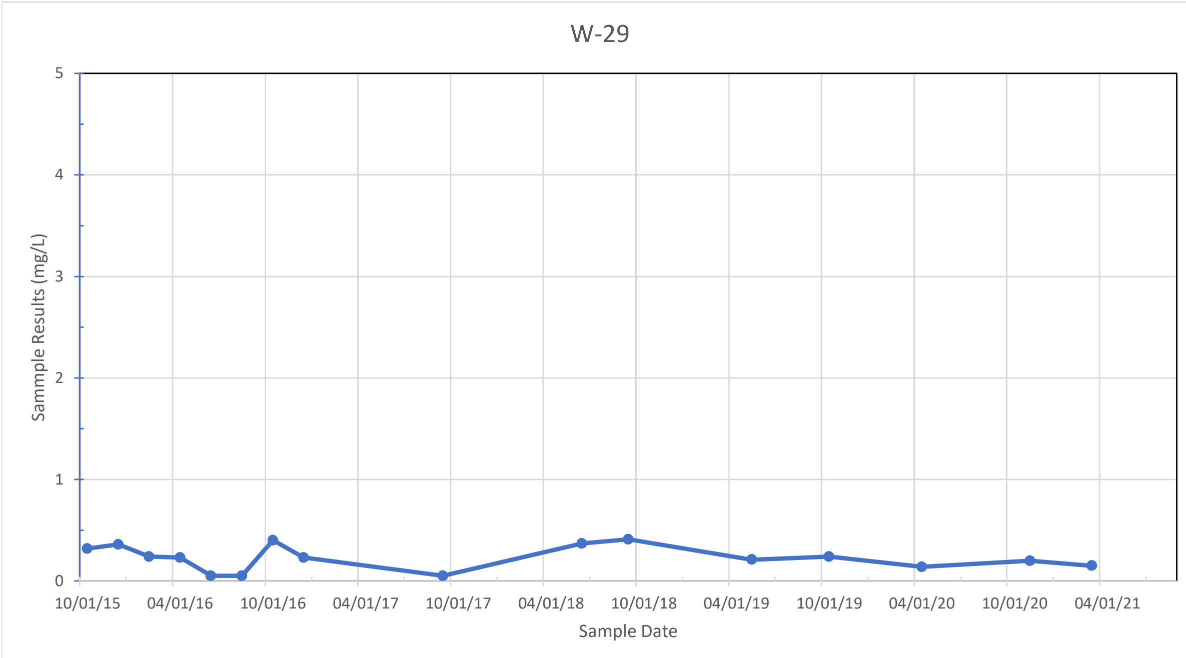


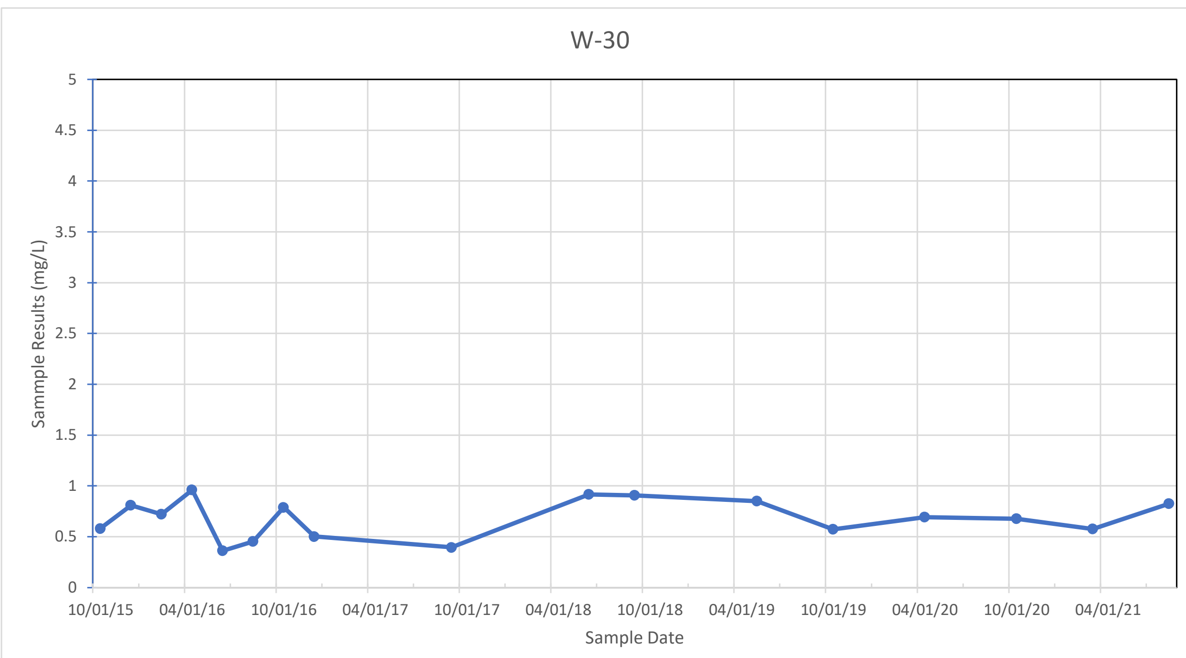


Statistical Analysis of Ground Water Data
Time Series Chart - Chloride
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas

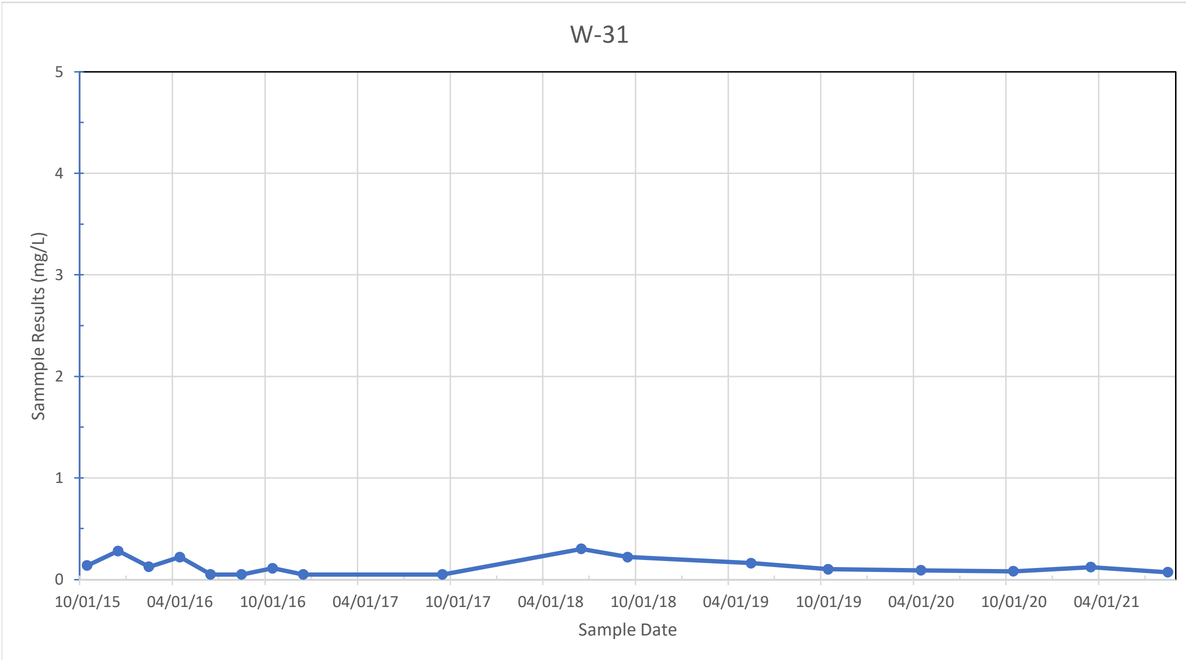


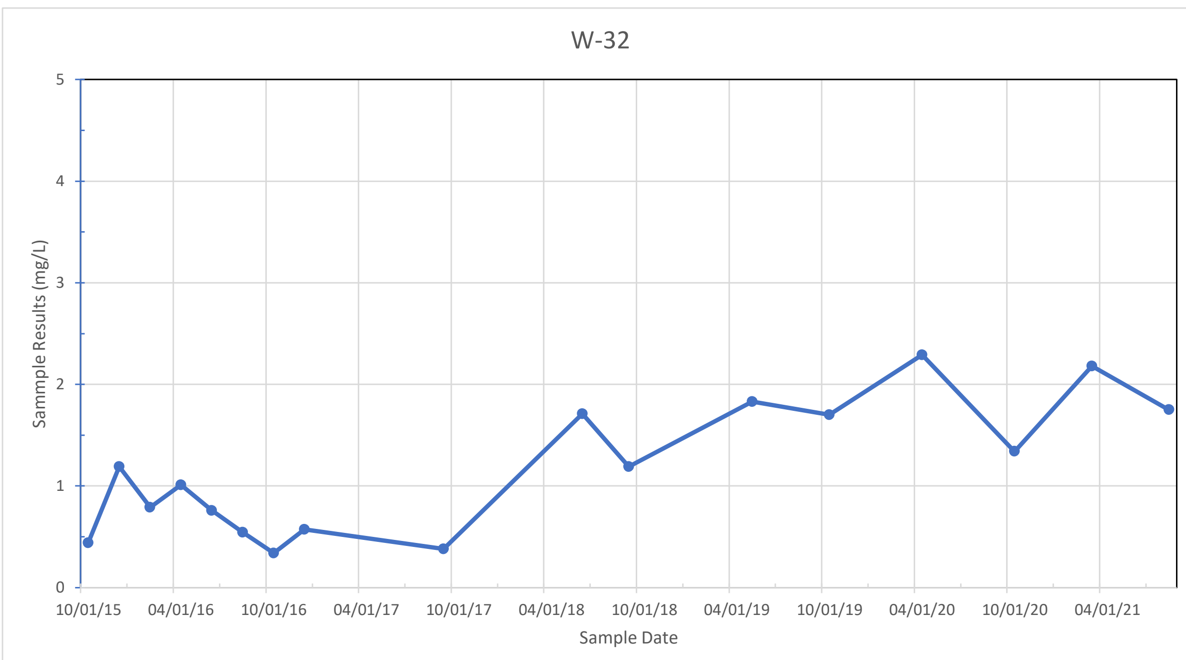
Statistical Analysis of Ground Water Data
Time Series Chart - Fluoride
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas



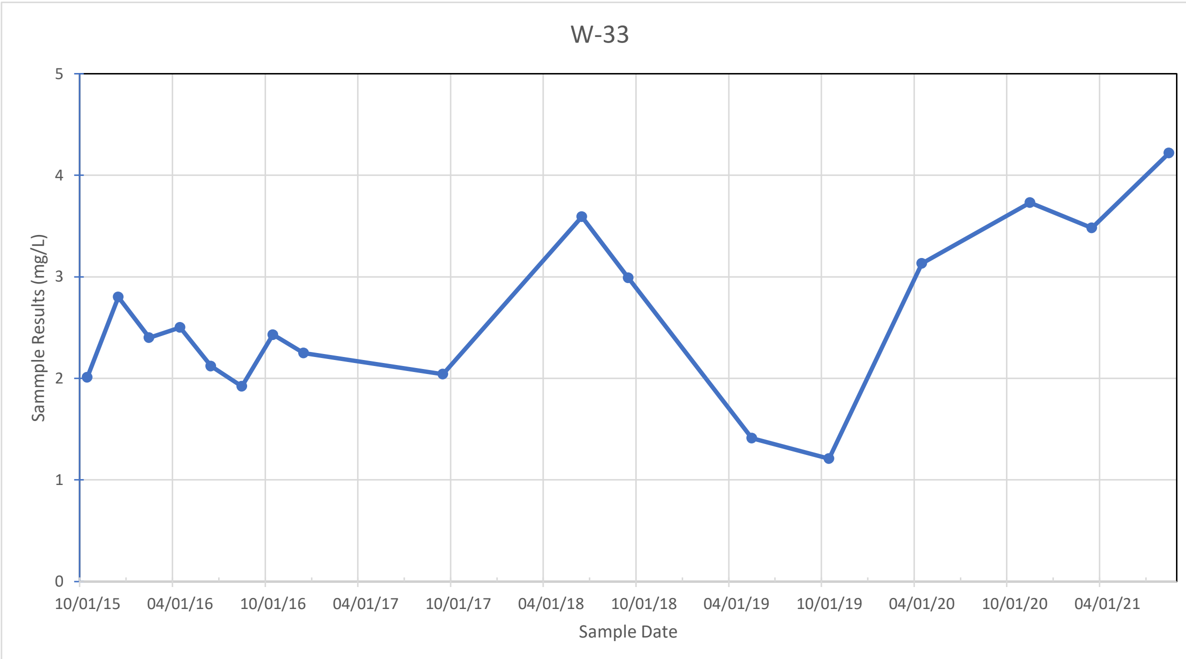


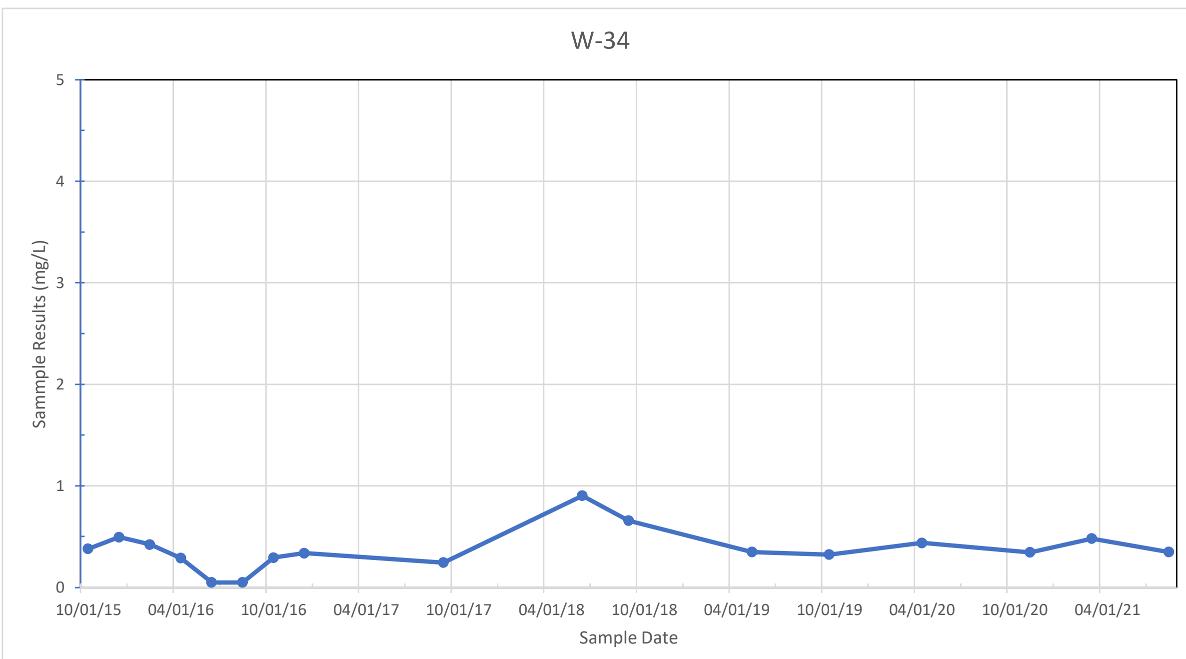
Statistical Analysis of Ground Water Data
Time Series Chart - Fluoride
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas



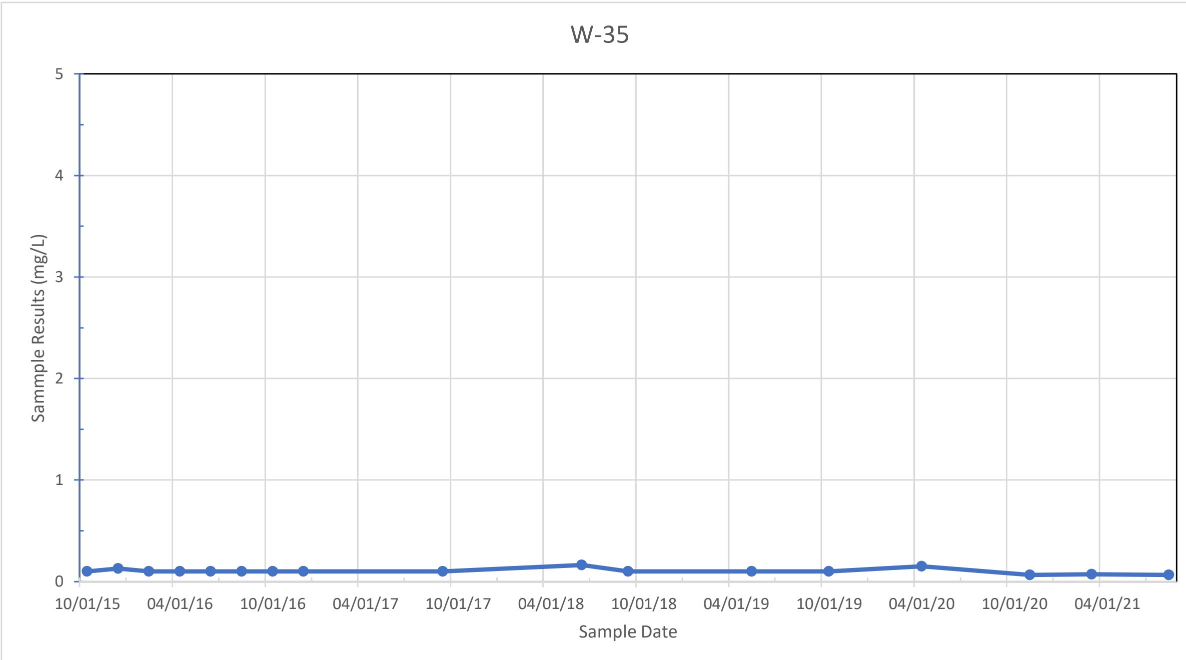


Statistical Analysis of Ground Water Data
Time Series Chart - Fluoride
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas

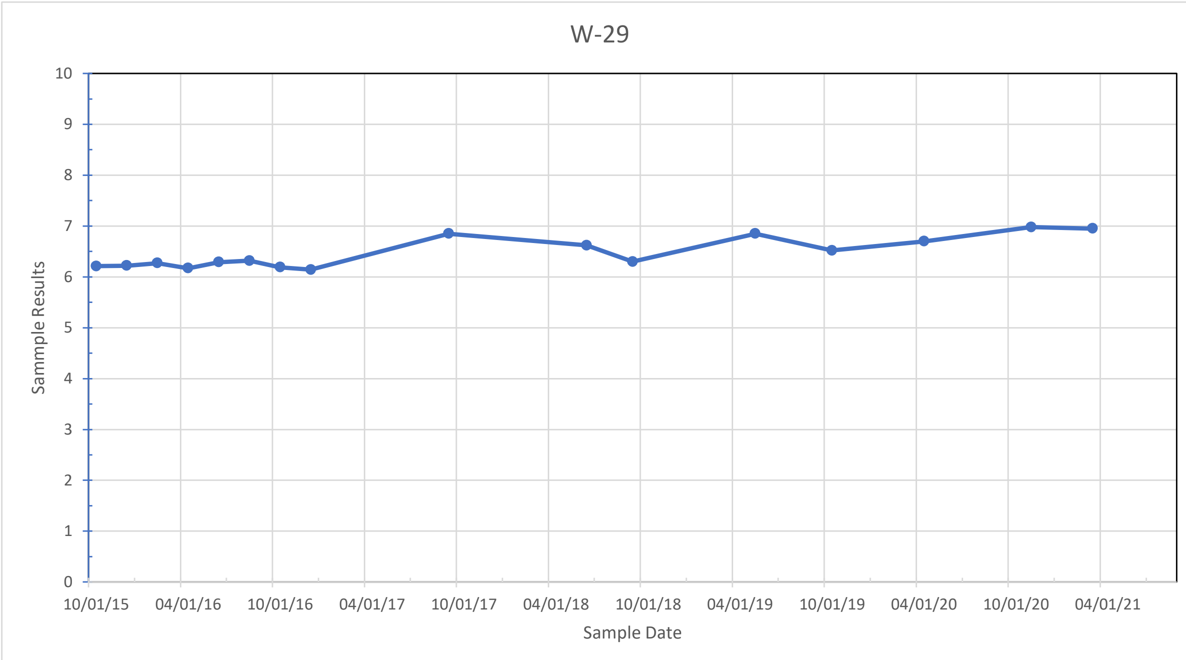


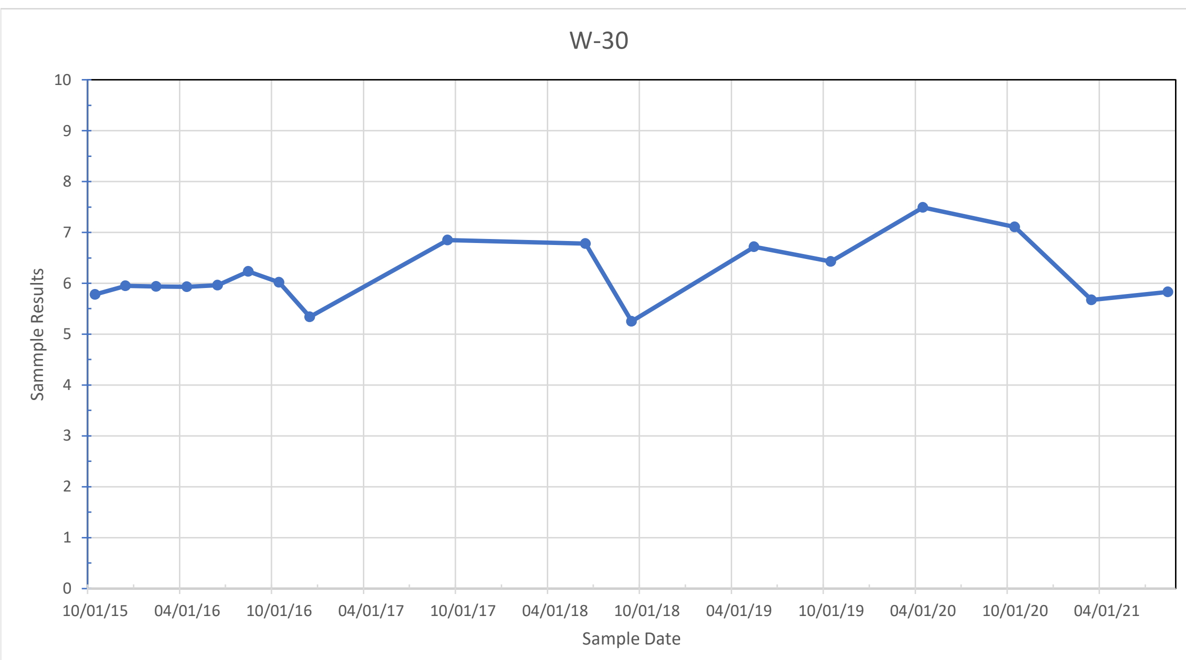


Statistical Analysis of Ground Water Data
Time Series Chart - Fluoride
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas

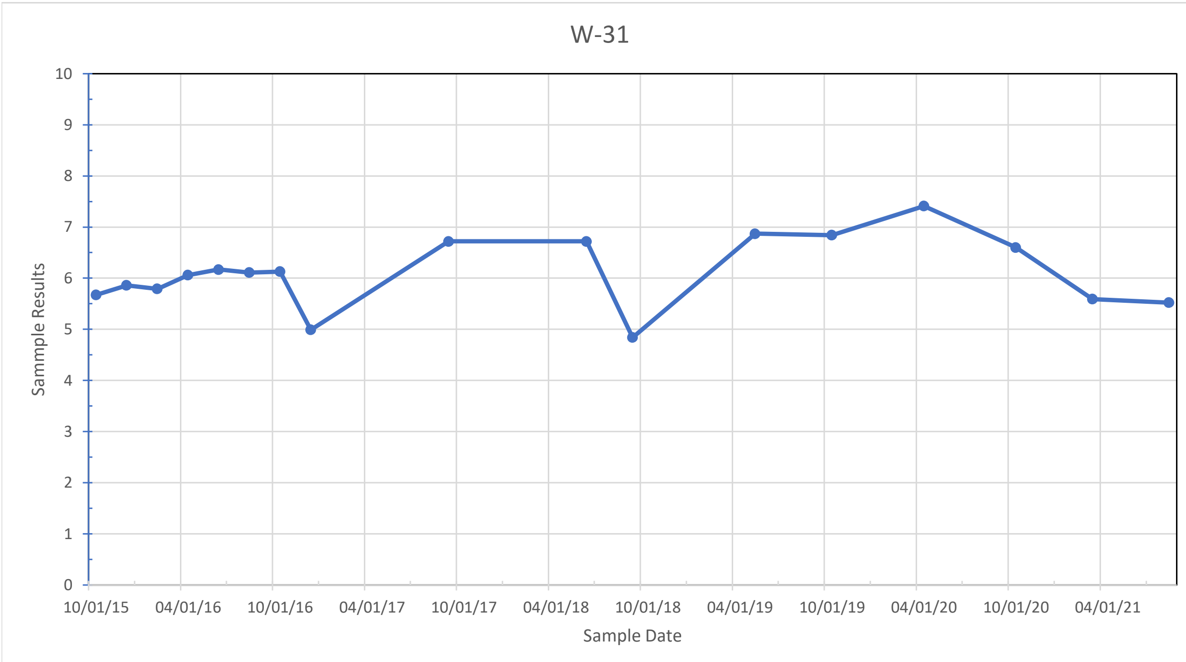


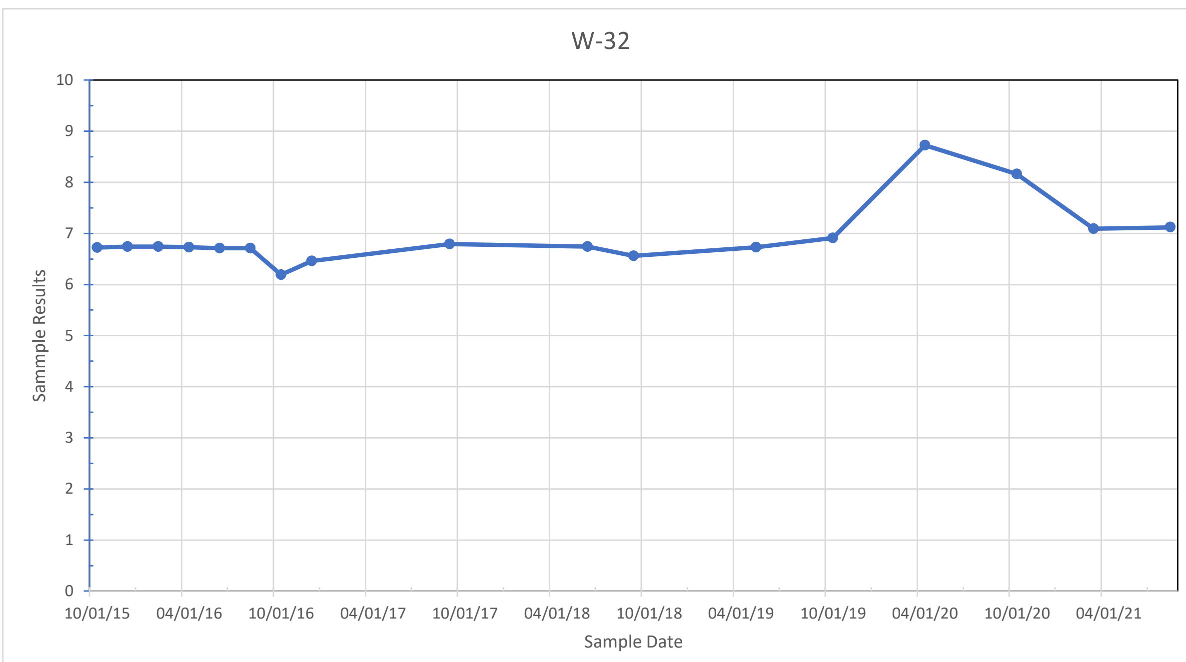
Statistical Analysis of Ground Water Data
Time Series Chart - pH
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas



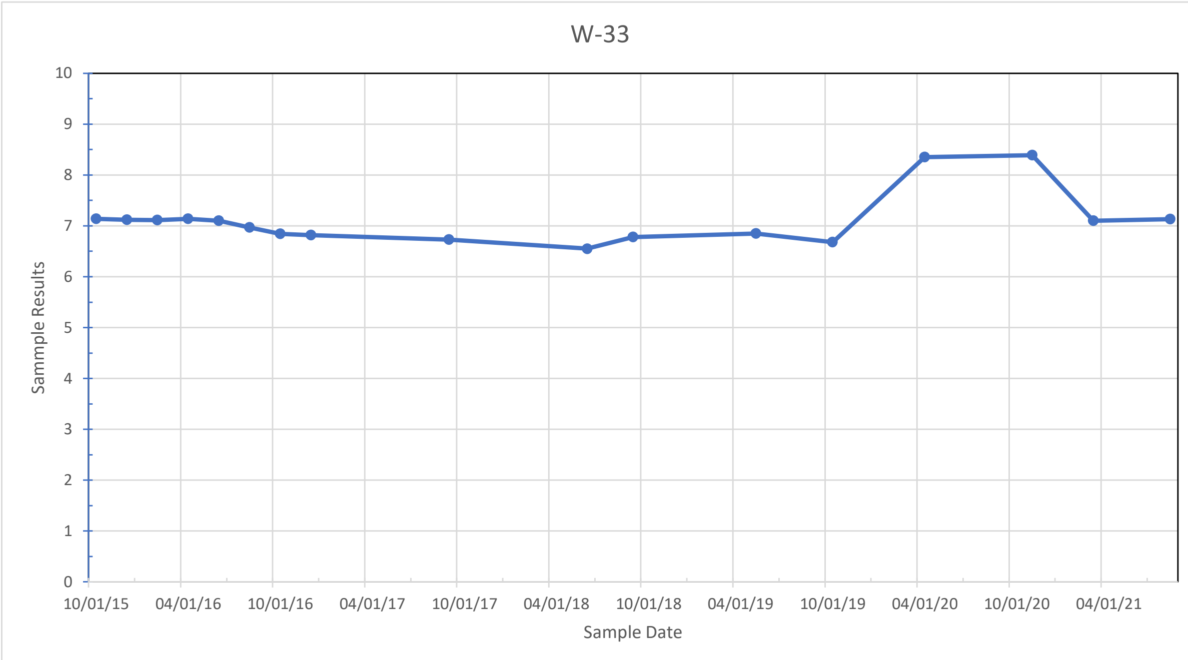


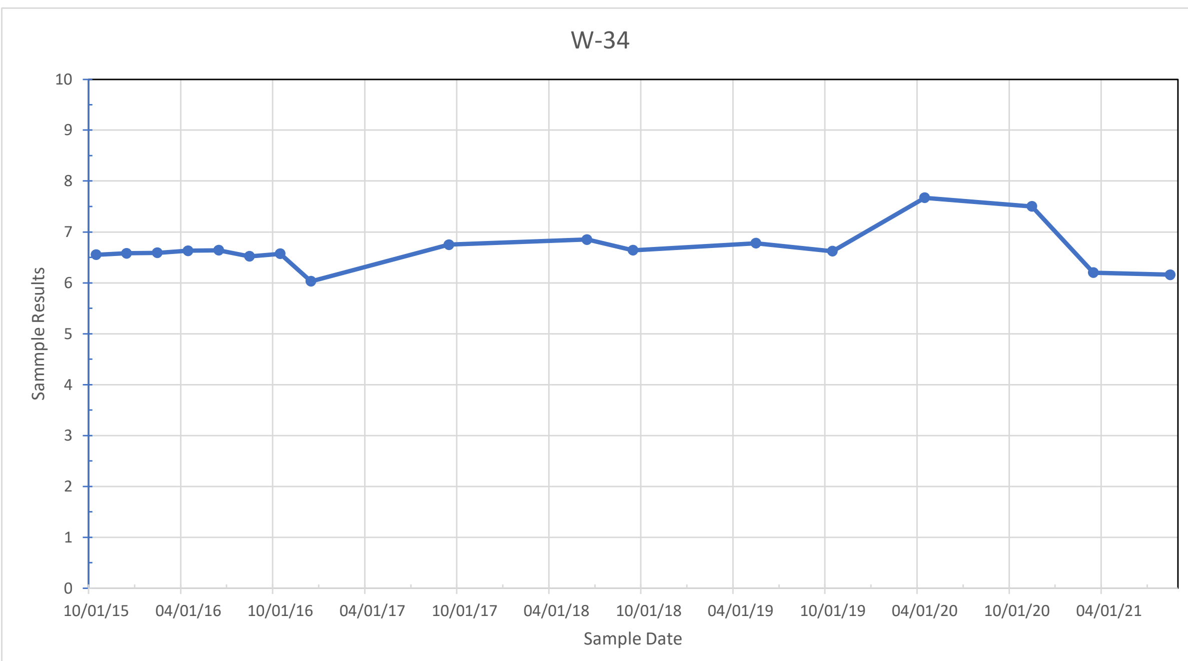
Statistical Analysis of Ground Water Data
Time Series Chart - pH
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas



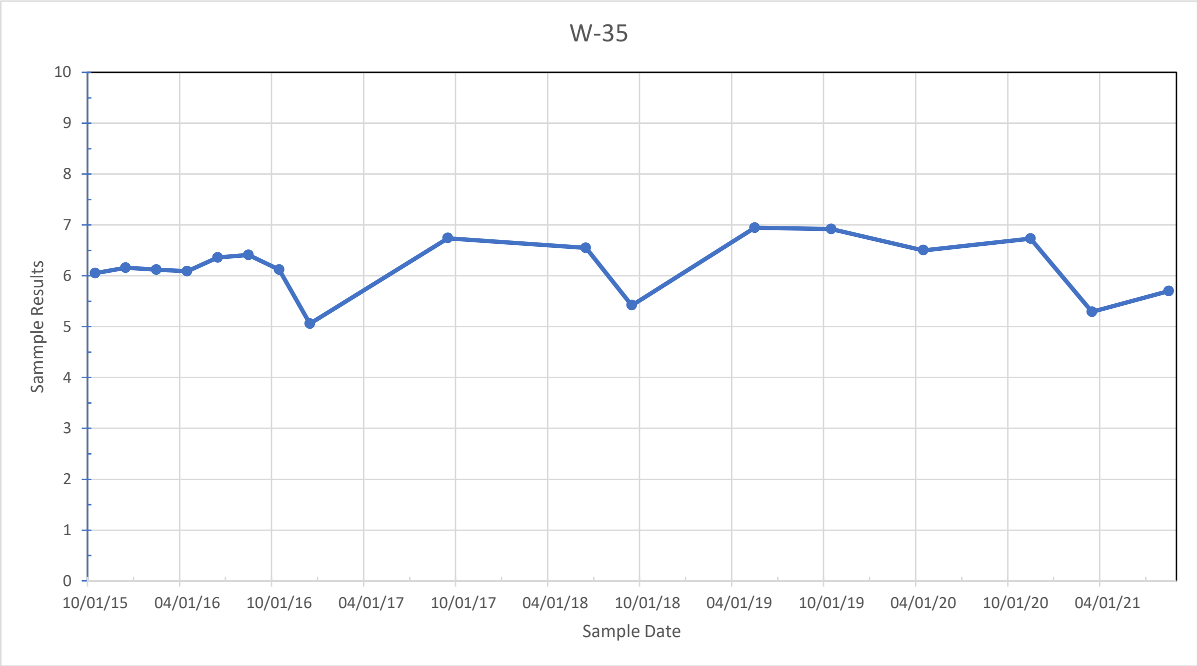


Statistical Analysis of Ground Water Data
Time Series Chart - pH
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas

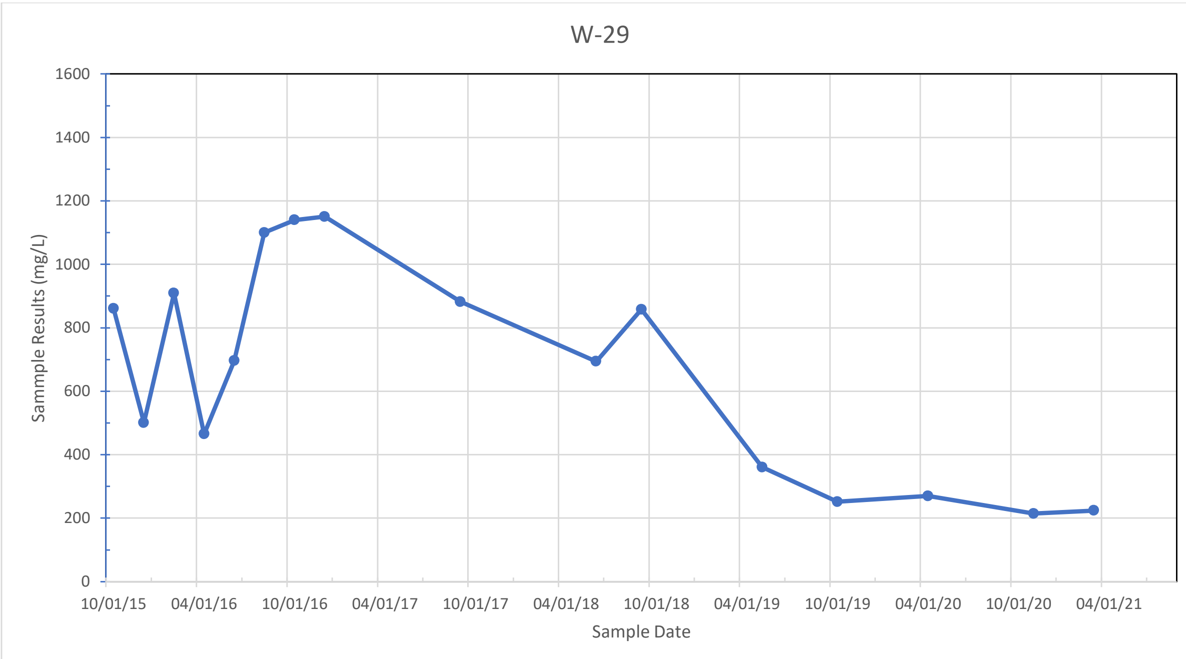


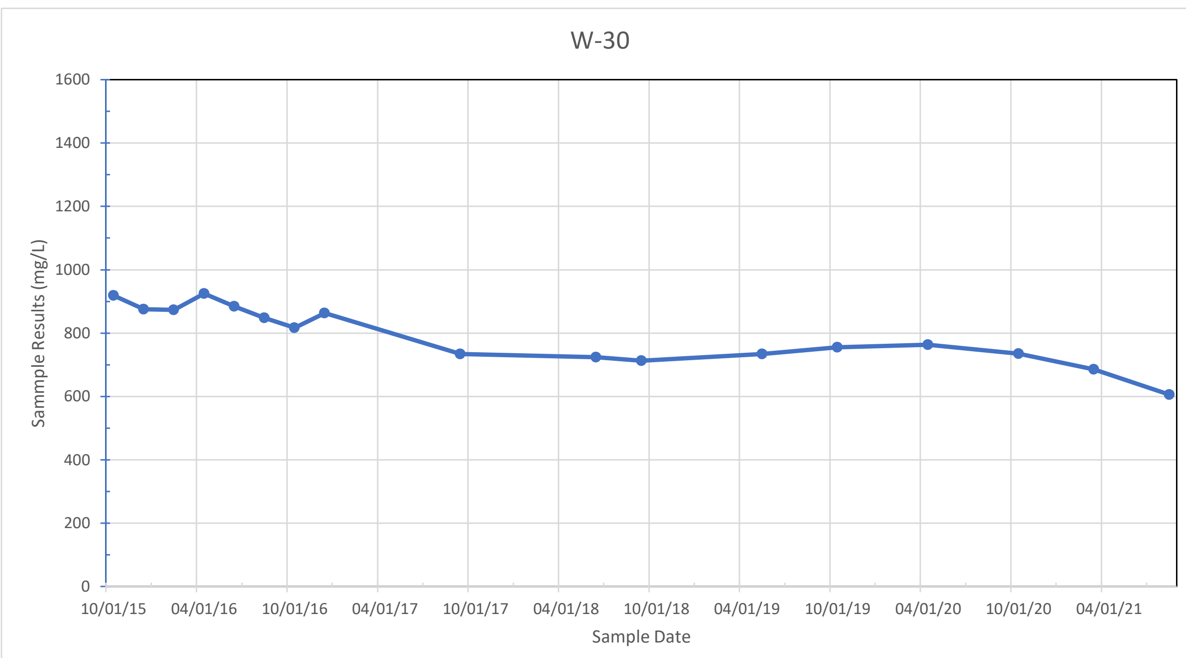


Statistical Analysis of Ground Water Data
Time Series Chart - pH
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas

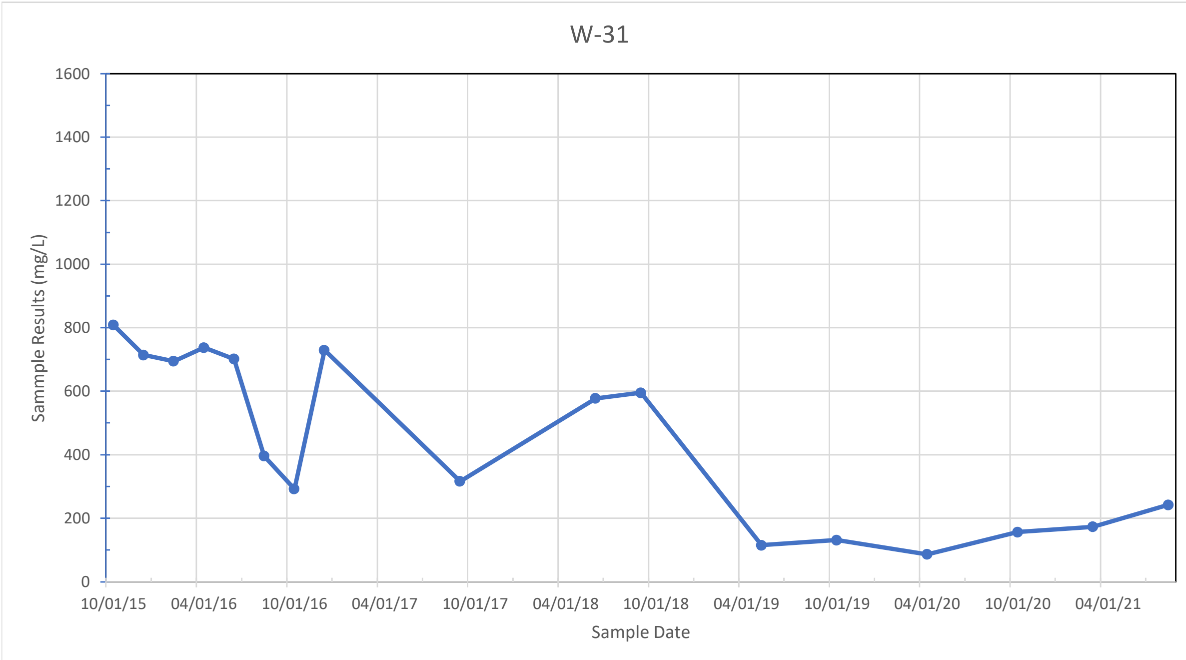


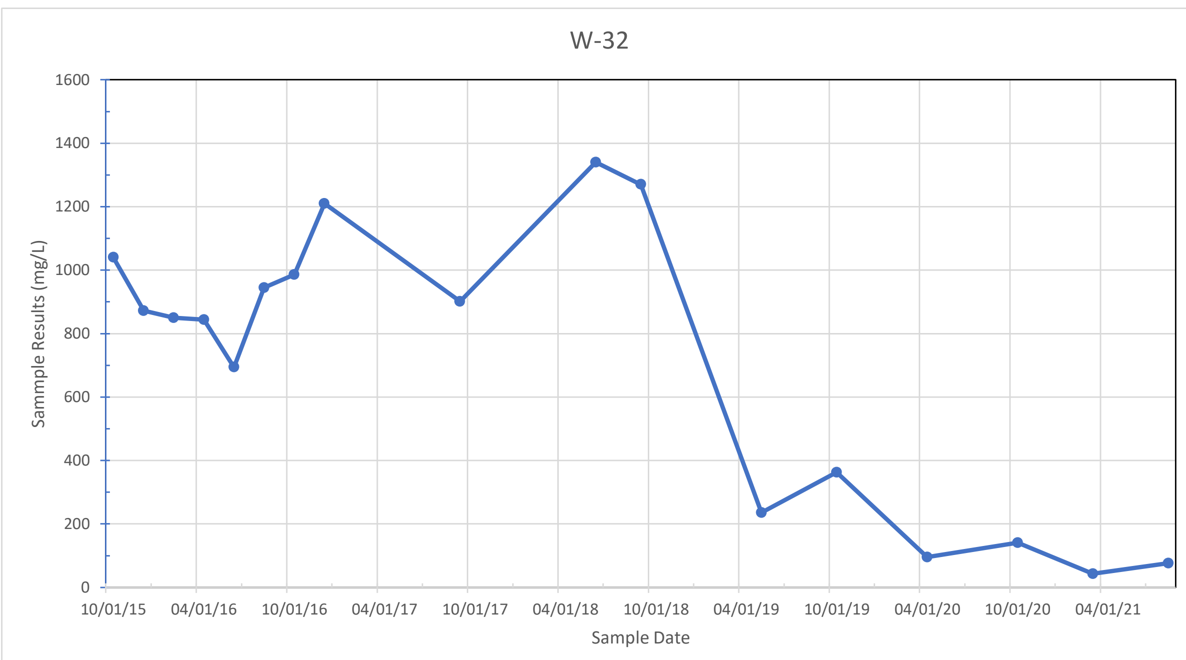
Statistical Analysis of Ground Water Data
Time Series Chart - Sulfate
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas



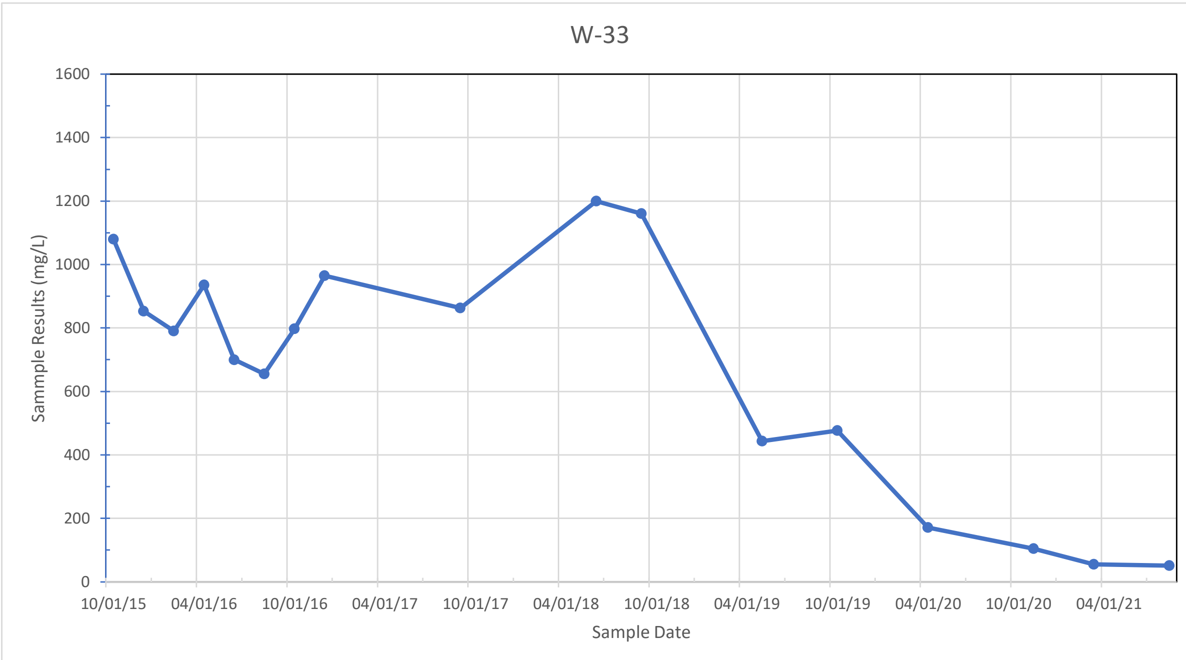


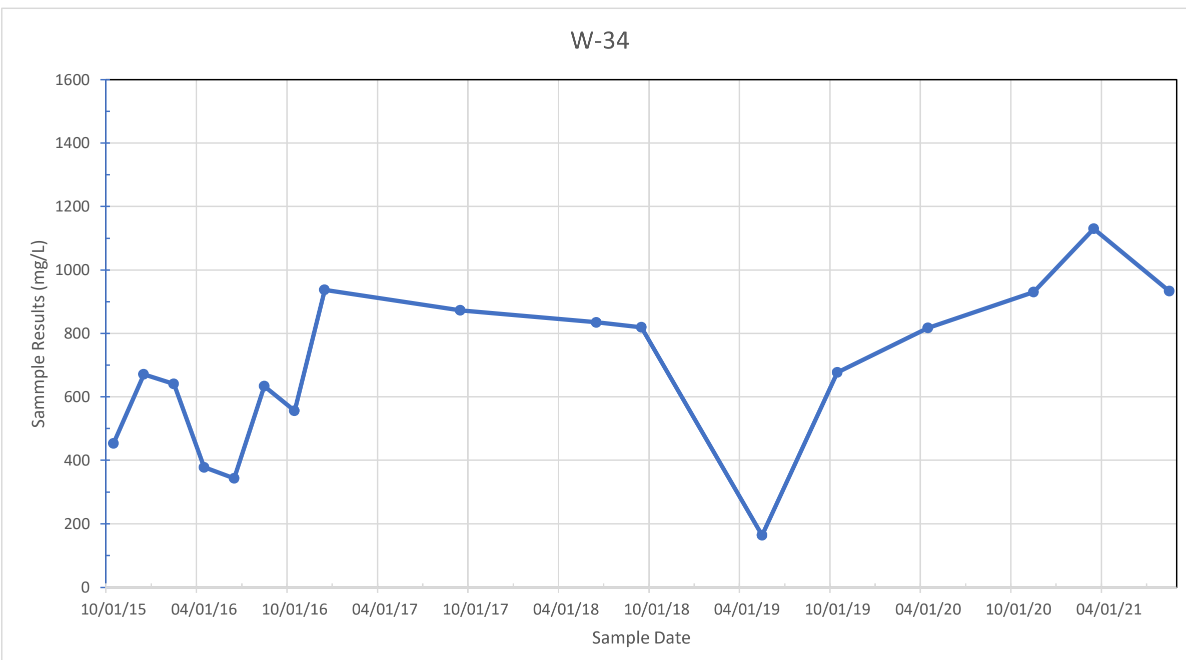
Statistical Analysis of Ground Water Data
Time Series Chart - Sulfate
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas



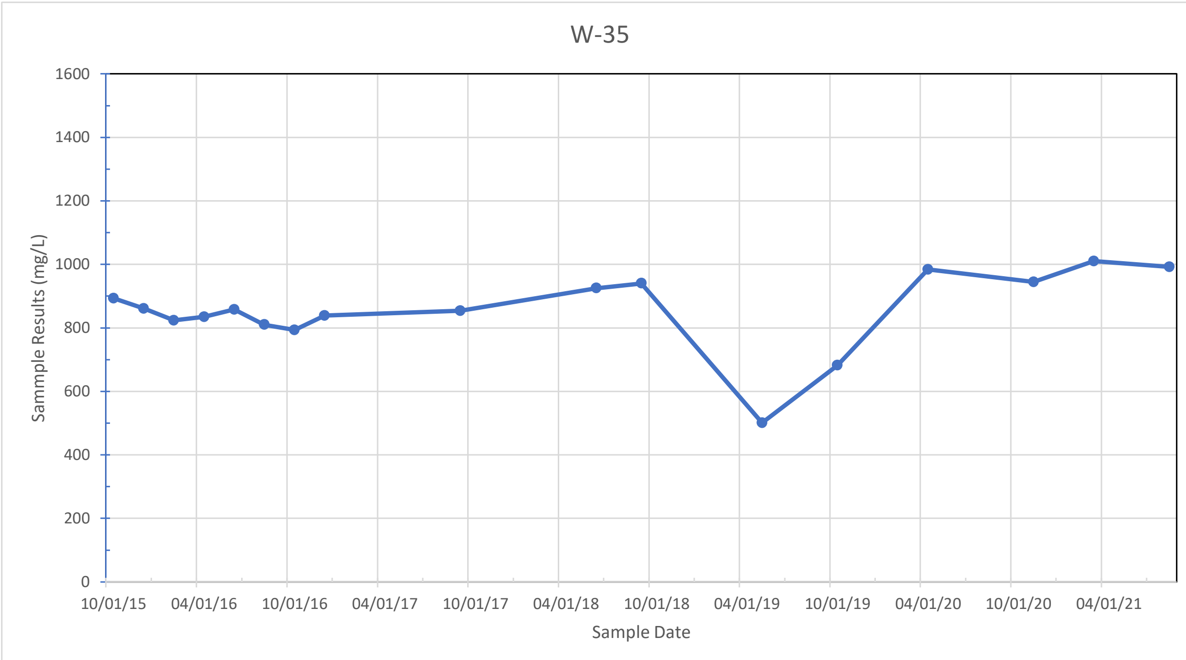


Statistical Analysis of Ground Water Data
Time Series Chart - Sulfate
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas

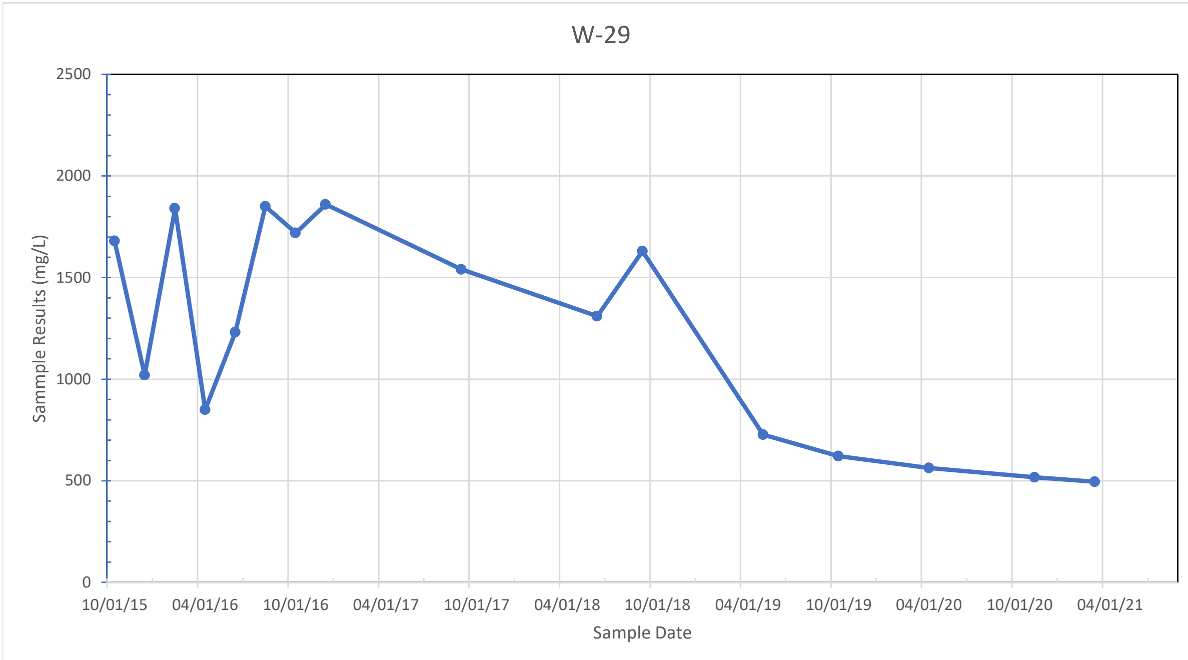


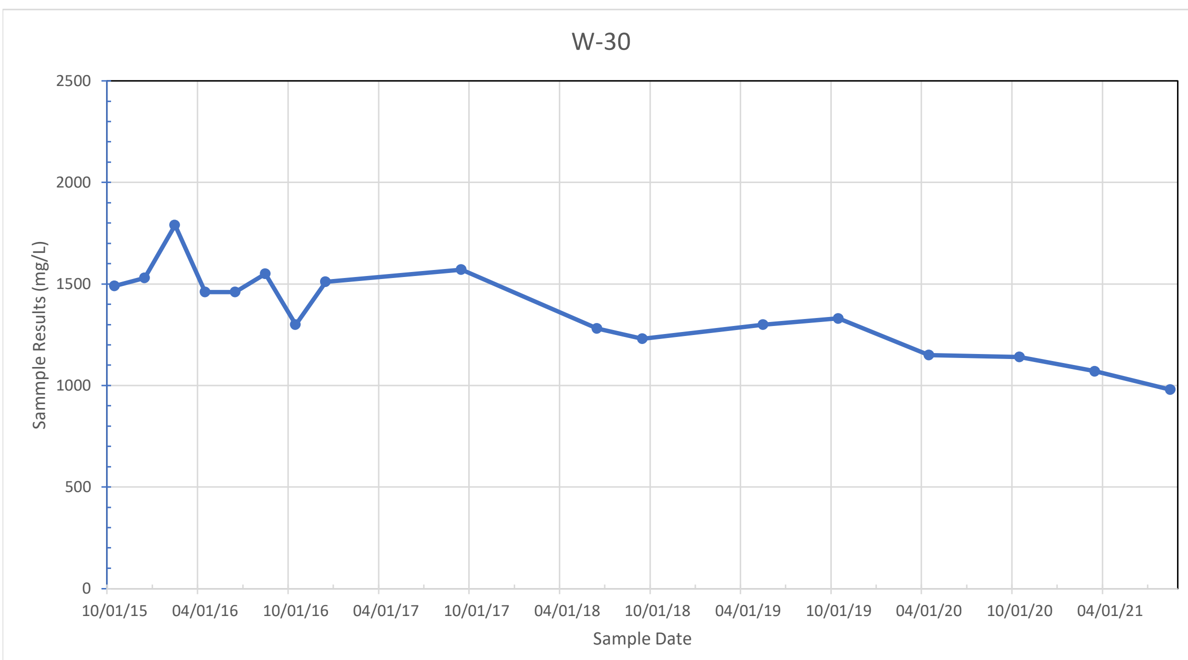


Statistical Analysis of Ground Water Data
Time Series Chart - Sulfate
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas

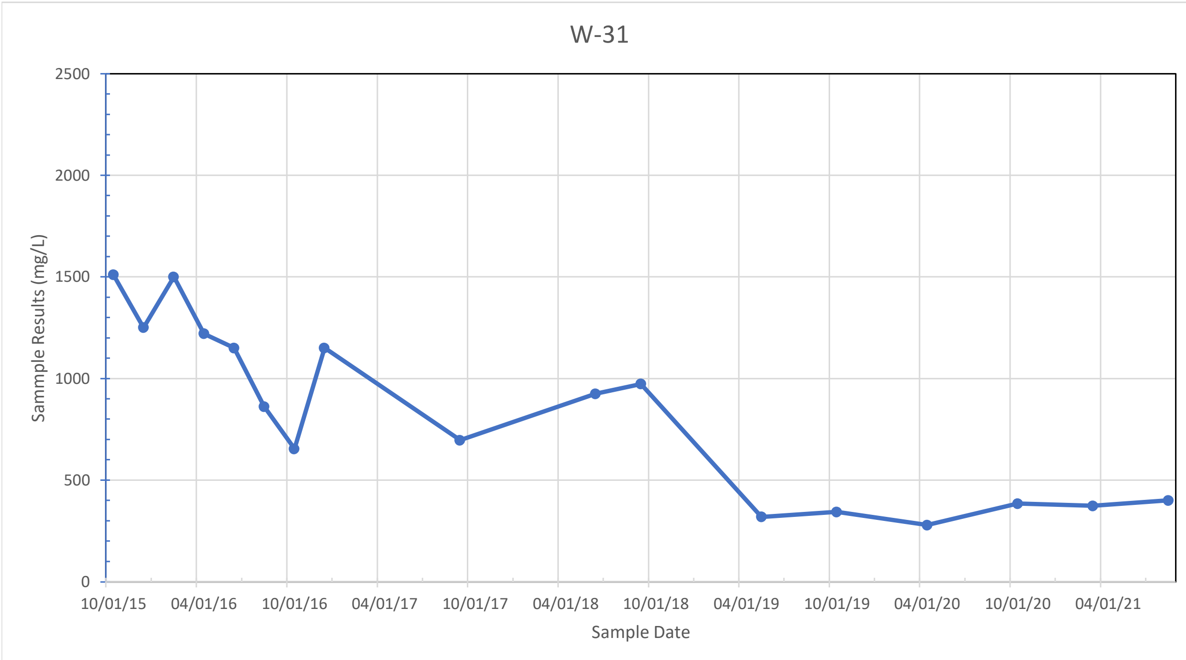


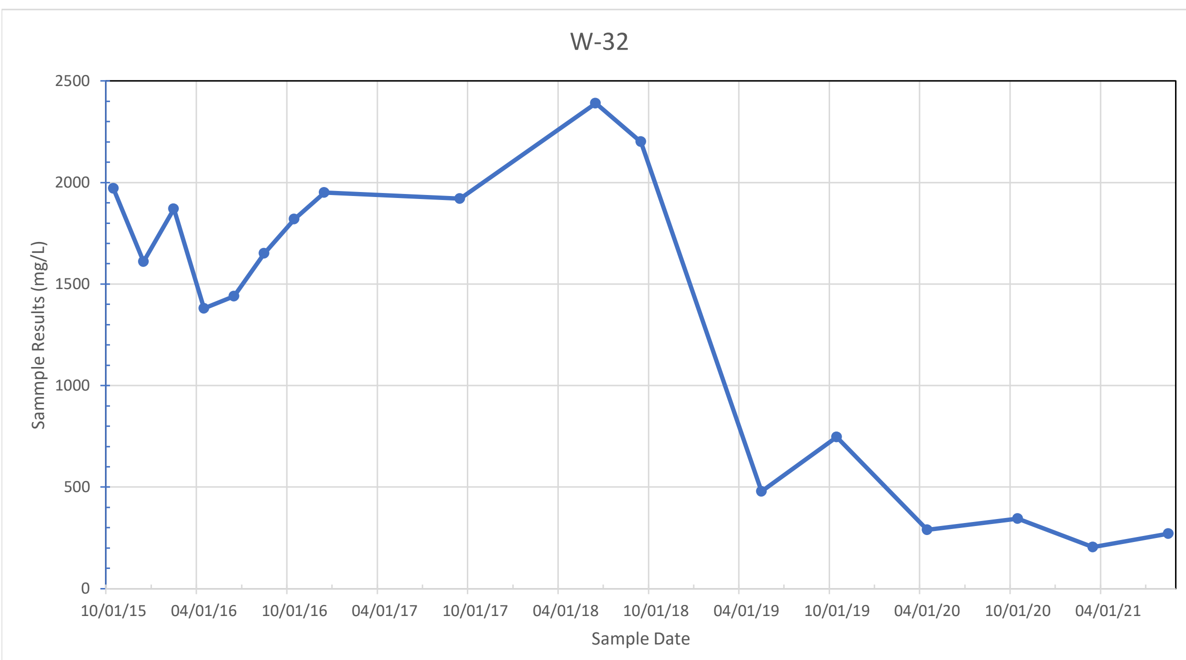
Statistical Analysis of Ground Water Data
Time Series Chart - TDS
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas



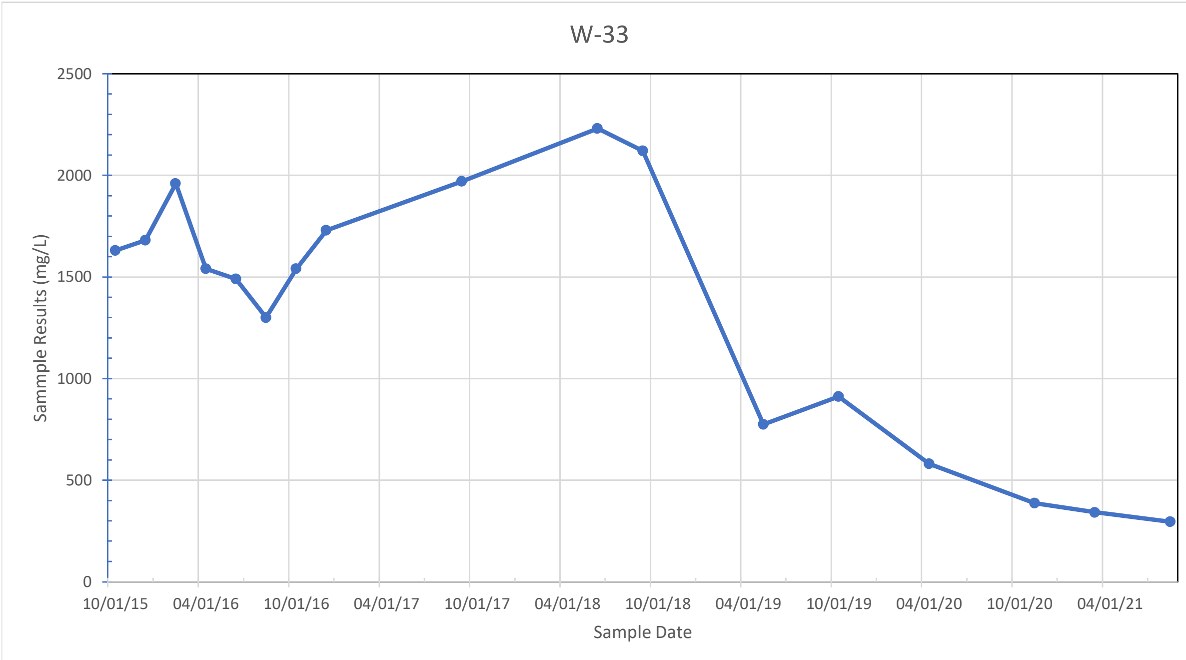


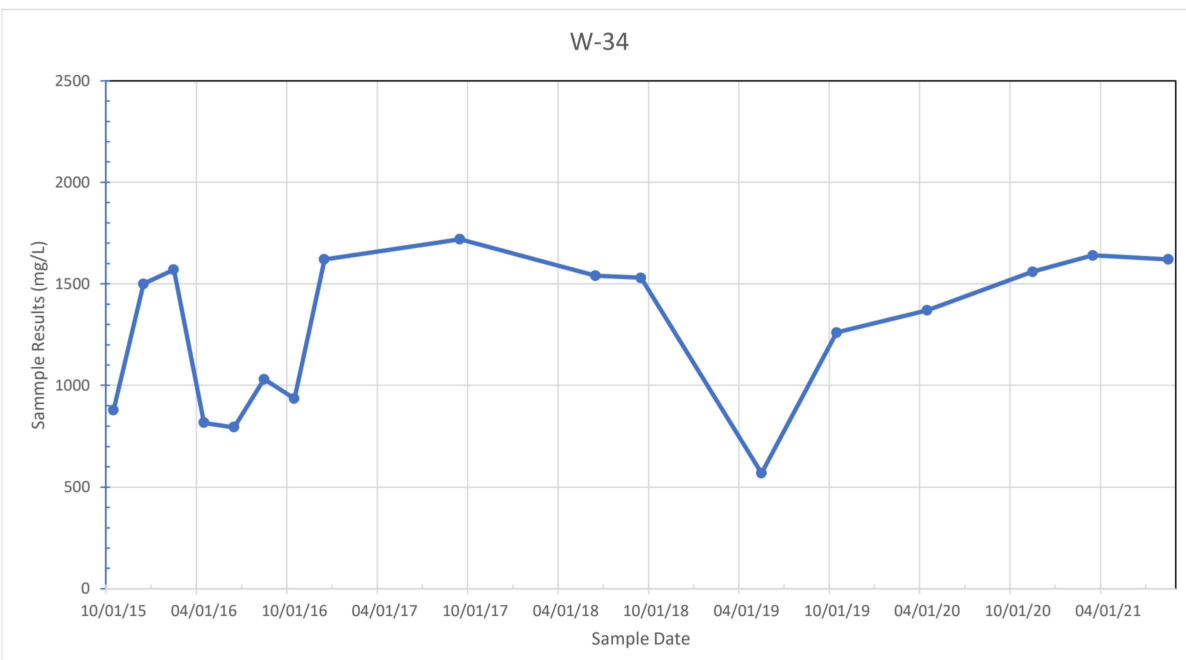
Statistical Analysis of Ground Water Data
Time Series Chart - TDS
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas



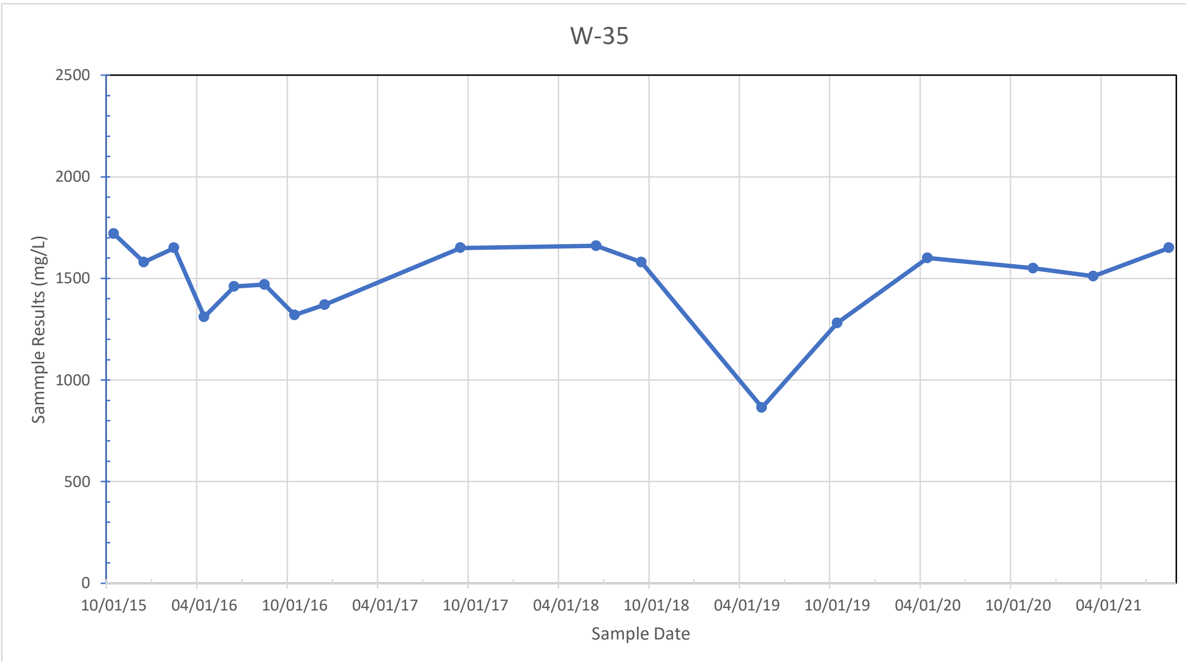


Statistical Analysis of Ground Water Data
Time Series Chart - TDS
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas





Statistical Analysis of Ground Water Data
Time Series Chart - TDS
Former Monticello Steam Electric Station
Mt. Pleasant, Titus County, Texas



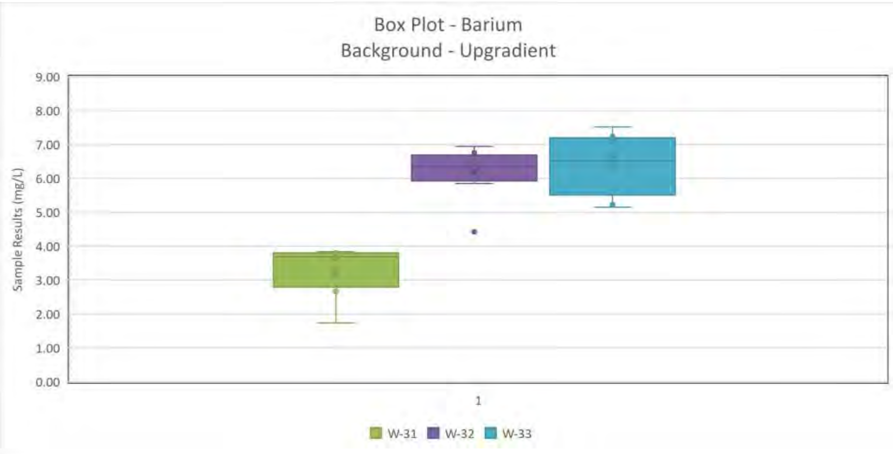
Appendix B
Box Plots

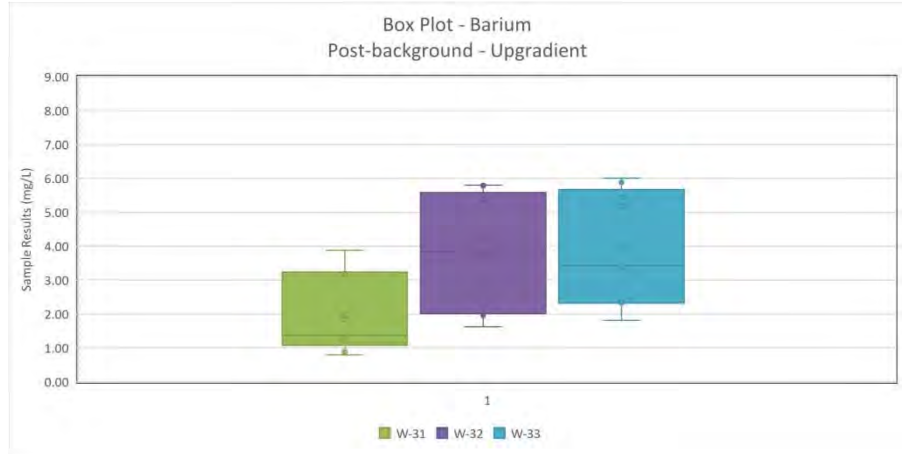
Statistical Analysis of Ground Water Data
Former Monticello Steam Electric Generating Station
Mt. Pleasant, Titus County, Texas

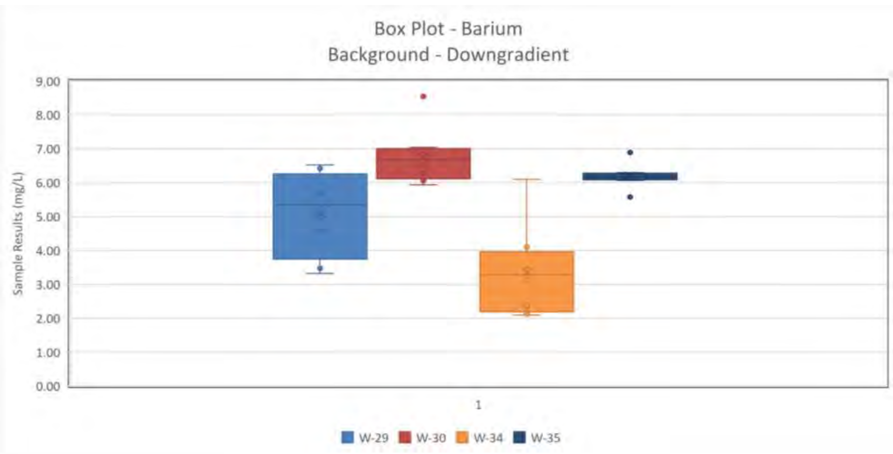
Well.ID	Date.sampled	Well.type	Barium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)	Sulfate (mg/L)	TDS (mg/L)
W-29	10/15/15	Background	4.58	111	101	0.32	6.21	861	1680
	12/07/15		3.47	86.6	81.1	0.36	6.22	501	1020
	02/22/16		4.98	114	82.3	0.24	6.27	909	1840
	04/04/16		3.32	169	75.9	0.23	6.17	465	850
	06/06/16		5.77	162	85.5	0.1	6.29	696	1230
	08/08/16		5.70	153	85.6	0.1	6.32	1100	1850
	10/12/16		6.42	174	82.4	0.40	6.19	1140	1720
	12/29/16		6.52	185	82.5	0.23	6.14	1150	1860
W-30	10/15/15	Background	6.06	133	106	0.58	5.78	919	1490
	12/07/15		7.04	135	98.3	0.81	5.95	875	1530
	02/22/16		6.83	138	96.3	0.72	5.94	873	1790
	04/04/16		6.28	141	95.2	0.96	5.93	925	1460
	06/06/16		6.89	132	94.9	0.36	5.96	884	1460
	08/08/16		5.94	136	85.7	0.45	6.23	848	1550
	10/12/16		6.51	130	79.9	0.79	6.02	817	1300
	12/29/16		8.54	192	85.3	0.50	5.34	863	1510
W-31	10/15/15	Background	3.74	130	66.2	0.14	5.67	808	1510
	12/07/15		3.81	136	51.2	0.28	5.86	714	1250
	02/22/16		3.65	130	49.2	0.12	5.79	694	1500
	04/04/16		3.80	119	48.9	0.22	6.06	737	1220
	06/06/16		3.84	104	47.8	0.1	6.17	701	1150
	08/08/16		2.67	92.4	58.4	0.1	6.11	396	862
	10/12/16		1.74	71.7	55.1	0.11	6.13	292	654
	12/29/16		3.15	89.7	49.3	0.1	4.99	729	1150
W-32	10/15/15	Background	5.85	282	160	0.44	6.72	1040	1970
	12/07/15		6.76	260	122	1.19	6.74	872	1610
	02/22/16		6.95	247	124	0.79	6.74	850	1870
	04/04/16		6.50	239	139	1.01	6.73	844	1380
	06/06/16		6.18	192	105	0.76	6.71	694	1440
	08/08/16		4.43	261	110	0.54	6.71	945	1650
	10/12/16		6.32	284	134	0.34	6.19	986	1820
	12/29/16		6.38	310	147	0.57	6.46	1210	1950
W-33	10/15/15	Background	6.36	311	162	2.01	7.14	1080	1630
	12/07/15		6.68	252	120	2.80	7.12	853	1680
	02/22/16		7.52	243	124	2.40	7.11	790	1960
	04/04/16		7.24	278	171	2.50	7.14	935	1540
	06/06/16		7.08	229	120	2.12	7.10	700	1490
	08/08/16		6.37	215	108	1.92	6.97	655	1300
	10/12/16		5.15	237	111	2.43	6.84	797	1540
	12/29/16		5.23	275	125	2.25	6.82	965	1730
W-34	10/15/15	Background	2.38	124	87.1	0.38	6.55	453	878
	12/07/15		4.10	153	82.2	0.49	6.58	671	1500
	02/22/16		3.44	117	85.9	0.42	6.59	641	1570
	04/04/16		2.09	86.9	80.7	0.287	6.63	378	817
	06/06/16		2.12	66.2	73.0	0.1	6.64	343	795
	08/08/16		3.56	121	98.4	0.1	6.52	634	1030
	10/12/16		3.13	110	84.9	0.29	6.57	556	935
	12/29/16		6.10	158	122	0.336	6.03	937	1620
W-35	10/15/15	Background	5.58	175	98.2	0.1	6.05	893	1720
	12/07/15		6.13	177	90.2	0.128	6.16	861	1580
	02/22/16		6.29	160	85.4	0.1	6.12	824	1650
	04/04/16		6.16	169	91.3	0.1	6.09	835	1310
	06/06/16		6.17	158	98.5	0.1	6.36	858	1460
	08/08/16		6.07	159	97.8	0.1	6.41	810	1470
	10/12/16		6.25	150	97.8	0.1	6.12	793	1320
	12/29/16		6.89	151	110	0.1	5.06	839	1370
W-29	09/20/17	Downgradient	4.84	128	80.6	0.1	6.85	882	1540
	06/08/18		3.70	127	87.9	0.37	6.62	694	1310
	09/10/18		4.14	140	81.5	0.41	6.30	858	1630
	05/10/19		1.94	95.4	92.1	0.21	6.85	361	727
	10/30/19		1.69	100	86.1	0.24	6.52	252	621
	04/26/20		1.36	70	88.2	0.14	6.70	270	563
	11/01/20		1.24	84	88.1	0.20	6.98	214	517
	03/29/21		1.25	89.9	83.3	0.15	6.95	224	495
W-30	09/20/17	Downgradient	5.76	127	76.5	0.394	6.85	734	1570
	06/08/18		5.06	127	87.8	0.92	6.78	724	1280
	09/10/18		4.53	115	81.1	0.91	5.25	713	1230
	05/09/19		5.13	115	97.5	0.85	6.72	734	1300
	10/30/19		5.06	161	59.4	0.57	6.43	755	1330
	04/26/20		4.18	135	51.4	0.69	7.49	763	1150
	10/31/20		4.26	141	44.0	0.68	7.11	735	1140
	03/24/21		4.33	133	40.5	0.58	5.67	686	1070
	08/15/21		4.01	100	33.4	0.82	5.83	606	979
W-34	09/20/17	Downgradient	5.36	181	117	0.244	6.75	873	1720
	06/08/18		4.95	180	116	0.90	6.85	835	1540
	09/10/18		4.53	161	114	0.66	6.64	819	1530
	05/09/19		1.51	64.7	45.1	0.348	6.78	164	568
	10/30/19		4.11	154	103	0.322	6.62	677	1260
	04/26/20		4.26	182	108	0.44	7.67	817	1370
	11/01/20		5.47	217	114	0.35	7.50	930	1560
	03/24/21		5.80	229	132	0.48	6.20	1130	1640
	08/15/21		4.83	210	125	0.35	6.16	933	1620
W-35	09/20/17	Downgradient	6.27	186	120	0.1	6.74	854	1650
	06/08/18		5.81	200	128	0.163	6.55	925	1660
	09/10/18		5.70	204	132	0.1	5.42	940	1580
	05/10/19		5.46	182	75.5	0.1	6.94	501	865
	10/30/19		3.63	111	95.5	0.1	6.92	682	1280
	04/26/20		5.30	209	129	0.15	6.50	984	1600
	11/01/20		5.95	207	118	0.064	6.73	945	1550
	03/25/21		6.16	213	129	0.0725	5.29	1010	1510
	08/15/21		6.04	216	137	0.064	5.70	992	1650
W-31	09/20/17	Upgradient	3.88	96.3	49.8	0.1	6.72	316	696
	06/08/18		3.28	86.3	48.6	0.3	6.72	577	925
	09/10/18		3.19	86.5	46.3	0.22	4.84	595	973
	05/09/19		0.88	36.5	54.0	0.16	6.87	115	319
	10/30/19		1.29	35.6	49.1	0.1	6.84	131	343
	04/26/20		0.79	34.4	51.1	0.09	7.41	86	279
	10/31/20		1.27	36.9	48.3	0.08	6.60	156	384
	03/24/21		1.38	41.4	47.7	0.12	5.59	173	373
	08/15/21		1.84	51.6	49.9	0.07	5.52	242	400
W-32	09/20/17	Upgradient	5.81	270	118	0.38	6.79	901	1920
	06/08/18		5.79	380	149	1.71	6.74	1340	2390
	09/10/18		5.38	370	140	1.19	6.56	1270	2200
	05/09/19		3.83	91	21.9	1.83	6.73	236	479
	10/30/19		4.24	130	35.0	1.7	6.91	363	746
	04/26/20		1.96	48.6	9.7	2.29	8.72	96	290
	10/31/20		2.85	64.8	12.5	1.34	8.16	141	344
	03/24/21		1.62	40.0	5.32	2.18	7.09	42.9	204
	08/15/21		2.07	52.3	9.64	1.75	7.12	76.3	270
W-33	09/20/17	Upgradient	5.89	271	112	2.04	6.73	863	1970
	06/08/18		6.01	364	142	3.59	6.55	1200	2230
	09/10/18		5.45	351	132	2.99	6.78	1160	2120
	05/09/19		3.41	93.7	36.7	1.41	6.85	443	775
	10/30/19		5.18	169	39.7	1.21	6.68	477	911
	04/26/20		3.43	96.4	17.7	3.13	8.35	171	580
	11/01/20		2.33	80.9	10.8	3.73	8.39	104	387
	03/24/21		2.32	77.0	8.55	3.48	7.10	54.8	342.0
	08/15/21		1.81	61.7	8.05	4.22	7.13	51.4	295

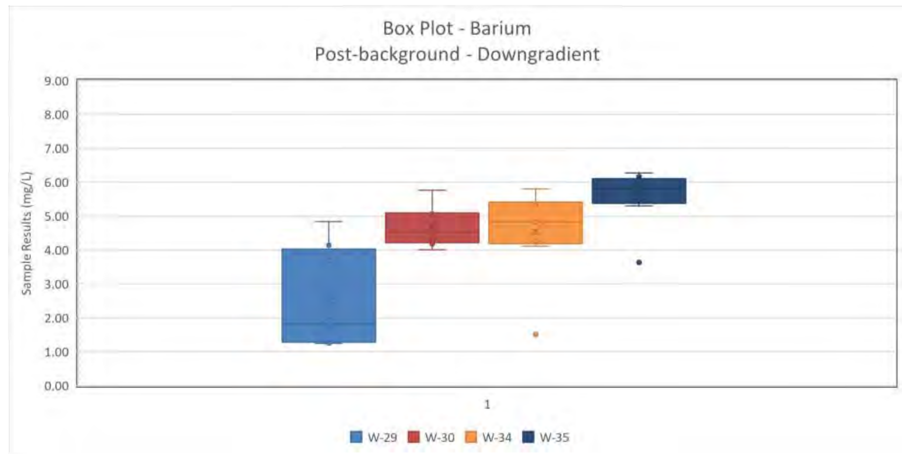
Notes: Bkgd - Background
PBkgd - Post-Background
Ug - Upgradient
Dg - Downgradient
Yellow shaded cells are "non-detect" values modified per the Statistical Analysis Plan (10/11/17)
Green shaded cells are "J" values modified per the Statistical Analysis Plan (10/11/17)

Statistical Analysis of Ground Water Data
Former Monticello Steam Electric Generating Station
Mt. Pleasant, Titus County, Texas









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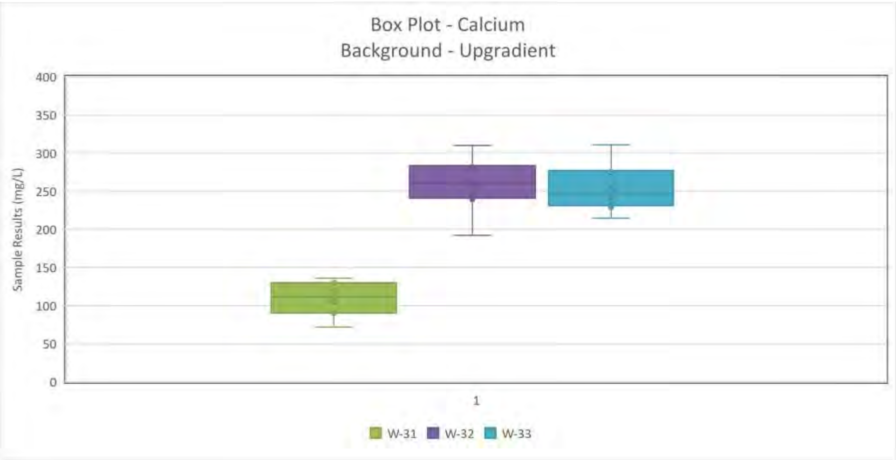
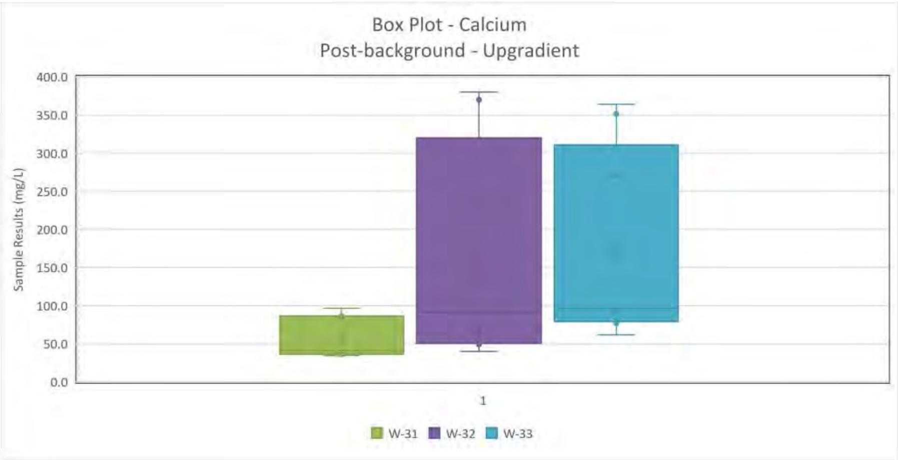
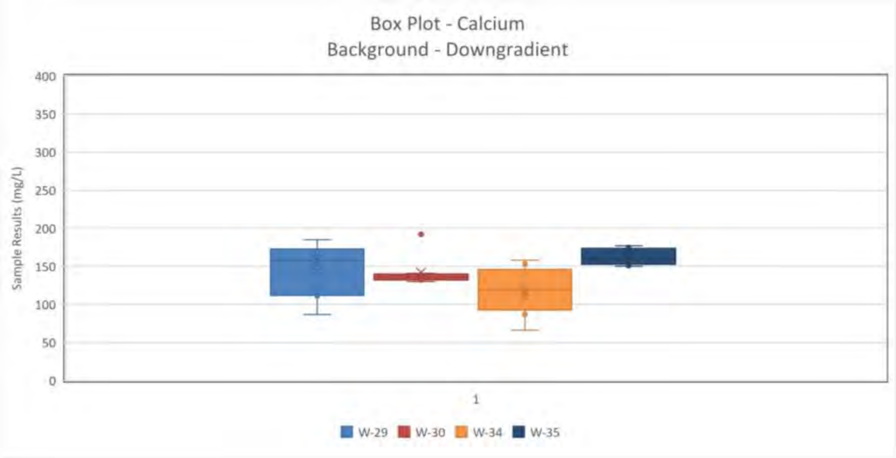
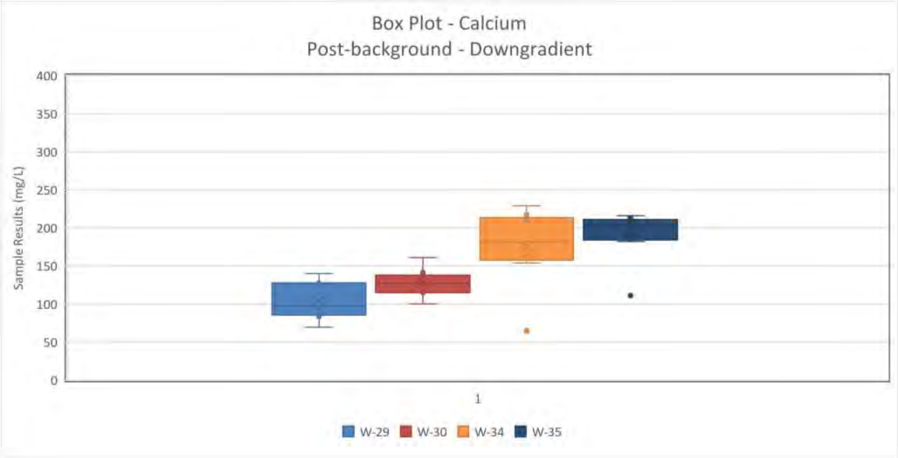
Mt. Pleasant, Titus County, Texas









Statistical Analysis of Ground Water Data
Former Monticello Steam Electric Generating Station
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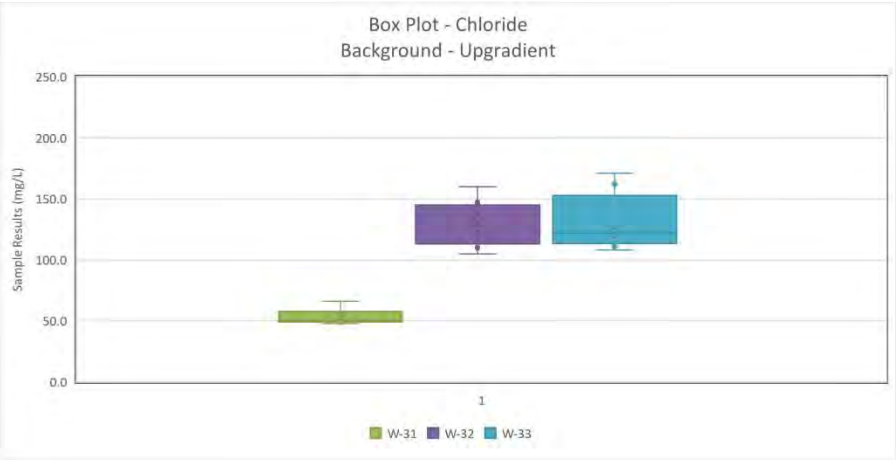

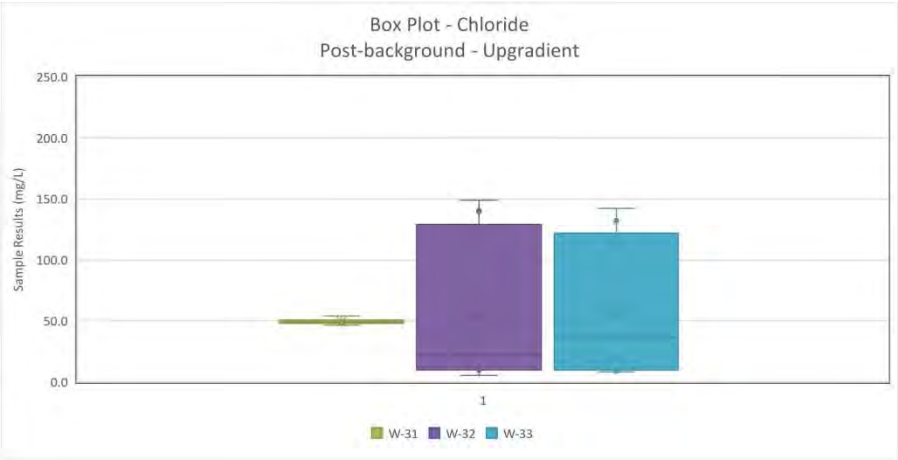

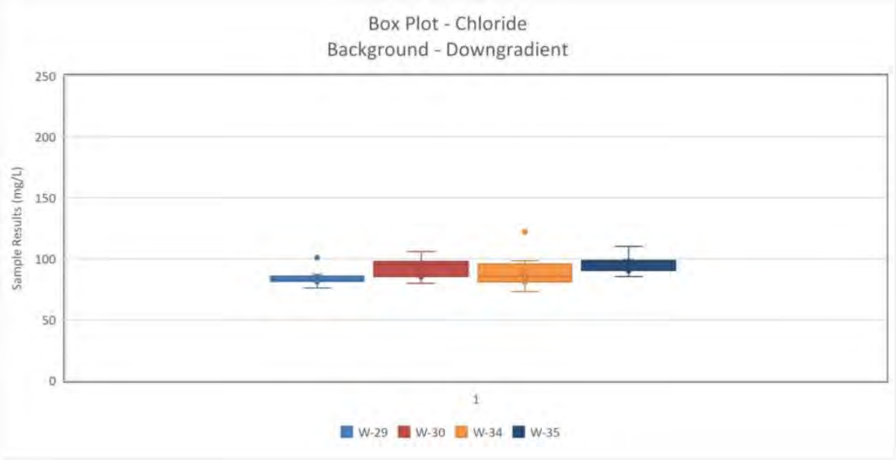

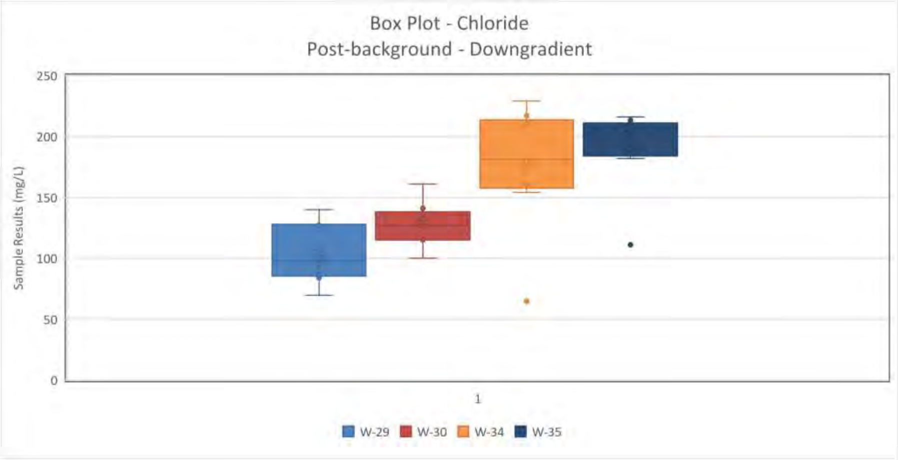

Statistical Analysis of Ground Water Data
Former Monticello Steam Electric Generating Station
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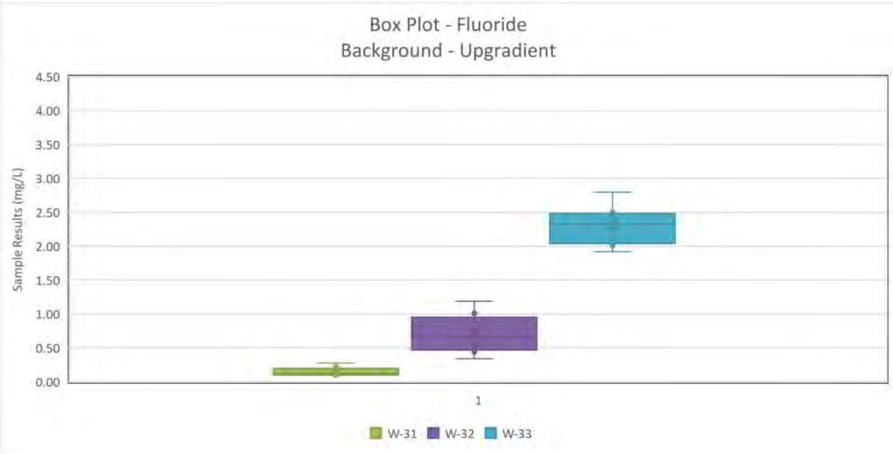
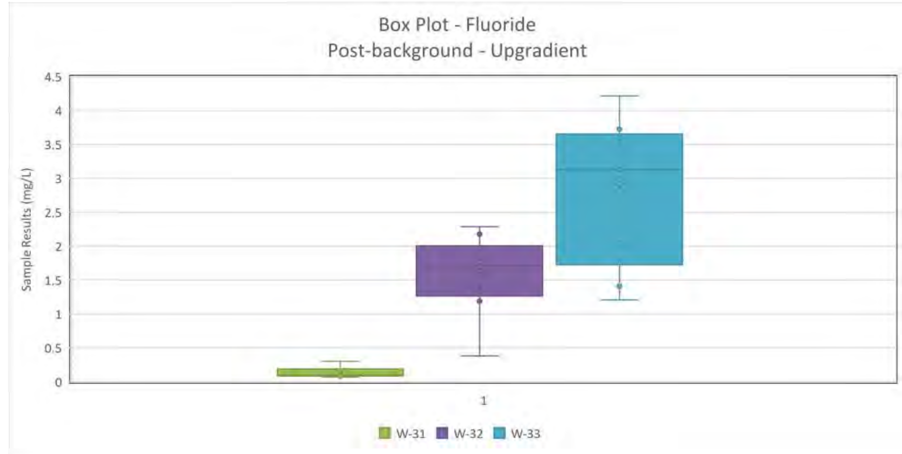
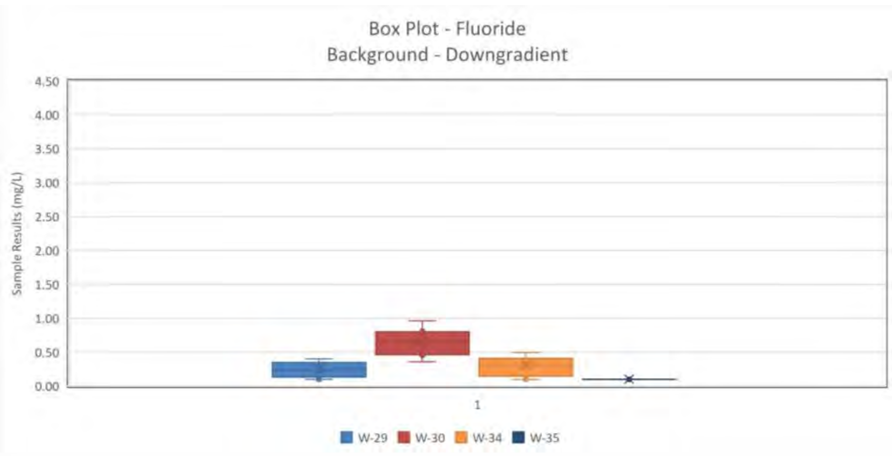
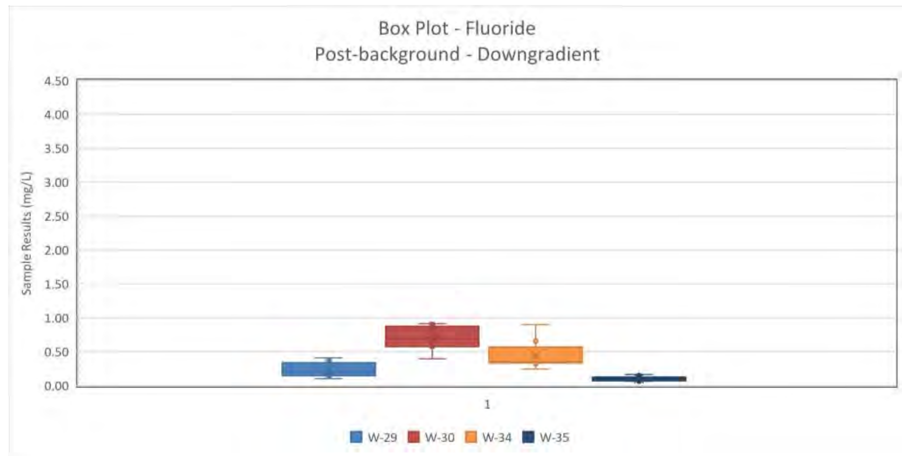
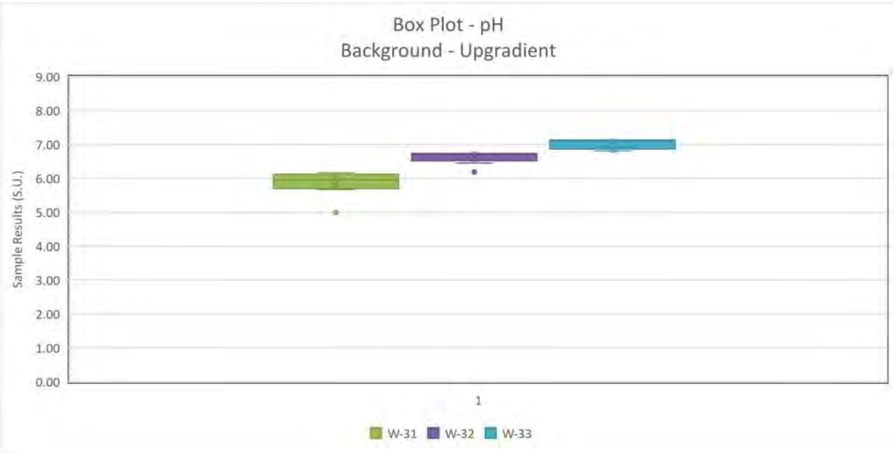
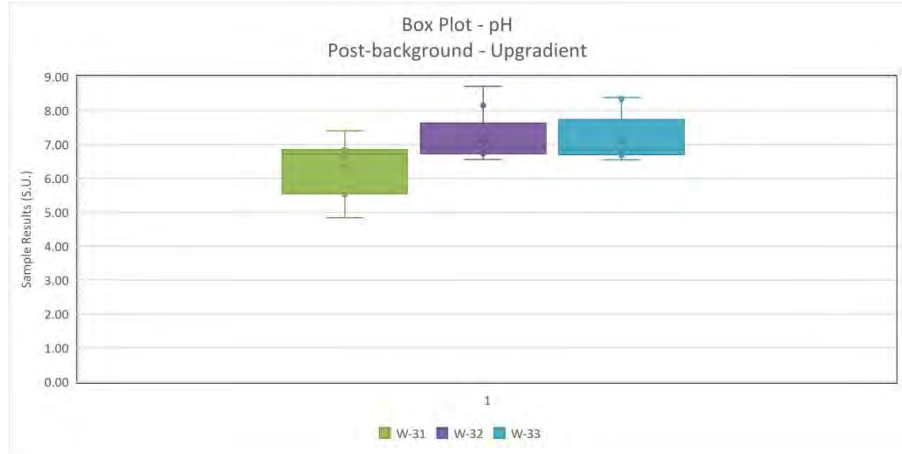


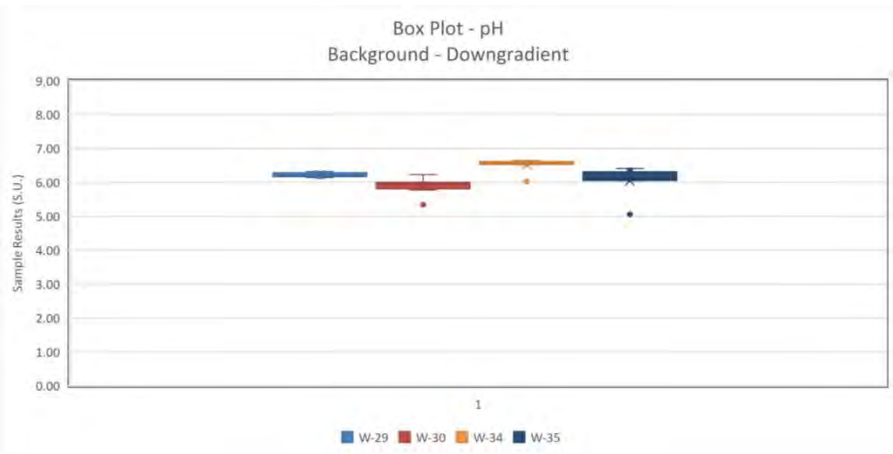


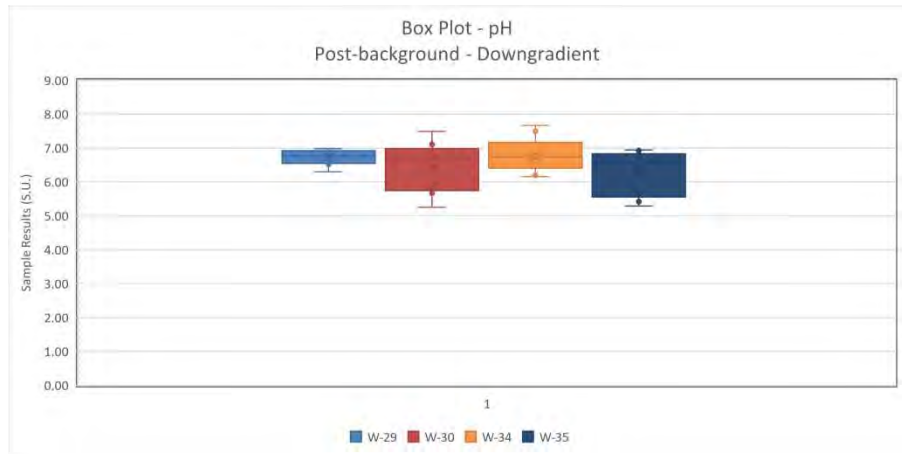





Box Plot - pH
Background - Upgradient
Sample Results (S.U.)
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
1
W-31
W-32
W-33


Box Plot - pH
Post-background - Upgradient
Sample Results (S.U.)
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
1
W-31
W-32
W-33


Box Plot - pH
Background - Downgradient
Sample Results (S.U.)
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
1
W-29
W-30
W-34
W-35


Box Plot - pH
Post-background - Downgradient
Sample Results (S.U.)
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
1
W-29
W-30
W-34
W-35

Statistical Analysis of Ground Water Data
Former Monticello Steam Electric Generating Station
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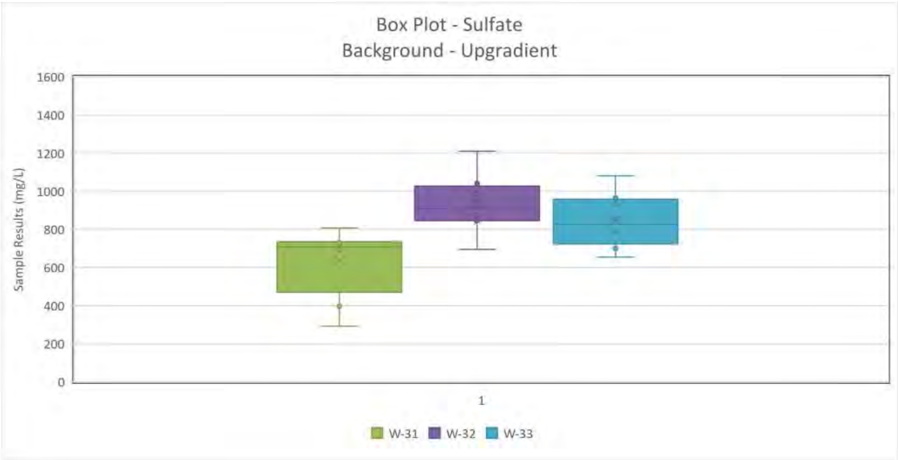
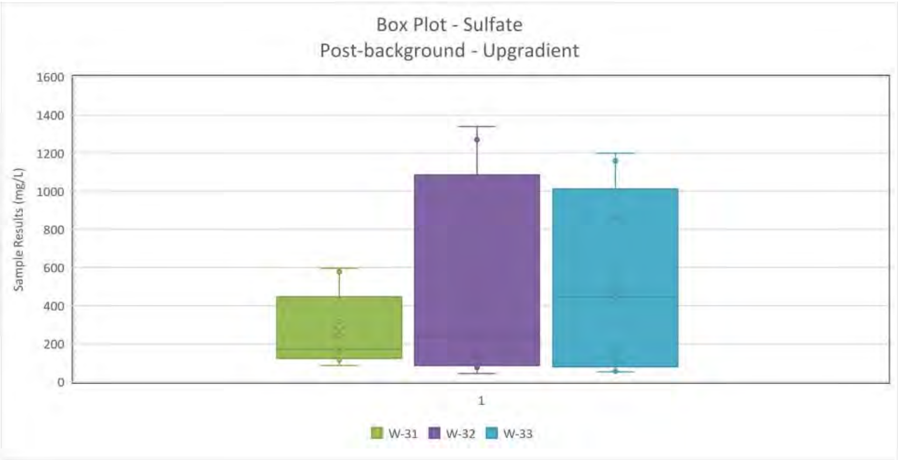
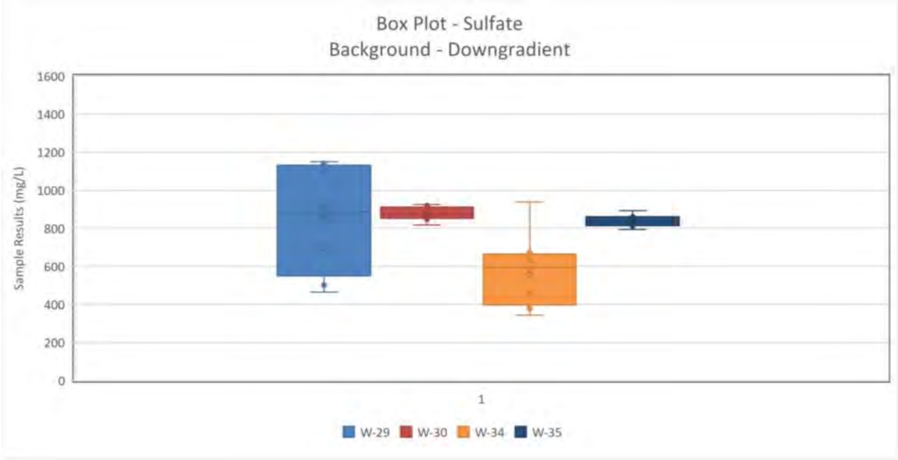
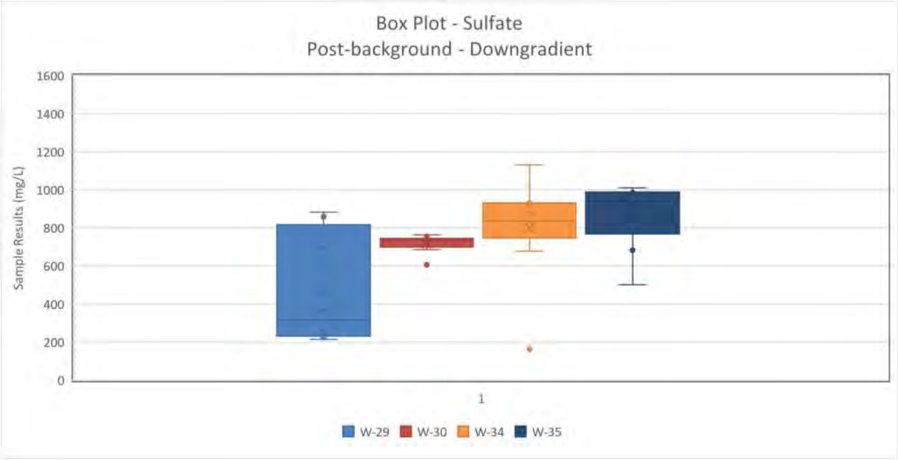
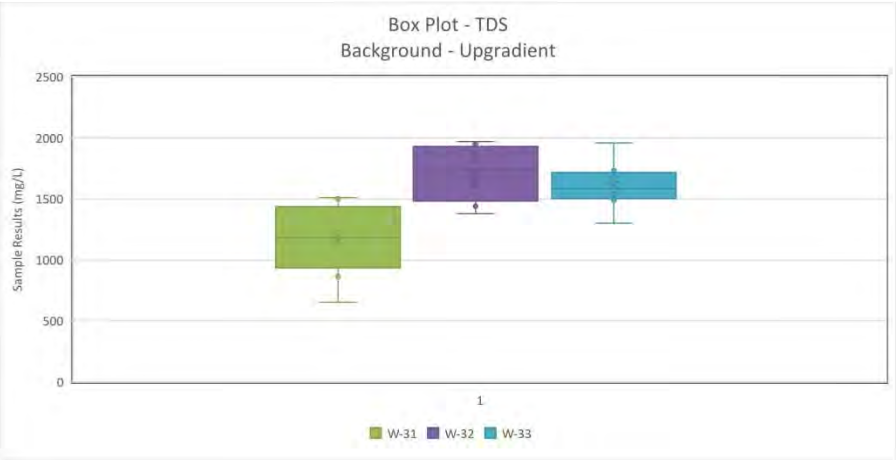


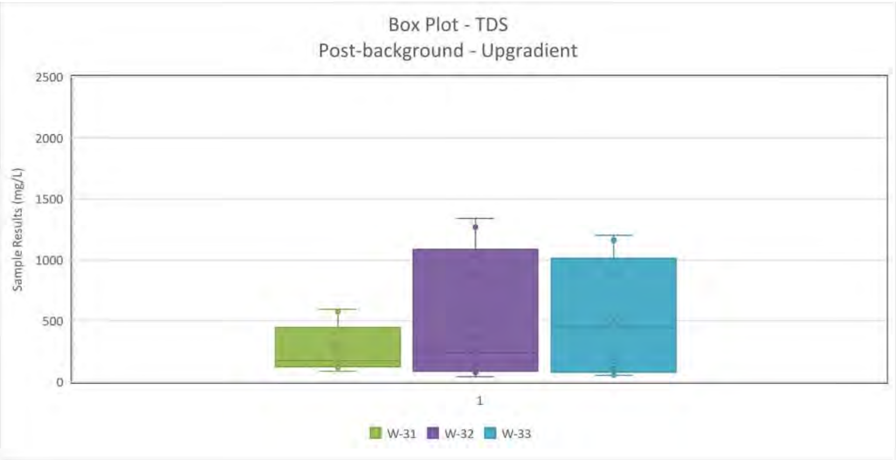


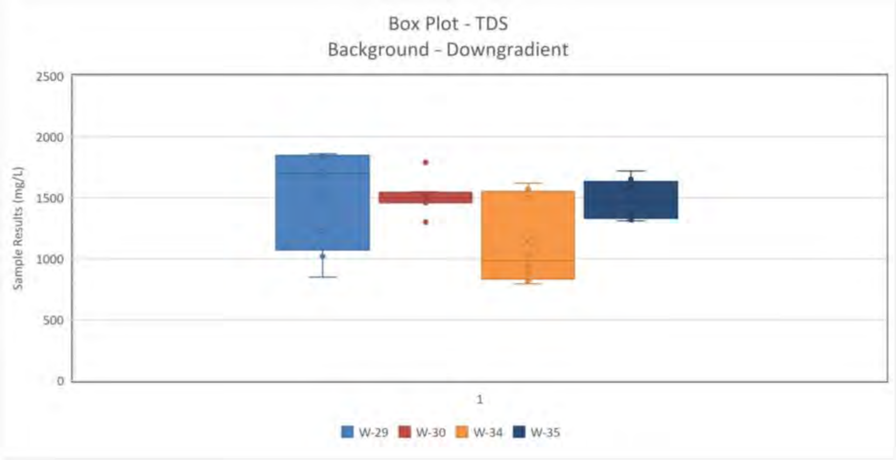


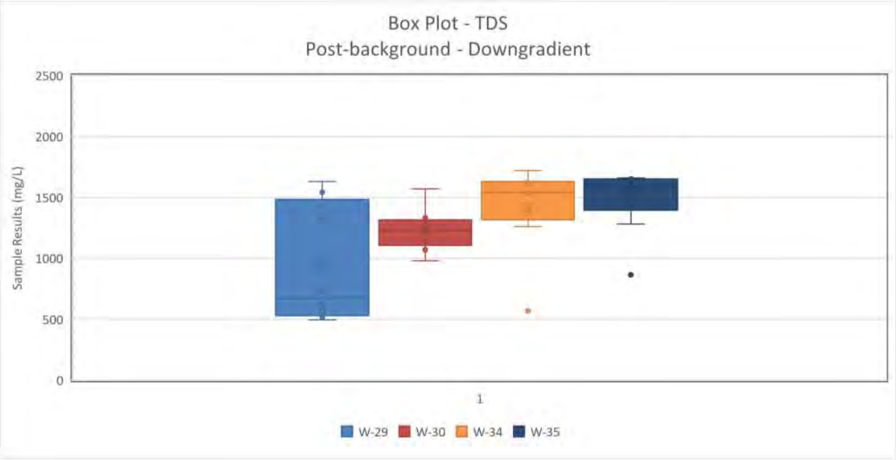


Statistical Analysis of Ground Water Data
Former Monticello Steam Electric Generating Station
Mt. Pleasant, Titus County, Texas









Statistical Analysis of Ground Water Data
Former Monticello Steam Electric Generating Station
Mt. Pleasant, Titus County, Texas

Well.ID	Date.sampled	Well.type	Barium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)	Sulfate (mg/L)	TDS (mg/L)
W-29	10/15/15	Bkgd-Dg	4.58	111	101	0.32	6.21	861	1680
	12/07/15		3.47	86.6	81.1	0.36	6.22	501	1020
	02/22/16		4.98	114	82.3	0.24	6.27	909	1840
	04/04/16		3.32	169	75.9	0.23	6.17	465	850
	06/06/16		5.77	162	85.5	0.05	6.29	696	1230
	08/08/16		5.70	153	85.6	0.05	6.32	1100	1850
	10/12/16		6.42	174	82.4	0.40	6.19	1140	1720
	12/29/16		6.52	185	82.5	0.23	6.14	1150	1860
W-30	10/15/15	Bkgd-Dg	6.06	133	106	0.58	5.78	919	1490
	12/07/15		7.04	135	98.3	0.81	5.95	875	1530
	02/22/16		6.83	138	96.3	0.72	5.94	873	1790
	04/04/16		6.28	141	95.2	0.96	5.93	925	1460
	06/06/16		6.89	132	94.9	0.36	5.96	884	1460
	08/08/16		5.94	136	85.7	0.45	6.23	848	1550
	10/12/16		6.51	130	79.9	0.79	6.02	817	1300
	12/29/16		8.54	192	85.3	0.50	5.34	863	1510
W-31	10/15/15	Bkdg-Ug	3.74	130	66.2	0.14	5.67	808	1510
	12/07/15		3.81	136	51.2	0.28	5.86	714	1250
	02/22/16		3.65	130	49.2	0.12	5.79	694	1500
	04/04/16		3.80	119	48.9	0.22	6.06	737	1220
	06/06/16		3.84	104	47.8	0.05	6.17	701	1150
	08/08/16		2.67	92.4	58.4	0.05	6.11	396	862
	10/12/16		1.74	71.7	55.1	0.11	6.13	292	654
	12/29/16		3.15	89.7	49.3	0.05	4.99	729	1150
W-32	10/15/15	Bkdg-Ug	5.85	282	160	0.44	6.72	1040	1970
	12/07/15		6.76	260	122	1.19	6.74	872	1610
	02/22/16		6.95	247	124	0.79	6.74	850	1870
	04/04/16		6.50	239	139	1.01	6.73	844	1380
	06/06/16		6.18	192	105	0.76	6.71	694	1440
	08/08/16		4.43	261	110	0.54	6.71	945	1650
	10/12/16		6.32	284	134	0.34	6.19	986	1820
	12/29/16		6.38	310	147	0.57	6.46	1210	1950
W-33	10/15/15	Bkdg-Ug	6.36	311	162	2.01	7.14	1080	1630
	12/07/15		6.68	252	120	2.80	7.12	853	1680
	02/22/16		7.52	243	124	2.40	7.11	790	1960
	04/04/16		7.24	278	171	2.50	7.14	935	1540
	06/06/16		7.08	229	120	2.12	7.10	700	1490
	08/08/16		6.37	215	108	1.92	6.97	655	1300
	10/12/16		5.15	237	111	2.43	6.84	797	1540
	12/29/16		5.23	275	125	2.25	6.82	965	1730
W-34	10/15/15	Bkgd-Dg	2.38	124	87.1	0.38	6.55	453	878
	12/07/15		4.10	153	82.2	0.49	6.58	671	1500
	02/22/16		3.44	117	85.9	0.42	6.59	641	1570
	04/04/16		2.09	86.9	80.7	0.287	6.63	378	817
	06/06/16		2.12	66.2	73.0	0.05	6.64	343	795
	08/08/16		3.56	121	98.4	0.05	6.52	634	1030
	10/12/16		3.13	110	84.9	0.29	6.57	556	935
	12/29/16		6.10	158	122	0.336	6.03	937	1620
W-35	10/15/15	Bkgd-Dg	5.58	175	98.2	0.05	6.05	893	1720
	12/07/15		6.13	177	90.2	0.128	6.16	861	1580
	02/22/16		6.29	160	85.4	0.05	6.12	824	1650
	04/04/16		6.16	169	91.3	0.05	6.09	835	1310
	06/06/16		6.17	158	98.5	0.05	6.36	858	1460
	08/08/16		6.07	159	97.8	0.05	6.41	810	1470
	10/12/16		6.25	150	97.8	0.1	6.12	793	1320
	12/29/16		6.89	151	110	0.05	5.06	839	1370
W-29	09/20/17	pBkdg-Dg	4.84	128	80.6	0.05	6.85	882	1540
	06/08/18		3.70	127	87.9	0.37	6.62	694	1310
	09/10/18		4.14	140	81.5	0.41	6.30	858	1630
	05/10/19		1.94	95.4	92.1	0.21	6.85	361	727
	10/30/19		1.69	100	86.1	0.24	6.52	252	621
	04/26/20		1.36	70	88.2	0.14	6.70	270	563
	11/01/20		1.24	84	88.1	0.20	6.98	214	517
	03/29/21		1.25	89.9	83.3	0.15	6.95	224	495
W-30	09/20/17	pBkdg-Dg	5.76	127	76.5	0.394	6.85	734	1570
	06/08/18		5.06	127	87.8	0.92	6.78	724	1280
	09/10/18		4.53	115	81.1	0.91	5.25	713	1230
	05/09/19		5.13	115	97.5	0.85	6.72	734	1300
	10/30/19		5.06	161	59.4	0.57	6.43	755	1330
	04/26/20		4.18	135	51.4	0.69	7.49	763	1150
	10/31/20		4.26	141	44.0	0.68	7.11	735	1140
	03/24/21		4.33	133	40.5	0.58	5.67	686	1070
	08/15/21		4.01	100	33.4	0.82	5.83	606	979
W-31	09/20/17	pPBkgd-Ug	3.88	96.3	49.8	0.05	6.72	316	696
	06/08/18		3.28	86.3	48.6	0.3	6.72	577	925
	09/10/18		3.19	86.5	46.3	0.22	4.84	595	973
	05/09/19		0.88	36.5	54.0	0.16	6.87	115	319
	10/30/19		1.29	35.6	49.1	0.1	6.84	131	343
	04/26/20		0.79	34.4	51.1	0.09	7.41	86	279
	10/31/20		1.27	36.9	48.3	0.08	6.60	156	384
	03/24/21		1.38	41.4	47.7	0.12	5.59	173	373
	08/15/21		1.84	51.6	49.9	0.07	5.52	242	400
W-32	09/20/17	pPBkgd-Ug	5.81	270	118	0.38	6.79	901	1920
	06/08/18		5.79	380	149	1.71	6.74	1340	2390
	09/10/18		5.38	370	140	1.19	6.56	1270	2200
	05/09/19		3.83	91	21.9	1.83	6.73	236	479
	10/30/19		4.24	130	35.0	1.7	6.91	363	746
	04/26/20		1.96	48.6	9.7	2.29	8.72	96	290
	10/31/20		2.85	64.8	12.5	1.34	8.16	141	344
	03/24/21		1.62	40.0	5.32	2.18	7.09	42.9	204
	08/15/21		2.07	52.3	9.64	1.75	7.12	76.3	270
W-33	09/20/17	pPBkgd-Ug	5.89	271	112	2.04	6.73	863	1970
	06/08/18		6.01	364	142	3.59	6.55	1200	2230
	09/10/18		5.45	351	132	2.99	6.78	1160	2120
	05/09/19		3.41	93.7	36.7	1.41	6.85	443	775
	10/30/19		5.18	169	39.7	1.21	6.68	477	911
	04/26/20		3.43	96.4	17.7	3.13	8.35	171	580
	11/01/20		2.33	80.9	10.8	3.73	8.39	104	387
	03/24/21		2.32	77.0	8.55	3.48	7.10	54.8	342.0
	08/15/21		1.81	61.7	8.05	4.22	7.13	51.4	295
W-34	09/20/17	pBkdg-Dg	5.36	181	117	0.244	6.75	873	1720
	06/08/18		4.95	180	116	0.90	6.85	835	1540
	09/10/18		4.53	161	114	0.66	6.64	819	1530
	05/09/19		1.51	64.7	45.1	0.348	6.78	164	568
	10/30/19		4.11	154	103	0.322	6.62	677	1260
	04/26/20		4.26	182	108	0.44	7.67	817	1370
	11/01/20		5.47	217	114	0.35	7.50	930	1560
	03/24/21		5.80	229	132	0.48	6.20	1130	1640
	08/15/21		4.83	210	125	0.35	6.16	933	1620
W-35	09/20/17	pBkdg-Dg	6.27	186	120	0.05	6.74	854	1650
	06/08/18		5.81	200	128	0.163	6.55	925	1660
	09/10/18		5.70	204	132	0.05	5.42	940	1580
	05/10/19		5.46	182	75.5	0.05	6.94	501	865
	10/30/19		3.63	111	95.5	0.05	6.92	682	1280
	04/26/20		5.30	209	129	0.075	6.50	984	1600
	11/01/20		5.95	207	118	0.032	6.73	945	1550
	03/25/21		6.16	213	129	0.0725	5.29	1010	1510
	08/15/21		6.04	216	137	0.064	5.70	992	1650

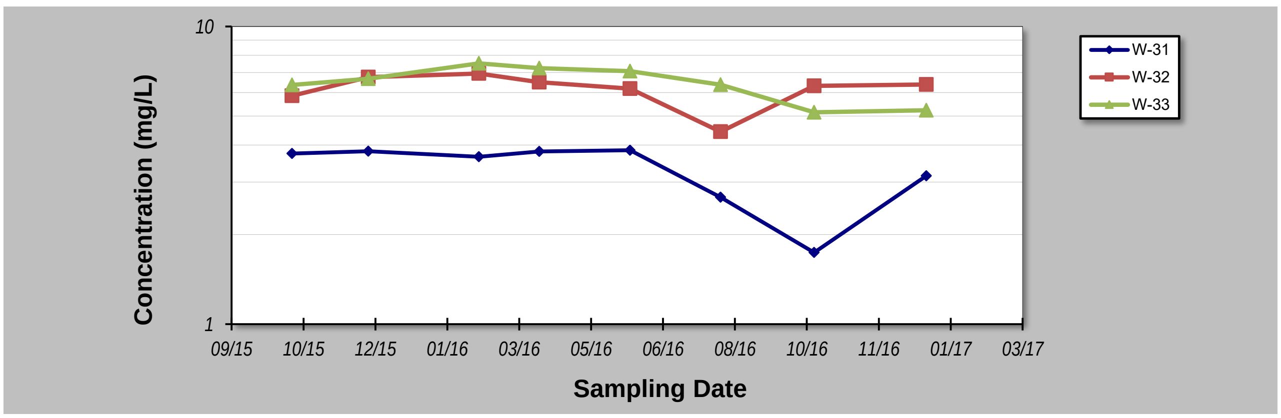
Notes: Bkgd - Background
PBkgd - Post-Background
Ug - Upgradient
Dg - Downgradient
Yellow shaded cells are "non-detect" values modified per the Statistical Analysis Plan (10/11/17)
Green shaded cells are "J" values modified per the Statistical Analysis Plan (10/11/17)

Appendix C
Mann-Kendall Analyses

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **8-Nov-22**
Facility Name: **MOSES**
Conducted By: **BJF**
Job ID: **Bkgd-Ug**
Constituent: **Boron**
Concentration Units: **mg/L**

Sampling Point ID:		W-31	W-32	W-33				
Sampling Event	Sampling Date	BORON CONCENTRATION (mg/L)						
1	10/15/15	3.74	5.85	6.36				
2	12/07/15	3.81	6.76	6.68				
3	02/22/16	3.65	6.95	7.52				
4	04/04/16	3.80	6.50	7.24				
5	06/06/16	3.84	6.18	7.08				
6	08/08/16	2.67	4.43	6.37				
7	10/12/16	1.74	6.32	5.15				
8	12/29/16	3.15	6.38	5.23				
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.23	0.13	0.14				
Mann-Kendall Statistic (S):		-10	-4	-10				
Confidence Factor:		86.2%	64.0%	86.2%				
Concentration Trend:		Stable	Stable	Stable				



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*

2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.

3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	**9-Nov-22**	Job ID:	**Bkgd-Ug**
Facility Name:	**MOSES**	Constituent:	**Calcium**
Conducted By:	**KRO**	Concentration Units:	**mg/L**

Sampling Event	Sampling Date	W-31	W-32	W-33				
		CALCIUM CONCENTRATION (mg/L)						
1	10/15/15	130.00	282.00	311.00				
2	12/07/15	136.00	260.00	252.00				
3	02/22/16	130.00	247.00	243.00				
4	04/04/16	119.00	239.00	278.00				
5	06/06/16	104.00	192.00	229.00				
6	08/08/16	92.40	261.00	215.00				
7	10/12/16	71.70	284.00	237.00				
8	12/29/16	89.70	310.00	275.00				
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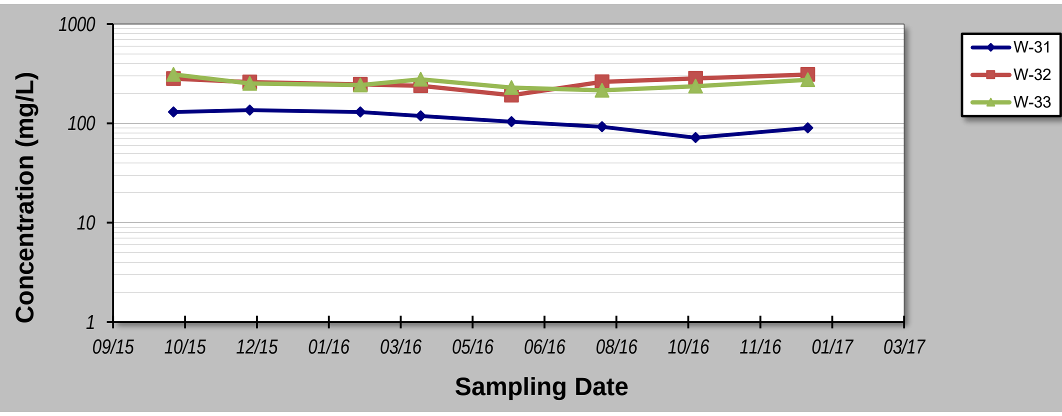
19								
20								
Coefficient of Variation:		0.21	0.14	0.12				
Mann-Kendall Statistic (S):		-23	6	-10				
Confidence Factor:		99.9%	72.6%	86.2%				
Concentration Trend:		Decreasing	No Trend	Stable				



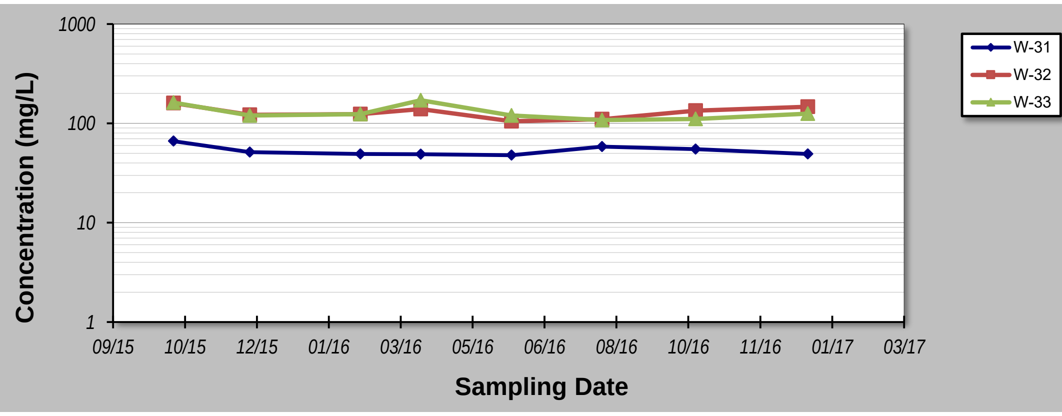
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **9-Nov-22**
Facility Name: **MOSES**
Conducted By: **KRO**
Job ID: **Bkgd-Ug**
Constituent: **Chloride**
Concentration Units: **mg/L**

Sampling Event	Sampling Date	W-31	W-32	W-33				
		CHLORIDE CONCENTRATION (mg/L)						
1	10/15/15	66.20	160.00	162.00				
2	12/07/15	51.20	122.00	120.00				
3	02/22/16	49.20	124.00	124.00				
4	04/04/16	48.90	139.00	171.00				
5	06/06/16	47.80	105.00	120.00				
6	08/08/16	58.40	110.00	108.00				
7	10/12/16	55.10	134.00	111.00				
8	12/29/16	49.30	147.00	125.00				
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.12	0.14	0.18				
Mann-Kendall Statistic (S):		-6	0	-7				
Confidence Factor:		72.6%	45.2%	76.4%				
Concentration Trend:		Stable	Stable	Stable				



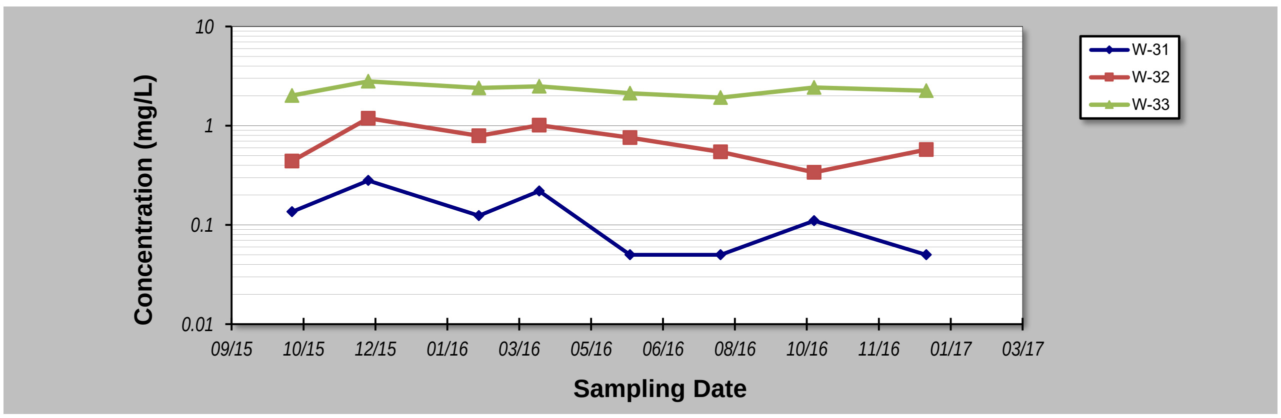
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	9-Nov-22	Job ID:	Bkgd-Ug
Facility Name:	MOSES	Constituent:	Fluoride
Conducted By:	KRO	Concentration Units:	mg/L

Sampling Point ID:		W-31	W-32	W-33				
Sampling Event	Sampling Date	FLUORIDE CONCENTRATION (mg/L)						
1	10/15/15	0.14	0.44	2.01				
2	12/07/15	0.28	1.19	2.80				
3	02/22/16	0.12	0.79	2.40				
4	04/04/16	0.22	1.01	2.50				
5	06/06/16	0.05	0.76	2.12				
6	08/08/16	0.05	0.54	1.92				
7	10/12/16	0.11	0.34	2.43				
8	12/29/16	0.05	0.57	2.25				
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.66	0.41	0.12				
Mann-Kendall Statistic (S):		-15	-10	-4				
Confidence Factor:		95.8%	86.2%	64.0%				
Concentration Trend:		Decreasing	Stable	Stable				



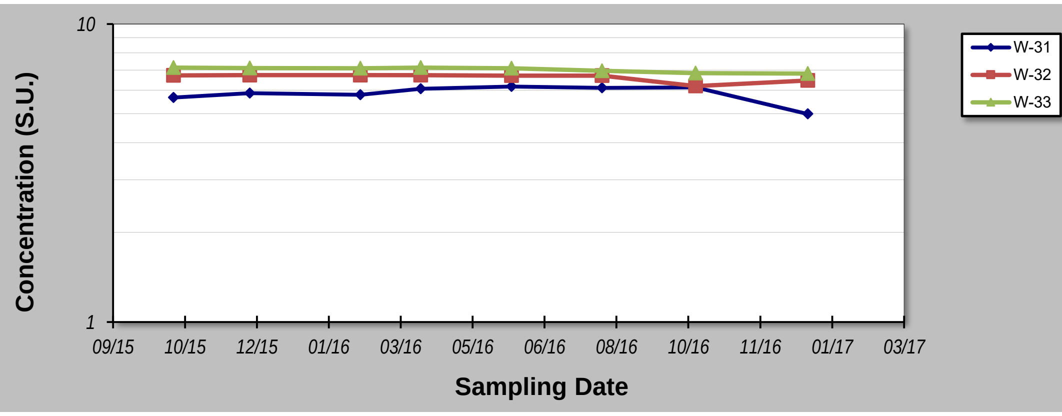
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 9-Nov-22
Facility Name: MOSES
Conducted By: KRO
Job ID: Bkgd-Ug
Constituent: pH
Concentration Units: S.U.

Sampling Point ID:		W-31	W-32	W-33				
Sampling Event	Sampling Date	PH CONCENTRATION (S.U.)						
1	10/15/15	5.67	6.72	7.14				
2	12/07/15	5.86	6.74	7.12				
3	02/22/16	5.79	6.74	7.11				
4	04/04/16	6.06	6.73	7.14				
5	06/06/16	6.17	6.71	7.10				
6	08/08/16	6.11	6.71	6.97				
7	10/12/16	6.13	6.19	6.84				
8	12/29/16	4.99	6.46	6.82				
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.07	0.03	0.02				
Mann-Kendall Statistic (S):		8	-18	-23				
Confidence Factor:		80.1%	98.4%	99.9%				
Concentration Trend:		No Trend	Decreasing	Decreasing				



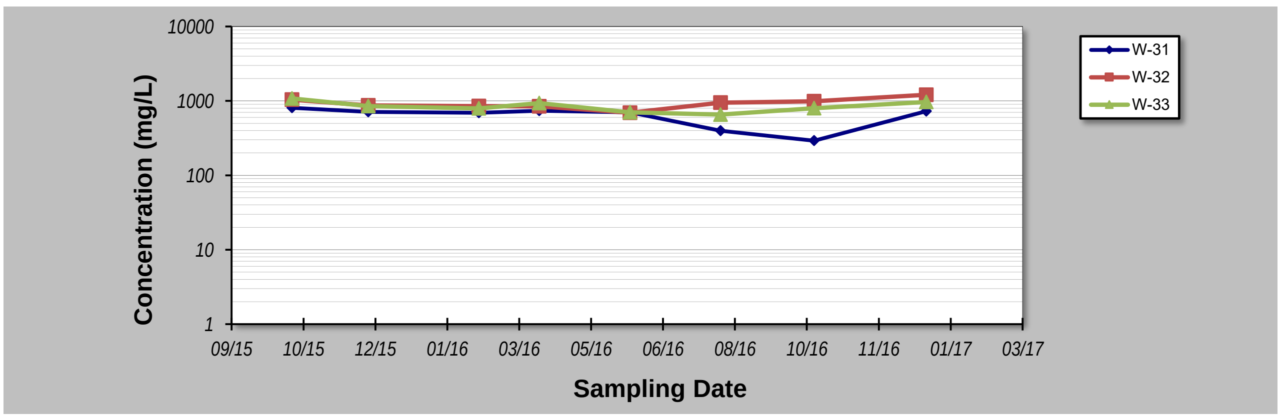
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	9-Nov-22	Job ID:	Bkgd-Ug
Facility Name:	MOSES	Constituent:	Sulfate
Conducted By:	KRO	Concentration Units:	mg/L

Sampling Point ID:		W-31	W-32	W-33				
Sampling Event	Sampling Date	SULFATE CONCENTRATION (mg/L)						
1	10/15/15	808.00	1040.00	1080.00				
2	12/07/15	714.00	872.00	853.00				
3	02/22/16	694.00	850.00	790.00				
4	04/04/16	737.00	844.00	935.00				
5	06/06/16	701.00	694.00	700.00				
6	08/08/16	396.00	945.00	655.00				
7	10/12/16	292.00	986.00	797.00				
8	12/29/16	729.00	1210.00	965.00				
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.29	0.17	0.17				
Mann-Kendall Statistic (S):		-12	4	-6				
Confidence Factor:		91.1%	64.0%	72.6%				
Concentration Trend:		Prob. Decreasing	No Trend	Stable				



Notes:

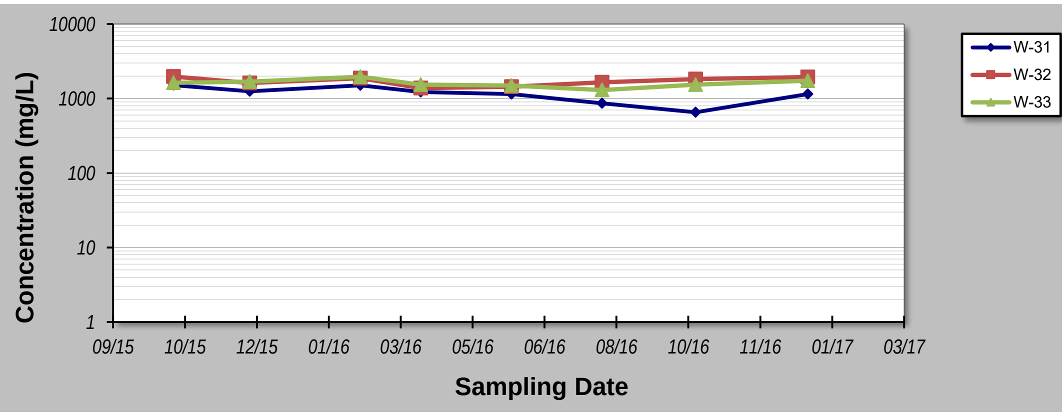
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **9-Nov-22**
Facility Name: **MOSES**
Conducted By: **KRO**

Job ID: **Bkgd-Ug**
Constituent: **TDS**
Concentration Units: **mg/L**

Sampling Point ID:		W-31	W-32	W-33				
Sampling Event	Sampling Date	TDS CONCENTRATION (mg/L)						
1	10/15/15	1510.00	1970.00	1630.00				
2	12/07/15	1250.00	1610.00	1680.00				
3	02/22/16	1500.00	1870.00	1960.00				
4	04/04/16	1220.00	1380.00	1540.00				
5	06/06/16	1150.00	1440.00	1490.00				
6	08/08/16	862.00	1650.00	1300.00				
7	10/12/16	654.00	1820.00	1540.00				
8	12/29/16	1150.00	1950.00	1730.00				
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.25	0.13	0.12				
Mann-Kendall Statistic (S):		-21	2	-5				
Confidence Factor:		99.6%	54.8%	68.3%				
Concentration Trend:		Decreasing	No Trend	Stable				



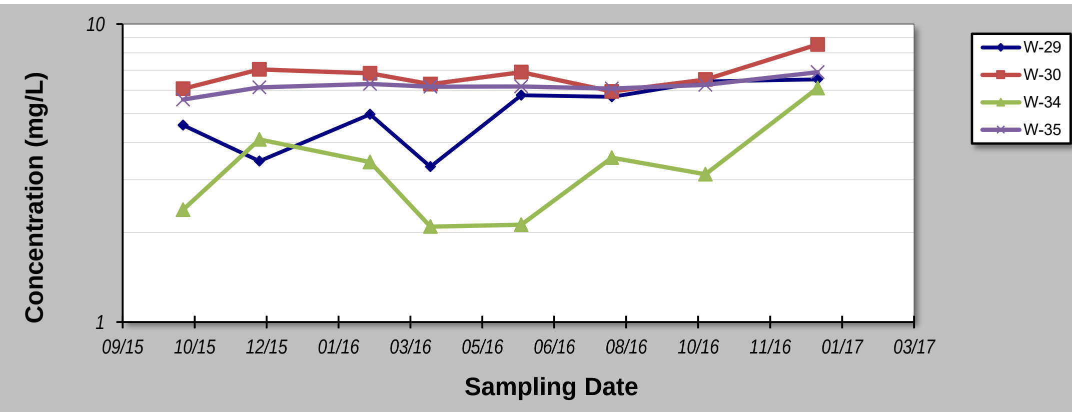
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	**9-Nov-22**	Job ID:	**Bkgd-Dg**
Facility Name:	**MOSES**	Constituent:	**Boron**
Conducted By:	**KO**	Concentration Units:	**mg/L**

Sampling Point ID:		W-29	W-30	W-34	W-35			
Sampling Event	Sampling Date	BORON CONCENTRATION (mg/L)						
1	10/15/15	4.58	6.06	2.38	5.58			
2	12/07/15	3.47	7.04	4.10	6.13			
3	02/22/16	4.98	6.83	3.44	6.29			
4	04/04/16	3.32	6.28	2.09	6.16			
5	06/06/16	5.77	6.89	2.12	6.17			
6	08/08/16	5.70	5.94	3.56	6.07			
7	10/12/16	6.42	6.51	3.13	6.25			
8	12/29/16	6.52	8.54	6.10	6.89			
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.24	0.12	0.39	0.06			
Mann-Kendall Statistic (S):		18	4	6	14			
Confidence Factor:		98.4%	64.0%	72.6%	94.6%			
Concentration Trend:		Increasing	No Trend	No Trend	Prob. Increasing			



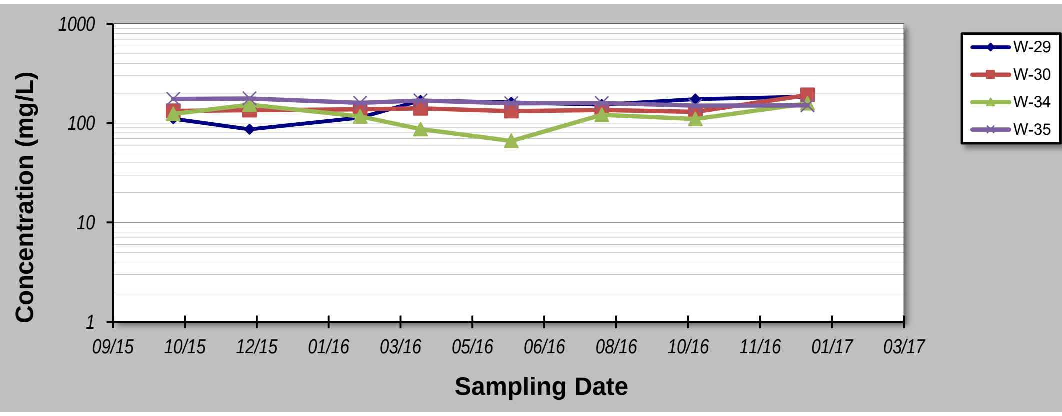
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	9-Nov-22	Job ID:	Bkgd-Dg
Facility Name:	MOSES	Constituent:	Calcium
Conducted By:	KRO	Concentration Units:	mg/L

	Sampling Point ID:	W-29	W-30	W-34	W-35			
Sampling Event	Sampling Date	CALCIUM CONCENTRATION (mg/L)						
1	10/15/15	111.00	133.00	124.00	175.00			
2	12/07/15	86.60	135.00	153.00	177.00			
3	02/22/16	114.00	138.00	117.00	160.00			
4	04/04/16	169.00	141.00	86.90	169.00			
5	06/06/16	162.00	132.00	66.20	158.00			
6	08/08/16	153.00	136.00	121.00	159.00			
7	10/12/16	174.00	130.00	110.00	150.00			
8	12/29/16	185.00	192.00	158.00	151.00			
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
	Coefficient of Variation:	0.25	0.14	0.26	0.06			
	Mann-Kendall Statistic (S):	20	4	-2	-20			
	Confidence Factor:	99.3%	64.0%	54.8%	99.3%			
	Concentration Trend:	Increasing	No Trend	Stable	Decreasing			



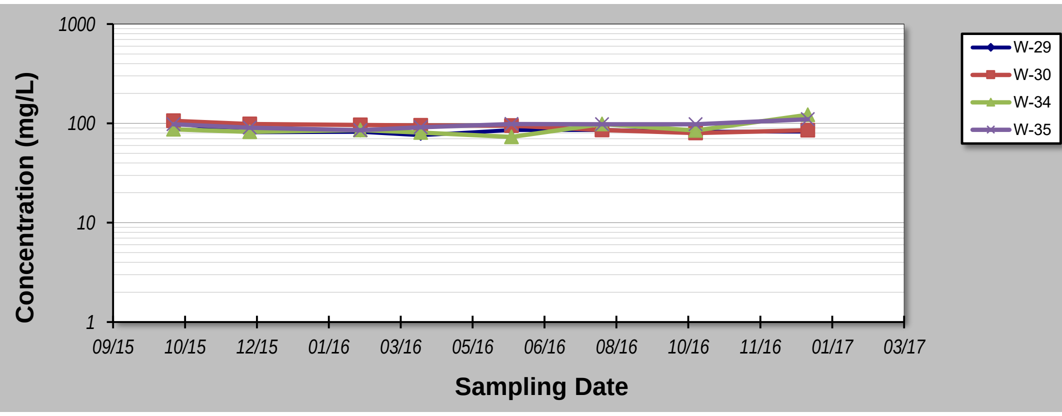
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	9-Nov-22	Job ID:	Bkgd-Dg
Facility Name:	MOSES	Constituent:	Chloride
Conducted By:	KRO	Concentration Units:	mg/L

Sampling Point ID:		W-29	W-30	W-34	W-35			
Sampling Event	Sampling Date	CHLORIDE CONCENTRATION (mg/L)						
1	10/15/15	101.00	106.00	87.10	98.20			
2	12/07/15	81.10	98.30	82.20	90.20			
3	02/22/16	82.30	96.30	85.90	85.40			
4	04/04/16	75.90	95.20	80.70	91.30			
5	06/06/16	85.50	94.90	73.00	98.50			
6	08/08/16	85.60	85.70	98.40	97.80			
7	10/12/16	82.40	79.90	84.90	97.80			
8	12/29/16	82.50	85.30	122.00	110.00			
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.09	0.09	0.17	0.08			
Mann-Kendall Statistic (S):		2	-26	4	11			
Confidence Factor:		54.8%	100.0%	64.0%	88.7%			
Concentration Trend:		No Trend	Decreasing	No Trend	No Trend			



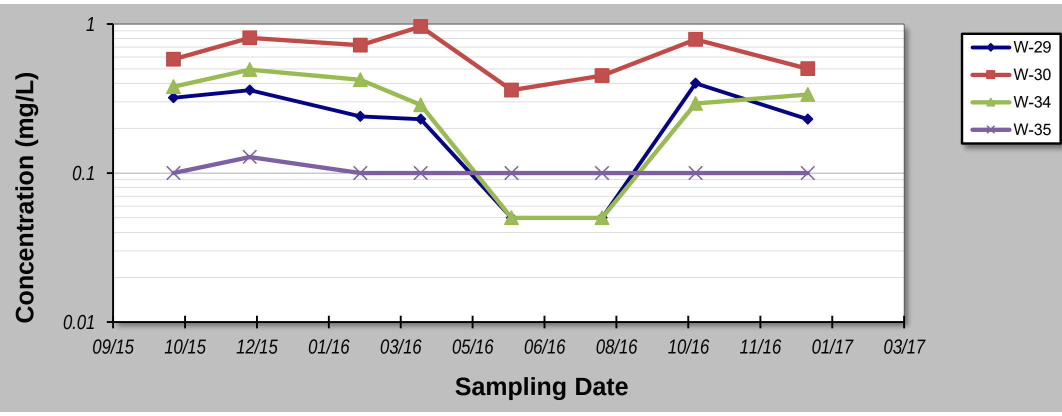
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	9-Nov-22	Job ID:	Bkgd-Dg
Facility Name:	MOSES	Constituent:	Fluoride
Conducted By:	KRO	Concentration Units:	mg/L

Sampling Event	Sampling Date	W-29	W-30	W-34	W-35			
		FLUORIDE CONCENTRATION (mg/L)						
1	10/15/15	0.32	0.58	0.38	0.10			
2	12/07/15	0.36	0.81	0.49	0.13			
3	02/22/16	0.24	0.72	0.42	0.10			
4	04/04/16	0.23	0.96	0.29	0.10			
5	06/06/16	0.05	0.36	0.05	0.10			
6	08/08/16	0.05	0.45	0.05	0.10			
7	10/12/16	0.40	0.79	0.29	0.10			
8	12/29/16	0.23	0.50	0.34	0.10			
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.55	0.32	0.56	0.10			
Mann-Kendall Statistic (S):		-8	-4	-9	-5			
Confidence Factor:		80.1%	64.0%	83.2%	68.3%			
Concentration Trend:		Stable	Stable	Stable	Stable			



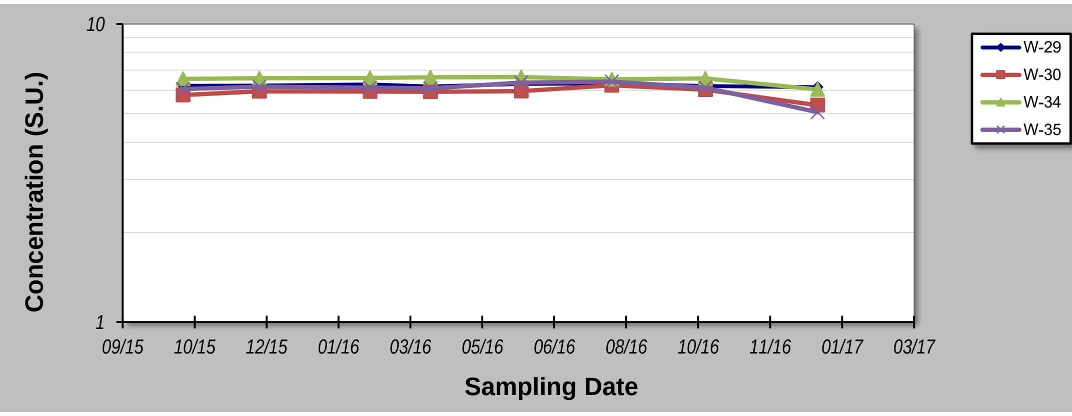
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	9-Nov-22	Job ID:	Bkgd-Dg
Facility Name:	MOSES	Constituent:	pH
Conducted By:	KRO	Concentration Units:	S.U.

Sampling Point ID:		W-29	W-30	W-34	W-35			
Sampling Event	Sampling Date	PH CONCENTRATION (S.U.)						
1	10/15/15	6.21	5.78	6.55	6.05			
2	12/07/15	6.22	5.95	6.58	6.16			
3	02/22/16	6.27	5.94	6.59	6.12			
4	04/04/16	6.17	5.93	6.63	6.09			
5	06/06/16	6.29	5.96	6.64	6.36			
6	08/08/16	6.32	6.23	6.52	6.41			
7	10/12/16	6.19	6.02	6.57	6.12			
8	12/29/16	6.14	5.34	6.03	5.06			
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.01	0.04	0.03	0.07			
Mann-Kendall Statistic (S):		-2	6	-4	1			
Confidence Factor:		54.8%	72.6%	64.0%	50.0%			
Concentration Trend:		Stable	No Trend	Stable	No Trend			



Notes:

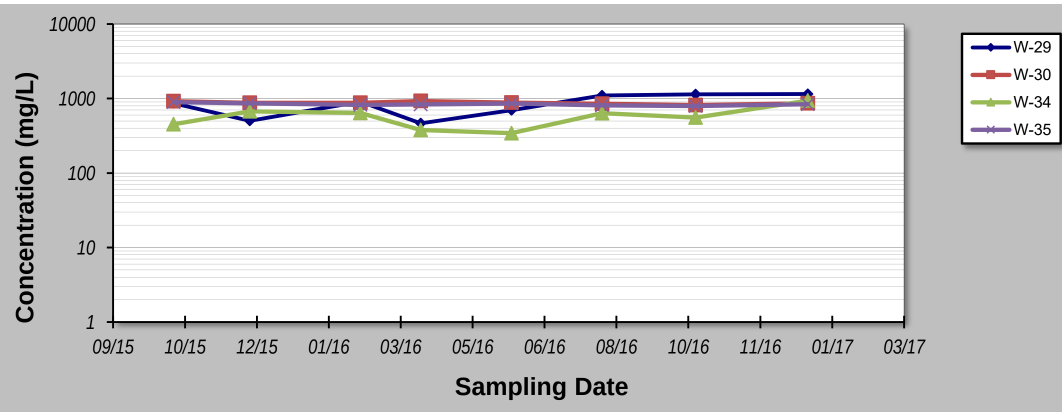
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 9-Nov-22
Facility Name: MOSES
Conducted By: KRO

Job ID: Bkgd-Dg
Constituent: Sulfate
Concentration Units: mg/L

Sampling Point ID:		W-29	W-30	W-34	W-35			
Sampling Event	Sampling Date	SULFATE CONCENTRATION (mg/L)						
1	10/15/15	861.00	919.00	453.00	893.00			
2	12/07/15	501.00	875.00	671.00	861.00			
3	02/22/16	909.00	873.00	641.00	824.00			
4	04/04/16	465.00	925.00	378.00	835.00			
5	06/06/16	696.00	884.00	343.00	858.00			
6	08/08/16	1100.00	848.00	634.00	810.00			
7	10/12/16	1140.00	817.00	556.00	793.00			
8	12/29/16	1150.00	863.00	937.00	839.00			
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.32	0.04	0.33	0.04			
Mann-Kendall Statistic (S):		16	-14	2	-14			
Confidence Factor:		96.9%	94.6%	54.8%	94.6%			
Concentration Trend:		Increasing	Prob. Decreasing	No Trend	Prob. Decreasing			



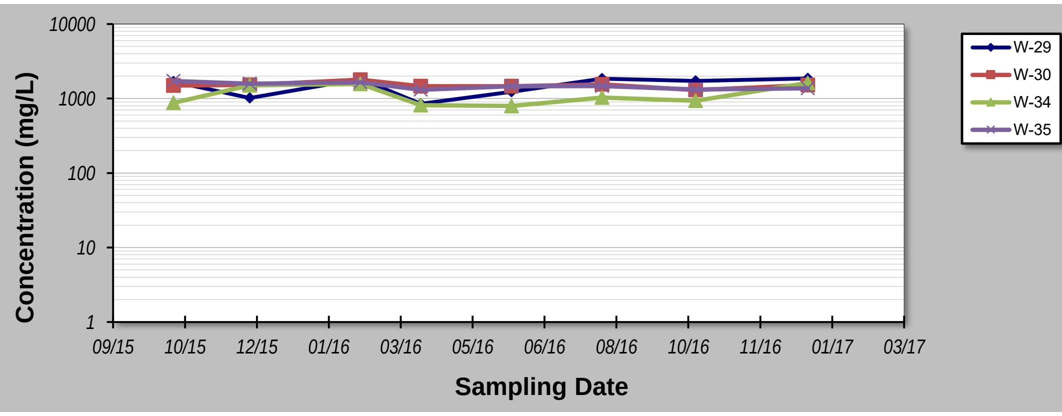
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **9-Nov-22** | Job ID: **Bkgd-Dg**
Facility Name: **MOSES** | Constituent: **TDS**
Conducted By: **KRO** | Concentration Units: **mg/L**

Sampling Point ID:		W-29	W-30	W-34	W-35			
Sampling Event	Sampling Date	TDS CONCENTRATION (mg/L)						
1	10/15/15	1680.00	1490.00	878.00	1720.00			
2	12/07/15	1020.00	1530.00	1500.00	1580.00			
3	02/22/16	1840.00	1790.00	1570.00	1650.00			
4	04/04/16	850.00	1460.00	817.00	1310.00			
5	06/06/16	1230.00	1460.00	795.00	1460.00			
6	08/08/16	1850.00	1550.00	1030.00	1470.00			
7	10/12/16	1720.00	1300.00	935.00	1320.00			
8	12/29/16	1860.00	1510.00	1620.00	1370.00			
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.27	0.09	0.31	0.10			
Mann-Kendall Statistic (S):		12	-5	4	-14			
Confidence Factor:		91.1%	68.3%	64.0%	94.6%			
Concentration Trend:		Prob. Increasing	Stable	No Trend	Prob. Decreasing			



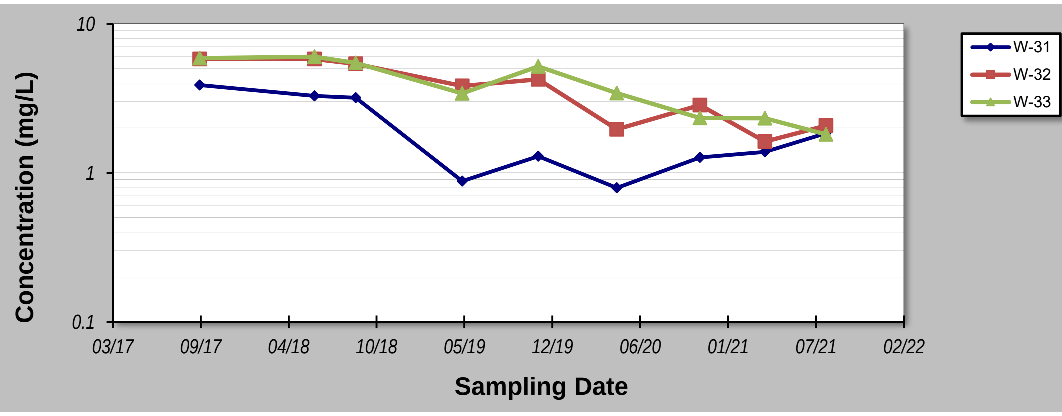
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	8-Nov-22	Job ID:	PBkgd-Ug
Facility Name:	MOSES	Constituent:	Boron
Conducted By:	KO	Concentration Units:	mg/L

Sampling Point ID:		W-31	W-32	W-33				
Sampling Event	Sampling Date	BORON CONCENTRATION (mg/L)						
1	09/20/17	3.88	5.81	5.89				
2	06/08/18	3.28	5.79	6.01				
3	09/10/18	3.19	5.38	5.45				
4	05/10/19	0.88	3.83	3.41				
5	10/30/19	1.29	4.24	5.18				
6	04/26/20	0.79	1.96	3.43				
7	11/01/20	1.27	2.85	2.33				
8	03/29/21	1.38	1.62	2.32				
9	08/15/21	1.84	2.07	1.81				
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.59	0.45	0.42				
Mann-Kendall Statistic (S):		-12	-28	-30				
Confidence Factor:		87.0%	99.9%	100.0%				
Concentration Trend:		Stable	Decreasing	Decreasing				



Notes:

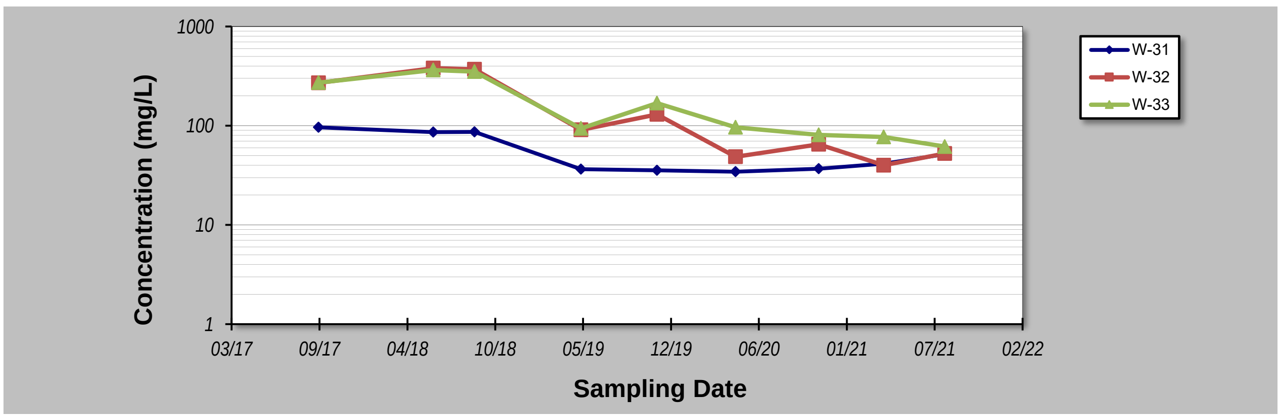
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **9-Nov-22**
Facility Name: **MOSES**
Conducted By: **KRO**

Job ID: **PBkgd-Ug**
Constituent: **Calcium**
Concentration Units: **mg/L**

Sampling Point ID:		W-31	W-32	W-33				
Sampling Event	Sampling Date	CALCIUM CONCENTRATION (mg/L)						
1	09/20/17	96.30	270.00	271.00				
2	06/08/18	86.30	380.00	364.00				
3	09/10/18	86.50	370.00	351.00				
4	05/10/19	36.50	91.00	93.70				
5	10/30/19	35.60	130.00	169.00				
6	04/26/20	34.40	48.60	96.40				
7	11/01/20	36.90	64.80	80.90				
8	03/29/21	41.40	40.00	77.00				
9	08/15/21	51.6	52.30	61.70				
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.46	0.87	0.70				
Mann-Kendall Statistic (S):		-10	-24	-28				
Confidence Factor:		82.1%	99.4%	99.9%				
Concentration Trend:		Stable	Decreasing	Decreasing				



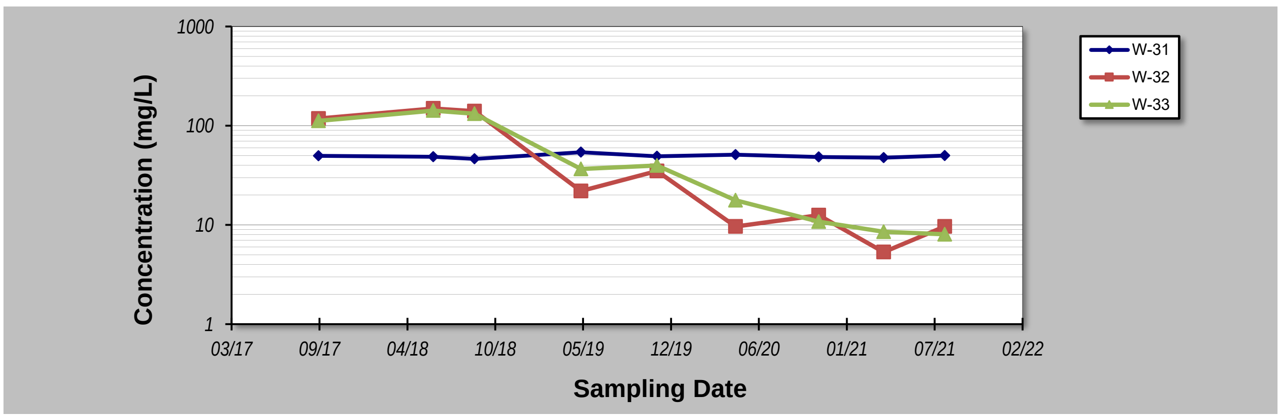
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	9-Nov-22	Job ID:	PBkgd-Ug
Facility Name:	MOSES	Constituent:	Chloride
Conducted By:	KRO	Concentration Units:	mg/L

Sampling Point ID:		W-31	W-32	W-33				
Sampling Event	Sampling Date	CHLORIDE CONCENTRATION (mg/L)						
1	09/20/17	49.80	118.00	112.00				
2	06/08/18	48.60	149.00	142.00				
3	09/10/18	46.30	140.00	132.00				
4	05/10/19	54.00	21.90	36.70				
5	10/30/19	49.10	35.00	39.70				
6	04/26/20	51.10	9.65	17.70				
7	11/01/20	48.30	12.50	10.80				
8	03/29/21	47.70	5.32	8.55				
9	08/15/21	49.9	9.64	8.05				
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.04	1.10	0.99				
Mann-Kendall Statistic (S):		-2	-26	-30				
Confidence Factor:		54.0%	99.7%	100.0%				
Concentration Trend:		Stable	Decreasing	Decreasing				



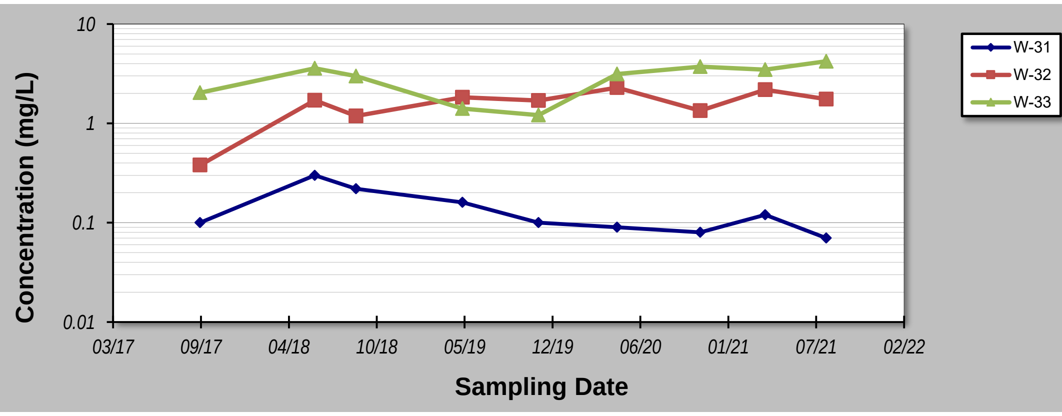
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	9-Nov-22	Job ID:	PBkgd-Ug
Facility Name:	MOSES	Constituent:	Fluoride
Conducted By:	KRO	Concentration Units:	mg/L

Sampling Point ID:		W-31	W-32	W-33				
Sampling Event	Sampling Date	FLUORIDE CONCENTRATION (mg/L)						
1	09/20/17	0.10	0.38	2.04				
2	06/08/18	0.30	1.71	3.59				
3	09/10/18	0.22	1.19	2.99				
4	05/10/19	0.16	1.83	1.41				
5	10/30/19	0.10	1.70	1.21				
6	04/26/20	0.09	2.29	3.13				
7	11/01/20	0.08	1.34	3.73				
8	03/29/21	0.12	2.18	3.48				
9	08/15/21	0.07	1.75	4.22				
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.56	0.36	0.37				
Mann-Kendall Statistic (S):		-21	14	14				
Confidence Factor:		98.3%	91.0%	91.0%				
Concentration Trend:		Decreasing	Prob. Increasing	Prob. Increasing				



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	9-Nov-22	Job ID:	PBkgd-Ug
Facility Name:	MOSES	Constituent:	pH
Conducted By:	KRO	Concentration Units:	S.U.

Sampling Point ID:		W-31	W-32	W-33				
Sampling Event	Sampling Date	PH CONCENTRATION (S.U.)						
1	09/20/17	6.72	6.79	6.73				
2	06/08/18	6.72	6.74	6.55				
3	09/10/18	4.84	6.56	6.78				
4	05/10/19	6.87	6.73	6.85				
5	10/30/19	6.84	6.91	6.68				
6	04/26/20	7.41	8.72	8.35				
7	11/01/20	6.60	8.16	8.39				
8	03/29/21	5.59	7.09	7.10				
9	08/15/21	5.52	7.12	7.13				
10								
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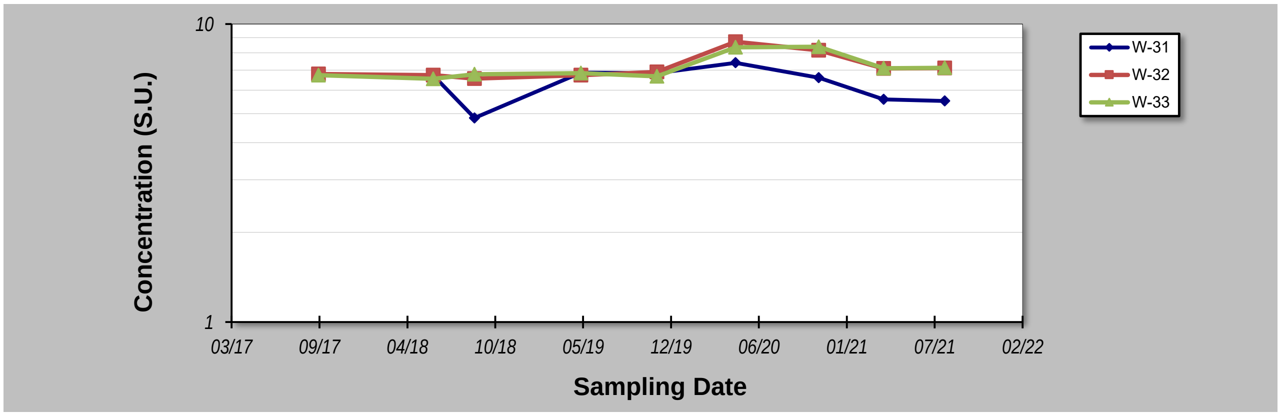
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.13	0.10	0.10				
Mann-Kendall Statistic (S):		-7	16	20				
Confidence Factor:		72.8%	94.0%	97.8%				
Concentration Trend:		Stable	Prob. Increasing	Increasing				



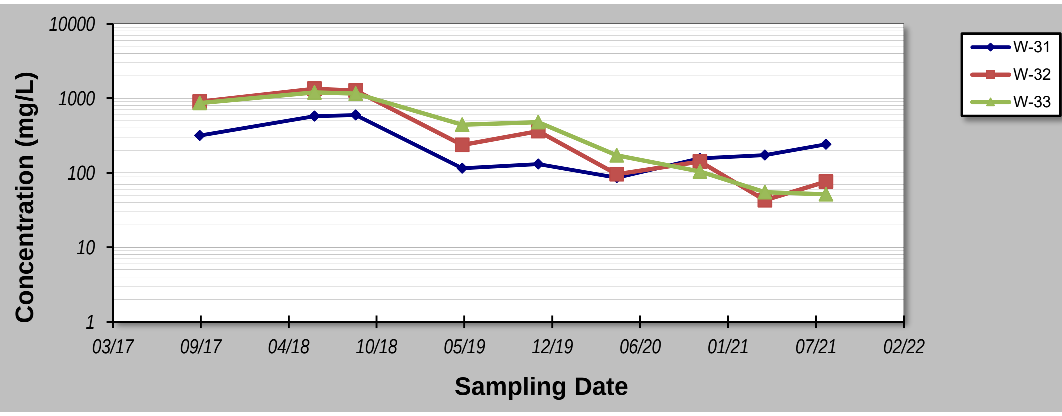
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	9-Nov-22	Job ID:	PBkgd-Ug
Facility Name:	MOSES	Constituent:	Sulfate
Conducted By:	KRO	Concentration Units:	mg/L

Sampling Point ID:		W-31	W-32	W-33				
Sampling Event	Sampling Date	SULFATE CONCENTRATION (mg/L)						
1	09/20/17	316.00	901.00	863.00				
2	06/08/18	577.00	1340.00	1200.00				
3	09/10/18	595.00	1270.00	1160.00				
4	05/10/19	115.00	236.00	443.00				
5	10/30/19	131.00	363.00	477.00				
6	04/26/20	85.90	95.80	171.00				
7	11/01/20	156.00	141.00	104.00				
8	03/29/21	173.00	42.90	54.80				
9	08/15/21	242	76.30	51.40				
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.73	1.06	0.92				
Mann-Kendall Statistic (S):		-4	-26	-30				
Confidence Factor:		61.9%	99.7%	100.0%				
Concentration Trend:		Stable	Decreasing	Decreasing				



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*

2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.

3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 9-Nov-22 | Job ID: PBkgd-Ug
Facility Name: MOSES | Constituent: TDS
Conducted By: KRO | Concentration Units: mg/L

Sampling Event	Sampling Date	W-31	W-32	W-33				
		TDS CONCENTRATION (mg/L)						
1	09/20/17	696.00	1920.00	1970.00				
2	06/08/18	925.00	2390.00	2230.00				
3	09/10/18	973.00	2200.00	2120.00				
4	05/10/19	319.00	479.00	775.00				
5	10/30/19	343.00	746.00	911.00				
6	04/26/20	279.00	290.00	580.00				
7	11/01/20	384.00	344.00	387.00				
8	03/29/21	373.00	204.00	342.00				
9	08/15/21	400	270.00	295.00				
10								
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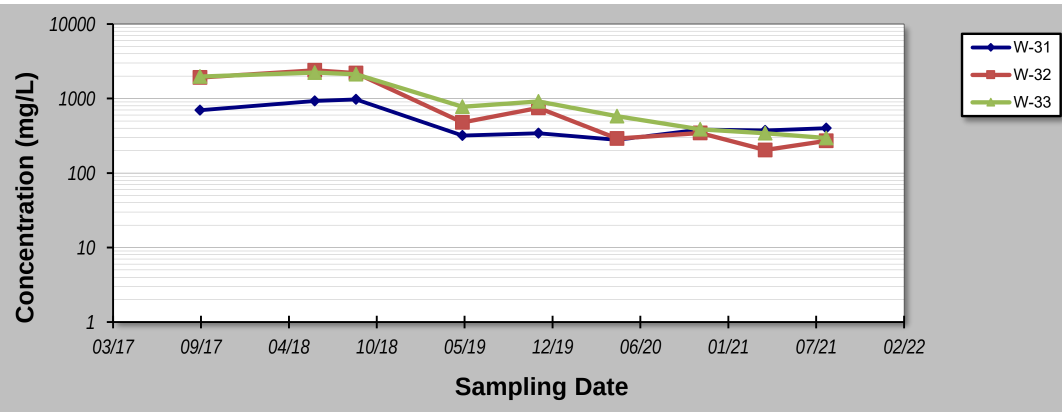
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.52	0.93	0.76				
Mann-Kendall Statistic (S):		-6	-26	-30				
Confidence Factor:		69.4%	99.7%	100.0%				
Concentration Trend:		Stable	Decreasing	Decreasing				



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	8-Nov-22	Job ID:	PBkgd-Dg
Facility Name:	MOSES	Constituent:	Boron
Conducted By:	KO	Concentration Units:	mg/L

	Sampling Point ID:	W-29	W-30	W-34	W-35			
Sampling Event	Sampling Date	BORON CONCENTRATION (mg/L)						
1	09/20/17	4.84	5.76	5.36	6.27			
2	06/08/18	3.70	5.06	4.95	5.81			
3	09/10/18	4.14	4.53	4.53	5.70			
4	05/09/19	1.94	5.13	1.51	5.46			
5	10/30/19	1.69	5.06	4.11	3.63			
6	04/26/20	1.36	4.18	4.26	5.30			
7	11/01/20	1.24	4.26	5.47	5.95			
8	03/24/21	1.25	4.33	5.80	6.16			
9	08/15/21		4.01	4.83	6.04			
10								
11								
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14								
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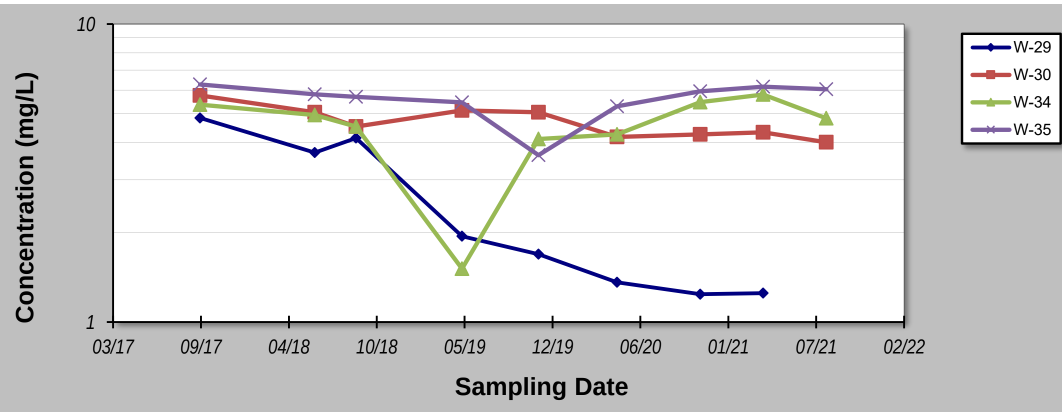
17								
18								
19								
20								
	Coefficient of Variation:	0.58	0.12	0.28	0.14			
	Mann-Kendall Statistic (S):	-24	-23	4	0			
	Confidence Factor:	99.9%	99.1%	61.9%	46.0%			
	Concentration Trend:	Decreasing	Decreasing	No Trend	Stable			



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*

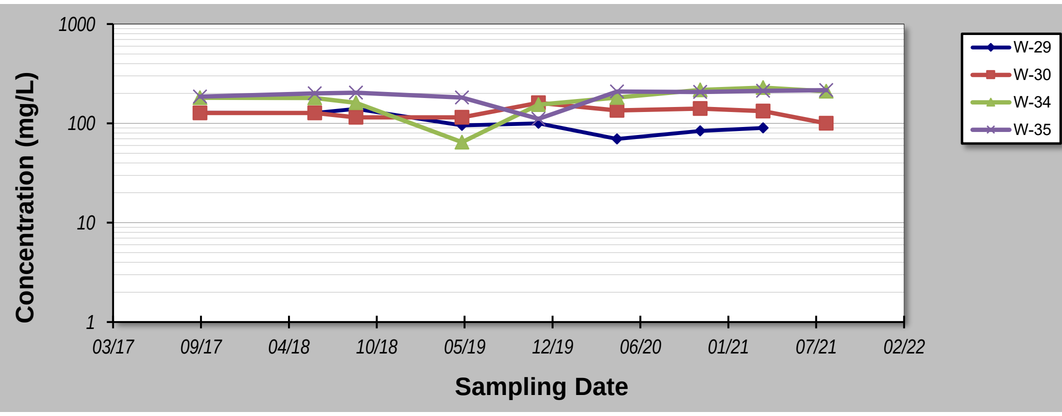
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.

3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	9-Nov-22	Job ID:	PBkgd-Dg
Facility Name:	MOSES	Constituent:	Calcium
Conducted By:	KRO	Concentration Units:	mg/L

Sampling Point ID:		W-29	W-30	W-34	W-35			
Sampling Event	Sampling Date	CALCIUM CONCENTRATION (mg/L)						
1	09/20/17	128.00	127.00	181.00	186.00			
2	06/08/18	127.00	127.00	180.00	200.00			
3	09/10/18	140.00	115.00	161.00	204.00			
4	05/09/19	95.40	115.00	64.70	182.00			
5	10/30/19	100.00	161.00	154.00	111.00			
6	04/26/20	69.70	135.00	182.00	209.00			
7	11/01/20	84.00	141.00	217.00	207.00			
8	03/24/21	89.90	133.00	229.00	213.00			
9	08/15/21		100	210.00	216.00			
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.24	0.14	0.28	0.17			
Mann-Kendall Statistic (S):		-16	0	14	20			
Confidence Factor:		96.9%	46.0%	91.0%	97.8%			
Concentration Trend:		Decreasing	Stable	Prob. Increasing	Increasing			



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	9-Nov-22	Job ID:	PBkgd-Dg
Facility Name:	MOSES	Constituent:	Chloride
Conducted By:	KRO	Concentration Units:	mg/L

Sampling Point ID:		W-29	W-30	W-34	W-35			
Sampling Event	Sampling Date	CHLORIDE CONCENTRATION (mg/L)						
1	09/20/17	80.60	76.50	117.00	120.00			
2	06/08/18	87.90	87.80	116.00	128.00			
3	09/10/18	81.50	81.10	114.00	132.00			
4	05/09/19	92.10	97.50	45.10	75.50			
5	10/30/19	86.10	59.40	103.00	95.50			
6	04/26/20	88.20	51.40	108.00	129.00			
7	11/01/20	88.10	44.00	114.00	118.00			
8	03/24/21	83.30	40.50	132.00	129.00			
9	08/15/21		33.4	125.00	137.00			
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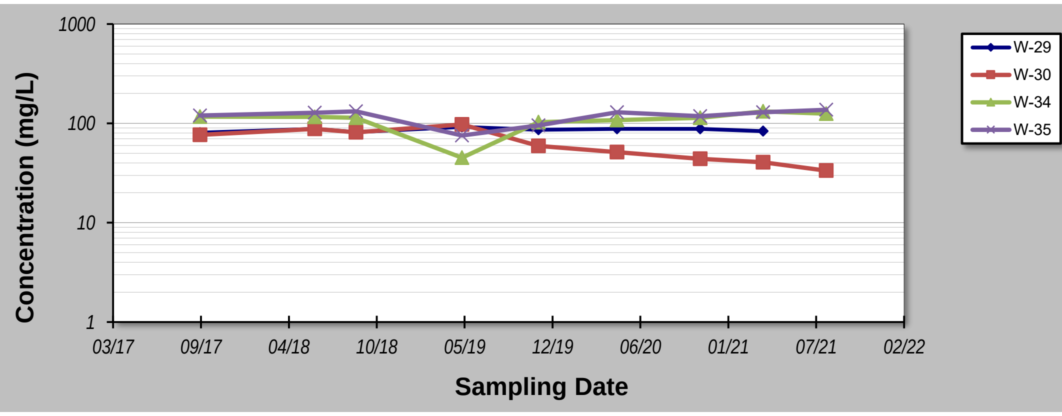
Coefficient of Variation:		0.05	0.36	0.23	0.17			
Mann-Kendall Statistic (S):		6	-26	5	11			
Confidence Factor:		72.6%	99.7%	65.7%	84.6%			
Concentration Trend:		No Trend	Decreasing	No Trend	No Trend			



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	9-Nov-22	Job ID:	PBkgd-Dg
Facility Name:	MOSES	Constituent:	Fluoride
Conducted By:	KRO	Concentration Units:	mg/L

Sampling Point ID:		W-29	W-30	W-34	W-35			
Sampling Event	Sampling Date	FLUORIDE CONCENTRATION (mg/L)						
1	09/20/17	0.10	0.39	0.24	0.10			
2	06/08/18	0.37	0.92	0.90	0.16			
3	09/10/18	0.41	0.91	0.66	0.10			
4	05/09/19	0.21	0.85	0.35	0.10			
5	10/30/19	0.24	0.57	0.32	0.10			
6	04/26/20	0.14	0.69	0.44	0.15			
7	11/01/20	0.20	0.68	0.35	0.06			
8	03/24/21	0.15	0.58	0.48	0.07			
9	08/15/21		0.824	0.35	0.06			
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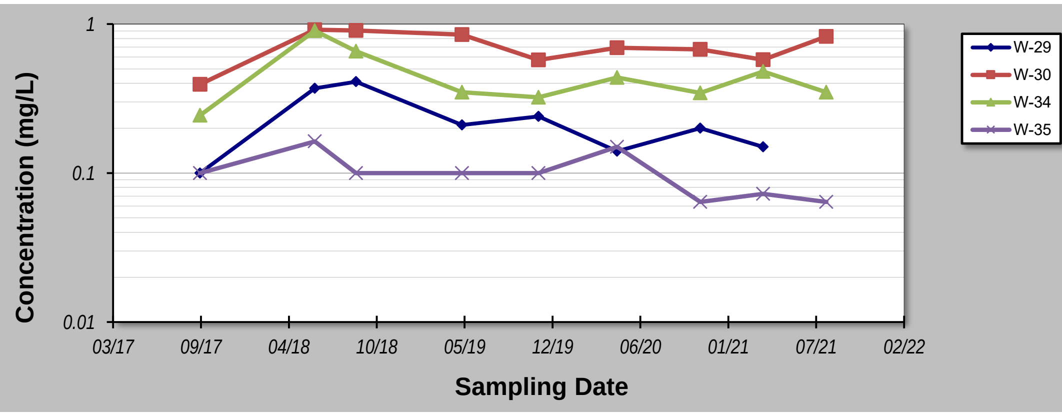
Coefficient of Variation:		0.48	0.25	0.45	0.34			
Mann-Kendall Statistic (S):		-6	-6	-1	-17			
Confidence Factor:		72.6%	69.4%	50.0%	95.1%			
Concentration Trend:		Stable	Stable	Stable	Decreasing			



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	9-Nov-22	Job ID:	PBkgd-Dg
Facility Name:	MOSES	Constituent:	pH
Conducted By:	KRO	Concentration Units:	S.U.

Sampling Point ID:		W-29	W-30	W-34	W-35			
Sampling Event	Sampling Date	PH CONCENTRATION (S.U.)						
1	09/20/17	6.85	6.85	6.75	6.74			
2	06/08/18	6.62	6.78	6.85	6.55			
3	09/10/18	6.30	5.25	6.64	5.42			
4	05/09/19	6.85	6.72	6.78	6.94			
5	10/30/19	6.52	6.43	6.62	6.92			
6	04/26/20	6.70	7.49	7.67	6.50			
7	11/01/20	6.98	7.11	7.50	6.73			
8	03/24/21	6.95	5.67	6.20	5.29			
9	08/15/21		5.83	6.16	5.70			
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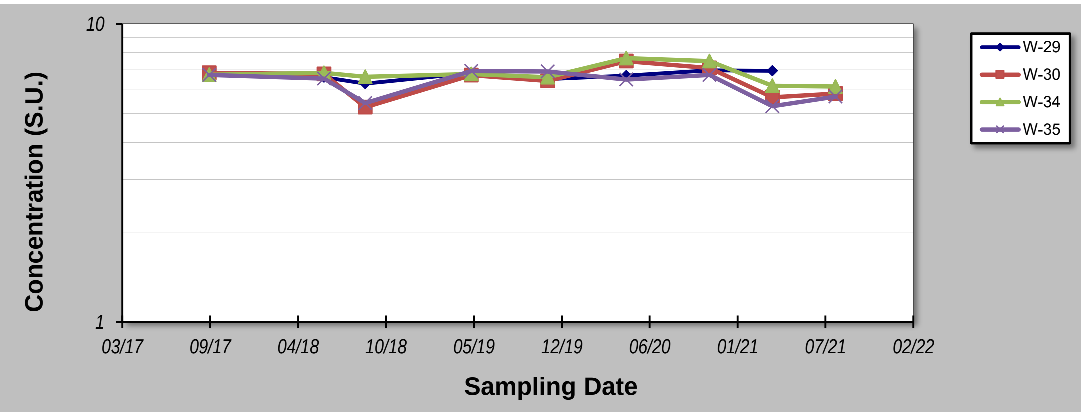
Coefficient of Variation:		0.03	0.11	0.08	0.10			
Mann-Kendall Statistic (S):		9	-6	-10	-12			
Confidence Factor:		83.2%	69.4%	82.1%	87.0%			
Concentration Trend:		No Trend	Stable	Stable	Stable			



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	**9-Nov-22**	Job ID:	**PBkgd-Dg**
Facility Name:	**MOSES**	Constituent:	**Sulfate**
Conducted By:	**KRO**	Concentration Units:	**mg/L**

Sampling Event	Sampling Date	W-29	W-30	W-34	W-35			
		SULFATE CONCENTRATION (mg/L)						
1	09/20/17	882.00	734.00	873.00	854.00			
2	06/08/18	694.00	724.00	835.00	925.00			
3	09/10/18	858.00	713.00	819.00	940.00			
4	05/09/19	361.00	734.00	164.00	501.00			
5	10/30/19	252.00	755.00	677.00	682.00			
6	04/26/20	270.00	763.00	817.00	984.00			
7	11/01/20	214.00	735.00	930.00	945.00			
8	03/24/21	224.00	686.00	1130.00	1010.00			
9	08/15/21		606.00	933.00	992.00			
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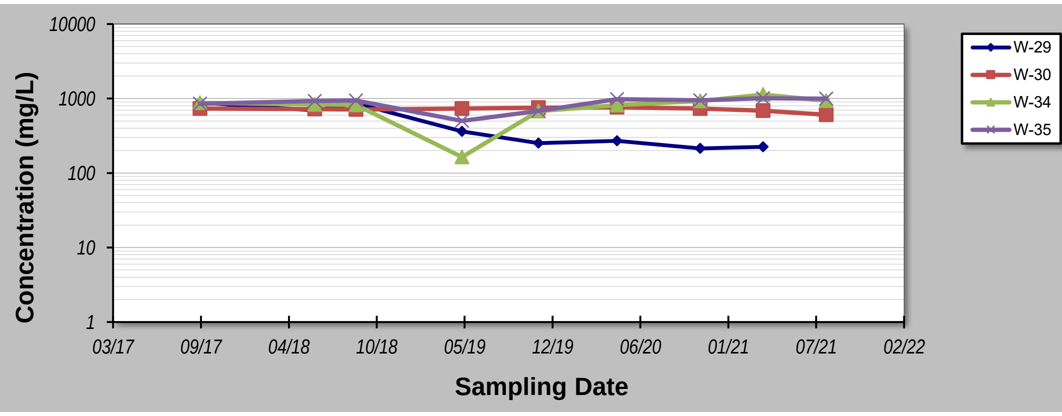
Coefficient of Variation:		0.62	0.07	0.33	0.20			
Mann-Kendall Statistic (S):		-22	-5	10	20			
Confidence Factor:		99.8%	65.7%	82.1%	97.8%			
Concentration Trend:		Decreasing	Stable	No Trend	Increasing			



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT

for Constituent Trend Analysis

Evaluation Date:	9-Nov-22	Job ID:	PBkgd-Dg
Facility Name:	MOSES	Constituent:	TDS
Conducted By:	KRO	Concentration Units:	mg/L

Sampling Event	Sampling Date	W-29	W-30	W-34	W-35			
		TDS CONCENTRATION (mg/L)						
1	09/20/17	1540.00	1570.00	1720.00	1650.00			
2	06/08/18	1310.00	1280.00	1540.00	1660.00			
3	09/10/18	1630.00	1230.00	1530.00	1580.00			
4	05/09/19	727.00	1300.00	568.00	865.00			
5	10/30/19	621.00	1330.00	1260.00	1280.00			
6	04/26/20	563.00	1150.00	1370.00	1600.00			
7	11/01/20	517.00	1140.00	1560.00	1550.00			
8	03/24/21	495.00	1070.00	1640.00	1510.00			
9	08/15/21		979	1620.00	1650.00			
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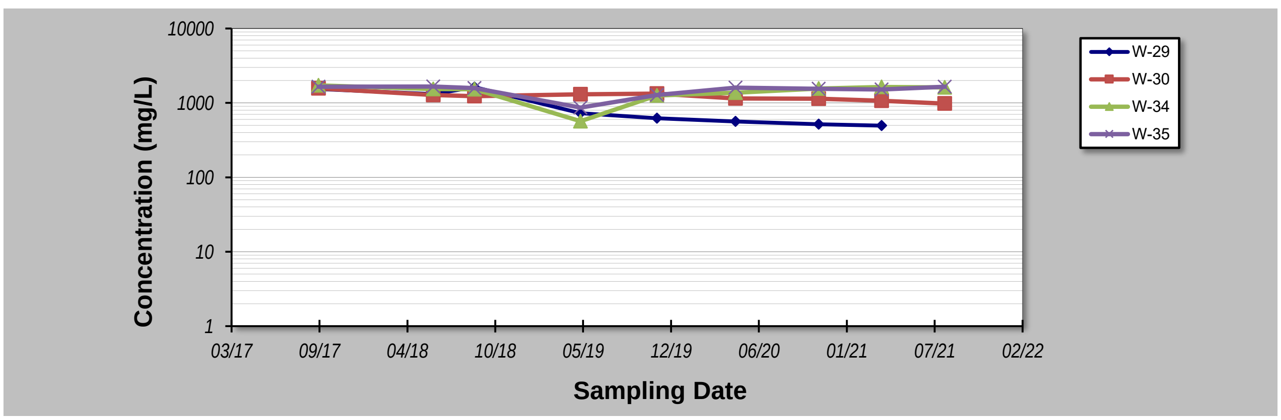
Coefficient of Variation:		0.52	0.14	0.25	0.17			
Mann-Kendall Statistic (S):		-24	-26	4	-5			
Confidence Factor:		99.9%	99.7%	61.9%	65.7%			
Concentration Trend:		Decreasing	Decreasing	No Trend	Stable			



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Attachment #13 for VII.31 – CCR Revised Closure Report

NODs #11 & #12 – November 21, 2022

UPDATED CCR CLOSURE PLAN
Bottom Ash Ponds

Former Monticello Steam Electric Station
Titus County, Texas

Prepared for:
GOLDEN EAGLE DEVELOPMENT LLC

Prepared by:
Gemini Engineering, LLC
2275 Cassens Drive, Suite 118
Fenton, Missouri 63026

November 2022

On behalf of Golden Eagle Development, LLC (Golden Eagle), Gemini Engineering has prepared this Updated Coal Combustion Residue (CCR) Closure Plan (30 TAC 352.1221/40 CFR 257.102(b)) for the Bottom Ash Ponds (BAPs) at the Monticello Steam Electric Station (MOSES) (Figure 1). This plan is an update to the updated closure plan submitted in May 2021 by Golden Eagle (ATON, 2021). The 2016 closure plan design proposed to close one of the BAPs by CCR removal and cap the other two ponds. Per the 2021 updated plans all three BAPs were closed by removal. This update provides an updated of the required regulations.

1.0 BOTTOM ASH PONDS

The site contains three BAPs subject to CCR closure requirements, Northeast Ash Water Retention Pond (WMU 11), West Ash Settling Pond (WMU 12), and Southwest Ash Settling Pond (WMU 22) that comprise of approximately 19-acres (Figure 2). The adjacent Stormwater Collection Pond (WMU 9) is not subject to CCR regulations. The BAPs were built in 1974; however, they were relined in 1990 with 3-foot clay liners.

The BAPs received recovered overflow from bottom ash dewatering bins and other MOSES process wastewater sources. The ponds also acted as a surge basin for various water streams in the ash-water system. Recovered sluice water, process waters and storm water runoff from the MOSES ash-water system were pumped to each pond through a series of above grade pipes on the east end. The BAPs also served as settling basins to remove residual bottom ash and fines from recovered sluice water associated with the dewatering bins. Water was pumped from the SW Pond, as needed, and returned for reuse in the bottom ash system. When sufficient ash had accumulated in either the NE or West Ponds, the recovered sluice water was diverted to the other pond. Ash was then removed from the first pond and transported via train car to the G Ash Area. Based on the design of the BAPs, minimal accumulation of solids occurred within the SW Pond.

Per the 2017 Annual Surface Impoundment Inspection Report (PBW, 2018), based on the available construction information, each of the BAPs were constructed to provide the following estimated storage capacities:

- NE Pond: 100 acre-feet
- West Pond: 130 acre-feet
- SW Pond: 1440 acre-feet

1.1 Bottom Ash Beneficial Reuse

Per the TCEQ approved Updated Closure Plan for the B-Area Landfill (ATON, 2020), to establish the desired slopes in the B-Area Landfill it will be necessary to add a significant amount of fill material. Golden Eagle proposed to beneficially use the bottom ash currently contained in the BAPs. A sample of the bottom ash material was collected and analyzed for the appropriate constituents and the concentrations are below the Maximum Contaminant Levels (MCLs) as outlined in the Industrial Classification Guidelines (RG-022). The bottom ash from the BAPs is considered a Class 3 industrial non-hazardous material in accordance with 30 Texas Administrative Code (TAC) 335, Subchapter R. The use of bottom ash use was used in accordance with 40 CFR §257.53. The beneficial reuse determination records are available onsite.

2.0 BOTTOM ASH PONDS CLOSURE - CLOSURE BY REMOVAL OF CCR

2.1 Closure by Removal

The purpose of this Updated CCR Closure Plan is to describe the steps required to close the BAPs at MOSES consistent with recognized and generally accepted good engineering practices. Closure of the BAPS will be designed to reduce the need for long-term maintenance and control the post-closure release of constituents into environmental pathways. The BAPS will be closed through the removal of CCR, and the closure will be performed pursuant to 40 CFR 257.102(c).

The ash material from the BAPs will been dewatered of free liquids via pumping to the North Operating Pond (WMU 007) starting with the SW Pond. Following removal of free liquids, the bottom ash material from the ponds will be excavated and hauled to the B-Area Landfill (WMU 002) for beneficial structure fill starting with the SW Pond. Water and bottom ash will then be removed from the NE Pond and West Pond, respectively. The embankments and bottom clay liner will also be removed following the bottom ash and used as B-Area fill. Pipelines that are above be removed from the around the impoundments. Underground pipelines entering the impoundments will be excavated and removed or closed in place as necessary for future grading.

Upon closure completion, certification from a qualified Texas professional engineer will be provided verifying that closure has been completed in accordance with the closure plan. Following closure certification, the area will be graded to the southwest toward Lake Monticello via an existing surface water culvert that is currently permitted stormwater Outfall 001. Interior surface grading will provide a 3 to 5 percent slope for drainage relief from the footprint of the former impoundments to ensure (to the maximum extent feasible) that post-closure run-off is conveyed off the former impoundment area. The Stormwater Collection Pond will be closed per Texas Risk Reduction Rule (TRRP) 30 TAC 350.

2.2 Closure Schedule

- Mobilization and dewatering SW Pond – completed February 2021
- Bottom Ash Removal – SW Pond – completed April 2021
- Bottom Ash Removal – West Pond - Completed June 2022
- BAP Closure – Closure Report Submitted July 2022
- BAP Area Re-Grading – 2023

3.0 GROUNDWATER MONITORING

Golden Eagle currently conducts groundwater sampling in the BAP area on a semi-annual basis for Detection Monitoring in accordance with 40 CFR 257.94. Pursuant to 40 CFR 257.102(c), groundwater protection standards (GWPS) have not been established. The impoundment will remain in detection monitoring during implementation of the closure activities. If groundwater has been determined to not be impacted, the ongoing detection monitoring program will cease after completion of the closure activities and posting of the Notification of Completion of Closure to the CCR website. The monitoring wells making up the bottom ash ponds groundwater monitoring system will then be properly closed and abandoned per applicable State of Texas requirements.

4.0 CERTIFICATION STATEMENT

This closure plan and all attachments were prepared by Gemini Engineering LLC under my direction and supervision. This closure plans meets the requirements of 30 TAC 352.1221/40 CFR 257.102 and been prepared in a manner consistent with recognized and generally accepted good engineering practices.

Adam J. Kaiser, PE

11/18/2022

5.0 REFERENCES

ATON, 2020. *Updated Closure Plan for the B-Area Landfill*, September.

ATON, 2021. *Updated CCR Closure Plan, Monticello Steam Electric Station.* May.

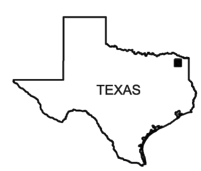
Golder, 2020. *Annual Groundwater Monitoring Report, Monticello Steam Electric Station*. July 10.

Pastor, Behling & Wheeler, LLC (PBW), 2016. *CCR Closure Plan, Monticello Steam Electric Station, Bottom Ash Ponds.* October.

Pastor, Behling & Wheeler, LLC (PBW), 2016. *CCR Post-Closure Plan, Monticello Steam Electric Station, Bottom Ash Ponds.* October.

Pastor, Behling & Wheeler, LLC (PBW), 2017 Annual Surface Impoundment Inspection Report. January 2018.

REFERENCE(S)
BASE MAP TAKEN FROM WWW.TNRIS.GOV, MONTICELLO, TX 7.5 MIN. USGS QUADRANGLE DATED 2010.



QUADRANGLE LOCATIONS

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GEMINI ENGINEERING

Figure 1
Site Location Map
Former MOSES Site

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Drawn:	EFC
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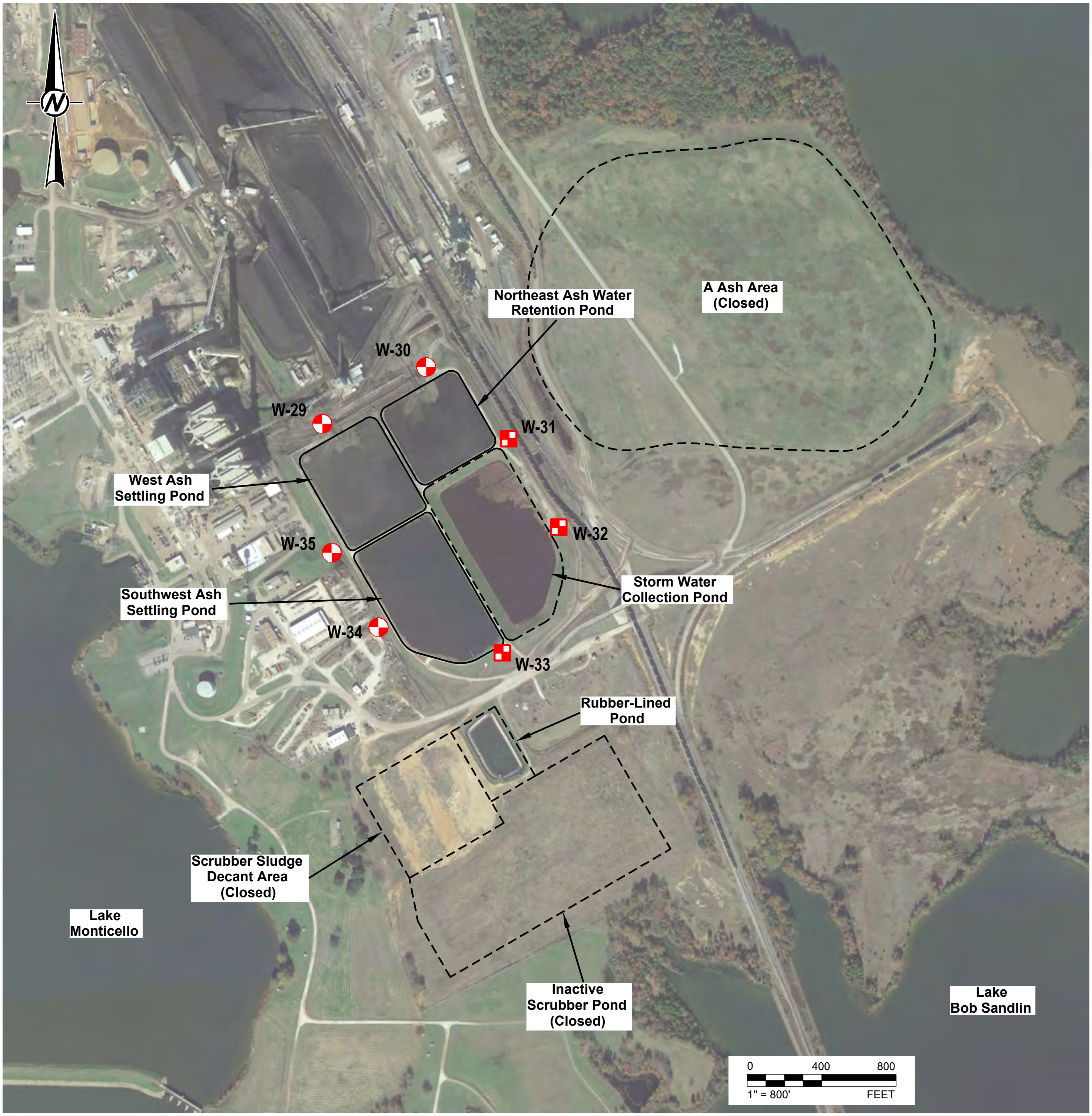
Scale:	As Shown



LEGEND

DOWNGRADIENT CCR MONITORING WELL

UPGRADIENT CCR MONITORING WELL

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GEMINI ENGINEERING

Detailed Site Plan
Site: Golden Eagle Development

Chkd:	AK
Drawn:	EFC
Page:	1 of 1
Date:	1/25/2022
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