Prepared for

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

GROUNDWATER MONITORING AND STATISTICAL ANALYSIS PLAN

FOR PLANT CRISP ASH POND AND SECONDARY ASH AREAS

CRISP COUNTY POWER COMMISSION
Crisp County, Georgia

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

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Solid Waste Management Program
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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF 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
LSASD	Laboratory Services and Applied Science Division
MCL	Maximum Contaminant Level
MW	Megawatt
NELAC	National Environmental Laboratory Accreditation Conference
NTU	Nephelometric Turbidity Unit
ORP	Oxidation Reduction Potential
PL	Upper Prediction Limit
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SESD	Science and Ecosystem Support Division
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

Geosyntec
consultants

CERTIFICATION BY QUALIFIED PROFESSIONAL

I hereby certify that this Groundwater Monitoring Plan was prepared by, or under the direct supervision of, a "Qualified Groundwater Scientist," in accordance with the Georgia Rules of Solid Waste Management. In accordance with Georgia Rules for Solid Waste Management, a "Qualified Groundwater Scientist" is a professional engineer or geologist registered to practice in Georgia who has received a baccalaureate or post-graduate degree in the natural sciences or engineering and has sufficient training and experience in groundwater hydrology and related fields that enable that individual to make sound professional judgments regarding groundwater monitoring, contaminant fate and transport, and corrective action. The design of the groundwater monitoring system was developed in compliance with the Georgia Environmental Protection Division (GA EPD) Rules of Solid Waste Management, Chapter 391-3-4-.10.

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1. INTRODUCTION

This Groundwater Monitoring and Statistical Analysis Plan has been prepared for Crisp County Power Commission (CCPC's) Plant Crisp ash pond and two former coal ash disposal areas (referred in this document as secondary ash areas). The ash pond had a Groundwater Monitoring and Statistical Analysis Plan dated April 2020 and approved by Georgia Environmental Protection Division (GA EPD). This *Groundwater Monitoring and Statistical Analysis Plan for Plant Crisp Ash Pond and Secondary Ash Areas* has been prepared to serve for both the ash pond and the secondary ash areas as requested by GA EPD in their letter dated 24 April 2023.

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 or any statistically significant levels (SSLs) exceeding the groundwater protection standard (GWPS) 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 CCPC to develop a procedure for groundwater monitoring and a process regarding the selection of the appropriate statistical analysis of groundwater data collected from monitoring wells. The Groundwater Monitoring and Statistical Analysis Plan provides: (i) discussions on groundwater monitoring well network for both the ash pond and secondary ash areas; (ii) groundwater sampling methods; (iii) laboratory analytical methods; and (iv) 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 pond and secondary ash areas. 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 groundwater 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 Warwick, Georgia. The byproducts of power generation through the combustion of coal (commonly referred to as CCR) at Plant Crisp included mainly fly ash and bottom ash. The CCR was disposed into a 6.5-acre ash pond located within the plant property. The coal burning and resulting sluicing operation was completed in March 2017. To comply with both the United States Environmental Protection Agency's (USEPA's) 40 C.F.R. 257 and Georgia Environmental Protection Division's (GA EPD's) Solid Waste Management, Chapter 391-3-4-.10, CCPC is currently closing the ash pond by removal and disposal of the CCR at the Crisp County Sanitary Landfill. During the decommissioning of the ash pond, two former coal ash disposal areas (also referred to herein as the secondary ash areas) were discovered. Secondary Ash Area 1 and Secondary Ash Area 2 cover approximately 0.9 and 3.4 acres, respectively. The secondary ash areas are located on undeveloped land that are either naturally forested or landscaped grass fields (**Figure 2-1**).

3. GROUNDWATER MONITORING WELL NETWORK

3.1 Overview

The groundwater monitoring system for the ash pond includes one upgradient monitoring well (MW-U1) and three downgradient monitoring wells (MW-D1, MW-D2, and MW-D3). The groundwater monitoring system for the secondary ash areas includes two upgradient monitoring wells (MW-U1 and MW-U2) and six downgradient monitoring wells (MW-D4 through MW-D9) located immediately downgradient of the secondary ash areas. Monitoring wells MW-D4, MW-D5, MW-D6 were installed downgradient of Secondary Ash Area 2. Monitoring wells MW-D7, MW-D8, and MW-D9 were installed downgradient of Secondary Ash Area 1. Details of the monitoring well installation are provided below. The locations of the monitoring wells are shown on **Figure 3-1**.

3.2 Selection of Well Locations

Existing hydrogeologic information was evaluated prior to placement of the groundwater monitoring well network. This included review of soil boring/piezometer information from historical geotechnical and hydrogeologic investigations performed between 1965 and 2014. Detailed description of the historical information has been provided in the *Hydrogeologic Assessment Report for Plant Crisp Ash Pond and Secondary Ash Areas* dated July 2023. The upgradient monitoring wells were installed beyond the upgradient limit of the ash pond and the secondary ash areas and are screened in the uppermost aquifer and in the same lithologic units as the downgradient wells (in the alluvium and upper portion of the residuum). The downgradient monitoring wells were installed at the edge of the waste boundary and also screened in the uppermost aquifer. Distance between the monitoring wells was selected so that potential release of CCR constituents will be immediately detected. The spacing between the downgradient monitoring wells considered site-specific hydrogeologic factors listed in Table II-1 of GA EPD's Manual for Groundwater Monitoring dated September 1991 (GA EPD, 1991).

3.3 Borehole Drilling, Well Installation, Abandonment, and Reporting

3.3.1 Ash Pond

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.

Drilling

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.

Well Design and Construction

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 34 ft (**Table 3-1**). 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 3-2**. The wells were developed 24 hours after well installation. In June 2017, Geosyntec prepared the Groundwater Monitoring System Certification in compliance with the requirements of 40 C.F.R. §257.91(f).

If additional wells are installed in the future, the well screen design will be in accordance with USEPA Guidance on Design and Installation of Monitoring Wells dated 16 January 2018 (SESDGUID-101-R2). For formations consisting primarily of fines (silts and clays), a 0.010" screen slots with a 20-40 sand filter pack will be used. Screen length shall not exceed 10 feet without EPD's approval.

Drilling equipment will be decontaminated prior to drilling and between boreholes or well installations in accordance with U.S. Environmental Protection Agency's Laboratory Science and Applied Science Operating Procedure LSASDPROC-205-R4 dated 22 June 2020 (USEPA, 2020), which includes washing with Liquinox® detergent and tap water, rinsing with tap water, and rinsing again with deionized or distilled water.

Surveying

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 A**. The boring logs and well construction diagrams for these monitoring wells are presented in **Appendix B**.

If additional wells are installed in the future, the horizontal coordinates of the well will be 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 will be surveyed to an accuracy of 0.01 ft and are referenced to the NAVD88 datum.

Well Abandonment

Monitoring wells will be abandoned using industry-accepted practices and using the Manual for Groundwater Monitoring (GA EPD, 1991) and Georgia Water Well Standards Act of 1985 [Official Code of Georgia Annotated (O.C.G.A.) 12-5-120, 1985] as guides. Neat Portland cement or bentonite will be used as appropriate to complete abandonment and seal the well borehole.

Per Georgia Rule 391-3-4-.10(6)(g), monitoring wells require abandonment and replacement after two consecutive dry sampling events, unless an alternate schedule is approved by the GA EPD. Well replacement and/or abandonment will be performed

under the direction of a professional geologist (P.G) or engineer (P.E.) registered in the state of Georgia. A minor modification shall be submitted in accordance with Rule 391-3-4-.02 prior to the installation or decommissioning of monitoring wells.

Reporting

If a change is made to the groundwater monitoring well network (installation of additional wells or abandonment of an existing well), the well installation will be performed in accordance with the USEPA Guidance on Design and Installation of Monitoring Wells dated 16 January 2018 (SESDGUID-101-R2). Following well installation or abandonment, a well installation report or abandonment report will be submitted to the GA EPD within 60 days of 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) and screen top and bottom elevation;
- 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 and specific well development procedure.

In accordance with the Georgia Water Well Standards act (O.C.G.A. § 12-5-134(5)(d)(vii)), at least once every five years, the owner of the property on which a monitoring well is constructed shall have the monitoring well(s) inspected by a professional engineer or professional geologist, who shall direct appropriate remedial corrective work to be performed if the well does not conform to standards.

3.3.2 Secondary Ash Areas

The groundwater monitoring system for the secondary ash areas include two upgradient monitoring wells (MW-U1 and MW-U2) and six downgradient monitoring wells (MW-D4 through MW-D9). Monitoring wells MW-D4, MW-D5, and MW-D6 were installed immediately downgradient of the Secondary ash area 2. Monitoring wells MW-D7, MW-D8, and MW-D9 were installed immediately downgradient of Secondary ash areas 1.

Drilling

Drilling and monitoring well installation were performed in May 2022 by GSE, Inc. of Trinity, Alabama under the supervision of a Geosyntec geologist. The Drilling and

monitoring well installation were performed in accordance with the USEPA Guidance on Design and Installation of Monitoring Wells dated 16 January 2018 (SESDGUID-101-R2). Borings were advanced to depths up to 35 feet below ground surface (ft bgs). Six-inch diameter boreholes were advanced using sonic drilling method. Continuous soil cuttings collected during borehole drilling were logged by a Geosyntec geologist.

Well Design and Construction

After reaching the desired drilling depth, two-inch diameter 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 24 ft and 34 ft bgs (**Table 3-1**). 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 feet 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 of bentonite chips were placed above the filter pack. After the bentonite chips were allowed to hydrate for approximately 24 hours, the remaining annular space was grouted using a cement-bentonite grout at 90/10 ratio. Well risers for the monitoring wells were installed extending between 2.5 feet and 4 feet above ground surface. The boring logs and well construction diagrams for these monitoring wells are presented in **Appendix B**.

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 3 ft × 3 ft × 6-inch 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 feet above ground surface and were painted yellow for high visibility. A schematic showing surface completion of the groundwater monitoring wells is provided in **Figure 3-2**. The wells were developed 24 hours after well installation using surging and pumping until the turbidity of the groundwater was less than 10 nephelometric turbidity units (NTU). Geosyntec prepared the Groundwater Monitoring System Certification for the secondary ash areas in compliance with the requirements of 40 C.F.R. §257.91(f) in August 2022.

If additional wells are installed in the future, the well screen design will be in accordance with USEPA Guidance on Design and Installation of Monitoring Wells dated 16 January 2018 (SESDGUID-101-R2). For formations consisting primarily of fines (silts and clays), a 0.010" screen slots with a 20-40 sand filter pack will be used. Screen length shall not exceed 10 feet without EPD's approval.

Drilling equipment will be decontaminated prior to drilling and between boreholes or well installations in accordance with U.S. Environmental Protection Agency's Laboratory Science and Applied Science Operating Procedure LSASDPROC-205-R4 dated 22 June 2020 (USEPA, 2020), which includes washing with Liquinox® detergent and tap water, rinsing with tap water, and rinsing again with deionized or distilled water.

Surveying

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 feet 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 feet and are referenced to the NAVD88 datum. A copy of the land surveyor's certification drawing is provided in **Appendix A**.

If additional wells are installed in the future, the horizontal coordinates of the well will be 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 will be surveyed to an accuracy of 0.01 ft and are referenced to the NAVD88 datum.

Potentiometric Surface Map

The potentiometric surface map depicts the groundwater flow direction from the southeast to the northwest (**Figure 3-3**). The groundwater flow direction has been consistent with historical conditions indicating no seasonal fluctuation in groundwater flow direction. **Table 3-2** presents a summary of groundwater elevation data between May 2022 and April 2023 from the monitoring wells and surface water elevation data from Lake Blackshear. Hydraulic gradients calculated between MW-U1 and MW-D9, between MW-D4 and MW-D9, and between Lake Blackshear and MW-D3 are also included in **Table 3-2**. The mean hydraulic gradient of approximately 0.012 ± 0.001 ft/ft is fairly consistent and not significantly different from historical measurements.

Consistent temporal and spatial hydraulic gradients are indicative of little to no seasonal and spatial fluctuations in groundwater flow velocity.

Well Abandonment

The well abandonment procedure discussed above for the ash pond wells will be followed for the monitoring wells at the secondary ash areas.

Reporting

The reporting procedure discussed above for the ash pond wells will be followed for the monitoring wells at the secondary ash areas.

4. GROUNDWATER SAMPLING AND ANALYSIS PROGRAM

According to 40 C.F.R. §257.93(a) the groundwater monitoring program must 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 represents 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.

The groundwater monitoring system for the ash pond 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. The monitoring well network for the secondary ash areas include two wells (MW-U1 and MW-U2) for background monitoring. Existing background well (MW-U1) will have historical monitoring data for that will be used for the secondary ash areas. In addition, six newly installed monitoring wells (MW-D4 through MW-D9) will be used for compliance/downgradient monitoring. 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.

4.1 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 calculate 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 Laboratory Services & Applied Science Division (LSASD, Athens, Georgia) Operating Procedure (LSASDPROC-301-R6) (USEPA, 2023). Groundwater samples will be collected using a low-flow sampling method. Peristaltic pump tubing or

submersible pump 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. 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. The well is considered stabilized and ready for sample collection when the indicator parameters have stabilized for three consecutive readings at a minimum:

- ±0.1 for pH
- ±5% for specific conductance
- ±10% or ±0.2 mg/L (whichever is greater) for DO where DO>0.5mg/L
- <10 NTU for turbidity
- Temperature – Record only, not used for stabilization criteria
- ORP ±20 mV.

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 (COC) protocol to a certified laboratory. The chain-of-custody procedures will be conducted in accordance with the USEPA's Laboratory Services and Applied Science Division Operating Procedure for Sample and Evidence Management LSASDPROC-005-R4 dated 3 November 2021 (USEPA, 2021).

The COC record will contain the following information:

- Sample identification numbers;
- Signature of sample collector;
- Date and time of collection;
- Sample type;
- Sample point identification;

- Number of sample containers;
- Signature of person(s) involved in the chain of possession;
- Dates and times of possession by each individual; and
- Notated date(s) and time(s) of sample transfer between individuals.

The samples will remain in the custody of assigned personnel, an assigned agent, or the laboratory. If the samples are transferred to other employees for delivery or transport, the sampler or possessor will relinquish possession and the samples must be received by the new owner. If the samples are being shipped, a hard copy COC will be signed and enclosed within the shipping container. Samplers will use COC forms provided by the analytical laboratory or use a COC form similarly formatted and containing the information listed above.

4.2 Field and Laboratory Quality Assurance/ Quality Control

During the past monitoring events from the ash pond and secondary ash areas, one field duplicate sample has been collected during each monitoring event. This practice was consistent with the Sampling and Analysis Plan approved for the ash pond. The field duplicate samples were shipped to the laboratory for analysis for quality assurance and quality control. The field duplicate samples were collected by filling additional containers at the same location, and the field duplicates were assigned a unique sample identification number.

For future groundwater monitoring events, field duplicates, field blanks, and equipment blanks will be collected and shipped to the laboratory for analysis.

Daily calibration of field instruments will be conducted and documented as follows:

- calibration of field instruments will occur daily and follow the recommended (specific) instrument calibration procedures provided by the manufacturer and/or equipment manual specific to each instrument.
- daily calibration will be documented on field forms and these field forms will be included in groundwater monitoring reports.

- instruments will be recalibrated as necessary (e.g. when calibration checks indicate significant variability), and any recalibration steps will be documented on field calibration forms.

- calibration of the instruments will also be checked if any readings during sampling activities are suspected.

- replacement probes and meters will be obtained as a corrective action if recalibration does not improve instrument function. Calibration field forms will be provided as part of each groundwater report's quality control documentation.

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 LSASDPROC-205-R4 dated 22 June 2020 (USEPA, 2020), which includes the following procedure:

1. Wash with Liquinox® detergent and tap water.

2. Rinse with tap water.

3. Rinse 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.

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.

4.3 Laboratory 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 4-1** presents the list of Appendix III and Appendix IV constituents and the laboratory analytical methods. The groundwater samples will be analyzed using methods specified in EPA Manual SW-846, EPA 600/4-79-020, Standard Methods for the Examination of Water and Wastewater (SM18-20), EPA Methods for the Chemical Analysis of Water and Wastes (MCAWW), ASTM, or other suitable analytical methods approved by GA EPD. The method used will be able to reach a suitable practical quantification limit to detect natural background conditions at the facility. The groundwater samples will be analyzed by licensed and accredited laboratories through the National Environmental Laboratory Accreditation Conference (NELAC). Field instruments used to measure pH must be accurate and reproducible to within 0.1 Standard Units (S.U.).

5. STATISTICAL ANALYSIS DURING DETECTION MONITORING

Groundwater quality data from each sampling event will be statistically evaluated to determine if there has been a statistically significant change in groundwater chemistry. Historical background data will be used to determine statistical limits.

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)].

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.

5.1 Physical Independence

Most statistical analyses require separate sampling events to be statistically independent. Statistical independence of groundwater samples is most likely to be realized when the samples are collected at time intervals that are sufficiently far apart that the samples are not from the same volume of groundwater. In such cases, the samples of groundwater are considered physically independent. To ensure physical independence, the minimum time between sampling events must be longer than the residence time of groundwater that would be collected in the monitoring well. The minimum time interval between sampling events (t_{min}) can be determined by calculating the groundwater velocity, as follows:

$$v = \frac{\mathrm{Ki}}{n_e}$$

$$t_{min} = \frac{\mathrm{D}}{\mathrm{v}}$$

where:

v = groundwater velocity;

K = hydraulic conductivity;

i = hydraulic gradient

n_e = effective porosity;

t_{min} = minimum time interval between sampling events;

D = well bore volume (i.e., diameter of well and surrounding filter pack)

5.2 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. A discussion will be added in the groundwater report as to how the outlier was identified and why it was excluded.

5.3 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.

5.4 Establishing Background

Between eight and ten independent background samples will be collected in accordance with the recommendations of the Unified Guidance. The samples will be analyzed for Appendix III and IV constituents from background wells MW-U1 and MW-U2, and each downgradient monitoring well for the ash pond and secondary ash areas as part of the initial monitoring period [40 C.F.R. §257.94(b)]. Background samples from the ash pond monitoring wells were collected in 2017. For the monitoring wells at the secondary ash

areas, CCPC already collected six background sampling events between July 2022 and April 2023 and will complete the eight background sampling events in 2023. Initially, background data will be evaluated for statistically significant temporal trends using the 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 be attributed to a 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 5.3. 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.

5.5 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 (α) 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 prediction 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 exceeds the PL (or control limit), then a resample will be collected and analyzed 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 constituents, the data will 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.

5.5.1. Handling Non-Detects in Background Data

If non-detect data are infrequent (less than 15%), half of the reporting limit (RL) can be used in place of these data without significantly altering the results of a statistical test. When at least half of the data are non-detect, non-parametric prediction intervals with retesting will be used. If all of the background data are non-detect, then the Double Quantification Rule[1] will be used. According to this rule, if a sample and verification resample from the downgradient wells both exceed the practical quantitation limit (PQL) at a particular monitoring point, then a confirmed exceedance is registered (i.e., an SSI can be concluded). Where available, estimated results less than the RL (i.e., "J-flagged" data) will be used, and these data will be considered detections for the purposes of statistical analysis.

[1] Double Quantification Rule is appropriate for detection monitoring because analytical results from the downgradient wells are compared with background concentrations.

6. 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 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)], which was adopted into the GA EPD Rules for Solid Waste Management 391-3-4-.10 on February 22, 2022. 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.

If a constituent is not detected in background groundwater, then the Double Quantification Rule can be used, in which case the UTL 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[2]. 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 will not be used. Instead, non-parametric prediction or tolerance intervals will 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.

[2] Confidence interval is recommended in the Unified Guidance during compliance/assessment and corrective action monitoring. A confidence interval is derived for a constituent from the compliance well data and compared with Groundwater Protection Standard (GWPS). According to the Unified Guidance, if the entire confidence interval (i.e., both the lower and upper confidence limits) lies below the fixed GWPS in either a compliance/assessment or corrective action setting, there is statistically significant evidence that the true concentration from the well (e.g., the mean or the median) is less than the GWPS and the constituent concentrations at the well are considered to be in compliance. Conversely, if the confidence interval lies entirely above the GWPS, the evidence suggests that the true concentration exceeds the standard, and that concentrations at the well are out of compliance. Because confidence intervals explicitly account for variation and uncertainty in the sample data used to construct them, the use of a double quantification rule and verification resampling is not needed to identify statistically significant levels (SSLs).

7. 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 be submitted to EPD within 90 days after sampling and analysis in accordance with the Georgia Comprehensive Rules and Regulations Rule 391-3-4.10. The report 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;
- identification of any groundwater wells that were installed or decommissioned during the preceding year, along with a narrative description of why these actions were taken.
- overview of purging and sampling protocols;
- comparison to established standards;
- discussion of results;
- water table measurements;
- NELAC certification;
- analytical data;
- chain-of-custody documentation;
- statistical analysis;
- recommendations for future monitoring;

- up to date well inspection by a qualified groundwater scientist (at least once every five years);
- trend charts (if applicable);
- plume map (if applicable); and
- updated potable water well survey (if applicable);
- copies of well-purging logs;
- copies of the original daily field instrument calibration sheets, indicator parameter and parameter stabilization;
- potentiometric surface contour map for the aquifer(s) being monitored, signed, and sealed by a Georgia-registered P.G. or P.E.;
- groundwater flow rate and direction calculations;
- semi-annual assessment monitoring results (if applicable);
- field logs and forms will be kept for each sampling event, and will include the following, but not be limited to, well signage, well access, sampling and purging equipment condition, and any site conditions that may affect sampling;
- a narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels);
- table of current analytical results for each well, highlighting statistically significant increases and concentrations above the background for Appendix III constituents or above groundwater protection standards for Appendix IV constituents, as applicable; and
- if an alternate source demonstration has been completed during the previous monitoring period, it will be included in the semi-annual groundwater report.

8. REFERENCES

GA EPD (1991). Manual for Groundwater Monitoring. Department of Natural Resources, Georgia Environmental Protection Division, September 1991.

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

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

USEPA (2021). Laboratory Services and Applied Science Division (LSASD, Athens, Georgia) Sample and Evidence Management (LSASDPROC-005-R4).

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

USEPA (2023). Laboratory Services & Applied Science Division (LSASD, Athens, Georgia) Operating Procedure, Groundwater Sampling (SESDPROC-301-R4).

USEPA (2020). Laboratory Services and Applied Science Division (LSASD, Athens, Georgia) Operating Procedure, Field Equipment Cleaning and Decontamination (LSASDPROC-301-R6).

TABLES

Table 3-1. Monitoring Well Construction Details
Crisp County Power Commission
Plant Crisp Ash Pond and Secondary Ash Areas

Well ID	Installation Date	Well Location	Northing[1]	Easting[1]	Ground Surface Elevation[2] (ft)	Top of Casing Elevation[2] (ft)	Total Well Depth Below Ground Surface (ft)	Screen Depth Interval Below Ground Surface (ft)	Screen Interval Elevation[2] (ft)	Screen Interval Lithologic Information
MW-D1	2/22/2017	Downgradient	670708.47	2365315.12	238.10	241.77	19.50	9.25-19.25	228.85-218.85	Alluvium and Residual Soil
MW-D2	2/21/2017	Downgradient	671291.61	2365308.73	229.14	232.66	19.75	9.50-19.50	219.64-209.64	Alluvium and Residual Soil
MW-D3	2/22/2017	Downgradient	671291.07	2365715.53	229.77	233.77	19.50	9.25-19.25	220.52-210.52	Alluvium and Residual Soil
MW-D4	5/12/2022	Downgradient	669875.01	2365444.95	244.22	246.51	27.25	17.00-27.00	227.22-217.22	Residual Soil
MW-D5	5/16/2022	Downgradient	670216.49	2365178.72	238.31	241.16	33.00	22.75-32.75	215.56-205.56	Residual Soil
MW-D6	5/13/2022	Downgradient	670393.04	2365406.13	249.85	252.63	34.25	24.00-34.00	225.85-215.85	Residual Soil
MW-D7	5/13/2022	Downgradient	671054.07	2365037.89	227.21	230.18	24.40	14.15-24.15	213.06-203.06	Residual Soil
MW-D8	5/13/2022	Downgradient	671186.85	2364861.25	223.90	226.76	25.00	14.75-24.75	209.15-199.15	Residual Soil
MW-D9	5/14/2022	Downgradient	671482.27	2364959.09	218.99	221.42	24.80	14.55-24.55	204.44-194.44	Residual Soil
MW-U1	2/23/2017	Upgradient	669996.79	2366420.55	246.28	249.52	33.75	23.50-33.50	222.78-212.78	Alluvium and Residual Soil
MW-U2	5/12/2022	Upgradient	669748.63	2366247.88	245.69	248.79	27.75	17.50-27.50	228.19-218.19	Residual Soil

Notes:
ft = feet
NAVD = North American Vertical Datum.
The easting, northing, and TOC elevations were obtained from a revised survey performed by J.B. Faircloth & Associates, P.C. on 19 November 2019 and 2 May 2022.
[1] :The easting and northing coordinates in North American Datum (NAD) 1983, State Plane, Georgia-West, feet.
[2]: Elevations referenced to the North American Vertical Datum of 1988 (NAVD88).

Table 3-2. Summary of Groundwater Elevations, Hydraulic Gradients, and Flow Velocities
Crisp County Power Commission
Plant Crisp Ash Pond and Secondary Ash Areas

Well ID	Top of Casing Elevation (ft MSL)	Groundwater Monitoring Date															
		5/26/2022		6/8/2022		7/8/2022		10/19/2022		12/5/2022		1/18/2023		3/1/2023		4/26/2023	
		Depth to Groundwater (ft)	Groundwater Elevation[1] (ft)	Depth to Groundwater (ft)	Groundwater Elevation[1] (ft)	Depth to Groundwater (ft)	Groundwater Elevation[1] (ft)	Depth to Groundwater (ft)	Groundwater Elevation[1] (ft)	Depth to Groundwater (ft)	Groundwater Elevation[1] (ft)	Depth to Groundwater (ft)	Groundwater Elevation[1] (ft)	Depth to Groundwater (ft)	Groundwater Elevation[1] (ft)	Depth to Groundwater (ft)	Groundwater Elevation[1] (ft)
MW-U1	249.52	12.53	236.99	13.11	236.41	14.59	234.93	14.62	234.90	15.61	233.91	13.08	236.44	9.25	240.27	12.1	237.42
MW-U2	248.79	12.18	236.61	12.48	236.31	14.03	234.76	14.24	234.55	14.94	233.85	12.48	236.31	8.57	240.22	11.24	237.55
MW-D1	241.77	15.57	226.20	15.98	225.79	16.35	225.42	16.34	225.43	15.9	225.87	15.28	226.49	14.29	227.48	15.75	226.02
MW-D2	232.66	13.60	219.06	14.60	218.06	15.66	217.00	15.77	216.89	14.33	218.33	13.82	218.84	13.04	219.62	12.63	220.03
MW-D3	233.78	7.83	225.95	8.44	225.34	8.99	224.79	9.45	224.33	8.63	225.15	7.85	225.93	7.49	226.29	7.83	225.95
MW-D4	246.51	11.43	235.08	12.05	234.46	13.00	233.51	13.46	233.05	13.70	232.81	12.04	234.47	9.39	237.12	11.00	235.51
MW-D5	241.16	8.27	232.89	8.64	232.52	9.94	231.22	10.41	230.75	10.48	230.68	9.22	231.94	7.51	233.65	8.90	232.26
MW-D6	252.63	22.47	230.16	22.96	229.67	23.85	228.78	24.03	228.60	23.83	228.80	22.19	230.44	20.65	231.98	22.5	230.13
MW-D7	230.18	7.92	222.26	8.57	221.61	9.22	220.96	9.29	220.89	8.66	221.52	7.85	222.33	6.79	223.39	6.64	223.54
MW-D8	226.76	7.94	218.82	8.61	218.15	9.34	217.42	9.14	217.62	8.08	218.68	7.43	219.33	6.87	219.89	6.52	220.24
MW-D9	221.42	6.98	214.44	8.67	212.75	10.63	210.79	10.49	210.93	8.04	213.38	5.99	215.43	6.04	215.38	6.95	214.47
Lake Blackshear		--	236.91	--	237.00	--	236.99	--	236.99	--	233.25	--	237.01	--	236.95	--	236.95
Hydraulic Gradient Between MW-U1 and MW-D9 (ft/ft)		0.011		0.011		0.012		0.012		0.010		0.010		0.012		0.011	
Flow Velocity Between MW-U1 and MW-D9 (ft/year)	Residual Soil	3		4		4		4		3		3		4		3	
	Alluvium and Residual Soil	8		9		9		9		7		8		9		8	
Hydraulic Gradient Between MW-D4 and MW-D9 (ft/ft)		0.012		0.013		0.013		0.013		0.011		0.011		0.013		0.012	
Flow Velocity Between MW-D4 and MW-D9 (ft/year)	Residual Soil	4		4		4		4		4		3		4		4	
	Alluvium and Residual Soil	9		10		10		10		9		8		10		9	
Hydraulic Gradient Between Lake Blackshear and MW-D3 (ft/ft)		0.012		0.013		0.013		0.014		0.009		0.012		0.012		0.012	
Flow Velocity Between Lake Blackshear and MW-D3 (ft/year)	Residual Soil	4		4		4		4		3		4		4		4	
	Alluvium and Residual Soil	9		10		10		10		7		9		9		9	

Notes:
ft = feet
[1]: Elevations referenced to the North American Vertical Datum of 1988 (NAVD88).
ft/ft = feet per foot
--: The depth to water measurement was not repretative of the static water level.
Horizontal distance between MW-U1 and MW-D9 is 2075 ft. Distance between MW-D4 and MW-D9 is 1690 ft, distance between Lake Blackshear and MW-D3 is 905 ft.
Groundwater flow velocity was calculated using average horizontal hydraulic conductivity for residual soil of 0.17 ft/day and the average horizontal hydraulic conductivity for alluvium and residual soil of 0.41 ft/day.

Table 4-1. Monitored Constituents and Laboratory Analytical Methods
Crisp County Power Commission
Plant Crisp Ash Pond and Secondary Ash Areas

Appendix III to 40 CFR §257 - Constituents for Detection Monitoring	
Analyte	**Laboratory Analytical Method**
Boron	EPA Method 6020
Calcium	EPA Method 6020
Chloride	USEPA method number 300.0/300.1/9250/9251/9253/9056A
Fluoride	USEPA method number 300.0/300.1/9214/9056A
pH	USEPA method number 150.1 field
Sulfate	USEPA method number 9035/9036/9038/300.0/300.1/9056A
Total Dissolved Solids (TDS)	EPA Method SM 2540C
Appendix IV to 40 CFR §257 - Constituents for Assessment Monitoring	
Analyte	**Laboratory Analytical Method**
Antimony	EPA Method 6020
Arsenic	EPA Method 6020
Barium	EPA Method 6020
Berylium	EPA Method 6020
Cadmium	EPA Method 6020
Chromium	EPA Method 6020
Cobalt	EPA Method 6020
Fluoride	USEPA method number 300.0/300.1/9214/9056A
Lead	EPA Method 6020
Lithium	EPA Method 6020
Mercury	EPA Method 7470A
Molybdenum	EPA Method 6020
Selenium	EPA Method 6020
Thallium	EPA Method 6020
Radium 226 and 228 Combined	EPA Method 9315 & 9320

FIGURES

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community Aerial Photograph from June 2016.

Legend

- CCPC Property Boundary
- Secondary Ash Area Approximate Boundary
- Ash Pond Approximate
- Parcels

0 250 500 1,000 Feet

Note: Parcel map obtained from Worth County, Georgia Board of Tax Assessors.

Site Location and Layout

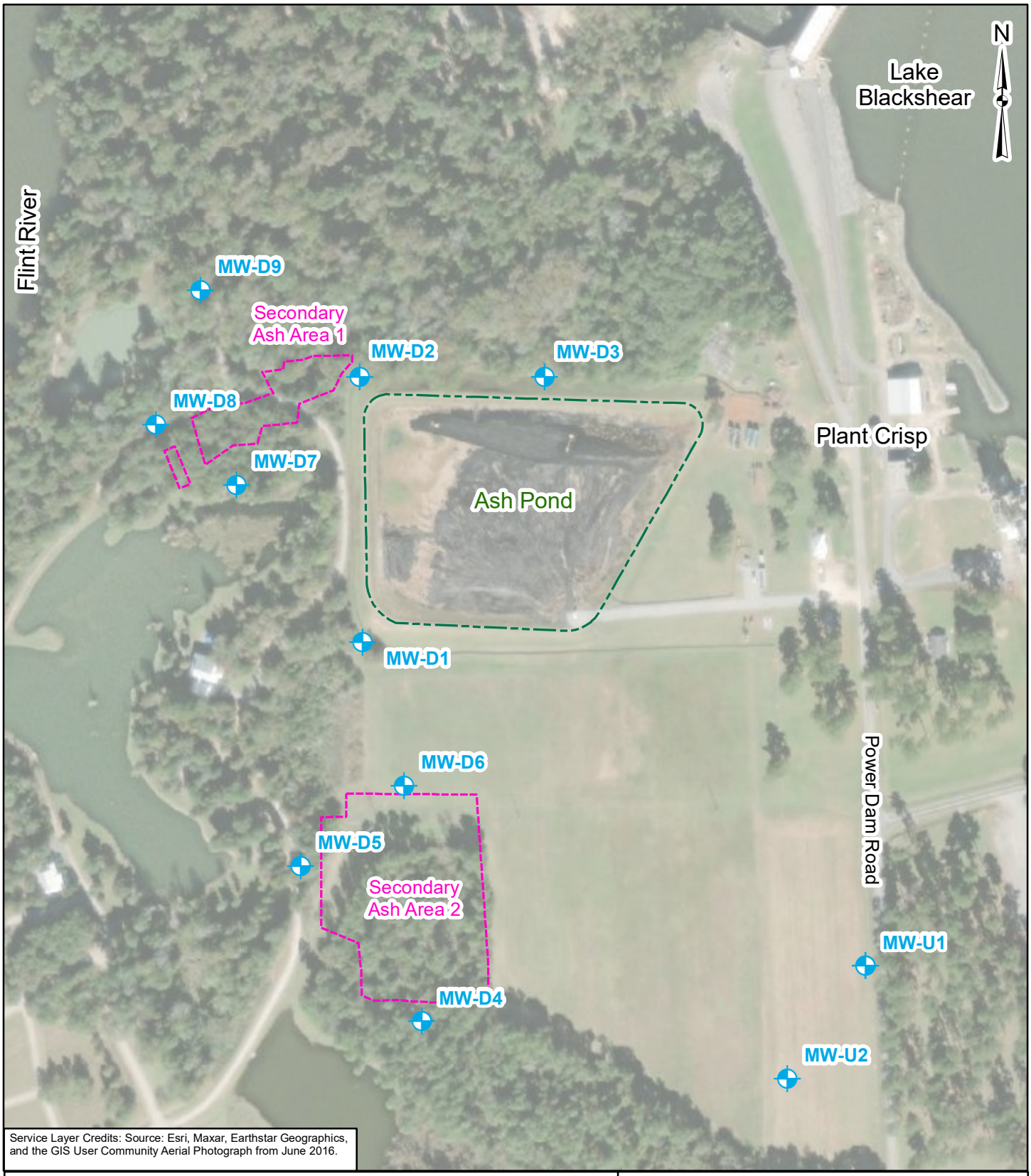
Crisp County Power Commission
Warwick, Georgia

Geosyntec consultants

KENNESAW, GA

DATE:	FEBRUARY 2024
PROJECT NO.	GW8836
DOCUMENT NO.	GA230223
FILE NO.	FIGURE 2-1 SITE LOCATION AND LAYOUT.MXD
FIGURE NO.	2-1

\\Aro-01\prj1$\Crisp County\GIS\MXD\2023\SAP\Figure 2-1 Site Location and Layout.mxd 6/7/2023 8:33:15 AM DY



Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community Aerial Photograph from June 2016.

Legend

- Monitoring Well
- Secondary Ash Area Approximate Boundary
- Ash Pond Approximate Boundary

0 150 300 Feet

Groundwater Monitoring Well Network

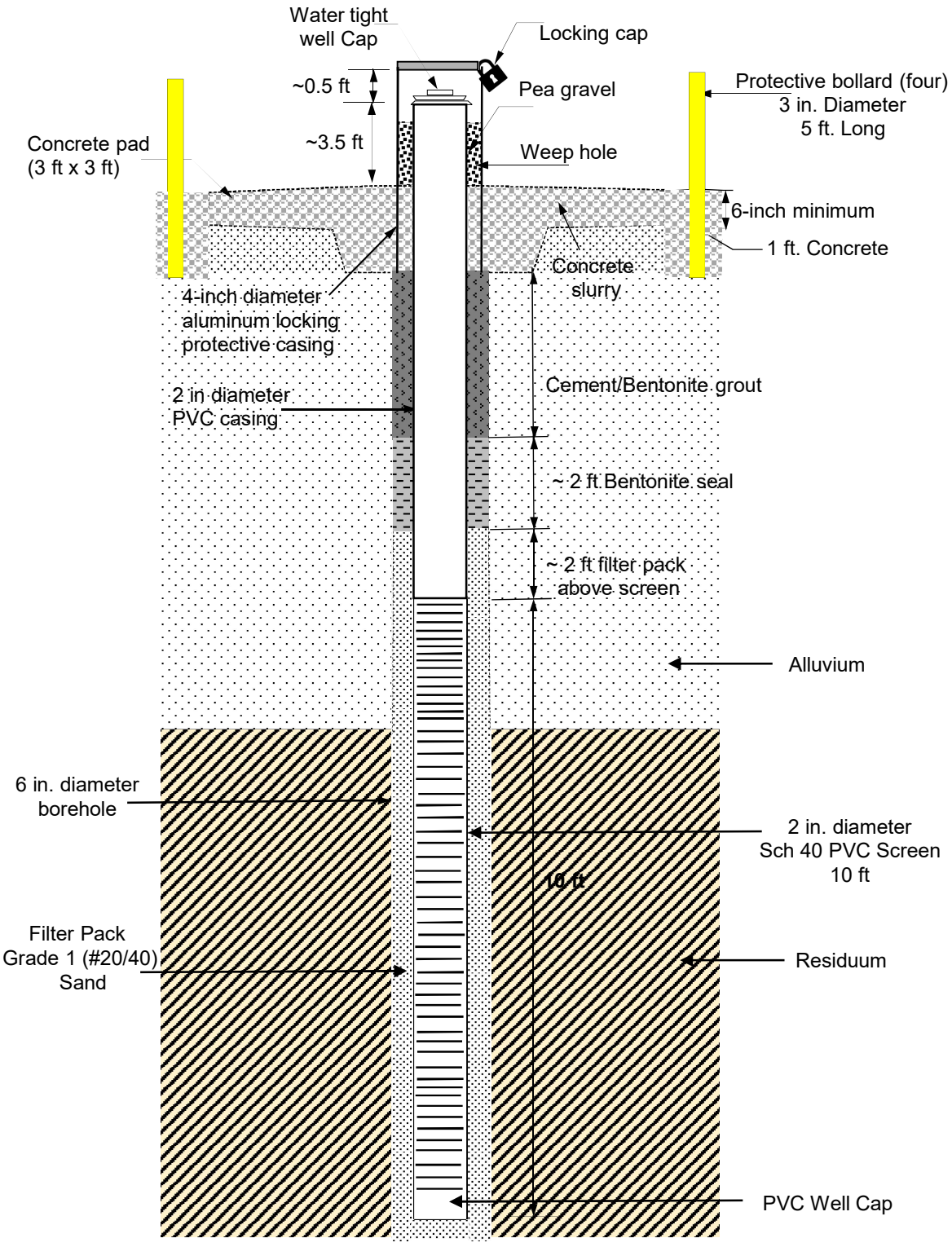
Crisp County Power Commission
Warwick, Georgia

Geosyntec consultants

KENNESAW, GA

DATE:	FEBRUARY 2024
PROJECT NO.	GW8836
DOCUMENT NO.	GA 230223
FILE NO.	FIGURE 3-1 GROUNDWATER MONITORING WELL NETWORK.MXD
FIGURE NO.	3-1

\\Aro-01\prj1$\Crisp County\GIS\MXD\2023\SAP\Figure 3-1 Groundwater Monitoring Well Network.mxd 6/7/2023 8:36:10 AM DY

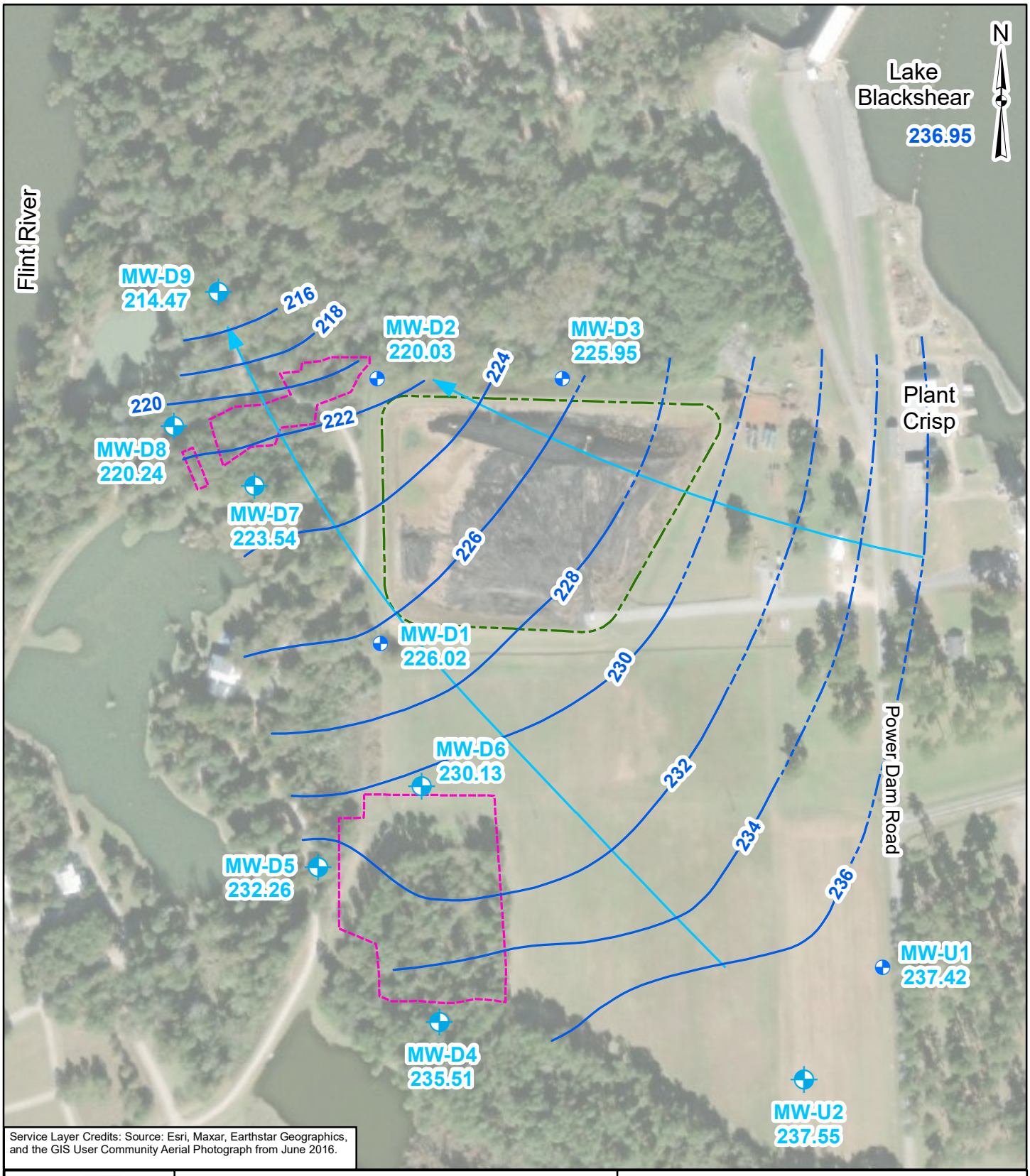


NOT TO SCALE

Groundwater Monitoring Well Detail

Crisp County Power Commission
Plant Crisp Ash Pond

Geosyntec consultants	DATE: FEBRUARY 2024
	PROJECT NO. GW8836
	DOCUMENT NO GA230223
	FILE NO.
KENNESAW, GA	FIGURE NO. 3-2



Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community Aerial Photograph from June 2016.

DAWIT D. YIFRU
GEORGIA REGISTERED PROFESSIONAL GEOLOGIST
No. 001965

Dawit Yifru
PG001965

Legend

- Monitoring Well (Inactive Landfills)
- Monitoring Well (Ash Pond)
- Groundwater Elevation Contour - 26 April 2023 (ft, MSL) (dashed where inferred)
- Groundwater Flow Direction
- Secondary Ash Areas Approximate Boundary
- Ash Pond Approximate Boundary

0 250 500 Feet

Potentiometric Surface Map (April 2023)

Crisp County Power Commission
Warwick, Georgia

Geosyntec consultants

KENNESAW, GA

DATE:	FEBRUARY 2024
PROJECT NO.	GW8836
DOCUMENT NO.	GA 230223
FILE NO.	FIGURE 3-3 POTENTIOMETRIC SURFACE MAP.MXD
FIGURE NO.	3-3

\\Aro-01\prj1$\Crisp County\GIS\MXD\2023\SAP\Figure 3-3 Potentiometric Surface Map.mxd 6/7/2023 8:37:49 AM DY

APPENDIX A

Land Surveyor's Certification Drawing

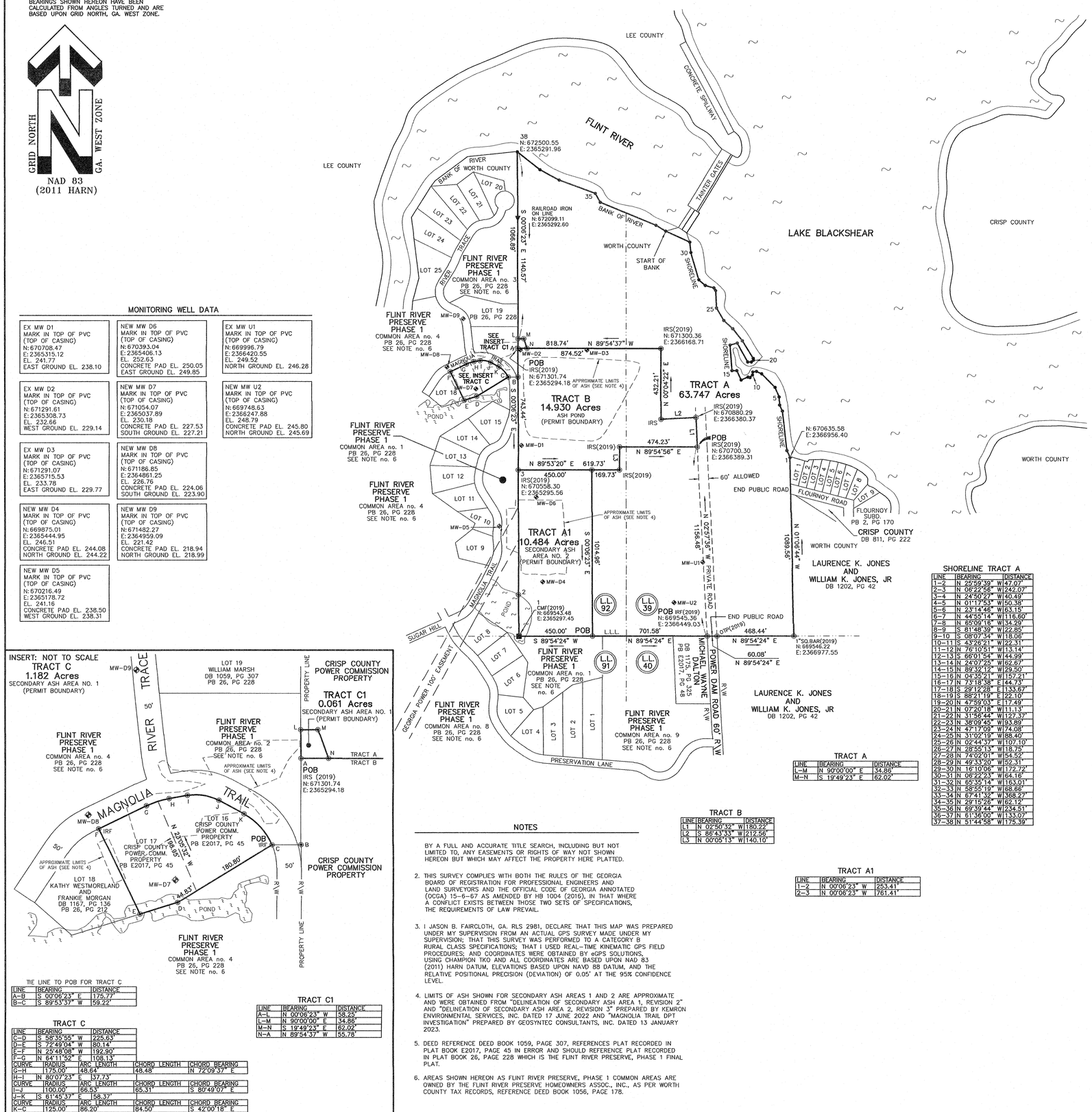
REFERENCE TO NORTH

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)

MONITORING WELL DATA

EX MW D1 MARK IN TOP OF PVC (TOP OF CASING) N: 670708.47 E: 2365315.12 EL. 241.77 EAST GROUND EL. 238.10	NEW MW D6 MARK IN TOP OF PVC (TOP OF CASING) N: 670393.04 E: 2365406.13 EL. 252.63 CONCRETE PAD EL. 250.05 EAST GROUND EL. 249.85	EX MW U1 MARK IN TOP OF PVC (TOP OF CASING) N: 669996.79 E: 2366420.55 EL. 249.52 NORTH GROUND EL. 246.28
EX MW D2 MARK IN TOP OF PVC (TOP OF CASING) N: 671291.61 E: 2365308.73 EL. 232.66 WEST GROUND EL. 229.14	NEW MW D7 MARK IN TOP OF PVC (TOP OF CASING) N: 671054.07 E: 2365037.89 EL. 230.18 CONCRETE PAD EL. 227.53 SOUTH GROUND EL. 227.21	NEW MW U2 MARK IN TOP OF PVC (TOP OF CASING) N: 669748.63 E: 2366247.88 EL. 248.79 CONCRETE PAD EL. 245.80 NORTH GROUND EL. 245.69
EX MW D3 MARK IN TOP OF PVC (TOP OF CASING) N: 671291.07 E: 2365715.53 EL. 233.78 EAST GROUND EL. 229.77	NEW MW D8 MARK IN TOP OF PVC (TOP OF CASING) N: 671186.85 E: 2364861.25 EL. 226.76 CONCRETE PAD EL. 224.06 SOUTH GROUND EL. 223.90	
NEW MW D4 MARK IN TOP OF PVC (TOP OF CASING) N: 669875.01 E: 2365444.95 EL. 246.51 CONCRETE PAD EL. 244.08 NORTH GROUND EL. 244.22	NEW MW D9 MARK IN TOP OF PVC (TOP OF CASING) N: 671482.27 E: 2364959.09 EL. 221.42 CONCRETE PAD EL. 218.94 NORTH GROUND EL. 218.99	
NEW MW D5 MARK IN TOP OF PVC (TOP OF CASING) N: 669816.49 E: 2365178.72 EL. 241.16 CONCRETE PAD EL. 238.50 WEST GROUND EL. 238.31		



TIE LINE TO POB FOR TRACT C

LINE	BEARING	DISTANCE
A–B	S 00°06'23" E	175.77'
B–C	S 89°53'37" W	59.22'

TRACT C

LINE	BEARING	DISTANCE
C–D	S 58°35'55" W	225.63'
D–E	S 72°49'04" W	80.14'
E–F	N 25°48'08" W	192.90'
F–G	N 64°11'52" E	108.13'

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING
G–H	175.00'	48.64'	48.48	N 72°09'37" E

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING
H–I	N 80°07'23" E	37.73'		

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING
I–J	100.00'	66.53'	65.31	S 89°49'07" E

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING
J–K	S 61°45'37" E	58.37'		

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING
K–C	125.00'	86.20'	84.50	S 42°00'18" E

TRACT C1

LINE	BEARING	DISTANCE
A–L	N 00°06'23" W	58.25'
L–M	N 90°00'00" E	34.86'
M–N	S 19°49'23" E	62.02'
N–A	N 89°54'37" W	55.78'

TRACT A

LINE	BEARING	DISTANCE
L–M	N 90°00'00" E	34.86'
M–N	S 19°49'23" E	62.02'

TRACT B

LINE	BEARING	DISTANCE
L1	N 02°50'32" W	180.22'
L2	S 86°43'33" W	212.56'
L3	N 00°05'13" W	140.10'

TRACT A1

LINE	BEARING	DISTANCE
1–2	N 00°06'23" W	253.41'
2–3	N 00°06'23" W	761.41'

SHORELINE TRACT A

LINE	BEARING	DISTANCE
1–2	N 25°59'39" W	47.07'
2–3	N 06°22'56" W	242.07'
3–4	N 24°50'27" W	40.49'
4–5	N 01°17'53" W	50.38'
5–6	N 23°14'46" W	63.15'
6–7	N 44°55'14" W	116.60'
7–8	N 65°09'16" W	34.29'
8–9	S 81°48'39" W	22.85'
9–10	S 08°07'34" W	18.06'
10–11	S 43°26'21" W	22.31'
11–12	N 76°10'51" W	13.14'
12–13	S 66°01'54" W	44.99'
13–14	N 24°07'25" W	62.67'
14–15	N 89°32'12" W	29.50'
15–16	N 04°35'21" W	157.21'
16–17	N 73°18'38" E	44.73'
17–18	S 29°12'28" E	133.67'
18–19	S 89°21'19" E	22.10'
19–20	N 47°59'03" E	17.49'
20–21	N 07°20'18" W	11.13'
21–22	N 31°56'44" W	127.37'
22–23	N 38°09'45" W	93.89'
23–24	N 47°17'09" W	74.08'
24–25	N 31°02'19" W	88.40'
25–26	N 02°44'37" W	107.10'
26–27	N 28°55'13" W	18.75'
27–28	N 74°02'01" W	54.52'
28–29	N 49°33'20" W	52.31'
29–30	N 16°10'06" W	172.72'
30–31	N 06°22'23" W	64.16'
31–32	N 65°35'14" W	163.01'
32–33	N 58°55'19" W	68.68'
33–34	N 67°41'32" W	368.27'
34–35	N 29°15'26" W	82.12'
35–36	N 69°39'44" W	234.51'
36–37	N 61°36'00" W	133.07'
37–38	N 51°44'58" W	175.39'

NOTES

1. 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 (2016), IN THAT WHERE A CONFLICT EXISTS BETWEEN THOSE TWO SETS OF SPECIFICATIONS, THE REQUIREMENTS OF LAW PREVAIL.
3. I JASON B. FAIRCLOTH, GA. RLS 2981, 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 B RURAL CLASS SPECIFICATIONS; THAT I USED REAL-TIME KINEMATIC GPS FIELD PROCEDURES; AND COORDINATES WERE OBTAINED BY eGPS SOLUTIONS, USING CHAMPION TKO 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.
4. LIMITS OF ASH SHOWN FOR SECONDARY ASH AREAS 1 AND 2 ARE APPROXIMATE AND WERE OBTAINED FROM "DELINEATION OF SECONDARY ASH AREA 1, REVISION 2" AND "DELINEATION OF SECONDARY ASH AREA 2, REVISION 3" PREPARED BY KEMRON ENVIRONMENTAL SERVICES, INC. DATED 17 JUNE 2022 AND "MAGNOLIA TRAIL DPT INVESTIGATION" PREPARED BY GEOSYNTEC CONSULTANTS, INC. DATED 13 JANUARY 2023.
5. DEED REFERENCE DEED BOOK 1059, PAGE 307, REFERENCES PLAT RECORDED IN PLAT BOOK E2017, PAGE 45 IN ERROR AND SHOULD REFERENCE PLAT RECORDED IN PLAT BOOK 26, PAGE 228 WHICH IS THE FLINT RIVER PRESERVE, PHASE 1 FINAL PLAT.
6. AREAS SHOWN HEREON AS FLINT RIVER PRESERVE, PHASE 1 COMMON AREAS ARE OWNED BY THE FLINT RIVER PRESERVE HOMEOWNERS ASSOC., INC., AS PER WORTH COUNTY TAX RECORDS, REFERENCE DEED BOOK 1056, PAGE 178.

LEGEND

IRF – DENOTES 1/2" IRON REBAR FOUND
IRS – DENOTES 1/2" IRON REBAR SET
OTP – DENOTES OPEN TOP IRON PIPE FOUND
CTP – DENOTES CRIMP TOP IRON PIPE FOUND
CMF – DENOTES CONCRETE MONUMENT FOUND
LLL – DENOTES LAND LOT LINE
LDL – DENOTES LAND DISTRICT LINE
POB – DENOTES POINT OF BEGINNING
R\W – DENOTES RIGHT OF WAY

TRACT B
(ASH POND)
METES AND BOUNDS DESCRIPTION

All that tract or parcel of land lying in or being in Land Lots 39 and 92 15th. Land District, Worth County, Georgia, and being more particularly described as follows:

Beginning at the intersection of the South line Land Lot 39 and the West right of way of Power Dam Road (60' R\W), said intersection being marked by a 1\2" rebar found and having Grid North, Ga. West Zone coordinates of N. 669545.36, E. 2366449.03; Thence N 02°57'36" W a distance of 1156.48' along the West right of way of a Private Road, to a 1\2" rebar set, having grid coordinates of N. 670700.30, E. 2366389.31, said rebar being the POINT OF BEGINNING;

Thence N 02°50'32" W a distance of 180.22' along said right of way of said Private Road to a 1\2" rebar set, having grid coordinates of N. 670880.29, E. 2366380.37;
Thence S 86°43'33" W a distance of 212.56' to a 1\2" rebar set;
Thence N 00°04'22" E a distance of 432.21' to a 1\2" rebar set;
Thence N 89°54'37" W a distance of 874.52' to a 1\2" rebar set on the West property line, having grid coordinates of N. 671301.74, E. 2365294.18;
Thence S 00°06'23" E a distance of 743.44' along said West property line to a 1\2" rebar set, having grid coordinates of N. 670558.30, E. 2365295.56;
Thence N 89°53'20" E a distance of 619.73' to a 1\2" rebar set;
Thence N 00°05'13" W a distance of 140.10' to a 1\2" rebar set;
Thence N 89°54'56" E a distance of 474.23' to a 1\2" rebar set, said rebar being the POINT OF BEGINNING.

Said tract or parcel of land having an area of 14.930 Acres.

TRACT C
(SECONDARY ASH AREA NO. 1)
METES AND BOUNDS DESCRIPTION

All that tract or parcel of land lying in or being in Land Lot 92, 15th. Land District, Worth County, Georgia, and being more particularly described as follows:

Beginning at the intersection of the South line Land Lot 39 and the West right of way of Power Dam Road (60' R\W), said intersection being marked by a 1\2" rebar found and having Grid North, Ga. West Zone coordinates of N. 669545.36, E. 2366449.03; Thence N 02°57'36" W a distance of 1156.48' along the West right of way of a Private Road, to a 1\2" rebar set, having grid coordinates of N. 670880.29, E. 2366380.37; Thence S 86°43'33" W a distance of 212.56' to a 1\2" rebar set; Thence N 00°04'22" E a distance of 432.21' to a 1\2" rebar set; Thence N 89°54'37" W a distance of 874.52' to a 1\2" iron rebar set, said rebar having grid coordinates of N. 671301.74, E. 2365294.18 and being the POINT OF BEGINNING;

Thence N 00°06'23" W a distance of 58.25', to a point;
Thence N 90°00'00" E a distance of 34.86', to a point;
Thence S 19°49'23" E a distance of 62.02', to a point;
Thence N 89°54'37" W a distance of 55.78', to the POINT OF BEGINNING.

Said tract or parcel of land having an area of 0.061 Acres.

TRACT A
METES AND BOUNDS DESCRIPTION

All that tract or parcel of land lying in or being in Land Lots 39 and 92, 15th. Land District, Worth County, Georgia, and being more particularly described as follows:

Beginning at the intersection of the South line of Land Lot 39 and the West right of way of Power Dam Road (60' R\W), said intersection being marked by a 1\2" rebar found and having Grid North Ga. West Zone coordinates of N. 669545.36, E. 2366449.03, and being the POINT OF BEGINNING;

Thence N 89°54'24" E a distance of 60.08' along said Land Lot Line to a 1\2" open top pipe, located on the East right of way of Power Dam Road;
Thence N 89°54'24" E a distance of 468.44' along said Land Lot Line to a 1" Square Bar, having grid coordinates of N. 669546.22, E. 2366977.55;
Thence N 01°06'44" W a distance of 1089.56' to a point located on the Westerly shoreline of Lake Blackshear, having grid coordinates of N. 670635.58, E. 2366956.40;
Thence N 25°59'39" W a distance of 47.07' along said shoreline to a point;
Thence N 06°22'56" W a distance of 242.07' along said shoreline to a point;
Thence N 24°50'27" W a distance of 40.49' along said shoreline to a point;
Thence N 01°17'53" W a distance of 50.38' along said shoreline to a point;
Thence N 23°14'46" W a distance of 63.15' along said shoreline to a point;
Thence N 44°55'14" W a distance of 116.60' along said shoreline to a point;
Thence N 65°09'16" W a distance of 34.29' along said shoreline to a point;
Thence S 81°48'39" W a distance of 22.85' along said shoreline to a point;
Thence S 08°07'34" W a distance of 18.06' along said shoreline to a point;
Thence S 43°26'21" W a distance of 22.31' along said shoreline to a point;
Thence N 76°10'51" W a distance of 13.14' along said shoreline to a point;
Thence S 66°01'54" W a distance of 44.99' along said shoreline to a point;
Thence N 24°07'25" W a distance of 62.67' along said shoreline to a point;
Thence N 89°32'12" W a distance of 29.50' along said shoreline to a point;
Thence N 04°35'21" W a distance of 157.21' along said shoreline to a point;
Thence N 73°18'38" E a distance of 44.73' along said shoreline to a point;
Thence S 29°12'28" E a distance of 133.67' along said shoreline to a point;
Thence S 88°21'19" E a distance of 22.10' along said shoreline to a point;
Thence N 47°59'03" E a distance of 17.49' along said shoreline to a point;
Thence N 07°20'18" W a distance of 11.13' along said shoreline to a point;
Thence N 31°56'44" W a distance of 127.37' along said shoreline to a point;
Thence N 38°09'45" W a distance of 93.89' along said shoreline to a point;
Thence N 47°17'09" W a distance of 74.08' along said shoreline to a point;
Thence N 31°02'19" W a distance of 88.40' along said shoreline to a point;
Thence N 02°44'37" W a distance of 107.10' along said shoreline to a point;
Thence N 28°55'13" W a distance of 18.75' along said shoreline to a point;
Thence N 74°02'01" W a distance of 54.52' along said shoreline to a point;
Thence N 49°33'20" W a distance of 52.31' along said shoreline to a point;
Thence N 16°10'06" W a distance of 172.72' along said shoreline to a point;
Thence N 06°22'23" W a distance of 64.16' along said shoreline to a point;
Thence N 65°35'14" W a distance of 163.01' along said shoreline to a point; located on the Southwesterly bank of the Flint River;
Thence N 58°55'19" W a distance of 68.66' along said bank to a point;
Thence N 67°41'32" W a distance of 368.27' along said bank to a point;
Thence N 29°15'26" W a distance of 82.12' along said bank to a point;
Thence N 69°39'44" W a distance of 234.51' along said bank to a point;
Thence N 61°36'00" W a distance of 133.07' along said bank to a point;
Thence N 51°44'58" W a distance of 175.39' along said bank to a point, located on the West property line and having grid coordinates of N. 672500.55, E. 2365291.96;
Thence S 00°06'23" E a distance of 1140.57' along said West property line, to a point;
Thence N 90°00'00" E a distance of 34.86' to a point;
Thence S 19°49'23" E a distance of 62.02' to a point;
Thence S 89°54'37" E a distance of 818.74' to a 1\2" rebar set;
Thence S 00°04'22" W a distance of 432.21' to a 1\2" rebar set;
Thence N 86°43'33" E a distance of 212.56' to a 1\2" rebar set on the West right of way of a Private Road;
Thence S 02°50'32" E a distance of 180.22' along said right of way of said Private Road;
Thence S 89°54'56" W a distance of 474.23' to a 1\2" rebar set;
Thence S 00°05'13" E a distance of 140.10' to a 1\2" rebar set;
Thence S 89°53'20" W a distance of 169.73' to a point;
Thence S 00°06'23" E a distance of 1014.96' to a point on the South line of Land Lots 92 & 39;
Thence N 89°54'24" E a distance of 701.58' along said Land Lot Line to the POINT OF BEGINNING.

Said tract or parcel of land having an area of 63.747 Acres.

TRACT A1
(SECONDARY ASH AREA NO. 2)
METES AND BOUNDS DESCRIPTION

All that tract or parcel of land lying in or being in Land Lot 92, 15th. Land District, Worth County, Georgia, and being more particularly described as follows:

Beginning at the intersection of the South line of Land Lots 39 & 92 and the West right of way of Power Dam Road (60' R\W), said intersection being marked by a 1\2" rebar found and having Grid North Ga. West Zone coordinates of N. 669545.36, E. 2366449.03, Thence S 89°54'24" W a distance of 701.58' along said line of said Land Lots to the POINT OF BEGINNING;

Thence S 89°54'24" W a distance of 450.00' along said line of said Land Lots, to a concrete monument;
Thence N 00°06'23" W a distance of 253.41', to a point;
Thence N 00°06'23" W a distance of 761.41', to a point;
Thence N 89°53'20" E a distance of 450.00', to a point;
Thence S 00°06'23" E a distance of 1014.96', to the POINT OF BEGINNING.

Said tract or parcel of land having an area of 10.484 Acres.

GRAPHIC SCALE

300 0 150 300 600 1200

(IN FEET)
1 inch = 300 ft.

REVISION no. 7, AUG. 28, 2023, ADDRESSED RED LINE COMMENTS.
REVISION no. 6, JUNE 19, 2023, ADDRESSED RED LINE COMMENTS.
REVISION no. 5, JUNE 2, 2023, ADDRESSED RED LINE COMMENTS.
REVISION no. 4, AUG. 5, 2022, ADDRESSED RED LINE COMMENTS.
REVISION no. 3, JUNE 8, 2022, TO SHOW LOCATION OF NEW MONITORING WELLS, AND TO SHOW LIDAR TOPOGRAPHIC SURVEY.

REFERENCE: DEED BOOK 45, PAGE 152

* SURVEY FOR *

CRISP COUNTY POWER COMMISSION

PART OF LAND LOTS 92 & 39, 15th. LAND DISTRICT, WORTH COUNTY, GEORGIA

SCALE: 1 INCH REPRESENTS 300 FEET
DATE OF SURVEY: OCT. 15, 2018
REVISIONS: no. 1 APRIL 1, 2019 no. 2 MAY 2, 2022
DATE OF PLAT: OCT. 25, 2018
THIS PLAT HAS BEEN CALCULATED FOR CLOSURE AND IS FOUND TO BE ACCURATE. LINEAR PRECISION – 1' IN 42,366,456'
THE FIELD DATA UPON WHICH THIS PLAT IS BASED HAS A CLOSURE PRECISION OF ONE FOOT IN FEET AND AN ANGULAR ERROR OF PER ANGLE POINT, AND WAS ADJUSTED USING THE SEE NOTE no. 3
EQUIPMENT USED: SEE NOTE no. 3
PROJECT:C:\CARLSON PORJECTS\2017\CCPAshPond\CCPD Boundary Plat 2022 REV(KEMRON)6-02-2023.DWG
DRAWN BY: SMK FILE NO. 4137 PLAT NO. 1456 A DATE OF ISSUANCE:

J.B. FAIRCLOTH & ASSOCIATES, P.C.
LAND SURVEYING, PLANNING AND MAPPING
FIRM CERTIFICATE OF AUTHORIZATION NO. LSF00031
1109 EAST 13th. AVE.
CORDELE, GEORGIA 31015
PHONE (229)-273-1282
FAX (229)-273-2340

GEORGIA REGISTERED NO. 2981 PROFESSIONAL LAND SURVEYOR JASON B. FAIRCLOTH
8-30-23

APPENDIX B

Boring Logs and Well Construction Diagrams

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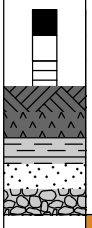
BORING AND WELL LOG LEGEND

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: Trace = <5% Few = 5-10% Little = 15-25% Some = 30-45% Mostly = >=50%
				Water Level During Drilling Water Level at End of Drilling/in Completed Well
				Cap Riser Screen Cement Bentonite Grout Bentonite Seal Filter Pack Backfill
			GR	Grab
			EN	Encore
			SS	Split Spoon
			SH	Shelby Tube
			CO	Core Barrel
			DP	Direct Push
			ID	Lab Sample and ID

NOTES:

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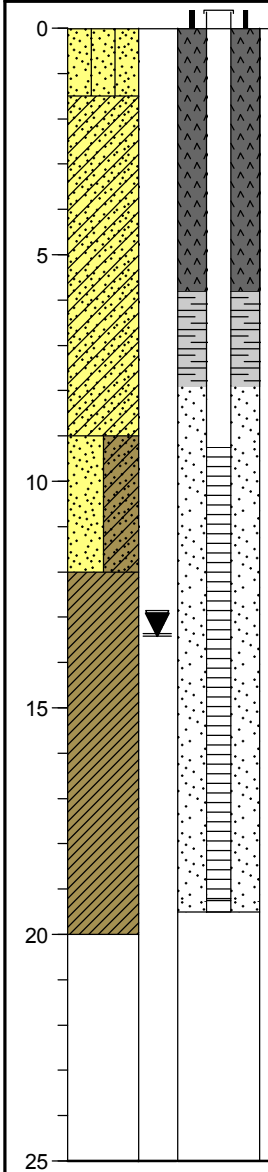
Client: Crisp County Power Plant
Project: GW6152
Address: Warwick, GA

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.

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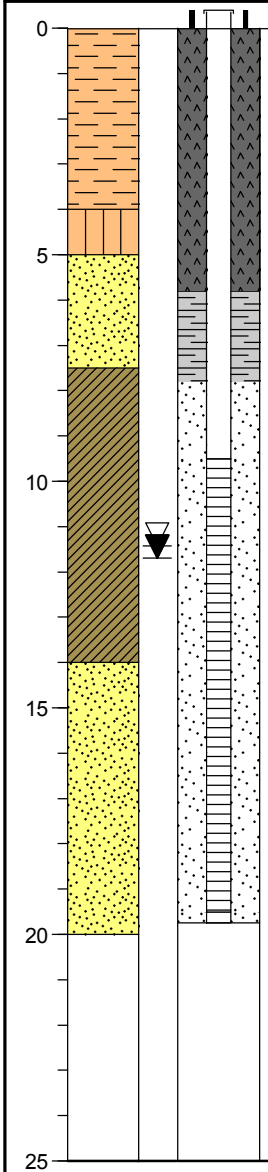
Client: Crisp County Power Plant
Project: GW6152
Address: Warwick, GA

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 (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.

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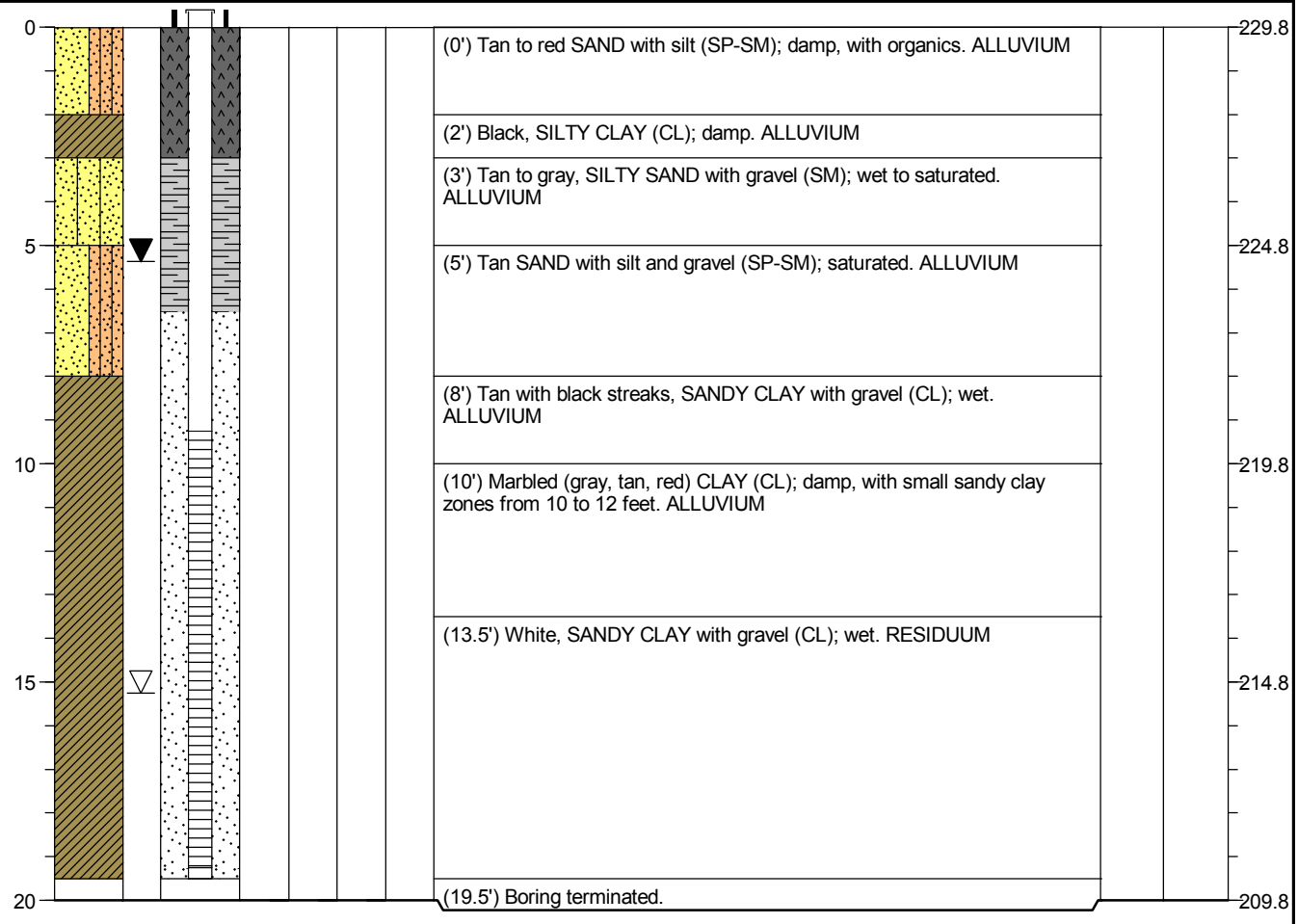
Client: Crisp County Power Plant
Project: GW6152
Address: Warwick, GA

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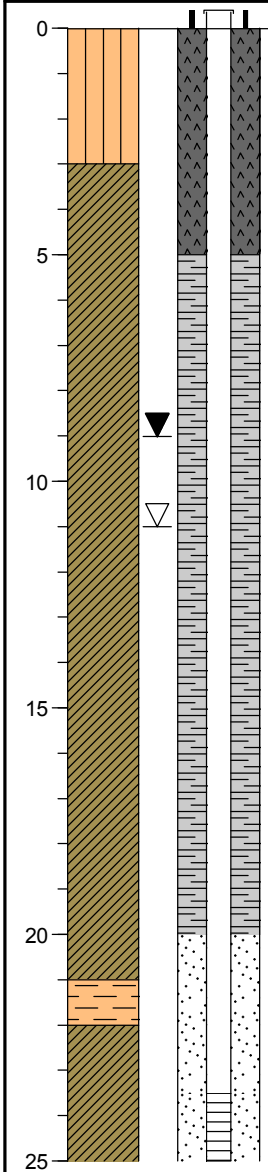
Client: Crisp County Power Plant
Project: GW6152
Address: Warwick, GA

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.

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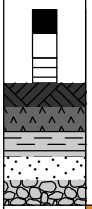
BORING AND WELL LOG LEGEND

LITHOLOGY	WATER LEVEL	WELL/BORING COMPLETION	COLLECT: Sample Type	COLLECT: Date & Time	COLLECT: Blow Counts	COLLECT: Recovery (ft)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: PID (ppm)	MEASURE: Lab Sample
			GR EN SS ST CO DP				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: Trace = <5% Few = 5-10% Little = 15-25% Some = 30-45% Mostly = >=50% Water Level During Drilling Water Level at End of Drilling/in Completed Well Cap Riser Screen Cement Bentonite Grout Bentonite Seal Filter Pack Backfill Grab Encore Split Spoon Shelby Tube Core Barrel Direct Push Lab Sample and ID	0.0	ID

NOTES:

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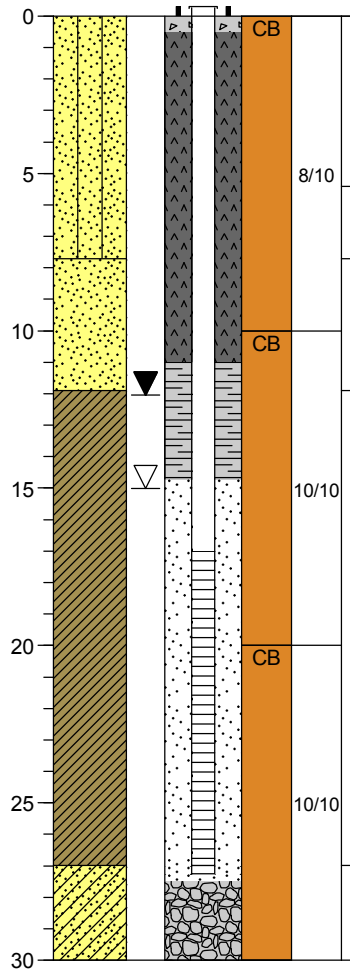
Client: Crisp County Power Commission
Project: GW8836
Address: Warwick, GA

WELL LOG
Well No. MW-D4
Page: 1 of 1

Drilling Start Date:	05/12/2022	Boring Depth (ft):	30	Well Depth (ft):	27.25
Drilling End Date:	05/16/2022	Boring Diameter (in):	4x6	Well Diameter (in):	2
Drilling Company:	GSE	Sampling Method(s):	Continuous Core	Screen Slot (in):	0.010
Drilling Method:	Sonic	DTW During Drilling (ft):	15.00	Riser Material:	Sch 40 PVC
Drilling Equipment:	TSI-150	DTW After Drilling (ft):	12.05	Screen Material:	Sch 40 PVC Slotted
Driller:	Robert Morgan	Top of Casing Elev. (ft):	246.51 ft (NAVD 88)	Seal Material(s):	Grout/Bentonite
Logged By:	Dalton Kegley	North, East (Y,X):	669875.01, 2365444.95	Filter Pack:	Fine-Medium Sand



DEPTH (ft)	SOIL/ROCK VISUAL DESCRIPTION	ELEVATION (ft)
0	(0') Silty SAND (SM); brownish-black, trace gravel, trace organics [TOPSOIL].	244
5	(5.4') Silty SAND (SM); reddish-brown, some gravel [ALLUVIUM].	239
	(7.7') SAND (SP) (Residual soil with some weathered limestone); partially weathered limestone fragments with some sand [RESIDUAL SOIL].	
10		234
	(11.9') CLAY (CL); reddish-brown, stiff, medium plasticity, some limestone fragments with trace sand [RESIDUAL SOIL].	
15		229
20		224
25		219
	(27') Clayey SAND with limestone fragments (SC); whitish brown, moist [RESIDUAL SOIL].	
30		214
	(30') Boring terminated.	

NOTES: Well completed with 4 inch aluminum stickup outer protective casing in 3ft x 3ft concrete pad and four bollards.

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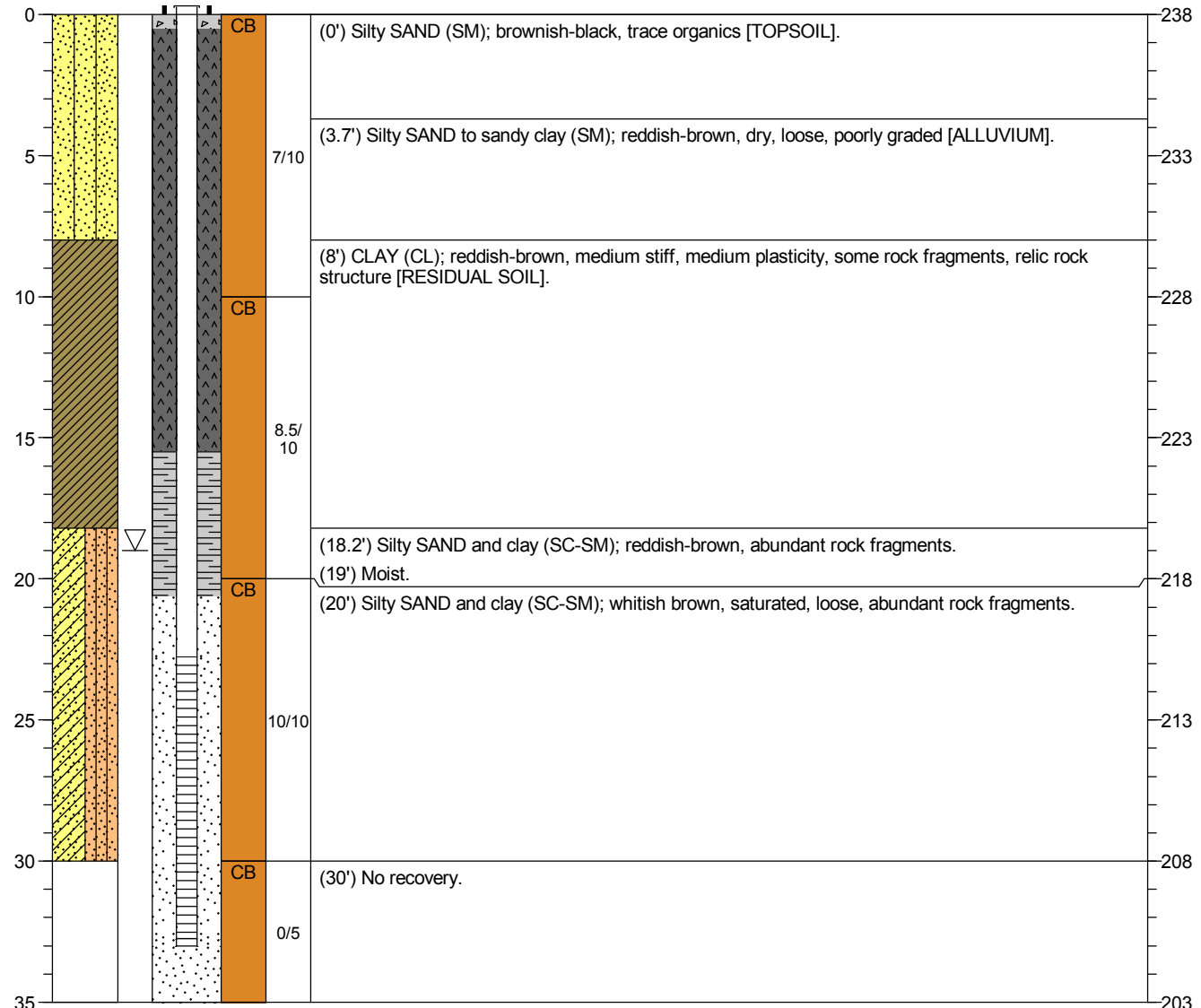
Client: Crisp County Power Commission
Project: GW8836
Address: Warwick, GA

WELL LOG
Well No. MW-D5
Page: 1 of 1

Drilling Start Date:	05/16/2022	Boring Depth (ft):	35	Well Depth (ft):	33
Drilling End Date:	05/18/2022	Boring Diameter (in):	4x6	Well Diameter (in):	2
Drilling Company:	GSE	Sampling Method(s):	Continuous Core	Screen Slot (in):	0.010
Drilling Method:	Sonic	DTW During Drilling (ft):	19.00	Riser Material:	Sch 40 PVC
Drilling Equipment:	TSI-150	DTW After Drilling (ft):	NA	Screen Material:	Sch 40 PVC Slotted
Driller:	Robert Morgan	Top of Casing Elev. (ft):	241.16 ft (NAVD 88)	Seal Material(s):	Grout/Bentonite
Logged By:	Dalton Kegley	North, East (Y,X):	670216.49, 2365178.72	Filter Pack:	Fine-Medium Sand



NOTES: Well completed with 4 inch aluminum stickup outer protective casing in 3ft x 3ft concrete pad and four bollards.

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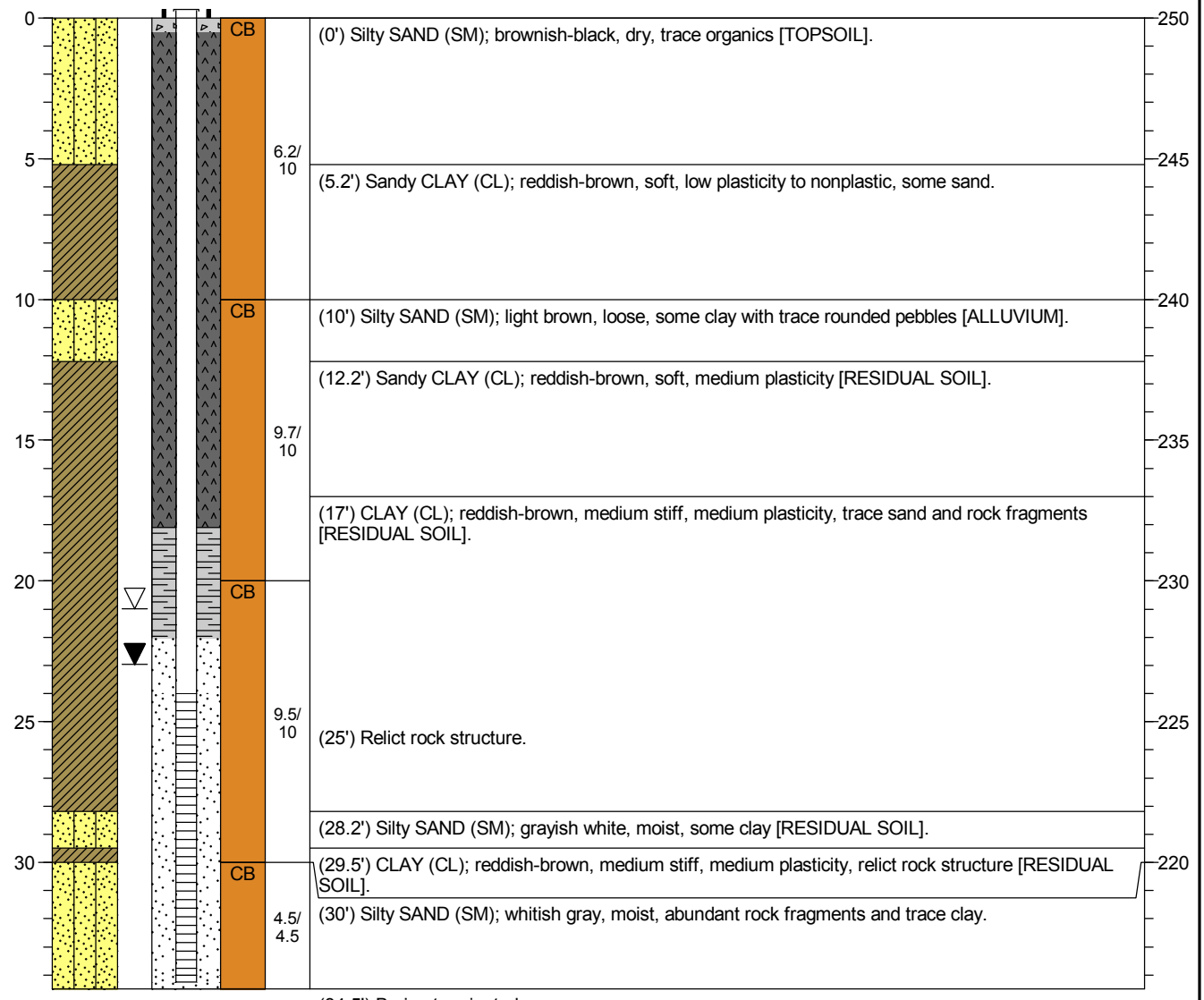
Client: Crisp County Power Commission
Project: GW8836
Address: Warwick, GA

WELL LOG
Well No. MW-D6
Page: 1 of 1

Drilling Start Date:	05/13/2022	Boring Depth (ft):	34.5	Well Depth (ft):	34.25
Drilling End Date:	05/15/2022	Boring Diameter (in):	4x6	Well Diameter (in):	2
Drilling Company:	GSE	Sampling Method(s):	Continuous Core	Screen Slot (in):	0.010
Drilling Method:	Sonic	DTW During Drilling (ft):	21.00	Riser Material:	Sch 40 PVC
Drilling Equipment:	TSI-150	DTW After Drilling (ft):	22.96	Screen Material:	Sch 40 PVC Slotted
Driller:	Robert Morgan	Top of Casing Elev. (ft):	252.63 ft (NAVD 88)	Seal Material(s):	Grout/Bentonite
Logged By:	Dalton Kegley	North, East (Y,X):	670393.04, 2365406.13	Filter Pack:	Fine-Medium Sand



NOTES: Well completed with 4 inch aluminum stickup outer protective casing in 3ft x 3ft concrete pad and four bollards.

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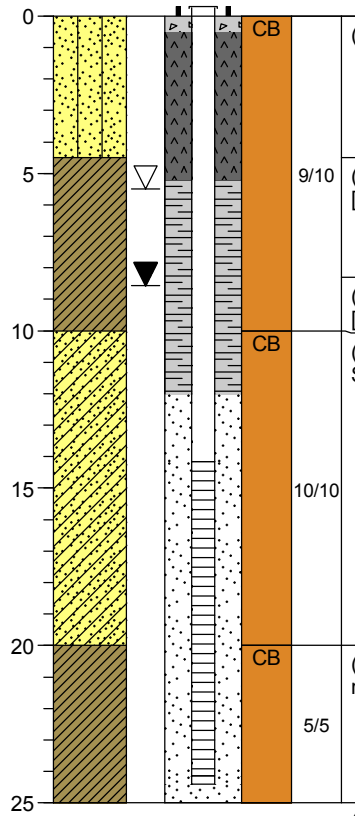
Client: Crisp County Power Commission
Project: GW8836
Address: Warwick, GA

WELL LOG
Well No. MW-D7
Page: 1 of 1

Drilling Start Date:	**05/13/2022**	Boring Depth (ft):	**25**	Well Depth (ft):	**24.4**
Drilling End Date:	**05/15/2022**	Boring Diameter (in):	**4x6**	Well Diameter (in):	**2**
Drilling Company:	**GSE**	Sampling Method(s):	**Continuous Core**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic**	DTW During Drilling (ft):	**5.50**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	DTW After Drilling (ft):	**8.57**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**Robert Morgan**	Top of Casing Elev. (ft):	**230.18 ft (NAVD 88)**	Seal Material(s):	**Grout/Bentonite**
Logged By:	**Dalton Kegley**	North, East (Y,X):	**671054.07, 2365037.89**	Filter Pack:	**Fine-Medium Sand**



DEPTH (ft)	Sample Type	Recovery (ft/ft)	SOIL/ROCK VISUAL DESCRIPTION	ELEVATION (ft)
0	CB	9/10	(0') Silty SAND (SM); brownish-black, trace organics [ALLUVIUM/TOPSOIL].	227
			(4.5') Sandy CLAY (CL); reddish-brown, moist, medium stiff, medium plasticity, some sand [ALLUVIUM].	222
			(8.3') Sandy CLAY and partially weathered rock (CL); reddish-brown to gray, rock fragments [RESIDUAL SOIL].	
10	CB	10/10	(10') Clayey SAND and partially weathered rock fragments (SC); whitish gray, saturated [RESIDUAL SOIL].	217
15				212
20	CB	5/5	(20') Sandy CLAY and partially weathered rock fragments (CL); whitish gray, moist, medium stiff, medium plasticity [RESIDUAL SOIL].	207
25			(25') Boring terminated.	202

NOTES: Well completed with 4 inch aluminum stickup outer protective casing in 3ft x 3ft concrete pad and four bollards.

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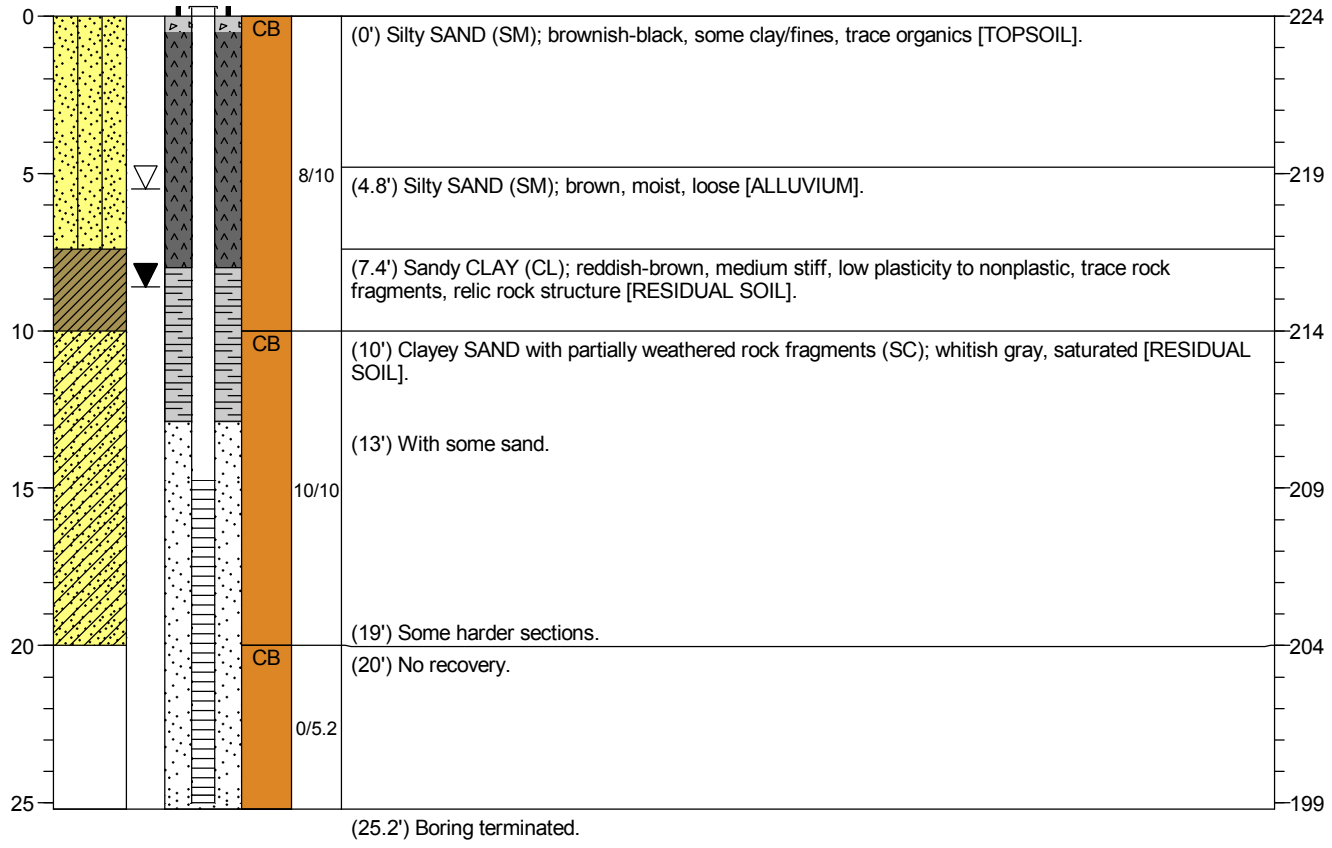
Client: Crisp County Power Commission
Project: GW8836
Address: Warwick, GA

WELL LOG
Well No. MW-D8
Page: 1 of 1

Drilling Start Date:	**05/13/2022**	Boring Depth (ft):	**25.2**	Well Depth (ft):	**25**
Drilling End Date:	**05/15/2022**	Boring Diameter (in):	**4x6**	Well Diameter (in):	**2**
Drilling Company:	**GSE**	Sampling Method(s):	**Continuous Core**	Screen Slot (in):	**0.010**
Drilling Method:	**Sonic**	DTW During Drilling (ft):	**5.50**	Riser Material:	**Sch 40 PVC**
Drilling Equipment:	**TSI-150**	DTW After Drilling (ft):	**8.61**	Screen Material:	**Sch 40 PVC Slotted**
Driller:	**Robert Morgan**	Top of Casing Elev. (ft):	**226.76 ft (NAVD 88)**	Seal Material(s):	**Grout/Bentonite**
Logged By:	**Dalton Kegley**	North, East (Y,X):	**671186.85, 2364861.25**	Filter Pack:	**Fine-Medium Sand**



NOTES: Well completed with 4 inch aluminum stickup outer protective casing in 3ft x 3ft concrete pad and four bollards.

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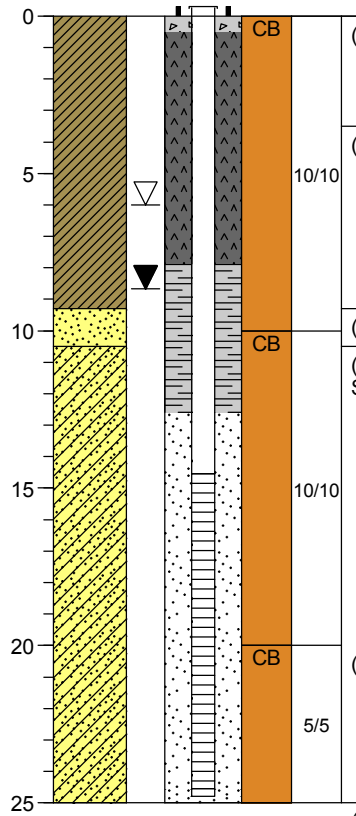
Client: Crisp County Power Commission
Project: GW8836
Address: Warwick, GA

WELL LOG
Well No. MW-D9
Page: 1 of 1

Drilling Start Date:	05/14/2022	Boring Depth (ft):	25	Well Depth (ft):	24.8
Drilling End Date:	05/15/2022	Boring Diameter (in):	4x6	Well Diameter (in):	2
Drilling Company:	GSE	Sampling Method(s):	Continuous Core	Screen Slot (in):	0.010
Drilling Method:	Sonic	DTW During Drilling (ft):	6.00	Riser Material:	Sch 40 PVC
Drilling Equipment:	TSI-150	DTW After Drilling (ft):	8.67	Screen Material:	Sch 40 PVC Slotted
Driller:	Robert Morgan	Top of Casing Elev. (ft):	221.42 ft (NAVD 88)	Seal Material(s):	Grout/Bentonite
Logged By:	Dalton Kegley	North, East (Y,X):	671482.27, 2364959.09	Filter Pack:	Fine-Medium Sand



DEPTH (ft)	Recovery (ft/ft)	SOIL/ROCK VISUAL DESCRIPTION	ELEVATION (ft)
0		(0') Sandy CLAY (CL); reddish-brown, soft, medium plasticity.	219
	10/10	(3.5') CLAY (CL); light brown, medium stiff, medium plasticity, some organics (tree roots).	
5			214
10		(9.3') SAND (SP); reddish-brown, moist, loose, trace silt/clay fines [ALLUVIUM].	209
	10/10	(10.5') Clayey SAND with some partially weathered rock (SC); whitish gray, saturated [RESIDUAL SOIL].	
15			204
20	5/5	(20') Same as above.	199
25		(25') Boring terminated.	194

NOTES: Well completed with 4 inch aluminum stickup outer protective casing in 3ft x 3ft concrete pad and four bollards.

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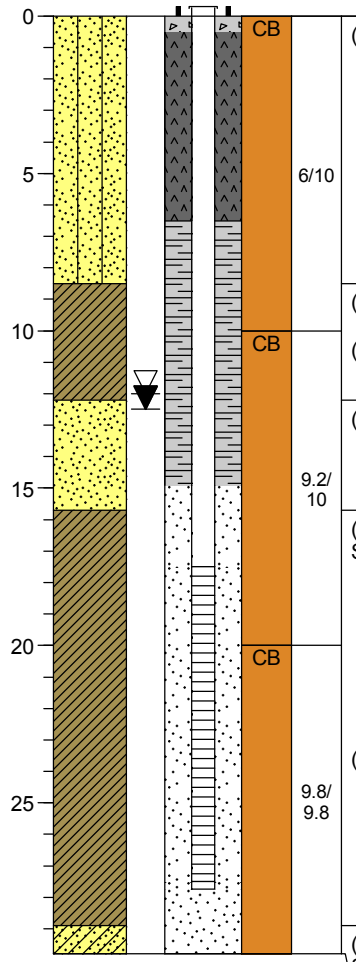
Client: Crisp County Power Commission
Project: GW8836
Address: Warwick, GA

WELL LOG
Well No. MW-U2
Page: 1 of 1

Drilling Start Date:	05/12/2022	Boring Depth (ft):	29.8	Well Depth (ft):	27.75
Drilling End Date:	05/16/2022	Boring Diameter (in):	4x6	Well Diameter (in):	2
Drilling Company:	GSE	Sampling Method(s):	Continuous Core	Screen Slot (in):	0.010
Drilling Method:	Sonic	DTW During Drilling (ft):	12.00	Riser Material:	Sch 40 PVC
Drilling Equipment:	TSI-150	DTW After Drilling (ft):	12.48	Screen Material:	Sch 40 PVC Slotted
Driller:	Robert Morgan	Top of Casing Elev. (ft):	248.79 ft (NAVD 88)	Seal Material(s):	Grout/Bentonite
Logged By:	Dalton Kegley	North, East (Y,X):	669748.63, 2366247.88	Filter Pack:	Fine-Medium Sand



DEPTH (ft)	ELEVATION (ft)	SOIL/ROCK VISUAL DESCRIPTION
0	246	(0') Silty SAND (SM); brownish-black, trace gravel, trace organics [TOPSOIL].
5	241	
8.5		(8.5') Sandy CLAY (CL); reddish-brown, soft, medium plasticity.
10	236	(10') Moist.
12.2		(12.2') SAND (SP); brownish white, moist, loose, trace clay/silt fines [ALLUVIUM].
15	231	
15.7		(15.7') CLAY (CL); reddish-brown, medium stiff to stiff, medium plasticity, trace sand [RESIDUAL SOIL].
20	226	
23		(23') Increased plasticity.
25	221	
28.9		(28.9') Clayey SAND (SC); whitish gray, moist, well-graded, some dense sand clumps [RESIDUAL SOIL].
29.8		(29.8') Boring terminated.

NOTES: Well completed with 4 inch aluminum stickup outer protective casing in 3ft x 3ft concrete pad and four bollards.

WELL DEVELOPMENT DATA FORM

Site Name: CRISP COUNTY	Project Number:
Well Name: MW-01	Date Installed: 2/22/17
	Date Developed: 2/24/17
Depth To Bottom:	
(Initial)	Pump (Type) SUBMERSIBLE
(Final)	(Capacity)
DTW - 13.42 TOC	TOC - PAD 41 7/8"
TDW - 22.95 TOC	
Field Cleaning of Equip:	
Save Purge Water:	Purge Water Containment Method: 5 GAL. BUCKETS
Measuring Point:	GeoSyntec Representative:
Casing I.D.:	Drilling Firm Representative:

Time	Volume Removed (gal)	pH	Temp (°C)	Conductance (µS/cm)	Turbidity (NTU)	Salinity (ppm)	ORP (mV)	Comments
1630	Ø	6.82	21.5	180.0	571			
1637	5	7.02	22.3	184.9	319			
1657	10	7.90	23.2	279	999			
1710	12.5	7.42	23.1	252	91			
1723	15	7.36	22.8	216	148			
1736	17.5	7.22	22.7	217	109			
1750	20	7.21	21.4	199.4	8			
1805	22.5	7.19	21.4	204	13			
1820	25	7.20	21.6	206	8			

PUMP PLACED WITHIN 6" FROM BOTTOM OF WELL SCREEN. WELL PRODUCED A CONSTANT SLOW FLOW. WELL DID NOT DRY.

WELL DEVELOPMENT DATA FORM

Site Name: CRISP COUNTY	Project Number:
Well Name: MW-02	Date Installed: 2/22/17
	Date Developed: 2/24/17
Depth To Bottom:	
(Initial)	Pump (Type) SUBMERSIBLE
(Final)	(Capacity)
DTW - 11.7 TOC	TOC - PAD 41.5"
Field Cleaning of Equip:	
Save Purge Water:	Purge Water Containment Method: 5 GAL BUCKETS
Measuring Point:	GeoSyntec Representative:
Casing I.D.:	Drilling Firm Representative:

Time	Volume Removed (gal)	pH	Temp (°C)	Conductance (µS/cm)	Turbidity (NTU)	Salinity (ppm)	ORP (mV)	Comments
1110	Ø	7.70	22.7	6.45	999			
1120	3	7.34	22.6	6.47	999			
1130	2	7.36	23.5	6.52	999			
1135	3	7.42	23.6	6.54	999			
1140	2	7.51	23.7	6.62	999			
1150	3	7.25	23.7	6.41	999			
1200	2	7.33	23.6	6.52	999			WELL DRY
1230	—	7.37	23.3	6.43	999			PUMP ON
1250	2	7.36	23.8	6.51	999			WELL DRY
	17.0	TOTAL	PURGED					

WATER COLUMN DOWN QUICKLY. PUMP PLACED WITHIN 6" FROM BOTTOM OF SCREEN. WELL WILL NOT RECOVER TO ALLOW CONSTANT FLOW WITH SUBMERSIBLE PUMP. 30

WELL DEVELOPMENT DATA FORM

2/27/17

Site Name: CRISP COUNTY	Project Number:
Well Name: MW-D2	Date Installed:
	Date Developed: 2/27/17
Depth To Bottom:	
(Initial)	Pump (Type) SUBMERSIBLE
(Final)	(Capacity)
DTW 11.84' TOC	
Field Cleaning of Equip:	
Save Purge Water:	Purge Water Containment Method:
Measuring Point:	GeoSyntec Representative:
Casing I.D.:	Drilling Firm Representative:

Time	Volume Removed (gal)	pH	Temp (°C)	Conductance (µS/cm)	Turbidity (NTU)	Salinity (ppm)	ORP (mV)	Comments
1032	0	7.29	18.6	715	999			
1043	2.5	7.32	19.8	688	999			
1102	5.0	7.28	21.3	693	95			
1110	6.0	7.29	21.6	695	94			
1121	7.5	7.19	23.8	688	26			
1141	10.0	7.16	22.7	693	9			
1201	12.5	7.10	24.7	677	11			
1221	15.0	7.13	23.3	673	7			

1036 - SURGED PUMP. PUMP NOW APPROX 4" FROM BOTTOM OF WELL SCREEN. SLOW FLOW BUT CONSTANT.

WELL DEVELOPMENT DATA FORM

Site Name: CRISP COUNTY	Project Number:
Well Name: MW-03	Date Installed: 2/23/17
	Date Developed: 2/24/17
Depth To Bottom:	
(Initial)	Pump (Type) SUBMERSIBLE
(Final)	(Capacity)
DTW - 5.37 - TOC	TOC - PAD 43.75"
TDW - 23.8 - TOC	
Field Cleaning of Equip:	
Save Purge Water:	Purge Water Containment Method: 5 GAL BUCKETS
Measuring Point:	GeoSyntec Representative:
Casing I.D.:	Drilling Firm Representative:

Time	Volume Removed (gal)	pH	Temp (°C)	Conductance (µS/cm)	Turbidity (NTU)	Salinity (ppm)	ORP (mV)	Comments
1310	Ø	7.15	22.8	6.25	999			
1319	5	7.19	24.7	6.20	999			
1330	10	7.25	23.8	6.33	999			
1340	15	7.28	23.9	6.10	999			
1351	20	7.20	23.9	6.13	999			
1402	25	7.21	24.2	6.16	999			
1415	30	7.23	24.1	6.15	961			
1429	35	7.22	24.3	6.13	415			
1442	40	7.21	24.2	6.14	71			
1455	45	7.21	24.1	6.13	78			
1509	50	7.22	24.1	6.13	39			
1521	55	7.22	24.0	6.14	34			
1533	60	7.22	24.1	6.14	44			
1547	65	7.22	24.1	6.13	43			
1603	70	7.21	23.8	6.13	31			

PUMP PLACEMENT WITHIN 6" FROM BOTTOM OF WELL SCREEN. WAS TOLD BY JEREMY 3 READINGS BELOW 50 NTU AFTER 50 GALS PURGED WAS SUFFICIENT. WELL DID NOT RUN DRY.

WELL DEVELOPMENT DATA FORM

Site Name: CRISP COUNTY	Project Number:
Well Name: MW-01	Date Installed: 2/23/17
	Date Developed: 2/27/17
Depth To Bottom:	
(Initial)	Pump (Type) SUBMERSIBLE
(Final)	(Capacity)
DTW - 9.01 TOC	TDW - 37.8 TOC
Field Cleaning of Equip:	
Save Purge Water:	Purge Water Containment Method:
Measuring Point:	GeoSyntec Representative:
Casing I.D.:	Drilling Firm Representative:

Time	Volume Removed (gal)	pH	Temp (°C)	Conductance (µS/cm)	Turbidity (NTU)	Salinity (ppm)	ORP (mV)	Comments
1250	0	7.72	21.0	354	999			
1259	5.0	7.87	22.4	344	999			
1309	10.0	7.88	23.1	340	999			
1314	15.0	7.76	21.9	256	999			
1322	20.0	7.96	22.4	237	999			
1331	25.0	7.83	23.7	245	999			
1341	30.0	7.99	24.0	233	999			
1349	35.0	7.92	24.6	237	999			
1400	40.0	7.98	23.8	235	999			
1409	45.0	7.92	23.1	236	999			
1419	50.0	8.01	21.8	222	999			
1428	55.0	7.95	22.4	216	999			
1438	60.0	7.96	22.9	209	999			
1447	65.0	7.95	22.5	210	999			
1457	70.0	7.83	23.8	210	999			
1505	75.0	7.87	23.3	200	999			
1515	80.0	8.00	22.3	196.2	999			
1524	85.0	7.91	22.4	194.8	999			
1532	90.0	7.98	22.1	190.8	668			
1541	95.0	7.96	21.5	200.8	999			
1551	100.00	8.00	21.2	190.1	999			

WELL DEVELOPMENT DATA FORM

Site Name: CRISP COUNTY	Project Number:
Well Name: MW-41	Date Installed: 2/23/17
	Date Developed: 2/27/17
Depth To Bottom:	
(Initial)	Pump (Type) SUBMERSIBLE
(Final)	(Capacity)
DTW - 9.01 TOC	TDW - 37.8 TOC
Field Cleaning of Equip:	
Save Purge Water:	Purge Water Containment Method:
Measuring Point:	GeoSyntec Representative:
Casing I.D.:	Drilling Firm Representative:

Time	Volume Removed (gal)	pH	Temp (°C)	Conductance (µS/cm)	Turbidity (NTU)	Salinity (ppm)	ORP (mV)	Comments
1601	105	7.93	22.3	192.4	999			
1610	110	7.95	21.9	193.5	999			
1619	115	7.96	21.8	194.6	788			
1628	120	7.96	21.7	195.4	999			
1637	125	7.95	21.2	195.3	999			
1646	130	7.96	21.3	195.6	999			
1655	135	7.96	21.3	196.4	658			
1704	140	7.95	21.7	195.8	557			
1714	145	7.96	21.2	195.4	512			
1724	150	7.95	21.2	196.7	319			
1733	155	7.95	21.1	196.8	862			CHANGED BATTERIES
1743	160	7.94	21.9	196.2	999			
1753	165	7.95	20.9	195.3	915			715 TURB
1803	170	7.94	20.8	195.1	408			
1813	175	7.95	20.8	196.2	376			
1822	180	7.95	20.4	197.1	999			
1831	185	7.93	20.4	196.7	910			
1840	190	7.95	20.1	195.8	999			

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WELL DEVELOPMENT LOG SHEET

Client: CCPC
Site:
Well ID: MW-U2
Total Depth (ft) (after purge):
Depth to Water (ft) 141.92
Well Diameter (in):
Well Volume (gal) = 0.041 d^2 h
Well Volume (L) = gal * 3.785

d = well diameter (inches); h = length of water column (feet)

Well Type: Flush / Stick Up
Well Lock: Yes / No
Well Cap Condition: Good / Replace
Well Tag Present: Yes / No

Project No
Location
Pump Type/Model:
Tubing Material
Pump Intake Depth (ft):
Start/Stop Purge Time: 1625 / 1635
Purge Rate (mL/min): 1000
Total Purge Volume (L):

Development Date: 1/18/23
Field Personnel Name: A. Neuy

Time	pH (SU)	Spec. Cond. (µS/cm)	ORP (mV)	DO (mg/L)	Temp. (°C)	Turbidity (NTUs)	DTW (ft btoc)	Purge Rate (mL/min)	Purged Volume (L)	Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.)
[redacted]						[redacted]		1000		
purged well dry										
Stabilizing Criteria	+/- 0.1 SU	+/- 5%		0.2 mg/L or 10% for DO > 0.5 mg/L (whichever is greater)		< 5 NTUs				

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WELL DEVELOPMENT LOG SHEET

Client: CCPC
Site: MW-42
Well ID:
Total Depth (ft) (after purge):
Depth to Water (ft): 12.34
Well Diameter (in):
Well Volume (gal) = 0.041d$_2$h
Well Volume (L) = gal * 3.785

d = well diameter (inches); h = length of water column (feet)

Well Type	Flush	Stick Up
Well Lock	Yes	No
Well Cap Condition	Good	Replace
Well Tag Present	Yes	No

Project No:
Location:
Pump Type/Model:
Tubing Material:
Pump Intake Depth (ft):
Start/Stop Purge Time: 7:55 10820
Purge Rate (mL/min): 1000
Total Purge Volume (L):

Development Date: 1/19/23
Field Personnel Name: A. Neely

pv

Time	pH (SU)	Spec. Cond. (µS/cm)	ORP (mV)	DO (mg/L)	Temp. (°C)	Turbidity (NTUs)	DTW (ft btoc)	Purge Rate (mL/min)	Purged Volume (L)	Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.)
815	6.55	0.395	247	8.95	19.53	orange	21.11			Pumped well dry
Stabilizing Criteria	+/- 0.1 SU	+/- 5%		0.2 mg/L or 10% for DO > 0.5 mg/L (whichever is greater)		< 5 NTUs				

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WELL DEVELOPMENT LOG SHEET

Client: CCPC
Site: ~~[illegible]~~
Well ID: MW-02
Total Depth (ft) (after purge):
Depth to Water (ft): 12.34
Well Diameter (in)
Well Volume (gal) = 0.041 d^2 h
Well Volume (L) = gal * 3.785

d = well diameter (inches); h = length of water column (feet)

Project No
Location
Pump Type/Model:
Tubing Material
Pump Intake Depth (ft):
Start/Stop Purge Time: 1130 / 1150
Purge Rate (mL/min): 1000
Total Purge Volume (L):

Development Date: 1/19/23
Field Personnel Name: A. Nelly

Well Type	Flush	Stick Up
Well Lock	Yes	No
Well Cap Condition:	Good	Replace
Well Tag Present:	Yes	No

Time	pH (SU)	Spec. Cond. (µS/cm)	ORP (mV)	DO (mg/L)	Temp. (°C)	Turbidity (NTUs)	DTW (ft btoc)	Purge Rate (mL/min)	Purged Volume (L)	Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.)
1135	7.65	0.312	133	9.12	20.52	1515	26.76	1000		
1140	7.73	0.340	93	8.48	20.60	4017	28.54			
1145	7.69	0.384	89	8.32	20.91	overrange	28.94			
purged	well dry									
Stabilizing Criteria	+/- 0.1 SU	+/- 5%		0.2 mg/L or 10% for DO > 0.5 mg/L (whichever is greater)		< 5 NTUs				

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WELL DEVELOPMENT LOG SHEET

Client: CCPC
Site:
Well ID: MW-U2
Total Depth (ft) (after purge):
Depth to Water (ft): 28.83
Well Diameter (in):
Well Volume (gal) = 0.041 d^2 h
Well Volume (L) = gal * 3.785

d = well diameter (inches); h = length of water column (feet)

Project No
Location
Pump Type/Model:
Tubing Material
Pump Intake Depth (ft):
Start/Stop Purge Time: 1310 / 1325
Purge Rate (mL/min): 1000
Total Purge Volume (L)

Development Date: 1/19/23
Field Personnel Name: A Neely

Well Type	Flush	Stick Up
Well Lock	Yes	No
Well Cap Condition	Good	Replace
Well Tag Present:	Yes	No

Time	pH (SU)	Spec. Cond. (µS/cm)	ORP (mV)	DO (mg/L)	Temp. (°C)	Turbidity (NTUs)	DTW (ft btoc)	Purge Rate (mL/min)	Purged Volume (L)	Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.)
1315	8.03	0.278	39	9.41	22.73	1571	28.83	1000		
1320	6.98	0.323	129	7.88	22.89	1546	28.89			
pumped well dry										
Stabilizing Criteria	+/- 0.1 SU	+/- 5%		0.2 mg/L or 10% for DO > 0.5 mg/L (whichever is greater)		< 5 NTUs				

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WELL DEVELOPMENT LOG SHEET

Client: CCPC
Site: Plant Crisp
Well ID: MW-12
Total Depth (ft) (after purge): 30.06
Depth to Water (ft): 12.01
Well Diameter (in): 2
Well Volume (gal) = 0.041d^{2}h: 3.11
Well Volume (L) = gal * 3.785: 11.76
d = well diameter (inches); h = length of water column (feet)

Project No.: GW88316
Location: Warwick, GA
Pump Type/Model: Hurricane
Tubing Material: Polyethylene
Pump Intake Depth (ft): 30.0
Start/Stop Purge Time: 4:34 / 11:09
Purge Rate (mL/min): 500
Total Purge Volume (L): 149.6

Development Date: 5/15/22
Field Personnel Name: Dalton Kegley

Well Type: Flush / (Stick Up)
Well Lock: (Yes) / No
Well Cap Condition: (Good) / Replace
Well Tag Present: Yes / (No)

Time	pH (SU)	Spec. Cond. (mS/cm)	ORP (mV)	DO (mg/L)	Temp. (°C)	Turbidity (NTUs)	DTW (ft btoc)	Purge Rate (mL/min)	Purged Volume (L)	Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.)
4:34	7.36	0.231	39	7.06	25.62	2122 ATU	12.01	3900/min	0	
4:39	7.19	0.247	34	7.09	25.61	Over range	23.46	3900/min	146.9	
4:44	7.62	0.261	31	7.04	25.52	3474 ATU	23.57	900	23.4	
4:49	7.56	0.253	34	7.16	25.62	3615 ATU	23.46	400	27.4	
4:54	7.74	0.271	35	7.19	25.74	3372 ATU	24.64	500	37.4	
9:09	7.46	0.265	34	7.20	25.73	1325 ATU	27.21	500	47.4	
9:19	6.00	0.260	37	7.12	25.71	Over range	27.72	500	47.4	
9:29	6.07	0.257	31	7.13	25.68	Over range	26.29	500	57.4	
9:39	6.10	0.253	25	7.17	25.18	Over range	24.13	500	57.4	
9:49	06.05	0.254	59	7.24	26.01	23.7 J	24.30	500	62.4	
9:59	6.17	0.258	53	7.78	27.40	23.3	24.31	450	67.3	
10:09	6.44	0.262	47	7.74	26.58	20.6	24.33	450	71.4	
										Dry Recharge
10:39	6.33	0.256	53	7.77	26.86	45.4	27.11	450	76.3	
10:49	6.28	0.257	74	7.47	26.47	17.3	24.31	450	81.6	
10:59	6.30	0.252	58	7.59	26.79	11.71	24.33	450	86.3	
11:09	6.39	0.253	46	7.64	26.98	10.73	24.50	450	89.6	
Stabilizing Criteria	**+/- 0.1 SU**	**+/- 5%**		0.2 mg/L or 10% for DO > 0.5 mg/L (whichever is greater)		**< 5 NTUs**				

DK

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WELL DEVELOPMENT LOG SHEET

Client: CCPC
Site: Plant Crisp
Well ID: MW-D4
Total Depth (ft) (after purge): 29.91
Depth to Water (ft): 11.46
Well Diameter (in): 2
Well Volume (gal) = 0.041d$_2$h: ~~3.03~~
Well Volume (L) = gal * 3.785: ~~11.45~~
d = well diameter (inches); h = length of water column (feet)

Project No.: GW1116326
Location: Warwick, GA
Pump Type/Model: Hurricane
Tubing Material: Polyethylene
Pump Intake Depth (ft): 29.5'
Start/Stop Purge Time: 5/13 11:45 / 4:30 - 5/17
Purge Rate (mL/min): ~~500~~
Total Purge Volume (L): 111.5

Development Date: 5/13/22
Field Personnel Name: Dalton Kegley

Well Type: Flush (Stick Up)
Well Lock: (Yes) No
Well Cap Condition: (Good) Replace
Well Tag Present: Yes (No)

Time	pH (SU)	Spec. Cond. (mS/cm)	ORP (mV)	DO (mg/L)	Temp. (°C)	Turbidity (NTUs)	DTW (ft btoc)	Purge Rate (mL/min)	Purged Volume (L)	Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.)
11:45	4.43	0.256	-29	6.01	26.37	Overange	11.46	~~6300~~	0	
11:55	4.16	0.240	-118	7.73	25.83	Overange	26.90	3500	28.346	
12:05	4.07	0.295	-142	4.17	24.70	Overange	29.7	1000	Sle	
12:25	4.25	0.265	-35	9.06	23.96	Overange	26.13	500	41	Dry Recharging
5/15 13:00	4.31	0.243	-76	7.74	24.57	Overange	25.35	500	46	Dry Recharging
16:20	4.20	0.246	-21	6.96	25.32	Overange	~~11.57~~	6300	46	Dry Recharging
5/16 16:30	4.23	0.251	-41	6.64	25.71	Overange	23.90	3500	74	
16:40	4.31	0.262	-35	7.09	25.44	309	29.6	1000	42	
5/17 7:50	4.33	0.223	47	5.18	22.48	2110 NTU	11.57	6300	42	Dry Recharge
4:00	4.43	0.234	23	4.02	22.55	953 NTU	23.84	3500	100	
4:05	4.45	0.231	14	7.84	22.77	219 NTU	29.10	~~500~~	~~102.5~~	
4:16	4.49	0.226	19	7.29	22.96	31.8	28.42	500	105	
4:15	4.51	0.223	17	7.71	23.10	22.3	29.05	400	~~107~~	
4:25	4.52	0.220	21	7.44	23.13	12.25	29.11	300	110	
8:30	4.51	0.221	23	7.47	23.17	4.39	29.09	300	111.5	
Stabilizing Criteria	**+/- 0.1 SU**	**+/- 5%**	DK	0.2 mg/L or 10% for DO > 0.5 mg/L (whichever is greater)		**<5 NTUs**				

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WELL DEVELOPMENT LOG SHEET

Client: COPC
Site: Plant Crisp
Well ID: MW-D5
Total Depth (ft) (after purge): 36.11
Depth to Water (ft): 9.57
Well Diameter (in): 2
Well Volume (gal) = 0.041d$_2$h: 4.35
Well Volume (L) = gal * 3.785: 16.47
d = well diameter (inches); h = length of water column (feet)

Project No.: GW98836
Location: Warwick, GA
Pump Type/Model: Hurricane
Tubing Material: Polyethylene
Pump Intake Depth (ft): 35'
Start/Stop Purge Time: 5/25 12:50 / 14:35 - 5/26
Purge Rate (mL/min): 500
Total Purge Volume (L): 932

Development Date: 5/18/22
Field Personnel Name: Dalton Kegley

Well Type: Flush (Stick Up)
Well Lock: (Yes) No
Well Cap Condition: (Good) Replace
Well Tag Present: Yes (No)

Time	pH (SU)	Spec. Cond. (mS/cm)	ORP (mV)	DO (mg/L)	Temp. (°C)	Turbidity (NTUs)	DTW (ft btoc)	Purge Rate (mL/min)	Purged Volume (L)	Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.)
12:50	6.51	0.291	191	7.76	27.29	Overange	9.57	6300	0	
13:00	6.53	0.284	201	5.69	24.95	4049 AU	33.12	3400	20	
13:10	6.48	0.293	216	4.63	23.96	Overange	33.12	3400	38	
13:40	6.45	0.265	229	7.92	24.86	2423 AU	33.14	3400	172	
14:10	6.51	0.280	739	8.55	25.45	1422 AU	33.13	3400	2466	
14:40	6.55	0.279	210	9.32	25.60	1249 AU	33.14	3400	400	
15:10	6.48	0.267	214	8.02	25.74	615 AU	33.12	3400	9514	
15:40	6.35	0.271	204	4.67	27.12	175	33.14	3400	6726	
16:10	6.45	0.280	206	3.66	25.49	93.2	33.15	3400	7942	
16:40	6.32	0.260	213	9.23	27.42	221.0	33.15	3400	8756	
12:30	7.96	0.297	136	4.97	23.49	overange	8.27	6300	8816	
12:35	7.70	0.245	197	9.70	23.46	2349 AU	22.19	3400	4487	
12:40	7.60	0.240	204	4.36	23.79	243	22.14	500	4469.5	
12:45	7.61	0.245	199	4.58	23.82	205	22.17	500	4492	
12:50	7.64	0.244	213	4.91	23.49	150	22.19	500	4494.5	
12:55	7.74	0.248	223	4.27	23.36	46.4	22.14	500	4497	
13:00	7.76	0.249	224	7.50	23.04	66.6	22.17	500	4499.5	
13:03	7.80	0.248	213	4.54	23.63	59.0	22.19	500	9002	
Stabilizing Criteria	**+/- 0.1 SU**	**+/- 5%**		0.2 mg/L or 10% (or DO > 0.5 mg/L (whichever is greater)		**< 5 NTUs**				

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WELL DEVELOPMENT LOG SHEET

Client: GCPC
Site: Plant Crisp
Well ID: MW-DS
Total Depth (ft) (after purge): 36.11
Depth to Water (ft): 9.57
Well Diameter (in): 2
Well Volume (gal) = 0.041d_2h: 4.35
Well Volume (L) = gal * 3.785: 16.47
d = well diameter (inches); h = length of water column (feet)

Project No.: GW84636
Location: Warwick, RI
Pump Type/Model: Monsoon
Tubing Material: Polyethylene
Pump Intake Depth (ft): 31'
Start/Stop Purge Time: 5/26 12:50 / 14:35 - 5/26
Purge Rate (mL/min): 500 /
Total Purge Volume (L): 932

Development Date: 5/26/22
Field Personnel Name: Dalton Kegley

Well Type: Flush (Stick Up)
Well Lock: (Yes) No
Well Cap Condition: (Good) Replace
Well Tag Present: Yes (No)

Time	pH (SU)	Spec. Cond. (mS/cm)	ORP (mV)	DO (mg/L)	Temp. (°C)	Turbidity (NTUs)	DTW (ft btoc)	Purge Rate (mL/min)	Purged Volume (L)	Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.)
13:10	7.65	0.246	232	4.16	23.89	47.0	22.19	500	904.5	
13:15	7.70	0.258	236	5.16	23.38	34.6	22.14	500	907	
13:20	7.68	0.247	242	7.79	23.61	26.3	22.16	500	909.5	
13:25	7.72	0.249	236	7.91	23.25	27.7	22.13	500	917	
13:30	7.67	0.246	239	7.84	23.51	24.8	21.67	500	914.5	
13:35	7.65	0.249	248	7.67	23.72	46.3	21.62	500	917	Moved pump to 31'
13:45	7.71	0.248	245	7.85	23.79	29.4	20.42	500	919.5	
13:55	7.67	0.290	254	7.80	23.87	22.7	20.42	500	922	
14:05	7.666	0.292	256	7.73	23.60	13.5	20.71	500	924.5	
14:15	7.68	0.291	255	7.74	23.72	12.6	20.12	500	927	
14:25	7.69	0.292	256	7.75	23.81	11.3	20.12	500	929.5	
14:35	7.66	0.299	254	7.77	23.86	9.47	20.11	500	932	
						DK				
Stabilizing Criteria	**+/- 0.1 SU**	**+/- 5%**		0.2 mg/L or 10% for DO > 0.5 mg/L (whichever is greater)		**< 5 NTUs**				

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WELL DEVELOPMENT LOG SHEET

Client: CCPC
Site: Plant Crisp
Well ID: MW-D6'
Total Depth (ft) (after purge): 37.46'
Depth to Water (ft): 22.24'
Well Diameter (in): 2
Well Volume (gal) = 0.041d_2h: 2.50
Well Volume (L) = gal * 3.785: 9.45
d = well diameter (inches); h = length of water column (feet)

Project No.: GW84636
Location: Warwick, RI
Pump Type/Model: Hurricane
Tubing Material: Polyethylene
Pump Intake Depth (ft): 36'
Start/Stop Purge Time: 5/15 ~13:55 / 10:25 ✓ 5/17
Purge Rate (mL/min): 6300
Total Purge Volume (L): 4134

Development Date: 5/15/22
Field Personnel Name: Dalton Kegley

Well Type: Flush / (Stick Up)
Well Lock: (Yes) / No
Well Cap Condition: (Good) / Replace
Well Tag Present: Yes / (No)

Time	pH (SU)	Spec. Cond. (mS/cm)	ORP (mV)	DO (mg/L)	Temp. (°C)	Turbidity (NTUs)	DTW (ft btoc)	Purge Rate (mL/min)	Purged Volume (L)	Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.)
13:55	8.56	0.248	174	7.81	27.11	241	22.24	6300	0	
14:05	8.34	0.240	167	7.89	26.19	Overrange	33.50	6300	75	
14:15	8.55	0.234	170	6.65	25.50	Overrange	33.91	6300	150	
14:25	8.51	0.233	162	6.24	25.39	Overrange	32.70	6300	225	
14:35	8.57	0.212	161	8.52	26.04	4093 AM	32.30	6300	300	
14:45	8.47	0.211	162	4.70	26.54	2961 AM	33.92	6300	375	
14:55	8.40	0.207	167	4.09	25.83	1152 AM	33.96	6300	450	
15:05	8.31	0.209	162	7.82	26.59	1355 AM	33.91	6300	525	
15:15	8.27	0.202	173	4.68	27.45	773 AM	33.87	6300	600	
15:25	8.13	0.205	194	7.84	27.21	329	34.10	6300	675	
15:35	8.09	0.202	198	8.04	29.95	303	33.92	6300	750	
15:45	8.09	0.202	148	4.85	27.73	233	33.93	6300	825	
15:55	8.05	0.201	142	4.45	28.42	228	33.91	6300	900	
16:05	8.01	0.202	190	7.15	28.55	162	33.93	6300	975	
16:15	8.05	0.196	194	4.84	27.01	163	33.92	6300	1050	
16:25	8.02	0.205	201	3.74	27.32	150	33.89	6300	1125	
16:35	8.14	0.219	199	7.60	27.49	2446 AM	31.40	6300	1200	Surged
~~16:45~~										5/15/22
										5/16/22
Stabilizing Criteria	**+/- 0.1 SU**	**+/- 5%**		0.2 mg/L or 10% for DO > 0.5 mg/L (whichever is greater)		**< 5 NTUs**				

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WELL DEVELOPMENT LOG SHEET

Client: CCPC
Site: Plant Crisp
Well ID: MW-D6
Total Depth (ft) (after purge): 37.46
Depth to Water (ft): 22.32
Well Diameter (in): 2
Well Volume (gal) = 0.041d^2h: 2.56
Well Volume (L) = gal * 3.785: 9.45
d = well diameter (inches); h = length of water column (feet)

Project No.: GW88636
Location: Warwick GA
Pump Type/Model: Hurricane
Tubing Material: Polyethylene
Pump Intake Depth (ft): 36'
Start/Stop Purge Time: 5/16 - 13:55 / 10:25 - 5/17
Purge Rate (mL/min): 6300
Total Purge Volume (L): 4138

Development Date: 5/16/22
Field Personnel Name: Dalton Kegley

Well Type: Flush / (Stick Up)
Well Lock: (Yes) / No
Well Cap Condition: (Good) / Replace
Well Tag Present: Yes / (No)

Time	pH (SU)	Spec. Cond. (mS/cm)	ORP (mV)	DO (mg/L)	Temp. (°C)	Turbidity (NTUs)	DTW (ft btoc)	Purge Rate (mL/min)	Purged Volume (L)	Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.)
5/16										
16:20	7.78	0.245	162	8.87	24.98	1099 AU	22.32	6300	1200	
16:30	7.73	0.202	202	9.25	24.55	1419 AU	33.42	6300	1275	
16:40	7.86	0.195	207	9.29	24.19	345 NTU	33.45	6300	1350	
16:50	7.80	0.202	223	8.02	24.68	935	32.50	6300	1425	
9:00	7.87	0.207	225	4.81	24.72	363	32.71	6300	1500	
9:10	7.46	0.204	223	7.99	25.97	352	32.81	6300	1575	
9:20	7.90	0.206	225	7.89	26.36	348	32.77	6300	1650	
9:50	7.82	0.196	200	8.01	26.11	230	32.84	6300	1875	
10:20	7.86	0.192	236	9.42	26.71	163	32.61	6300	2100	
10:50	7.91	0.193	231	10.08	25.86	146	32.72	6300	2325	
11:20	8.00	0.191	239	10.02	26.50	98.6	32.69	6300	2550	
11:50	8.03	0.195	214	8.86	26.07	62.2	32.74	6300	2775	
12:20	7.64	0.196	232	4.26	26.12	40.2	32.52	6300	2900	
12:50	7.60	0.197	243	8.62	26.49	36.7	32.63	6300	3125	
13:50	7.63	0.199	245	7.43	26.77	23.8	32.81	6300	3575	5/16/22
14:50	7.60	0.206	221	7.01	26.32	22.1	32.72	6300	4025	
5/17										
10:10	4.27	0.245	227	7.70	24.50	59.8	22.34	6300	4025	5/17/22
10:15	4.16	0.221	222	4.60	25.43	15.9	33.46	6300	4063	
10:20	4.15	0.203	214	7.90	24.93	12.41	33.51	6300	4100	
10:25	4.17	0.205	211	7.77	24.49	9.92	33.47	6300	4138	
Stabilizing Criteria	+/- 0.1 SU	+/- 5%		0.2 mg/L or 10% for DO > 0.5 mg/L (whichever is greater)		< 5 NTUs				

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WELL DEVELOPMENT LOG SHEET

Client: CCPC
Site: Plant Crisp
Well ID: MW-D7
Total Depth (ft) (after purge): ~~27.06~~ 27.06
Depth to Water (ft): 8.33
Well Diameter (in): 2
Well Volume (gal) = 0.041d^2h: 3.07
Well Volume (L) = gal * 3.785: 11.63
d = well diameter (inches); h = length of water column (feet)

Project No.: GWK4136
Location: Warwick, GA
Pump Type/Model: Hurricane
Tubing Material: Polyethelene
Pump Intake Depth (ft): 26.5
Start/Stop Purge Time: 12:45 / 13:45
Purge Rate (mL/min): 400
Total Purge Volume (L): 52

Development Date: 5/17/22
Field Personnel Name: Dalton Kegley

Well Type: Flush (Stick Up)
Well Lock: (Yes) No
Well Cap Condition: (Good) Replace
Well Tag Present: Yes (No)

Time	pH (SU)	Spec. Cond. (µS/cm)	ORP (mV)	DO (mg/L)	Temp. (°C)	Turbidity (NTUs)	DTW (ft btoc)	Purge Rate (mL/min)	Purged Volume (L)	Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.)
~~12:45~~ 12:45	~~6.42~~ 6.42	0.292	-122	7.65	29.70	Overrange	8.33	~~6300~~	0	
12:55	4.35	0.327	48	5.44	28.44	Overrange	25.82	500	26	
13:05	4.31	0.325	57	7.45	26.91	57.7	26.04	400	36	2
13:15	4.29	0.321	53	7.43	26.43	14.4	26.14	400	40	
13:25	4.23	0.323	51	5.42	~~25.29~~	12.2	~~26~~.12	400	44	
13:35	~~4.21~~ 4.21	0.327	55	7.74	25.27	10.44	~~26~~.18	400	46	
13:45	~~4.23~~ 4.23	0.333	49	7.82	24.90	9.04	~~26~~.32	400	52	
Stabilizing Criteria	**+/- 0.1 SU**	**+/- 5%**		0.2 mg/L or 10% for DO > 0.5 mg/L (whichever is greater)		**< 5 NTUs**				

DK

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WELL DEVELOPMENT LOG SHEET

Client: GRPC
Site: Plant Crisp
Well ID: MW-D8
Total Depth (ft) (after purge): 27.74
Depth to Water (ft): 4.43
Well Diameter (in): 2
Well Volume (gal) = 0.041d^2h: 3.17
Well Volume (L) = gal * 3.785: 11.99
d = well diameter (inches); h = length of water column (feet)

Project No.: GW46636
Location: Warwick, GA
Pump Type/Model: Hurricane
Tubing Material: Polyethylene
Pump Intake Depth (ft): 27.5
Start/Stop Purge Time: 1500 / 1620
Purge Rate (mL/min): 500
Total Purge Volume (L): 48

Development Date: 5/17/22
Field Personnel Name: Dalton Kegley

Well Type: Flush / (Stick Up)
Well Lock: (Yes) / No
Well Cap Condition: (Good) / Replace
Well Tag Present: Yes / (No)

Time	pH (SU)	Spec. Cond. (mS/cm)	ORP (mV)	DO (mg/L)	Temp. (°C)	Turbidity (NTUs)	DTW (ft btoc)	Purge Rate (mL/min)	Purged Volume (L)	Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.)
1500	6.60	0.256	-4	4.90	27.46	Overrange	5.43	1300	0	
1510	6.63	0.256	160	7.46	26.67	2625 AU	26.81	500	20	
1520	6.56	0.249	156	7.58	25.99	49.0	26.91	500	34	
1530	6.55	0.312	225	7.04	24.83	1442 AU	26.72	500	28	surged
1540	6.54	0.326	204	6.33	25.21	32.4	26.84	500	32	
1550	6.43	0.332	135	7.67	25.00	12.7	26.95	500	36	
1600	8.42	0.338	163	7.81	25.02	5.10	27.01	500	40	
1610	8.44	0.341	154	7.39	24.37	3.27	27.09	500	44	
1620	8.43	0.344	136	7.70	24.27	3.79	27.016	500	48	
Stabilizing Criteria	+/- 0.1 SU	+/- 5%		0.2 mg/L or 10% for DO > 0.5 mg/L (whichever is greater)		< 5 NTUs				

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WELL DEVELOPMENT LOG SHEET

Client: GSPC
Site: Plant Crisp
Well ID: MW-D9
Total Depth (ft) (after purge): 27.31
Depth to Water (ft): 16.61
Well Diameter (in): 2
Well Volume (gal) = 0.041d^{2}h: 3.07
Well Volume (L) = gal * 3.785: 11.61
d = well diameter (inches); h = length of water column (feet)

Project No.: GW46336
Location: Warwick RI
Pump Type/Model: Hurricane
Tubing Material: Polyethylene
Pump Intake Depth (ft): 27'
Start/Stop Purge Time: 9:45 / 12:25
Purge Rate (mL/min): 200/400
Total Purge Volume (L): 54

Development Date: 5/14/22
Field Personnel Name: Dayton Kegley

Well Type: Flush / (Stick Up)
Well Lock: (Yes) / No
Well Cap Condition: (Good) / Replace
Well Tag Present: Yes / (No)

Time	pH (SU)	Spec. Cond. (mS/cm)	ORP (mV)	DO (mg/L)	Temp. (°C)	Turbidity (NTUs)	DTW (ft btoc)	Purge Rate (mL/min)	Purged Volume (L)	Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.)
9:45	6.53	0.257	76	9.51	22.15	545 AU	16.61	200	0	
9:55	6.49	0.256	76	6.05	22.41	Overange	26.91	500	27	
										Dry Recharge
10:20	6.52	0.250	76	6.82	22.81	Overange	22.51	1000	27	
10:30	6.57	0.246	129	7.94	23.36	3014 AU	26.97	400	37	
10:40	6.60	0.250	127	7.34	24.72	84.7	26.92	400	40	
10:50	6.63	0.253	126	7.21	25.99	42.2	26.94	400	44	
11:00	6.61	0.257	129	7.42	25.42	47.3	26.95	400	48	
										Dry Recharge
11:45	6.61	0.243	90	7.82	25.01	Overange	24.01	400	48	
11:55	6.64	0.250	115	6.77	27.02	101.9	26.91	400	52	
12:05	6.66	0.254	131	6.95	29.49	69.7	26.98	200	54	
12:15	6.61	0.255	126	7.91	29.81	10.91	26.99	200	56	
12:25	6.65	0.253	127	7.29	29.92	9.47	26.93	200	58	
				DK						
Stabilizing Criteria	**+/- 0.1 SU**	**+/- 5%**		0.2 mg/L or 10% for DO > 0.5 mg/L (whichever is greater)		**< 5 NTUs**				