*Prepared for*

**Crisp County Power Commission**
202 S. 7th Street
Cordele, Georgia 31015

# GROUNDWATER MONITORING AND STATISTICAL ANALYSIS PLAN

# CRISP COUNTY POWER COMMISSION PLANT CRISP ASH POND

**961 Power Dam Road**
**Warwick, GA 31796**

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

**Approved**
**Solid Waste Management Program**

Approved By: John Sayer Digitally signed by John Sayer Date: 2020.06.25 08:28:31 -04'00'

*Prepared by*

Geosyntec consultants
engineers | scientists | innovators

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1255 Roberts Boulevard, Suite 200
Kennesaw, Georgia 30144

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## COMMONLY USED ACRONYMS

| | |
|---|---|
| ANOVA | Analysis of Variance |
| CCPC | Crisp County Power Commission |
| CCR | Coal Combustion Residuals |
| C.F.R. | Code of Federal Regulations |
| DO | Dissolved Oxygen |
| GA EPD | Georgia Environmental Protection Division |
| MCL | Maximum Contaminant Level |
| MW | Megawatt |
| NTU | Nephelometric Turbidity Unit |
| ORP | Oxidation Reduction Potential |
| PL | Upper Prediction Limit |
| PQL | Practical Quantitation Limit |
| RCRA | Resource Conservation and Recovery Act |
| SOP | Standard Operating Procedure |
| SSI | Statistically Significant Increase |
| SSL | Statistically Significant Level |
| SWFPR | Site-wide False Positive Rate |
| USEPA | United States Environmental Protection Agency |
| UTL | Upper Tolerance Limit |

# 1. INTRODUCTION

In April 2015, the United States Environmental Protection Agency (USEPA) issued new regulations regarding the disposal of coal combustion residuals (CCR) under 40 C.F.R. §257, Subpart D, referred to as the "USEPA CCR Rule" (USEPA, 2015a). Facilities regulated under the CCR Rule are required to develop and sample a groundwater monitoring well network to evaluate if the CCR disposal units are impacting downgradient groundwater quality. As part of the evaluation, the analytical data collected during the sampling events must undergo statistical analysis to evaluate if any statistically significant increases (SSIs) in analyte concentrations above background levels exist. A description of acceptable statistical programs is provided in USEPA's document *Statistical Analysis of Groundwater Data at RCRA Facilities, Unified Guidance* (USEPA, 2009), which is commonly referred to as the "Unified Guidance."

The USEPA CCR Rule is not prescriptive regarding what statistical analysis should be selected to ensure groundwater data are interpreted in a consistent matter and the results meet certification requirements. Geosyntec Consultants, Inc. (Geosyntec) prepared this Groundwater Monitoring and Statistical Analysis Plan on behalf of Crisp County Power Commission (CCPC) to develop a process regarding the selection of the appropriate statistical analysis of groundwater data collected from the site. The Groundwater Monitoring and Statistical Analysis Plan provides: (i) groundwater sampling methods; (ii) analytical methods; and (iii) a narrative description of the statistical approach and methods to be used in accordance with the USEPA CCR Rule reporting requirements [40 C.F.R. §257.93(f)(6)]. The document describes procedures for collecting, preserving, shipping, and laboratory analysis of groundwater samples as well as statistical procedures to be used to establish background conditions, implement detection monitoring, and implement assessment monitoring (as needed) for the CCPC ash impoundment. This document does not include statistical procedures for corrective action monitoring which should be developed when a corrective action groundwater monitoring program is established, if remedial action is necessary.

## 2. SITE LOCATION AND BACKGROUND

CCPC Plant Crisp is a dual-fuel (coal and natural gas) electrical generation facility located in Worth County, Georgia. The byproducts of power generation through the combustion of coal (commonly referred to as CCRs) at Plant Crisp included mainly fly ash and bottom ash. The CCRs were disposed into a 6.5-acre ash pond located within the plant property using wet sluicing method. The coal burning and resulting sluicing operation was completed in August 2015. The coal burn unit was briefly re-activated for testing or to use up the remaining, low volume coal in the facility in 2017. CCPC has submitted notification of closure in accordance with 40 C.F.R. Part 257.

In June 2017, Geosyntec prepared and submitted a Groundwater Monitoring System Certification in compliance with the requirements of 40 C.F.R. §257.91(f). The groundwater monitoring system includes one upgradient monitoring well (MW-U1) and three monitoring wells (MW-D1, MW-D2, and MW-D3) located immediately downgradient of the ash pond to the southwest, northwest, and north, respectively. The locations of the monitoring wells are shown on **Figure 1**. Monitoring well construction details are provided in **Table 1**. The boring logs and well construction diagrams for these monitoring wells are presented in **Appendix A**.

Drilling and monitoring well installation were performed in February 2017 by Environmental Monitoring Services of Woodstock, GA under the supervision of a Geosyntec engineer. Borings were advanced to depths up to 40 feet below ground surface (ft bgs). The boreholes were advanced using a combination of direct push technology (DPT) and hollow stem auger drilling methods. Continuous soil cores collected via acetate DPT core sleeves were logged by a Geosyntec engineer. After reaching the desired drilling depth, each borehole was reamed to a six-inch diameter borehole using a hollow-stem auger drilling method. Monitoring wells were constructed of Schedule 40 polyvinyl chloride (PVC) casing and 10-ft slotted (0.010-inch) PVC screen. The monitoring wells were installed at depths ranging between 20 ft and 35 ft (Table 1). A filter pack consisting of quartz sand, fine- to medium-grained (approximately 20-40 Sieve size) was installed around the well screens and extended to approximately two ft above the top of the screen. The filter pack was added by pouring from the surface (gravity feed process) into the well annulus area between the drill casing and the PVC riser pipe assembly. Approximately two feet bentonite pellets were placed above the filter pack. After the bentonite pellets were allowed to hydrate, the remaining annular space was grouted using a cement-bentonite grout at 90/10 ratio. Well risers for the monitoring

wells were installed extending a minimum of 3.2 ft. above ground surface. Concrete surface pads and protective surface casings were installed at each monitoring well location. A lockable steel outer surface casing was installed over the PVC well casing within the 2 ft × 2 ft × 6 in concrete pad. The steel outer protective casing was pushed into the concrete slurry. The annular space between the extended PVC riser pipe and the steel outer protective cover was filled with washed pea gravel to approximately six inches below the top of the PVC. Two weep holes were drilled on opposite sides at the base of the steel outer protective casing. Four concrete-filled protective bollards were installed around each monitoring well and set in concrete. The bollards extend approximately 3 ft. above ground surface and were painted yellow for high-visibility. A schematic showing surface completion of the groundwater monitoring wells is provided in **Figure 2**. The wells were developed 24 hours after well installation. Surveying of the northing, easting, top of casing elevation, and ground surface elevation of the monitoring wells was conducted by J.B. Faircloth & Associates, P.C. under the supervision of a land surveyor licensed in Georgia. Horizontal coordinates were surveyed to an accuracy of 0.5 ft and are provided in the State Plane NAD83 Georgia West Zone coordinate system. Ground surface elevations and top of casing elevations were surveyed to an accuracy of 0.01 ft and are referenced to the NAVD88 datum. A copy of the land surveyor's certification drawing is provided in **Appendix B**.

If a change is made to the groundwater monitoring well network (installation of additional well or abandonment of an existing well), a well installation report or abandonment report will be submitted to the GA EPD within 60 days or installation or abandonment. The report will be certified by a qualified groundwater scientist. For installed wells, the following information will be included:

- well identification;
- name of drilling contractors and type of drill rig;
- date/time of construction;
- drilling method and drilling fluid if used;
- documentation that the driller, at the time the monitoring wells were installed, had a bond on file with the Water Well Advisory Board;

- borehole diameter and well casing diameter;
- well location given to within an accuracy of 0.5 feet based upon survey from acceptable survey point;
- well depth (±0.1 ft.);
- documentation of ground surface elevation (±0.01 ft.);documentation of top of casing elevation (±0.01 ft.)
- type of protective well cap and sump dimensions for each well;
- drilling and lithologic logs;
- schematic of the well with dimensions;
- casing and screen materials;
- screen slot size;
- screened interval in feet below ground surface and elevation;
- details of filter pack construction including material;
- filter pack emplacement method (narrative);
- seal emplacement method and type/volume of sealant;
- surface seal and volumes/mix of annular seal material;
- well development date;
- well turbidity following development; and
- narrative of well development method- specific well development procedure.

Groundwater flow direction is generally from east/southeast to the north/northwest direction (**Figure 3**) and disperse radially from the ash pond as driven by the hydraulic head of the pond created during its operation.

# 3. GROUNDWATER SAMPLING AND ANALYSIS PROGRAM

According to 40 C.F.R. §257.93(a) the groundwater monitoring program should include consistent sampling and analysis procedures to provide accurate representation of groundwater quality at the background and downgradient wells as required. CCPC's groundwater monitoring program has been designed to collect groundwater from the uppermost aquifer that accurately represent the quality of background groundwater that has not been affected by leakage from a CCR unit, and accurately represents the quality of groundwater passing the waste boundary of the CCR unit. **Figure 1** shows the location of the background well and three downgradient waste boundary wells. Sampling frequency will be consistent with requirements of CCR rule [40 C.F.R. §257.94(b) and 40 C.F.R. §257.95(d)(1)].

The sampling and analysis program as outlined below includes procedures and techniques for: (i) sample collection; (ii) sample preservation and shipment; (iii) quality assurance and quality control; (iv) chain of custody control; and (v) laboratory analytical methods.

## 3.1 Groundwater Sampling Procedures

In compliance with 40 C.F.R. §257.93(c) groundwater levels will be measured in each monitoring well immediately prior to purging, each time groundwater is sampled. Groundwater levels will be measured to the nearest 0.01 feet using an electrical water level indicator and used to determine rate and direction of groundwater flow each time groundwater is sampled. A potentiometric surface map for the uppermost aquifer will be generated using the measured water levels, except during establishing the background conditions. The potentiometric surface maps will allow for a quantitative assessment of groundwater flow rate and direction.

Groundwater sampling from monitoring wells will be performed in accordance with the USEPA Science and Ecosystem Support Division (SESD, Athens, Georgia) Standard Operating Procedure (SOP) (SESDPROC-301-R4) (USEPA, 2017). Groundwater samples will be collected using a low-flow sampling method. The peristaltic pump tubing will be placed in the approximate mid-portion of the screened interval of the well. To ensure that the samples collected are representative of the groundwater in the aquifer, field parameters will be measured during purging after purging one well volume. Temperature, pH, conductivity, oxidation-reduction potential (ORP), dissolved oxygen (DO), and turbidity will be measured using a Horiba U-53 water quality meter or

equivalent and a HACH 2100P or equivalent Turbidity Meter. Measurements will be taken within an enclosed flow-through cell to minimize effects of contact with air. Purging will be considered complete when groundwater pH, conductivity and turbidity measurements (below 10 NTU) equilibrated (as defined by USEPA Science and Ecosystem Support Division SOP) or at least three well volumes were removed. The groundwater samples will be collected in laboratory provided containers. Following sampling, the bottles will be sealed, labeled, packed in ice, and shipped under chain-of-custody protocol to a certified laboratory. The chain-of-custody procedures will be conducted in accordance with SESDPROC-005-R2 dated 29 January 2013 (USEPA, 2013). For quality assurance and quality control, one duplicate sample will be collected and shipped to the laboratory for analysis.

All non-disposable and non-dedicated tools which contact sample media will be decontaminated prior to the collection of each sample. Decontamination solutions will be kept in labeled plastic containers. Disposable nitrile gloves will be worn during all decontamination procedures. Because new tubing and external pump (Geopump or similar) will be used at the landfill, the water level indicator and the field water quality meter are the only pieces of equipment that will require decontamination.

The water level indicator will be decontaminated in accordance with SESDPROC-205-R3 dated 18 December 2015 (USEPA, 2015b), which includes the following procedure:

1. Rinse the tape and probe of the water level indicator with a Liquinox® detergent solution.

2. Rinse with tap water.

3. Rinse the tape and probe with deionized or distilled water.

The probe portions of the field water quality meter for pH, conductivity, dissolved oxygen, turbidity, and temperature will be decontaminated by rinsing with deionized or distilled water. In accordance with the Georgia Water Well Standards Act (O.C.G.A. § 12-5-120) the groundwater monitoring wells will be inspected by a professional engineer or professional geologist at least once every five years. A corrective action will be performed to the monitoring well if the well does not conform to the standards.

During each groundwater monitoring event, field sampling conditions including well signage, well access, sampling and purging equipment condition, and any site conditions that may affect sampling will be noted and maintained in field logbooks.

## 3.2 Groundwater Analysis

In compliance with 40 C.F.R. §257.93(b), the groundwater samples will be analyzed for constituents listed in Appendices III and IV of Part §257 of the CCR rule (referred herein as Appendix III and Appendix IV constituents). For detection monitoring, these constituents include boron, calcium, chloride, fluoride, pH, sulfate, and total dissolved solids from Appendix III Part §257 (Table III-2); and for assessment monitoring these constituents include antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, fluoride, lead, lithium, mercury, molybdenum, selenium, thallium, and radium 226 & 228 combined from Appendix IV Part §257 (Table III-3). All constituents will be analyzed as total recoverable, where samples are not field filtered. **Table 2** presents the list of Appendix III and Appendix IV constituents and the laboratory analytical methods. These laboratory analytical methods are approved by USEPA Manual SW-846 or Standard Method for the Examination of Water and Wastewater (USEPA, 1986).

# 4. STATISTICAL ANALYSIS DURING DETECTION MONITORING

Groundwater sampling frequency during the detection monitoring shall be at least semi-annual [40 C.F.R. §257.95(b)] except when there is no adequate groundwater flow to sample wells semi-annually. The alternative frequency shall be no less than annual [40 C.F.R. 257.94(d)]. If a monitoring well is dry for two consecutive monitoring events, the monitoring well will be abandoned, and a replacement well will be installed in compliance with the Georgia Solid Waste Management Rule 391-3-4-.10(6)(g).

According to 40 C.F.R. §257.93(f), the owner or operator of the CCR unit must select one of the statistical methods specified in paragraphs (f)(1) through (5) of this section to be used in evaluating groundwater monitoring data for each specified constituent. The statistical test chosen shall be conducted separately for each constituent in each monitoring well. CCPC will use the following statistical methods to analyze groundwater data collected during the detection monitoring.

## 4.1 Testing for Outliers

Outliers are extreme data points that may represent an anomaly or error. Data sets will be visually inspected for outliers using a time-series plot or statistical methods such as USEPA 1989 Outlier Screening method or Tukey's Outlier Screening method. Potential outliers will be evaluated for potential sources of error or evidence that the data point is not representative. Errors will be corrected prior to further statistical analysis. Non-representative data points may be excluded from the statistical analysis based on professional judgment.

## 4.2 Testing for Normality

Data will be tested for normal distribution using the Shapiro-Wilk test (for sample size up to 50) or the Shapiro-Francia test (for sample sizes greater than 50). If the data appear not to be normally distributed, then data may be transformed mathematically (e.g., log, natural log, square root, cube root) such that the transformed data follow a normal distribution (the data will be transformed because many statistical analyses assumes that the sample data are normally distributed). Alternatively, a non-parametric test (i.e., a test that does not assume a particular data distribution) may be used.

## 4.3 Establishing Background

By October 17, 2017, eight independent background samples were collected and analyzed for Appendix III and IV constituents from each background and downgradient monitoring well as part of the initial monitoring period [40 C.F.R. §257.94(b)]. Initially, background data will be evaluated for statistically significant temporal trends using Theil-Sen slope estimator with Mann-Kendall trend test ($\alpha = 0.05$). The trend test will be used to estimate the rate of change (increasing, no change, or decreasing) over time for each constituent. Statistically significant increases in background data (or decreasing trend in pH) could indicate an existing release from the CCR unit or another source, and further investigation may be needed.

When a trend test shows no statistically significant trend in background data, the data will be tested for normality using the methods outlined in Section 4.2. In compliance with 40 C.F.R. §257.93 (g)(1), when the data follows a normal or transformed normal distribution, parametric methods will be used. When the data do not follow a normal or transformed normal distribution, or when more than 50% of the data are non-detect, non-parametric methods may be used.

## 4.4 Evaluating Statistically Significant Increases (SSIs)

Statistical analysis of groundwater data during the detection monitoring will be performed in compliance with the USEPA Unified Guidance (USEPA, 2009). The USEPA CCR Rule specifically lists four methods acceptable for statistical analysis: analysis of variance (ANOVA), tolerance intervals, prediction intervals, and control charts [40 C.F.R.§257.93(f)]. Of these methods, the Unified Guidance recommends prediction limits combined with retesting for maintaining a low site wide false positive rate (SWFPR) while providing high statistical power. ANOVA is not recommended as the USEPA CCR Rule mandates a minimum type I error ($\alpha$) of 0.05, at which it would be difficult to maintain an annual SWFPR less than 10% (Unified Guidance). Control charts are acceptable as long as parametric methods can be used since there is no nonparametric counterpart to the control chart.

Prediction interval and control charts can be used for interwell comparison (data from pooled background monitoring wells used for background data set). Interwell comparison will be used when there are no statistically significant trends in the background data. An interwell statistical method will be used to compare Appendix III

groundwater monitoring data to background conditions. For prediction interval, background data are used to construct a concentration limit PL, which is then compared to one or more observations from the downgradient well. The acceptable range of concentrations includes all values that are lower than the prediction limit. The prediction interval will have the form [0, PL], with the upper limit PL as the comparison of importance.

If a sample does not exceed the calculated PL (or control limit), then it can be concluded that an SSI has not occurred. If the initial sample exceed the PL (or control limit), then a resample should be collected prior to the next regularly scheduled sampling event. If both the initial result and the subsequent resample exceed the PL (or control limit), then an SSI can be concluded.

If the statistical evaluation indicates an SSI for one or more Appendix III constituent, the data should be evaluated to assess whether the SSI is caused by a release from the CCR unit. If the evaluation demonstrates that the SSI is caused by natural variability, sampling, analysis or statistical error, or a release from another source, the demonstration will be made in writing and certified by a qualified professional engineer within 90 days of detecting an SSI [40 C.F.R. §257.94(3)(2)]. If a successful demonstration is not completed within the 90-day period, CCPC will initiate an assessment monitoring program as required under 40 C.F.R. §257.95.

### 4.4.1. Handling Non-Detects in Background Data

When at least half of the data are non-detect, non-parametric prediction intervals with retesting should be used. If all of the background data are non-detect, then the Double Quantification Rule should be used. According to this rule, if a sample and verification resample both exceed the practical quantitation limit (PQL), then an SSI can be concluded.

## 5. STATISTICAL ANALYSIS DURING ASSESSMENT MONITORING

In compliance with 40 C.F.R. §257.95(a), assessment monitoring is required when an SSI is identified over background levels for one or more of the constituents listed in Appendix III. Within 90 days of triggering an assessment monitoring program and annually thereafter, the monitoring wells must be sampled and analyzed for Appendix IV constituents [40 C.F.R. §257.95(b)]. Within 90 days of obtaining the results from this sampling event and on at least on a semi-annual basis thereafter, all monitoring wells must be sampled for all parameters in Appendix III and for those constituents in appendix IV that were detected during the initial assessment monitoring event [40 C.F.R. §257.95(d)(1)].

Statistical analysis of groundwater data during the assessment monitoring will be performed in compliance with the USEPA Unified Guidance (USEPA, 2009). Groundwater protection standards (GWPSs) must be established for each constituent in Appendix IV detected in groundwater [40 C.F.R. §257.95(h)]. The GWPS shall be:

(1) the maximum contaminant level (MCL) established under 40 C.F.R. §141.62 and §141.66.

(2) where an MCL has not been established:

  (i) Cobalt 0.006 mg/L;

  (ii) Lead 0.015 mg/L;

  (iii) Lithium 0.040 mg/L; and

  (iv) Molybdenum 0.100 mg/L.

(3) the upper tolerance limit (UTL) computed from background well data for constituents where the UTL is higher than the MCL or rule-specified GWPS.

USEPA's updated GWPS have not yet been incorporated under GA EPD's CCR Rule[1]. The GWPS based on the GA EPD CCR Rule is:

[1] GA EPD has adopted Federal CCR Rule as provided in 80 Fed. Reg. 21468 (April 17, 2015); as amended

(1) The federally established MCL for Appendix IV constituents.

(2) Where an MCL has not been established, the background concentration for Appendix IV constituents.

(3) Background levels for constituents where the background level is higher than the MCL for Appendix IV constituents.

If a constituent is not detected in background groundwater, then the Double Quantification Rule can be used, in which case the GWPS is the most recent reporting limit or PQL, and two consecutive downgradient concentrations higher than the GWPS will constitute a statistically significant level.

After the GWPS is established, the data will be evaluated to determine whether they are statistically significantly higher than the GWPS. To compare the new data with the fixed standard of the GWPS, the Unified Guidance recommends using confidence intervals around the mean or median. Confidence intervals around the mean will be used when the data follows a normal or transformed normal distribution. Confidence interval around the median will be used when data distributions are non-normal. When at least 50% of the recent data set is non-detect, a parametric confidence interval should not be used. Instead, non-parametric prediction or tolerance intervals should be used. In these cases, the upper prediction limit or upper tolerance limit is set either the highest or second highest concentration measured in the background dataset.

at 80 Fed. Reg. 37988 (July 2, 2015) and 81 Fed. Reg. 51807 (August 5, 2016). Portions of these federal rules have since been repealed. See, e.g. 83 Fed. Reg. 36,435 (July 30, 2018).

## 6. REPORTING

CCPC will submit annual groundwater monitoring reports in accordance with 40 C.F.R. §257.90(e) and semi-annual groundwater reports in accordance with 391-3-4-.10(6)(c). The annual and semiannual groundwater monitoring reports will include the following items:

- certification by a qualified groundwater scientist;
- summary of the site's history and monitoring system status;
- brief discussion of the geology/hydrogeology of the site;
- groundwater monitoring compliance status;
- documentation of dry or non-functioning wells;
- well installation/abandonment report;
- overview of purging and sampling protocols;
- comparison to established standards;
- discussion of results;
- potentiometric surface map;
- water table measurements;
- flow rate calculations;
- field sampling logs;
- NELAP certification;
- analytical data;
- chain-of-custody documentation;

- statistical analysis;
- recommendations for future monitoring;
- up to date well inspection by a qualified groundwater scientist;
- trend charts (if applicable);
- plume map (if applicable); and
- updated potable water well survey (if applicable).

## 7. CERTIFICATION BY QUALIFIED PROFESSIONAL ENGINEER

I certify that the Groundwater Monitoring and Statistical Analysis Plan was prepared by me or under my direct supervision, and meets the requirements of Section 40 C.F.R. § 257.93 of the Federal Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule (40 C.F.R. § 257) and the CCR section of the Georgia EPD Solid Waste Management Rule (391-3-4-.10). The Groundwater Monitoring and Statistical Analysis Plan includes statistical methods and narrative description appropriate for evaluating the groundwater monitoring data for the CCR management area.

CUNEYT GOKMEN
Printed Name of Qualified Professional Engineer

28504 — Registration No.
GEORGIA — Registration State


4/30/2020
Stamp/Signature

## 8. REFERENCES

Rules and Regulations of the State of Georgia (2016). Solid Waste Management Rule 391-3-4-.10. Revised March 8, 2018.

USEPA (2013). Science and Ecosystem Support Division (SESD, Athens, Georgia) Sample and Evidence Management (SESDPROC-005-R2).

USEPA (2015a). Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule (40 C.F.R. Part §257).

USEPA (2015b). Science and Ecosystem Support Division (SESD, Athens, Georgia) Field Equipment Cleaning and Decontamination (SESDPROC-205-R3).

USEPA (2009). Statistical Analysis of Groundwater Data at RCRA Facilities: Unified Guidance. EPA 503/R-09-007.

USEPA (2017). Science and Ecosystem Support Division (SESD, Athens, Georgia) Standard Operating Procedure (SOP) (SESDPROC-301-R4).

USEPA (1986). Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846.

# TABLES

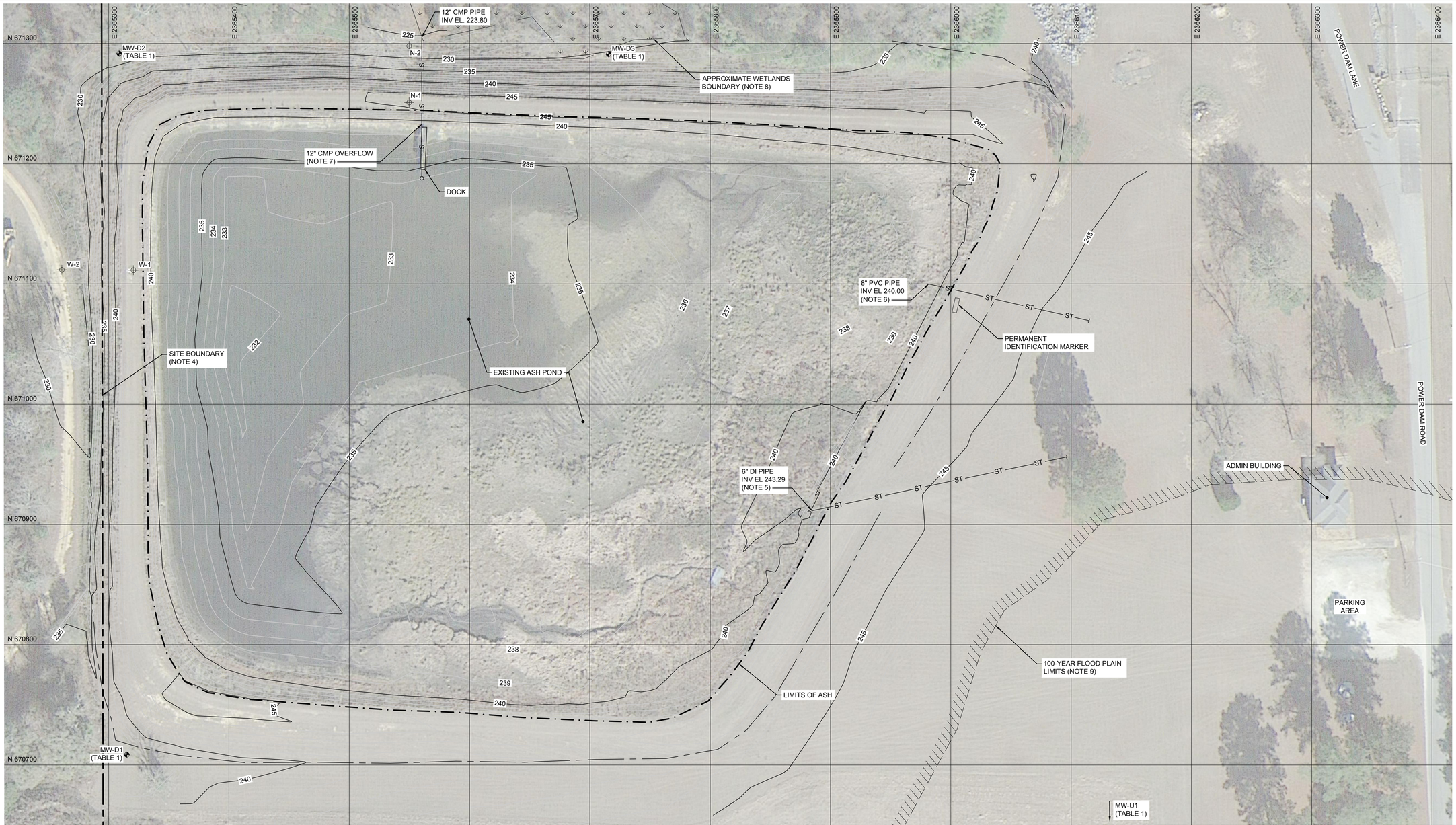
**Table 1. Monitoring Well Construction Details**
**Crisp County Power Commission**
**Plant Crisp Ash Pond**

| Well ID | Well Location | Northing (ft) | Easting (ft) | Ground Surface Elevation (ft msl) | Top of Casing Elevation (ft msl) | Total Well Depth Below Ground Surface (ft) | Screen Depth Interval | Screen Interval Elevation (ft msl) |
|---|---|---|---|---|---|---|---|---|
| MW-D1 | Downgradient | 670708.47 | 2365315.12 | 238.10 | 241.77 | 19.50 | 9.25-19.25 | 228.85-218.85 |
| MW-D2 | Downgradient | 671291.61 | 2365308.73 | 229.14 | 232.66 | 19.75 | 9.50-19.50 | 219.64-209.64 |
| MW-D3 | Downgradient | 671291.07 | 2365715.53 | 229.77 | 233.78 | 19.50 | 9.25-19.25 | 220.52-210.52 |
| MW-U1 | Upgradient | 669996.79 | 2366420.66 | 246.28 | 249.52 | 33.75 | 23.50-33.50 | 222.78-212.78 |

**Table 2. Monitored Constituents and Laboratory Analytical Methods**
**Crisp County Power Commission**
**Plant Crisp Ash Pond**

| Appendix III to 40 CFR §257 - Constituents for Detection Monitoring | | |
|---|---|---|
| **Analyte** | **Laboratory Analytical Method** | **Laboratory Method Approved by** |
| Boron | EPA Method 6020 | USEPA Manual SW-846 |
| Calcium | EPA Method 6020 | USEPA Manual SW-846 |
| Chloride | EPA Method SM 4500 Cl- E | Standard Methods for the Examination of Water and Wastewater |
| Fluoride | EPA Method SM 4500 F C | Standard Methods for the Examination of Water and Wastewater |
| pH | USEPA Region 4 Operating Procedure Field pH Measurement (SESDPROC-100-R4) (12/16/1016) | |
| Sulfate | EPA Method SM 4500 SO4 E | Standard Methods for the Examination of Water and Wastewater |
| Total Dissolved Solids (TDS) | EPA Method SM 2540C | Standard Methods for the Examination of Water and Wastewater |
| | | |
| **Appendix IV to 40 CFR §257 - Constituents for Assessment Monitoring** | | |
| **Analyte** | **Laboratory Analytical Method** | **Laboratory Method Approved by** |
| Antimony | EPA Method 6020 | USEPA Manual SW-846 |
| Arsenic | EPA Method 6020 | USEPA Manual SW-846 |
| Barium | EPA Method 6020 | USEPA Manual SW-846 |
| Berylium | EPA Method 6020 | USEPA Manual SW-846 |
| Cadmium | EPA Method 6020 | USEPA Manual SW-846 |
| Chromium | EPA Method 6020 | USEPA Manual SW-846 |
| Cobalt | EPA Method 6020 | USEPA Manual SW-846 |
| Fluoride | EPA Method SM 4500 | Standard Methods for the Examination of Water and Wastewater |
| Lead | EPA Method 6020 | USEPA Manual SW-846 |
| Lithium | EPA Method 6020 | USEPA Manual SW-846 |
| Mercury | EPA Method 7470A | USEPA Manual SW-846 |
| Molybdenum | EPA Method 6020 | USEPA Manual SW-846 |
| Selenium | EPA Method 6020 | USEPA Manual SW-846 |
| Thallium | EPA Method 6020 | USEPA Manual SW-846 |
| Radium 226 and 228 Combined | EPA Method 9315 & 9320 | USEPA Manual SW-846 |

# FIGURES




NOTES:

1. GRID COORDINATES CORRESPOND TO NORTH AMERICAN DATUM (NAD) 1983 HIGH ACCURACY REFERENCE NETWORK (HARN) DATUM. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL, NORTH AMERICAN VERICAL DATUM (NAVD) 1988.
2. AERIAL PHOTOGRAPH SHOWN IN THIS DRAWING WAS OBTAINED FROM GOOGLE EARTH PRO AND IS DATED 29 DECEMBER 2016.
3. TOPOGRAPHY AND EXISTING SITE FEATURES (I.E., BOREHOLES, DRAINAGE PIPES, ETC.) ARE APPROXIMATE AND BASED ON THE TOPOGRAPHIC SURVEY CONDUCTED BY J.B. FAIRCLOTH & ASSOCIATES P.C., DATED 20 MAY 2014 AND MAY NOT REFLECT CURRENT SITE CONDITIONS. BOREHOLES WERE ABANDONED WITH GROUT AND/OR BENTONITE CHIPS BY RIZZO ASSOCIATES, AS DESCRIBED IN "DAM SAFETY ASSESSMENT REPORT" DATED 16 JANUARY 2015.
4. SITE BOUNDARY LINE AND MONITORING WELLS SHOWN IN THIS DRAWING ARE BASED UPON A BOUNDARY SURVEY PERFORMED BY J.B. FAIRCLOTH AND ASSOCIATES ON 15 OCTOBER 2018 AND 26 NOVEMBER 2019, RESPECTIVELY.
5. 6-INCH DUCTILE IRON PIPE WAS USED AS CCR SLUICE LINE DURING COAL BURNING OPERATIONS.
6. 8-INCH PVC PIPE WAS USED TO CARRY MISCELLANEOUS RUNOFF AND PROCESS WATER FROM THE BAG HOUSE PUMP.
7. 12-INCH CMP WAS USED AS A SPILLWAY FOR THE IMPOUNDMENT.
8. WETLANDS BOUNDARY SHOWN IS APPROXIMATE AND BASED UPON THE WETLAND DELINEATIONS STUDY AND SITE VISIT COMPLETED BY GEOSYNTEC CONSULTANTS ON MARCH 22, 2019. NO WETLAND IMPACTS ARE ANTICIPATED AS PART OF THE PROJECT.
9. 100-YEAR FLOOD PLAIN LIMITS SHOWN ARE BASED UPON FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) PANEL NO. 13321C0030D. NO REDUCTIONS IN FLOODPLAIN VOLUME ARE ANTICIPATED AS A PART OF THIS PROJECT.

| WELL ID | NORTHING (FT) | EASTING (FT) | GROUND SURFACE EL (FT MSL) | TOP OF CASING EL (FT MSL) |
|---|---|---|---|---|
| MW-D1 | 670708.47 | 2365315.12 | 238.10 | 241.77 |
| MW-D2 | 671291.61 | 2365308.73 | 229.14 | 232.66 |
| MW-D3 | 671291.07 | 2365715.53 | 229.77 | 233.78 |
| MW-U1 | 669996.79 | 2366420.55 | 246.28 | 249.52 |

1 2 TABLE
MONITORING WELLS

LEGEND

- 230 — EXISTING GROUND ELEVATION (FT NAVD 88) (NOTE 3)
- EXISTING DITCH
- SITE BOUNDARY (NOTE 4)
- ST — EXISTING PIPE
- LIMITS OF ASH
- WETLANDS (NOTE 8)
- 100-YEAR FLOOD PLAIN LIMITS (NOTE 9)
- N-1 ABANDONED BOREHOLE (NOTE 2)
- MW-D1 EXISTING MONITORING WELL (NOTE 4)

ISSUED FOR PERMIT

N

0 40 80
SCALE: 1" = 40'

| REV | DATE | DESCRIPTION | DRN | APP |
|---|---|---|---|---|
| 2 | 11.27.19 | REVISED PER GEORGIA EPD COMMENTS | JHS | MI |
| 1 | 06.14.19 | REVISED PER GEORGIA EPD COMMENTS | JHS | MI |
| 0 | 11.16.18 | ISSUED FOR PERMIT | JHS | MI |

Geosyntec consultants
1255 ROBERTS BOULEVARD, N.W., SUITE 200
KENNESAW, GEORGIA 30144 USA
PHONE: 678.202.9500

TITLE: EXISTING SITE CONDITIONS

PROJECT: CRISP COUNTY POWER COMMISSION
ASH POND CLOSURE AND SITE RESTORATION

SITE: PLANT CRISP
WARWICK, GEORGIA

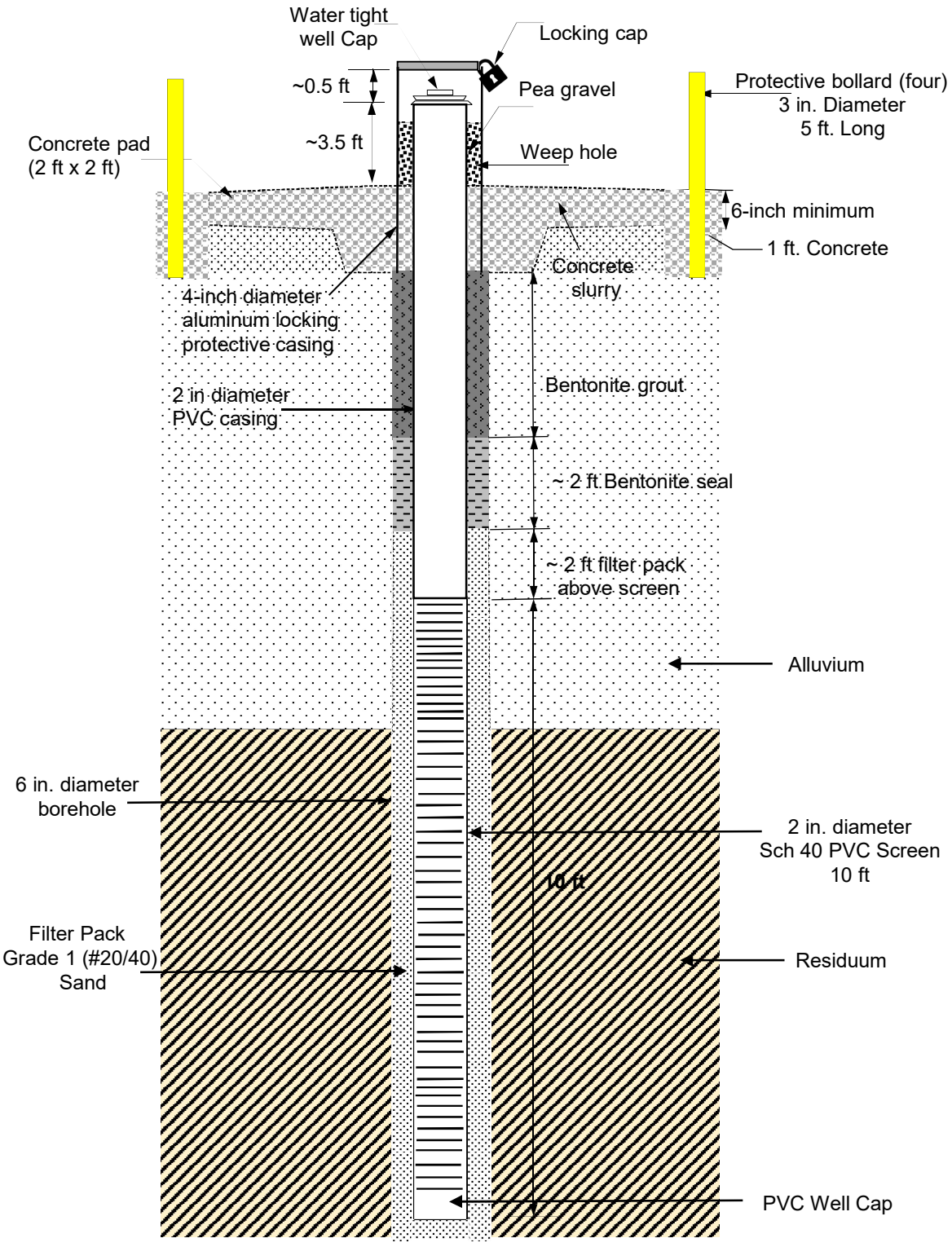
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE

DATE

| | | | |
|---|---|---|---|
| DESIGN BY: | MCS | DATE: | NOVEMBER 2019 |
| DRAWN BY: | JHS | PROJECT NO.: | GW6152 |
| CHECKED BY: | JWE | FILE: | 6152-003 |
| REVIEWED BY: | CG | FIGURE | 1 |
| APPROVED BY: | MI | | |

L:\CAD\DC\CRISP COUNTY\DRAWINGS\CCR PERMIT SET\6152-003




NOT TO SCALE

# Surface Completion of Wells

Crisp County Power Commission
Plant Crisp Ash Pond

| | |
|---|---|
| Geosyntec consultants | DATE: NOVEMBER 2019 |
| | PROJECT NO. GW6152 |
| | DOCUMENT NO |
| | FILE NO. |
| KENNESAW, GA | FIGURE NO. 2 |


Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community Aerial Photograph from June 2016.


**Legend**

- Groundwater Monitoring Well
- Groundwater Elevation Contour - 23 October 2019
- Groundwater Flow Direction
- Ash Pond Limits
- CCPC Property Boundary

0 250 500 1,000 Feet

**Potentiometric Surface Map**
**October 23, 2019**
Crisp County Power Commission
Warwick, Georgia

Geosyntec consultants
KENNESAW, GA

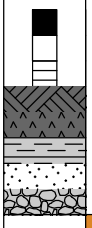
| | |
|---|---|
| DATE: | JANUARY 2020 |
| PROJECT NO. | GW6152 |
| DOCUMENT NO. | GA 200043 |
| FILE NO. | OCTOBER 2020 POTENTIOMETRIC SURFACE MAP.MXD |
| FIGURE NO. | 3 |

N:\Crisp County\GIS\MXD\2020\October 2019 Potentiometric Surface Map.mxd 11/27/2019 1:57:51 PM

# APPENDIX A
# Boring Logs and Well Construction Diagrams

Geosyntec consultants
engineers | scientists | innovators

# BORING AND WELL LOG LEGEND

| LITHOLOGY | WATER LEVEL | WELL/BORING COMPLETION | SAMPLE TYPE | DESCRIPTION |
|---|---|---|---|---|
|  | | | | ASPHALT |
| | | | | CONCRETE |
| | | | | FILL |
| | | | | TOPSOIL |
| | | | | COBBLES |
| | | | | IGNEOUS Rock |
| | | | | METAMORPHIC Rock |
| | | | | SEDIMENTARY Rock |
| | | | | Well-graded GRAVEL (GW) |
| | | | | Poorly graded GRAVEL (GP) |
| | | | | Silty GRAVEL (GM) |
| | | | | Clayey GRAVEL (GC) |
| | | | | Well-graded GRAVEL with silt (GW-GM) |
| | | | | Poorly graded GRAVEL with silt (GP-GM) |
| | | | | Well-graded GRAVEL with clay (GW-GC) |
| | | | | Poorly graded GRAVEL with clay (GP-GC) |
| | | | | Well-graded SAND (SW) |
| | | | | Poorly graded SAND (SP) |
| | | | | Silty SAND (SM) |
| | | | | Clayey SAND (SC) |
| | | | | Well-graded SAND with silt (SW-SM) |
| | | | | Poorly graded SAND with silt (SP-SM) |
| | | | | Well-graded SAND with clay (SW-SC) |
| | | | | Poorly graded SAND with clay (SP-SC) |
| | | | | SILT (ML) |
| | | | | Lean CLAY (CL) |
| | | | | Organic SOIL (OL) |
| | | | | Elastic SILT (MH) |
| | | | | Fat CLAY (CH) |
| | | | | Organic SOIL (OH) |
| | | | | PEAT (PT) |
| | | | | Volume Descriptors:<br>Trace = <5%<br>Few = 5-10%<br>Little = 15-25%<br>Some = 30-45%<br>Mostly = >=50% |
| |  | | | Water Level During Drilling<br>Water Level at End of Drilling/in Completed Well |
| | |  | | Cap<br>Riser<br>Screen<br>Cement<br>Bentonite Grout<br>Bentonite Seal<br>Filter Pack<br>Backfill |
| | | | GR | Grab |
| | | | EN | Encore |
| | | | SS | Split Spoon |
| | | | SH | Shelby Tube |
| | | | CO | Core Barrel |
| | | | DP | Direct Push |
| | | | ID | Lab Sample and ID |

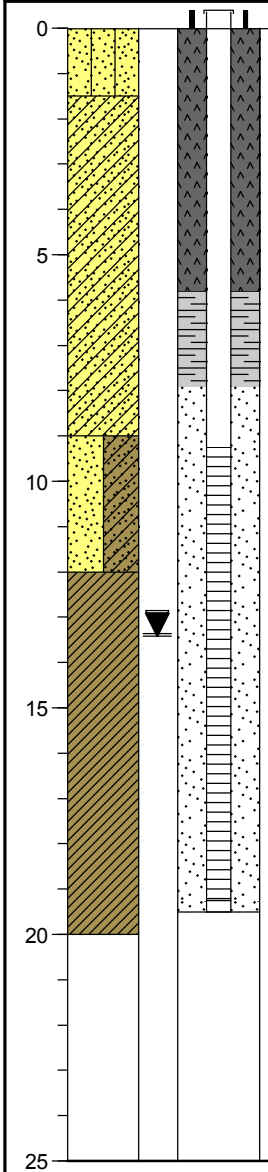
NOTES:

Geosyntec consultants
engineers | scientists | innovators

**Client:** Crisp County Power Plant
**Project:** GW6152
**Address:** Warwick, GA

# WELL LOG
**Well No.** MW-D1
**Page:** 1 of 1

| | | | | | |
|---|---|---|---|---|---|
| Drilling Start Date: | **2/22/2017** | Boring Depth (ft): | **20** | Well Depth (ft): | **19.5** |
| Drilling End Date: | **2/22/2017** | Boring Diameter (in): | **6** | Well Diameter (in): | **2** |
| Drilling Company: | **EM Services** | Sampling Method(s): | **DPT Core Sleeves** | Screen Slot (in): | **0.010** |
| Drilling Method: | **Geoprobe/HSA** | DTW During Drilling (ft): | **13.36** | Riser Material: | **Sch 40 PVC** |
| Drilling Equipment: | **Geoprobe 7822DT** | DTW After Drilling (ft): | **13.42** | Screen Material: | **Sch 40 PVC Slotted** |
| Driller: | **J. William** | Top of Casing Elev. (ft): | **241.77 ft amsl** | Seal Material(s): | **Grout, Bentonite** |
| Logged By: | **J. Gasser** | North, East (Y,X): | **670708.47, 2365315.12** | Filter Pack: | **Grade 1 (#20/40) Sand** |



| DEPTH (ft) | SOIL/ROCK VISUAL DESCRIPTION | PID (ppm) | Lab Sample | ELEVATION (ft) |
|---|---|---|---|---|
| 0 | (0') Dark brown, SILTY SAND (SM); damp. ALLUVIUM | | | 238.1 |
| | (1.5') Red, CLAYEY SAND (SC); damp. ALLUVIUM | | | |
| 5 | (5') Red, CLAYEY SAND with gravel (SC). ALLUVIUM | | | 233.1 |
| | (7.8') Gravel layer from 7.8-8.0 feet. ALLUVIUM | | | |
| | (8') Brown, CLAYEY SAND with gravel (SC); damp. ALLUVIUM | | | |
| 10 | (9') Brown SAND with clay and gravel (SP-SC); saturated. ALLUVIUM | | | 228.1 |
| | (12') Marbled (tan, gray, red, black,) CLAY (CL); damp, compact, with some sand and gravel decreasing with depth. ALLUVIUM | | | |
| 15 | (15') Same as above. | | | 223.1 |
| | (17') White, SANDY CLAY (CL); wet. RESIDUUM | | | |
| 20 | (20') Boring terminated. | | | 218.1 |
| 25 | | | | 213.1 |

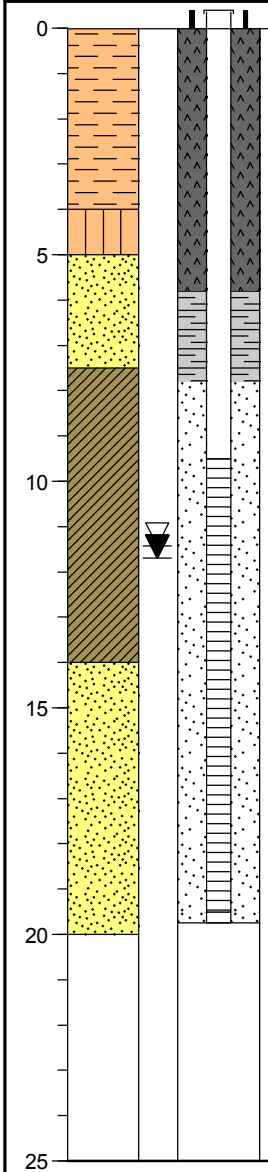
NOTES: Well completed with 4" aluminum stickup casing (+3.66 ft ags) and concrete pad/bollards.
Cement bentonite grout mixed in 90/10 ratio. Bentonite seal (pellets) hydrated for 24 hours.
Two weep holes were drilled on outer protective casing.

Geosyntec consultants
engineers | scientists | innovators

**Client:** Crisp County Power Plant
**Project:** GW6152
**Address:** Warwick, GA

# WELL LOG
**Well No.** MW-D2
**Page:** 1 of 1

| | | | | | |
|---|---|---|---|---|---|
| Drilling Start Date: | **2/21/2017** | Boring Depth (ft): | **20** | Well Depth (ft): | **19.75** |
| Drilling End Date: | **2/21/2017** | Boring Diameter (in): | **6** | Well Diameter (in): | **2** |
| Drilling Company: | **EM Services** | Sampling Method(s): | **DPT Core Sleeves** | Screen Slot (in): | **0.010** |
| Drilling Method: | **Geoprobe/HSA** | DTW During Drilling (ft): | **11.42** | Riser Material: | **Sch 40 PVC** |
| Drilling Equipment: | **Geoprobe 7822DT** | DTW After Drilling (ft): | **11.7** | Screen Material: | **Sch 40 PVC Slotted** |
| Driller: | **J. William** | Top of Casing Elev. (ft): | **232.66 ft amsl** | Seal Material(s): | **Grout, Bentonite** |
| Logged By: | **J. Gasser** | North, East (Y,X): | **671291.61, 2365308.73** | Filter Pack: | **Grade 1 (#20/40) Sand** |



| DEPTH (ft) | SOIL/ROCK VISUAL DESCRIPTION | PID (ppm) | Lab Sample | ELEVATION (ft) |
|---|---|---|---|---|
| 0 | (0') Dark brown/red, ORGANIC SOIL with silt (OL); dry, topsoil. | | | 229.1 |
| 4 | (4') Brown, SANDY SILT (ML); dry. ALLUVIUM | | | |
| 5 | (5') Tan SAND (SP); damp, fine-grained with trace clay. ALLUVIUM<br>(6') Saturated from 5-6 feet. | | | 224.1 |
| 7.5 | (7.5') Gray CLAY (CL); damp, very firm/compact, with trace sand and two thin bands of gravel. ALLUVIUM | | | |
| 10 | | | | 219.1 |
| 12 | (12') Gray blue CLAY (CL); moist, soft, with trace sand. ALLUVIUM | | | |
| 14 | (14') White/gray SAND with gravel (SP); wet, trace clay. RESIDUUM | | | |
| 15 | | | | 214.1 |
| 20 | (20') Boring terminated. | | | 209.1 |
| 25 | | | | 204.1 |

NOTES: Well completed with 4" aluminum stickup casing (+3.62 ft ags) and concrete pad/bollards.
Cement bentonite grout mixed in 90/10 ratio. Bentonite seal (pellets) hydrated for 24 hours.
Two weep holes were drilled on outer protective casing.

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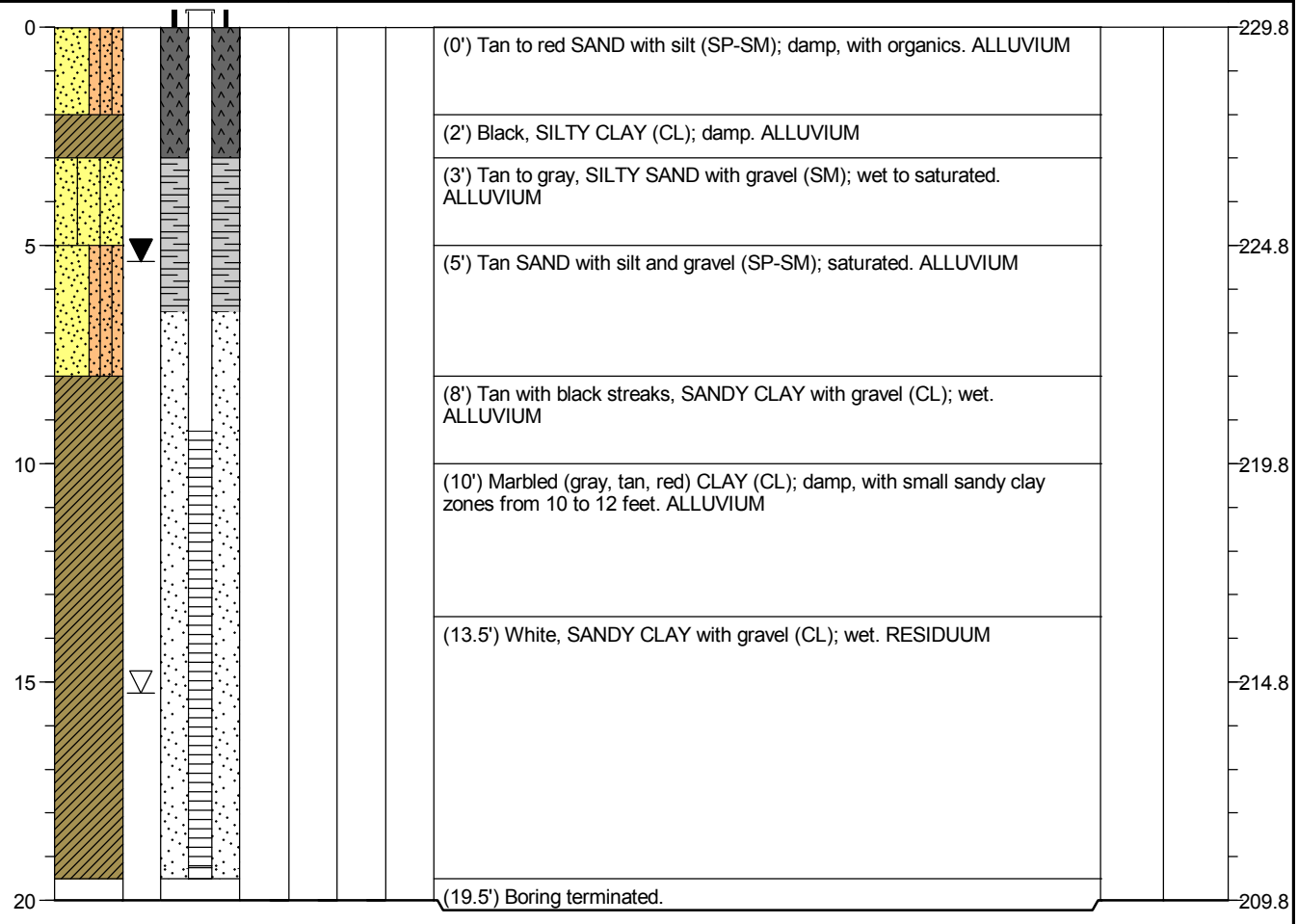
**Client:** Crisp County Power Plant
**Project:** GW6152
**Address:** Warwick, GA

# WELL LOG
**Well No.** MW-D3
**Page:** 1 of 1

| | | | | | |
|---|---|---|---|---|---|
| Drilling Start Date: | 2/22/2017 | Boring Depth (ft): | 19.5 | Well Depth (ft): | 19.5 |
| Drilling End Date: | 2/22/2017 | Boring Diameter (in): | 6 | Well Diameter (in): | 2 |
| Drilling Company: | EM Services | Sampling Method(s): | DPT Core Sleeves | Screen Slot (in): | 0.010 |
| Drilling Method: | Geoprobe/HSA | DTW During Drilling (ft): | 15.26 | Riser Material: | Sch 40 PVC |
| Drilling Equipment: | Geoprobe 7822DT | DTW After Drilling (ft): | 5.37 | Screen Material: | Sch 40 PVC Slotted |
| Driller: | J. William | Top of Casing Elev. (ft): | 233.78 ft amsl | Seal Material(s): | Grout, Bentonite |
| Logged By: | J. Gasser | North, East (Y,X): | 671291.07, 2365715.53 | Filter Pack: | Grade 1 (#20/40) Sand |




NOTES: Well completed with 4" aluminum stickup casing (+4.04 ft ags) and concrete pad/bollards.
Cement bentonite grout mixed in 90/10 ratio. Bentonite seal (pellets) hydrated for 24 hours.
Two weep holes were drilled on outer protective casing.

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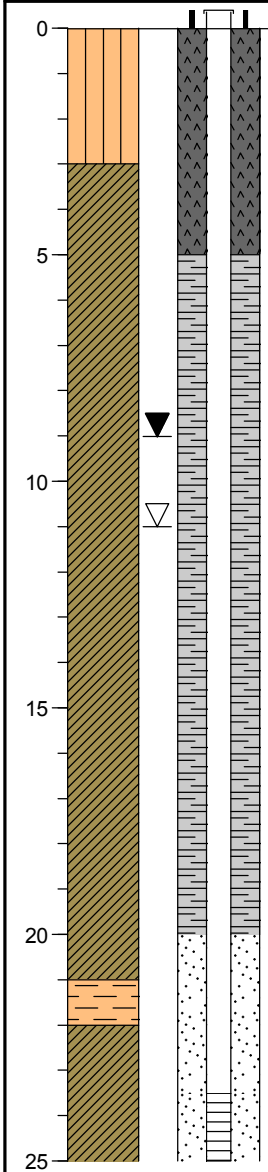
**Client:** Crisp County Power Plant
**Project:** GW6152
**Address:** Warwick, GA

# WELL LOG
**Well No.** MW-U1
**Page:** 1 of 2

| | | | | | |
|---|---|---|---|---|---|
| Drilling Start Date: | **2/21/2017** | Boring Depth (ft): | **40** | Well Depth (ft): | **33.75** |
| Drilling End Date: | **2/23/2017** | Boring Diameter (in): | **6** | Well Diameter (in): | **2** |
| Drilling Company: | **EM Services** | Sampling Method(s): | **DPT Core Sleeves** | Screen Slot (in): | **0.010** |
| Drilling Method: | **Geoprobe/HSA** | DTW During Drilling (ft): | **11** | Riser Material: | **Sch 40 PVC** |
| Drilling Equipment: | **Geoprobe 7822DT** | DTW After Drilling (ft): | **9.01** | Screen Material: | **Sch 40 PVC Slotted** |
| Driller: | **J. William** | Top of Casing Elev. (ft): | **249.52 ft amsl** | Seal Material(s): | **Grout, Bentonite** |
| Logged By: | **J. Gasser** | North, East (Y,X): | **669996.79, 2366420.55** | Filter Pack: | **Grade 1 (#20/40) Sand** |



| DEPTH (ft) | SOIL/ROCK VISUAL DESCRIPTION | PID (ppm) | Lab Sample | ELEVATION (ft) |
|---|---|---|---|---|
| 0 | (0') Dark brown SILT with sand (ML); organics, topsoil. | | | 246.3 |
| | (3') Orange/red CLAY with sand (CL); slightly moist. ALLUVIUM | | | |
| 5 | (5') Tan, SANDY CLAY (CL); moist. ALLUVIUM | | | 241.3 |
| 10 | (10') Same as above. | | | 236.3 |
| | (12.5') Marbled (tan, red), SANDY CLAY (CL); dry, compact, trace gravel. ALLUVIUM | | | |
| 15 | (15') Marbled (red, white, tan) CLAY (CL); trace water, very hard/compact, some sand and trace gravel. ALLUVIUM | | | 231.3 |
| 20 | (20') Same as above. | | | 226.3 |
| | (21') Dark brown, ORGANIC SOIL (OL); with wood. ALLUVIUM | | | |
| | (22') Tan/dark brown CLAY with sand and gravel (CL); moist. ALLUVIUM | | | |
| 25 | | | | 221.3 |

NOTES: Well completed with 4" aluminum stickup casing (+3.20 ft ags) and concrete pad/bollards.
Cement bentonite grout mixed in 90/10 ratio. Bentonite seal (pellets) hydrated for 24 hours.
Two weep holes were drilled on outer protective casing.
DPT borehole between 33.75 ft and 40 ft depth was filled with clay collapsed from the borehole.

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**Client:** Crisp County Power Plant
**Project:** GW6152
**Address:** Warwick, GA

# WELL LOG
**Well No.** MW-U1
**Page:** 2 of 2

| | | | | | |
|---|---|---|---|---|---|
| Drilling Start Date: | **2/21/2017** | Boring Depth (ft): | **40** | Well Depth (ft): | **33.75** |
| Drilling End Date: | **2/23/2017** | Boring Diameter (in): | **6** | Well Diameter (in): | **2** |
| Drilling Company: | **EM Services** | Sampling Method(s): | **DPT Core Sleeves** | Screen Slot (in): | **0.010** |
| Drilling Method: | **Geoprobe/HSA** | DTW During Drilling (ft): | **11** | Riser Material: | **Sch 40 PVC** |
| Drilling Equipment: | **Geoprobe 7822DT** | DTW After Drilling (ft): | **9.01** | Screen Material: | **Sch 40 PVC Slotted** |
| Driller: | **J. William** | Top of Casing Elev. (ft): | **249.52 ft amsl** | Seal Material(s): | **Grout, Bentonite** |
| Logged By: | **J. Gasser** | North, East (Y,X): | **669996.79, 2366420.55** | Filter Pack: | **Grade 1 (#20/40) Sand** |

| DEPTH (ft) | LITHOLOGY | WATER LEVEL | WELL COMPLETION | COLLECT: Sample Type | COLLECT: Date & Time | COLLECT: Blow Counts | COLLECT: Recovery (ft) | SOIL/ROCK VISUAL DESCRIPTION | MEASURE: PID (ppm) | MEASURE: Lab Sample | ELEVATION (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | | | | | | | | (25') Dark brown CLAY (CL); moist, sticky, very trace sand with one to two small sections of gravel. ALLUVIUM | | | 221.3 |
| | | | | | | | | (29') Same as above, but more moist and soft. | | | |
| 30 | | | | | | | | (30') Dark tan/brown CLAY with sand and gravel (CL); wet/saturated. RESIDUUM | | | 216.3 |
| 35 | | | | | | | | (35') White, SANDY CLAY (CL); saturated, and mostly sand at 40 feet. RESIDUUM | | | 211.3 |
| 40 | | | | | | | | (40') Boring terminated. | | | 206.3 |
| 45 | | | | | | | | | | | 201.3 |

NOTES: Well completed with 4" aluminum stickup casing (+3.20 ft ags) and concrete pad/bollards.
Cement bentonite grout mixed in 90/10 ratio. Bentonite seal (pellets) hydrated for 24 hours.
Two weep holes were drilled on outer protective casing.
DPT borehole between 33.75 ft and 40 ft depth was filled with clay collapsed from the borehole.

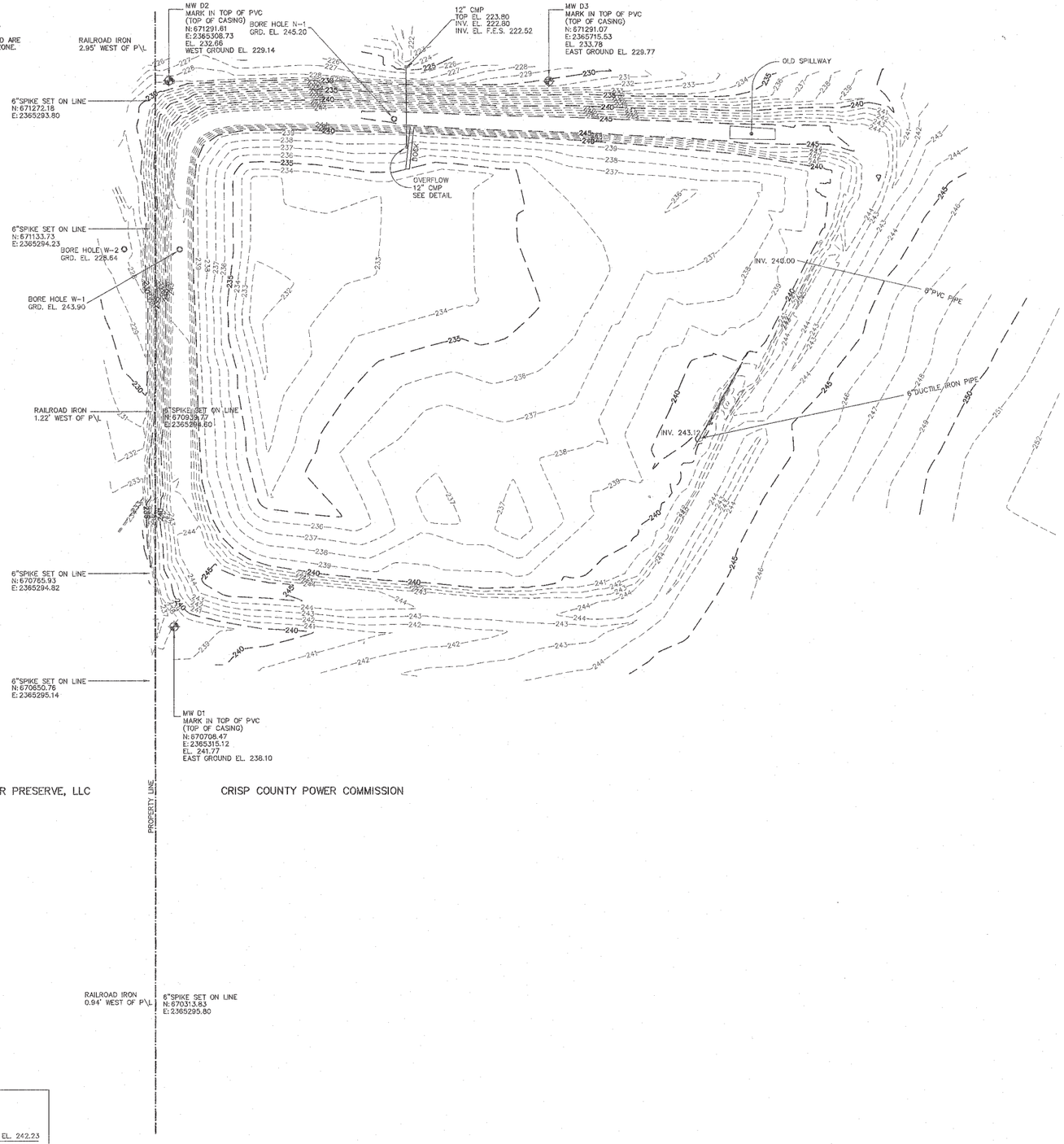
# APPENDIX B

# Land Surveyor's Certification Drawing

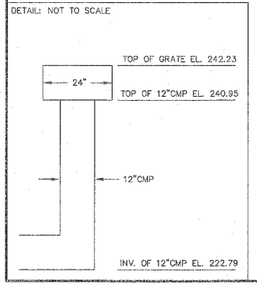
REFERENCE TO NORTH

BEARINGS SHOWN HEREON HAVE BEEN CALCULATED FROM ANGLES TURNED AND ARE BASED UPON GRID NORTH, GA. WEST ZONE.

GRID NORTH
GA. WEST ZONE
NAD 83
(2011 HARN)




DETAIL: NOT TO SCALE




SURVEYOR'S CERTIFICATION

I J.B. FAIRCLOTH, GA. RLS 2120, CERTIFY THAT THE HORIZONTAL ACCURACY FOR INSTALLED MONITORING WELLS MW 01, MW D2, MW D3 AND MW U1 IS 0.50 FEET, AND VERTICAL ACCURACY FOR ELEVATIONS TO 0.01 FEET AND ARE BASED UPON NAVD 88 DATUM.

J.B. FAIRCLOTH, GA. R.L.S. 2120

11-26-19
DATE

NOTES

1. THIS SURVEY IS SUBJECT TO MATTERS WHICH MAY BE DISCLOSED BY A FULL AND ACCURATE TITLE SEARCH, INCLUDING BUT NOT LIMITED TO, ANY EASEMENTS OR RIGHTS OF WAY NOT SHOWN HEREON BUT WHICH MAY AFFECT THE PROPERTY HERE PLATTED.
2. THIS SURVEY COMPLIES WITH BOTH THE RULES OF THE GEORGIA BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS AND THE OFFICIAL CODE OF GEORGIA ANNOTATED (OCGA) 15-6-67 AS AMENDED BY HB 1004 (2018), IN THAT WHERE A CONFLICT EXISTS BETWEEN THOSE TWO SETS OF SPECIFICATIONS, THE REQUIREMENTS OF LAW PREVAIL.
3. I J.B. FAIRCLOTH, GA. RLS 2120, DECLARE THAT THIS MAP WAS PREPARED UNDER MY SUPERVISION FROM AN ACTUAL GPS SURVEY MADE UNDER MY SUPERVISION; THAT THIS SURVEY WAS PERFORMED TO A CATEGORY 8 RURAL CLASS SPECIFICATIONS; THAT I USED REAL-TIME KINEMATIC GPS FIELD PROCEDURES; AND COORDINATES WERE OBTAINED BY eGPS SOLUTIONS, USING CHAMPION TWO AND ALL COORDINATES ARE BASED UPON NAD 83 (2011) HARN DATUM, ELEVATIONS BASED UPON NAVD 88 DATUM, AND THE RELATIVE POSITIONAL PRECISION (DEVIATION) OF 0.05' AT THE 95% CONFIDENCE LEVEL.

GRAPHIC SCALE

-60 0 30 60 120 240

( IN FEET )
1 inch = 60 ft.

POOL ELEVATION AS OF THE DATE OF THIS SURVEY = APPROX. 239 ELEVATION.
PURPOSE FOR REVISION (2017): TO SHOWN LOCATION OF PROPERTY LINE AND NEW MONITORING WELLS
PURPOSE FOR REVISION (2019): TO CERTIFY TO THE ELEVATIONS OF THE MARKS IN PVC AND LABEL MONITORING WELLS

* TOPOGRAPHIC SURVEY FOR *

CRISP COUNTY POWER COMMISSION

ASH POND, CRISP COUNTY POWER DAM, WARWICK GA.

| | | |
|---|---|---|
| SCALE: 1 INCH REPRESENTS 60 FEET | DATE OF SURVEY: MAY 2 & 5, 2014 | THIS PLAT HAS BEEN CALCULATED FOR CLOSURE AND IS FOUND TO BE ACCURATE. |
| REVISIONS: NOV. 25, 2019 (SURVEY) NOV. 25, 2019 (DRAWING) | DATE OF PLAT: MAY 20, 2014 | LINEAR PRECISION - |

THE FIELD DATA UPON WHICH THIS PLAT IS BASED HAS A CLOSURE PRECISION OF ONE FOOT IN N\A FEET AND AN ANGULAR ERROR OF N\A PER ANGLE POINT, AND WAS ADJUSTED USING THE N\A

EQUIPMENT USED: TRIMBLE with eGPS SOLUTIONS & TOPCON with TDS

PROJECT: C:\CARLSON PROJECTS\2017\CCPASHPOND\MON WELL LOCATION 2017 A.DWG

DRAWN BY: SMK | FILE NO. 3594 A | PLAT NO. 1194 B | DATE OF ISSUANCE: 11-26-19


J.B. FAIRCLOTH & ASSOCIATES, P.C.
LAND SURVEYING, PLANNING AND MAPPING
1109 EAST 13th. AVE.
CORDELE, GEORGIA 31015
PHONE (229)-273-1282
FAX (229)-273-2340

J.B. FAIRCLOTH, GA. RLS 2120
GA. RF 1940
JASON B. FAIRCLOTH, GA. RLS 2981


GEORGIA REGISTERED NO. 2120 PROFESSIONAL LAND SURVEYOR J.B. FAIRCLOTH 11-26-19