

**APPENDIX F –
BACKGROUND SOIL
INVESTIGATION**

APPENDIX F.1
BACKGROUND SOIL INVESTIGATION SAMPLING AND
ANALYSIS REPORT



**John Sevier Fossil Plant
Background Soil Investigation Sampling
and Analysis Report**

TDEC Commissioner's Order
Environmental Investigation Plan
John Sevier Fossil Plant
Rogersville, Tennessee

February 1, 2021

Prepared for:

Tennessee Valley Authority
Chattanooga, Tennessee



Prepared by:

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**JOHN SEVIER FOSSIL PLANT BACKGROUND SOIL INVESTIGATION SAMPLING AND ANALYSIS
REPORT**

Revision Record

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Sign-off Sheet

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Abbreviations

ASTM	American Society for Testing and Materials
BGS	Background Soil
CCR	Coal Combustion Residuals
CCR Parameters	Constituents listed in Appendix III and IV of 40 CFR 257 and five inorganic constituents included in Appendix I of Tennessee Rule 0400-11-01-04
CEC	Civil & Environmental Engineering Consultants, Inc.
CFR	Code of Federal Regulations
COC	Chain-of-Custody
DPT	Direct Push Technology
EAR	Environmental Assessment Report
EIP	Environmental Investigation Plan
ENV	Environmental
EnvStds	Environmental Standards, Inc.
FSP	Field Sampling Personnel
ft bgs	feet below ground surface
GPS	Global Positioning System
HSA	Hollow Stem Auger
ID	Identification
IDW	Investigation derived waste
JSF Plant	John Sevier Fossil Plant
PG	Professional Geologist
PLM	Polarized Light Microscopy
QAPP	Quality Assurance Project Plan
QC	Quality Control
RJ Lee	RJ Lee Group, Inc.
SAP	Sampling and Analysis Plan
SAR	Sampling and Analysis Report
SOP	Standard Operating Procedure
Stantec	Stantec Consulting Services Inc.
TDEC	Tennessee Department of Environment and Conservation
TDEC Order	Commissioner's Order No. OGC15-0177
TestAmerica	TestAmerica Laboratories, Inc.



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TI Technical Instruction
TVA Tennessee Valley Authority



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Introduction
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1.0 INTRODUCTION

Stantec Consulting Services Inc. (Stantec) has prepared this sampling and analysis report (SAR) on behalf of the Tennessee Valley Authority (TVA) to document activities related to a Background Soil (BGS) investigation at TVA's John Sevier Fossil (JSF) Plant located in Rogersville, Tennessee as shown on Exhibit A.1 (Appendix A).

The purpose of the BGS investigation was to collect soil samples to evaluate the background soil conditions at the JSF Plant in support of fulfilling the requirements for the Tennessee Department of Environment and Conservation (TDEC) issued Commissioner's Order No. OGC15-0177 (TDEC Order) to TVA (TDEC 2015). The TDEC Order sets forth a "process for the investigation, assessment, and remediation of unacceptable risks" at TVA's coal ash disposal sites in Tennessee.

The purpose of this SAR is to document the work completed during the BGS investigation and to present the information and data collected during the execution of the Background Soil Sampling and Analysis Plan (SAP) (Stantec 2018a). This SAR is not intended to provide conclusions or evaluations of results. The scope of the BGS investigation represented herein was conducted pursuant to the SAP and is part of a larger environmental investigation at the JSF Plant. The evaluation of the results will consider other aspects of the environmental investigation, as well as data collected under other State and/or coal combustion residual (CCR) programs and will be presented in the Environmental Assessment Report (EAR).

The BGS investigation activities were performed in general accordance with the following documents developed by TVA to support fulfilling the requirements of the TDEC Order at the JSF Plant:

- *Background Soil SAP* (Stantec 2018a)
- *Environmental Investigation Plan* (EIP) (Stantec 2018b)
- *Hydrogeological Investigation SAP* (Stantec 2018c)
- *Quality Assurance Project Plan* (QAPP) (Environmental Standards, Inc. 2018).

The BGS and Hydrogeological investigations were implemented in accordance with TVA- and TDEC-approved Programmatic- and Project-specific changes. Minor variations in scope and procedures from those outlined in the Background Soil SAP and the Hydrogeological Investigation SAP occurred during field activities due to field conditions and programmatic updates, and are referenced in Section 3.7.

The BGS sampling activities were completed in two field mobilization phases. Phase I field sampling activities were performed from January 23, 2019 to February 5, 2019, and Phase II field sampling activities were performed on October 7 and 8, 2019. Additional BGS sampling activities were performed from January 23 through 29, 2019 as part of the hydrogeological investigation during background groundwater monitoring well installation as described in the Hydrogeological Investigation SAP. A rock outcrop survey was also conducted on January 13 and 14, 2020.



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Laboratory analysis of constituents was performed by TestAmerica Laboratories, Inc (TestAmerica) in Pittsburgh, Pennsylvania, and St. Louis, Missouri (radium samples only) and by RJ Lee Group, Inc. (RJ Lee) in Monroeville, Pennsylvania (percent ash). Additional quality assurance oversight on data acquisition protocols, sampling practices, and data validation or verification was performed by Environmental Standards, Inc. (EnvStds) under direct contract to TVA.



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Objective and Scope
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2.0 OBJECTIVE AND SCOPE

The primary objective of the BGS investigation conducted pursuant to the Background Soil SAP is to collect soil samples for characterization of the background soils within the vicinity of the JSF Plant in response to the TDEC Order. The approach for the investigation was to:

- Identify locations where naturally occurring, in-situ, native soils unaffected by CCR material are present
- Mobilize a track mounted direct push technology (DPT) rig to staked boring locations approved by TDEC and considered suitable for the DPT rig to safely drill into the native underlying soils
- Advance the DPT rig and collect background soil samples for analyses
- Collect background soil samples from the well screen intervals of background monitoring wells using a hollow stem auger (HSA) drilling rig, as part of the hydrogeological investigation scope of work.

The scope of work for the BGS investigation consisted of the following tasks:

- Verifying and documenting proposed sampling locations using global positioning system (GPS) survey
- Collecting field measurements of soil pH
- Collecting soil samples for laboratory analysis of CCR-related constituents as described in the SAPs.

These activities were carried out concurrently with advancement of the soil borings. Drilling and background well installation and development activities were performed in accordance with the Hydrogeological Investigation SAP and reported in the JSF Plant Hydrogeological Investigation SAR.

In addition to the collection of soil samples, a rock outcrop survey was conducted. The scope of work for the survey consisted of the following tasks:

- Visually inspecting accessible rock and residuum outcrops in the vicinity of the JSF Plant to determine if naturally occurring sources of metallic ore minerals are present in the area
- Collecting rock samples with hand tools for further visual assessment where potential naturally occurring sources of metallic ore minerals were identified
- Recording sample collection locations using field GPS equipment.



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Field Activities
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3.0 FIELD ACTIVITIES

BGS investigation field activities were conducted between January 23, 2019 and October 8, 2019. Additionally, under the hydrogeological investigation scope of work, two background monitoring well borings were drilled between January 23 and 29, 2019, and a rock outcrop survey was conducted on January 13 and 14, 2020. Soil samples were collected from the 15 background soil borings and two background monitoring well borings and are included with the BGS investigation. Prior to initiating field activities, TVA conducted environmental reviews, obtained permits, and performed utility clearances as necessary to complete the field work.

Stantec performed soil sample collection and rock outcrop survey activities based on guidance and specifications listed in TVA's Environmental (ENV) Technical Instructions (TIs), the SAPs, and the QAPP, except as noted in the Variations section of this report. As part of TVA's commitment to generate representative and reliable data, data validation or verification of laboratory analytical results was performed by EnvStds under direct contract with TVA. EnvStds also conducted audits of field activities and provided quality reviews of field documentation. TDEC was onsite on January 14, 2020 to observe rock outcrop inspections and sampling. In addition, on behalf of TDEC, Civil and Environmental Consultants, Inc. (CEC) collected split soil samples at two boring locations (JSF-BG07 and JSF-110). Additional details of the CEC sample collection are provided in Section 3.3.1.

During the BGS investigation, Stantec conducted the following field activities:

- Verified boring locations proposed in the SAP using the GPS
- Collected GPS measurements at the boring locations
- Collected soil samples from 15 BGS boring locations and two background monitoring well locations (hydrogeological investigation scope of work)
- Recorded field measurements of soil pH at the 17 sampled boring/well locations
- Collected quality control (QC) samples, including four matrix spike/matrix spike duplicates, four field duplicates, 14 field blanks, six equipment blanks, and one liner blank
- Conveyed collected samples via Federal Express shipment to TestAmerica and to RJ Lee for analysis
- Visually inspected seven rock outcrop areas
- Collected seven rock outcrop samples for further visual assessment.

Details on each activity are presented in the sections below.



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3.1 WORK LOCATIONS

The BGS investigation field activities were conducted at 15 boring locations and seven rock outcrop areas near the JSF Plant under the BGS investigation scope of work and two background monitoring well locations near the JSF Plant under the hydrogeological investigation scope of work. The BGS investigation boring locations and rock outcrop survey areas are shown on Exhibit A.2 and Exhibit A.3 (Appendix A), respectively. A list of the BGS investigation borings and associated soil samples is included in Table B.1, and sample results provided in Tables B.2 through B.4 (Appendix B).

3.1.1 Soil Horizons

Surficial soil samples were collected at depths ranging from 0.0 to 0.5 feet below ground surface (ft bgs) using a hand auger. Along with surficial samples, the Field Sampling Personnel (FSP) collected approximately two feet of soil from each five-foot soil run (one foot in both directions from the midpoint of the five-foot interval) for the total depth of the boring. In cases where recovery was less than five feet, the FSP collected the two-foot sample interval generally from either the mid-point of the recovered interval or from the entire recovered interval, if recovery was about 2.5 feet or less. Samples were collected from multiple soil depths to provide data for vertical characterization of background soils.

3.1.2 Rock Outcrops

The rock outcrops were visually inspected for the presence of naturally occurring ore-related minerals. Visual inspections included removing weathered surficial rock or residuum, (if necessary, to identify any ore-related minerals that might be present) and photographing the outcrops. Representative samples were generally collected directly from the outcrops using hand tools and retained for further visual assessment to prepare a written description of the sample, as necessary. In areas where the outcrop consisted primarily of residuum and/or where outcrops had been anticipated to exist but were not found during the outcrop survey field work, grab samples were collected from float (i.e., pieces of rock that have been separated from nearby bedrock outcrops) present in those areas for further description. Outcrop strike and dip measurements were taken using a Brunton® Pocket Transit. The rock sample locations were recorded using field GPS equipment (Trimble® R1 unit).

3.2 DOCUMENTATION

Stantec planned the BGS investigation activities per ENV-TI-05.08.01, *Planning Sampling Events* and maintained field documentation in general accordance with ENV-TI-05.80.03, *Field Record Keeping* and the QAPP. Field activities and data were primarily recorded on program-specific field forms. Health and safety forms were completed in accordance with TVA and Stantec health and safety requirements. Additional information regarding field documentation is provided below.



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3.2.1 Field Forms

Stantec used program-specific field forms to record field observations and data for specific activities. Field forms used during the BGS investigation included:

- *Daily Field Activity Log*
- *Subsurface Log*
- *Soil pH Calibration and Inspection Log*
- *Soil pH Data Form*
- *Chain-of-Custody (COC)*.

3.2.1.1 Daily Field Activity Log

Stantec FSP recorded daily field activities, observations and data on a *Daily Field Activity Log* to chronologically document the field program. Deviations from the SAPs or QAPP were also documented on the *Daily Field Activity Log*.

3.2.1.2 Subsurface Log

A Professional Geologist (PG) licensed in the State of Tennessee prepared a *Subsurface Log* for each boring. The log documented date boring location, drilling personnel, tooling/equipment used, depth to water, sample number, sample recovery, Standard Penetration Test blow counts (not recorded when DPT rig was used), subsurface lithology and other relevant observations. Soil color was logged per the appropriate Munsell soil color chart (Munsell Color 2009). The *Subsurface Logs* are provided in Appendix C.

3.2.1.3 Soil pH Calibration and Inspection Log

Stantec FSP recorded daily soil pH meter calibrations and inspections on a *Soil pH Calibration and Inspection Log* for each day that soil pH measurements were taken. The log documented temperature, temperature verification, temperature-adjusted calibration values, post calibration pH values, and calibration solution details. Additional information on equipment calibration is provided in Section 3.2.2.

3.2.1.4 Soil pH Data Form

Stantec FSP prepared a *Soil pH Data Form* for each day that soil pH measurements were taken. The form documented the sample identification (ID), boring ID, the depth range, pH measurement date and time, and the field pH value.



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3.2.1.5 Chain-of-Custody

Stantec FSP completed COC documentation for each soil and outcrop sample collected for potential laboratory analysis and additional visual inspection during the BGS investigation. The sample ID, sample location, sample depth (if applicable), type of sample, sampling date, analyses requested (if determined warranted), and sample custody record were recorded on the COCs. The Field Team Leader reviewed the COCs for completeness, and the FSP conducted a QC check of samples in each cooler/container compared to sample IDs on the corresponding COC prior to submittal to the laboratory. COCs were completed in general accordance with *ENV-TI-05.80.02: Sample Labeling and Custody*.

3.2.2 Equipment Calibration

Field instruments used to collect, generate, or measure environmental data were calibrated each day prior to sampling as specified by the SAPs, QAPP, and Stantec Standard Operating Procedure (SOP) - REV 1 for measurement of soil pH for the ExTech ExStik 110 meter (Stantec 2018d). Temperature was recorded using a calibrated National Institute of Standards and Technology traceable thermometer. Additional details regarding equipment calibration were recorded on the *Soil pH Calibration and Inspection Logs*.

3.2.3 Photographs

Photographs of the soil cores from boring activities and the rock outcrop survey areas were taken during the BGS investigation. Photographic logs of subsurface soil cores from the BGS borings, the screened interval of the background well borings, and rock outcrop survey areas are provided in Attachments D.1, D.2, and D.3, respectively, in Appendix D.

3.3 SOIL BORINGS AND SAMPLING

3.3.1 Soil Borings

The BGS investigation borings were advanced by S&ME, Inc. and Hawkston Drilling, LLC. during the first and second mobilization, respectively, under Stantec oversight, using a DPT rig equipped with a dual tube tooling system. The background monitoring wells, completed under the hydrogeological investigation, were advanced by Stantec using a HSA drilling rig with a 2-inch spilt-spoon attached per American Society for Testing and Materials (ASTM) *D6151-08: Standard Practice for Using Hollow-Stem Augers for Geotechnical Exploration and Soil Sampling*.

A list of BGS investigation borings and associated soil samples is included in Table B.1 (Appendix B) and the locations of the BGS investigation borings are shown on Exhibit A.2 (Appendix A). BGS investigation borings were advanced in the following chronological sequence:

- JSF-BG12 – On January 23, 2019, the DPT rig mobilized to location JSF-BG12. The DPT rig advanced one soil boring at this location. Refusal was encountered at 15.9 ft bgs. The boring was logged and sampled as JSF-BG12.



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- JSF-106– On January 23, 2019, the HSA rig mobilized to location JSF-106. The HSA rig advanced one soil boring at this location. Refusal was encountered at 15.0 ft bgs. The boring was logged on and sampled as JSF-106 and background monitoring well JSF-106 was installed at this boring location. Monitoring well installation activities are summarized in the Hydrogeological Investigation SAR.
- JSF-BG10 – On January 24, 2019, the DPT rig mobilized to location JSF-BG10. The DPT rig advanced one soil boring at this location. Refusal was encountered at 12.9 ft bgs. The boring was logged and sampled as JSF-BG10.
- JSF-BG11 – On January 24, 2019, the DPT rig mobilized to location JSF-BG11. The DPT rig advanced one soil boring at this location. Refusal was encountered at 14.6 ft bgs. The boring was logged and sampled as JSF-BG11.
- JSF-BG09 – On January 25, 2019, the DPT rig mobilized to location JSF-BG09. The DPT rig advanced one soil boring at this location. Refusal was encountered at 19.1 ft bgs. The boring was logged and sampled as JSF-BG09.
- JSF-BG08 – On January 28, 2019, the DPT rig mobilized to location JSF-BG08. The DPT rig advanced one soil boring at this location. Refusal was encountered at 19.3 ft bgs. The boring was logged and sampled as JSF-BG08.
- JSF-110– On January 28, 2019, the HSA rig mobilized to location JSF-110. The HSA rig advanced one soil boring at this location. Refusal was encountered at 18.0 ft bgs. The boring was logged on and sampled as JSF-110 and background monitoring well JSF-110 was installed at this boring location. Monitoring well installation activities are summarized in the Hydrogeological Investigation SAR.

CEC collected split samples from 9.9 to 12.0 ft bgs at JSF-110.

- JSF-BG07 – On January 29, 2019, the DPT rig mobilized to location JSF-BG07. The DPT rig advanced one soil boring at this location. Refusal was encountered at 14.2 ft bgs. The boring was logged and sampled as JSF-BG07.

CEC collected split samples from 1.4 to 4.1 ft bgs and 11.0 to 14.0 ft bgs at JSF-BG07.

- JSF-BG03 – The original location of JSF-BG03 was moved after receiving TDEC approval because of private property access restrictions. On January 29, 2019, the DPT rig mobilized to alternate location JSF-BG03Alt. The DPT rig advanced one soil boring at this location. Refusal was encountered at 14.4 ft bgs. The boring was logged and sampled as JSF-BG03.
- JSF-BG04Alt – The original location of JSF-BG04 was moved after receiving TDEC approval because of private property access restrictions. On January 30, 2019, the DPT rig mobilized to alternate location JSF-BG04Alt. The DPT rig advanced one soil boring at this location. Refusal was encountered at 18.9 ft bgs. The boring was logged and sampled as JSF-BG04Alt.



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- JSF-BG05Alt – The original location of JSF-BG05 was moved after receiving TDEC approval because of private property access restrictions. On January 31, 2019, the DPT rig mobilized to alternate location JSF-BG05Alt. The DPT rig advanced two soil borings at this location. The initial boring was drilled to 5.0 ft bgs and had poor recovery (first boring). Refusal was encountered at 11.8 ft bgs (second boring). The deepest boring, drilled to 11.8 ft bgs, was logged and sampled as JSF-BG05Alt.
- JSF-BG06Alt – The original location of JSF-BG06 was moved after receiving TDEC approval because of private property access restrictions. On February 1, 2019, the DPT rig mobilized to alternate location JSF-BG06Alt. The DPT rig advanced one soil boring at this location. Refusal was encountered at 14.5 ft bgs. The boring was logged and sampled as JSF-BG06Alt.
- JSF-BG02Alt – The original location of JSF-BG02 was moved after receiving TDEC approval because of private property access restrictions. On February 4, 2019, the DPT rig mobilized to alternate location JSF-BG02Alt. The DPT rig advanced one soil boring. Refusal was encountered at 19.5 ft bgs. The boring was logged and sampled as JSF-BG02Alt.
- JSF-BG01Alt – The original location of JSF-BG03 was moved after receiving TDEC approval because of private property access restrictions. On February 5, 2019, the DPT rig mobilized to alternate location JSF-BG01Alt. The DPT rig advanced one soil boring. Refusal was encountered at 12.4 ft bgs. The boring was logged and sampled as JSF-BG01Alt.
- JSF-BG13 – On October 7, 2019, the DPT rig mobilized to location JSF-BG13. The DPT rig advanced one soil boring at this location. Refusal was encountered at 29.0 ft bgs. The boring was logged and sampled as JSF-BG13.
- JSF-BG14 – On October 8, 2019, the DPT rig mobilized to location JSF-BG14. The DPT rig advanced one soil boring at this location. Refusal was encountered at 25.0 ft bgs. The boring was logged and sampled as JSF-BG14.
- JSF-BG15 – On October 8, 2019, the DPT rig mobilized to location JSF-BG15. The DPT rig advanced one soil boring at this location. Refusal was encountered at 24.5 ft bgs. The boring was logged and sampled as JSF-BG15.

Following sample collection, as described in Section 3.3.2, the BGS investigation borings were backfilled using a 30 percent solids bentonite grout placed by the tremie method to within approximately six inches of the surface. The top six inches were restored to match the surrounding existing conditions.

3.3.2 Soil Sampling

During advancement of each boring, a Tennessee-licensed PG prepared field subsurface logs using the *Subsurface Log* form. Each form includes a description of subsurface lithology, sample recovery, color using the Munsell Soil Color Charts and other relevant parameters as required by the SAPs and TIs. As part of the logging process, soil cores were photographed by FSP with interval data presented on a white



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board. Analytical and duplicate samples were collected from the BGS investigation borings and documented on the *Daily Field Activity Log* and COC as shown on Table B.1 (Appendix B).

The sampling team typically collected approximately two-foot grab samples from the mid-point of each five-foot soil run based on recovery. The collected soil was placed in clean, resealable plastic bags and homogenized using gloved hands and when necessary clean, unused, disposable, or decontaminated sampling tools. Decontamination of sampling equipment was conducted in accordance with ENV-TI-05.80.05, *Field Sampling Equipment Cleaning and Decontamination*. Once the sample was sufficiently homogenized, an aliquot of the homogenized sample and deionized water was used to create a soil paste for measurement of the soil pH with the ExTech ExStik 110 pH meter according to Stantec SOP – REV 1 (Stantec, 2018d). The measurements were recorded on the *Soil pH Data Form* within 15 minutes after creating the soil paste.

Afterwards, the soil sample was placed in an appropriate laboratory-supplied sample container. Soil samples were collected in accordance with ENV-TI-05.80.50, *Soil and Sediment Sampling* and ENV-TI-05.80.04, *Field Sampling Quality Control*. Sample containers were labeled and handled in accordance with ENV-TI-05.80.02, *Sample Labeling and Custody*. FSP secured caps on each bottle and attached a custody seal across the cap before placing the sample container in a cooler with ice (within 15 minutes of sample collection) for shipment to the laboratory.

The samples were analyzed for CCR-related constituents listed in Appendices III and IV of Title 40 of the Code of Federal Regulations (CFR) Part 257 (40 CFR 257). In addition, five inorganic constituents listed in Appendix I of Tennessee Rule 0400-11-01-.04 and not included in the 40 CFR 257 Appendices III and IV were analyzed to maintain continuity with the TDEC environmental programs. These additional TDEC Appendix I constituents included copper, nickel, silver, vanadium, and zinc. The combined federal CCR Appendices III and IV constituents and TDEC Appendix I inorganic constituents are hereafter referred to as “CCR Parameters.” In addition, surficial soil samples from each BGS investigation boring location were analyzed for the presence of ash (percent ash) by polarized light microscopy (PLM). For borings JSF-BG13, JSF-BG14, and JSF-BG15, samples collected from the entire boring were also submitted for PLM analysis.

3.4 ROCK OUTCROP SURVEY

The rock outcrop survey was conducted on January 13 and 14, 2020. The survey areas are shown on Exhibit A.3 (Appendix A). As part of the survey process, rock outcrops were photographed by the FSP with area name, and strike and dip documented on a white board. A photographic log for the rock outcrop survey is provided in Attachment D.3 (Appendix D).

The survey was completed in the following chronological sequence:

- Area 01 – On January 13, 2020, the survey team mobilized to location Area 01. One rock sample was collected from the outcrops (JSF-ROC-AREA01-01).



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- Area 05 – On January 13, 2020, the survey team mobilized to location Area 05. One rock sample was collected from the outcrops (JSF-ROC-AREA05-01).
- Area 02 – On January 14, 2020, the survey team mobilized to location Area 02. Two rock samples were collected from the outcrops (JSF-ROC-AREA02-01 and JSF-ROC-AREA02-02).
- Area 03 – On January 14, 2020, the survey team mobilized to location Area 03. No rock samples were collected due to the absence of outcrops.
- Area 04 – On January 14, 2020, the survey team mobilized to location Area 04. No rock samples were collected due to the absence of outcrops.
- Area 06 – On January 14, 2020, the survey team mobilized to location Area 06. One rock sample was collected from the outcrops (JSF-ROC-AREA06-01). The rock outcrop located in Area 06 extends along the western bank of Polly's Branch and due to high water levels, only one portion of the outcrop near the southern tip of Area 06 could be surveyed in January 2020. The outcrop was found to be submerged in subsequent site visits; therefore, the survey of the northern portion of Area 06 could not be completed. Photographs taken along the outcrop of Polly's Branch on January 14, 2020 are included in the photographic log in Attachment D.3 (Appendix D).
- Area 07 – On January 14, 2020, the survey team mobilized to location Area 07. Two rock samples were collected from the outcrops (JSF-ROC-AREA07-01 and JSF-ROC-AREA07-02).

3.5 INVESTIGATION DERIVED WASTE

Investigation derived waste (IDW) generated during the BGS Investigation included:

- Used calibration solutions
- Soil cuttings
- Personal protective equipment
- Decontamination fluids
- General trash.

Soil cuttings and decontamination water produced during the BGS investigation were dispersed to the ground surface as authorized by TVA JSF Plant personnel and in accordance with ENV-TI-05.80.05, *Field Sampling Equipment Cleaning and Decontamination* and the Background Soil SAP.

IDW was handled in accordance with JSF Plant-specific waste management plan, and local, state, and federal regulations. Transportation and disposal of IDW was coordinated with TVA JSF Plant personnel.



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3.6 SAMPLE SHIPMENT

Soil samples were packed and transported or shipped under COC procedures as required by ENV-TI-05.80.06, *Handling and Shipping of Samples* and ENV-TI-05.80.02, *Sample Labeling and Custody*. The soil samples were shipped to TestAmerica in St. Louis, Missouri (radium analysis only) and to TestAmerica in Pittsburgh, Pennsylvania (all other analyses). The samples to be analyzed by PLM (percent ash) were shipped separately to RJ Lee located in Monroeville, Pennsylvania. TestAmerica submitted sample receipt forms to EnvStds to document the condition in which the samples were received. Rock outcrop samples were transported by Stantec field personnel to the Lexington, Kentucky, Stantec office for additional visual inspection and photo documentation.

3.7 VARIATIONS

The proposed scope and procedures for the BGS investigation were outlined in the SAPs, QAPP, applicable TVA TIs and ASTM standards, as detailed in the sections above. Variations in scope or procedures discussed with TDEC and/or TVA, changes based on field conditions, or additional field sampling performed to complete the scope of work in the SAR are described in the following sections. As discussed below, these variations do not impact the usability and representativeness of the data provided in this SAR for the BGS investigation at the JSF Plant.

3.7.1 Variations in Scope

Variations in scope are provided below.

- Alternate background soil boring locations for JSF-BG01 through JSF-BG06 were used because of private property access restrictions as approved by TDEC.
- Three background soil boring locations (JSF-BG13, JSF-BG14, and JSF-BG15) were approved by TDEC and added to the investigation to supplement the background data and meet the objectives of the SAP.

3.7.2 Variations in Procedures

Variations in procedures occurring in the field are provided below.

- The field pH measurement for the JSF-106 sample from 9.0 to 12.0 ft bgs was measured 33 minutes after the sample was placed in the laboratory containers. However, the field pH was measured within 15 minutes of creating the paste; therefore, the measurement is considered usable. The soil sample collected from this boring interval was also submitted to the laboratory for pH testing.



JOHN SEVIER FOSSIL PLANT BACKGROUND SOIL INVESTIGATION SAMPLING AND ANALYSIS REPORT

Summary
February 1, 2021

4.0 SUMMARY

The data presented in this report are from the BGS investigation at the JSF Plant. The BGS investigation included collecting soil analytical samples to assess CCR Parameters and percent ash. A total of 78 samples, including four duplicate samples, were collected from the 15 BGS borings (JSF-BG01Alt through JSF-BG15) and two background well borings (JSF-106 and JSF-110) and analyzed for CCR Parameters. Surficial soil samples from each BGS investigation boring location were analyzed for the presence of ash (percent ash) by PLM; additionally, soil samples from the entire JSF-BG13, JSF-BG14, and JSF-BG15 borings were also analyzed for PLM. Soil samples were also tested for pH in the field.

A list of samples collected, along with duplicates, is presented in Table B.1. The soil analytical data are presented in Tables B.2 and B.3, and the field soil pH data are summarized in Table B.4. Analytical data were reported by TestAmerica and RJ Lee and validated by EnvStds.

Additionally, a rock outcrop survey was conducted near the JSF Plant to determine if naturally occurring sources of metallic ore minerals are present in the area. Seven JSF rock outcrop areas were visited and documented, but only five areas were sampled. No samples were collected from Areas 03 and 04 due to the absence of outcrops.

Stantec has completed a BGS investigation at the JSF Plant in Rogersville, Tennessee, in accordance with the Background Soil and Hydrogeological Investigation SAPs as documented herein. The data collected during the BGS investigation are usable for reporting and evaluation in the EAR and meet the objectives of the TDEC Order EIP. The complete dataset from this investigation will be evaluated along with data collected under other TDEC Order SAPs, as well as data collected under other State and CCR Programs. This evaluation will be provided in the EAR.



JOHN SEVIER FOSSIL PLANT BACKGROUND SOIL INVESTIGATION SAMPLING AND ANALYSIS REPORT

References
February 1, 2021

5.0 REFERENCES

American Society for Testing and Materials *D6151-08: Standard Practice for Using Hollow-Stem Augers for Geotechnical Exploration and Soil Sampling.*

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TVA. ENV-TI-05.80.02, *Sample Labeling and Custody.*

TVA. ENV-TI-05.80.03, *Field Record Keeping.*

TVA. ENV-TI-05.80.04, *Field Sampling Quality Control.*

TVA. ENV-TI-05.80.05, *Field Sampling Equipment Cleaning and Decontamination.*

TVA. ENV-TI-05.80.06, *Handling and Shipping of Samples.*

TVA. ENV-TI-05.80.50, *Soil and Sediment Sampling.*



APPENDIX A - EXHIBITS



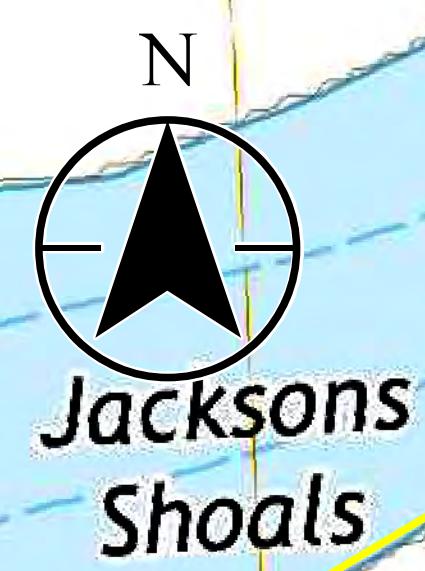
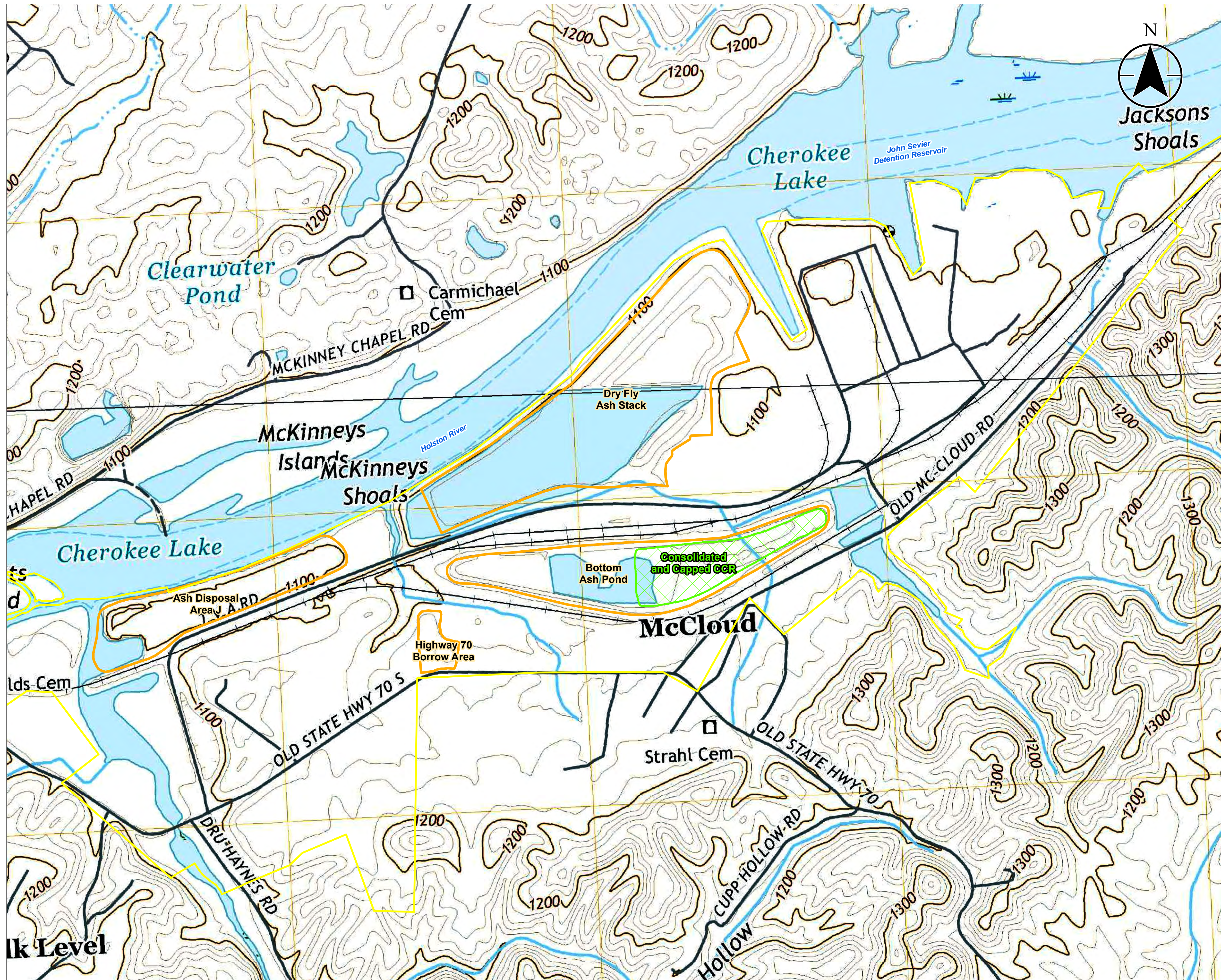
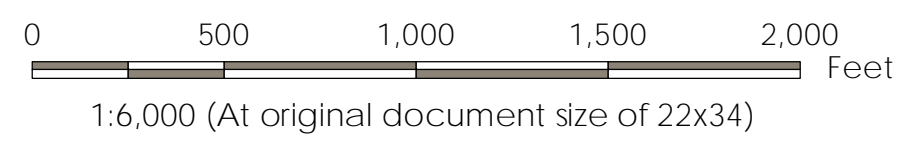


Exhibit No. **A.1**
 Title **Site Location Map**
 Client/Project
 Tennessee Valley Authority
 John Sevier Fossil (JSF) Plant TDEC Order
 Project Location
 Rogersville, Tennessee
 175568225
 Prepared by DMB on 2020-10-15
 Technical Review by RN on 2020-10-15



Legend

- TVA Property Boundary
- CCR Unit Area (Approximate)
- Consolidated & Capped CCR Area (Approximate)

Notes

1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Topographic mapping corresponds to the Burem and McCloud Quadrangles (Edition 2019, Scale 1:24,000)



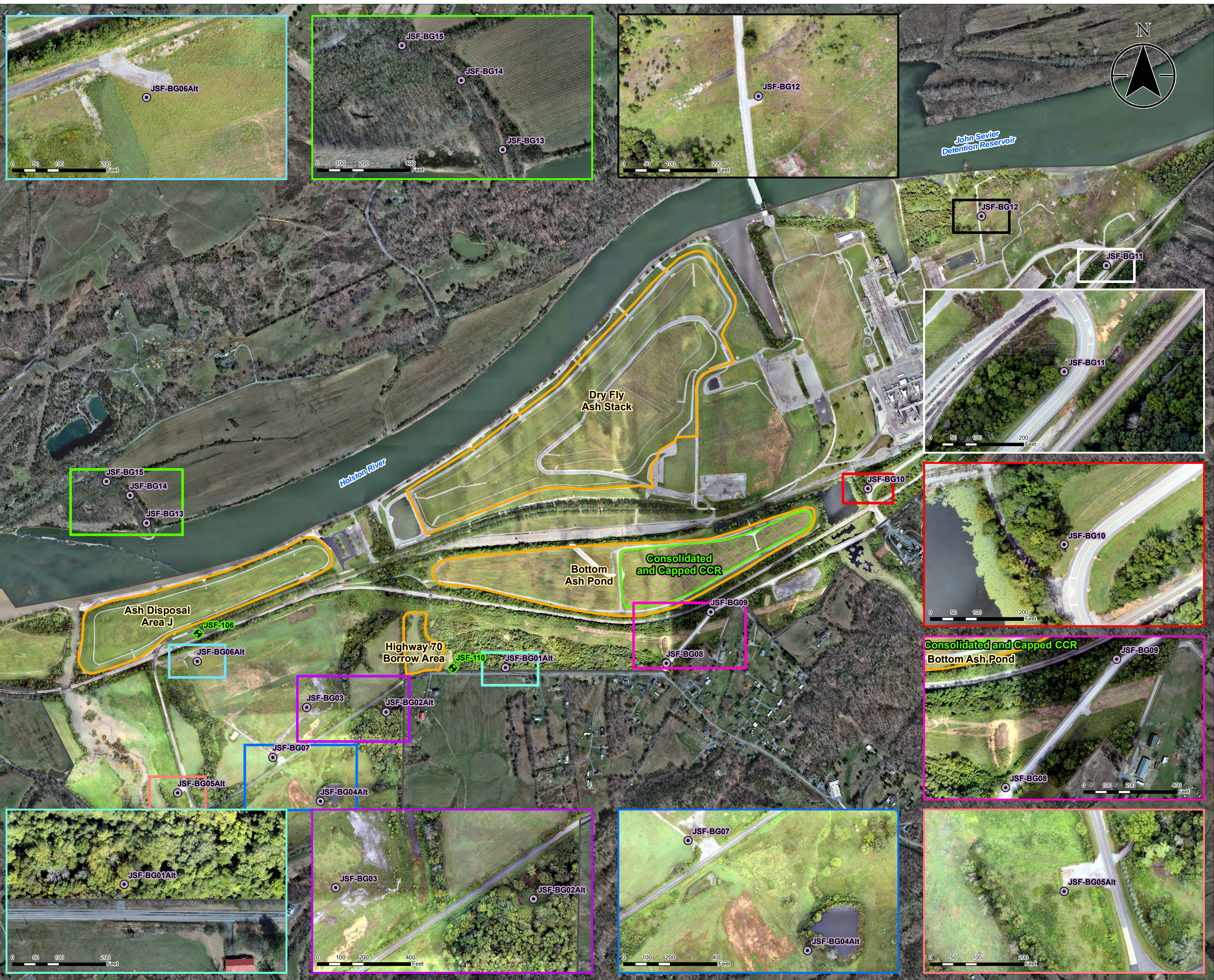
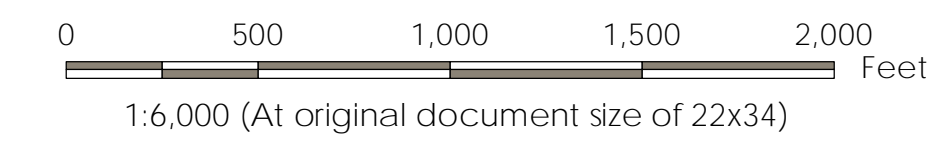


Exhibit No. **A.2**
 Title
Background Soil Boring Location Map
 Client/Project
 Tennessee Valley Authority
 John Sevier Fossil (JSF) Plant TDEC Order
 Project Location
 Rogersville, Tennessee
 175568225
 Prepared by DMB on 2020-10-15
 Technical Review by RN on 2020-10-15



- Legend**
- Background Soil Boring
 - Background Monitoring Well
 - 2018 Imagery Boundary
 - CCR Unit Area (Approximate)
 - Consolidated & Capped CCR Area (Approximate)

- Notes**
1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
 2. Imagery Provided by Tuck Mapping (2017-03-08) and TVA (2018-09-11)



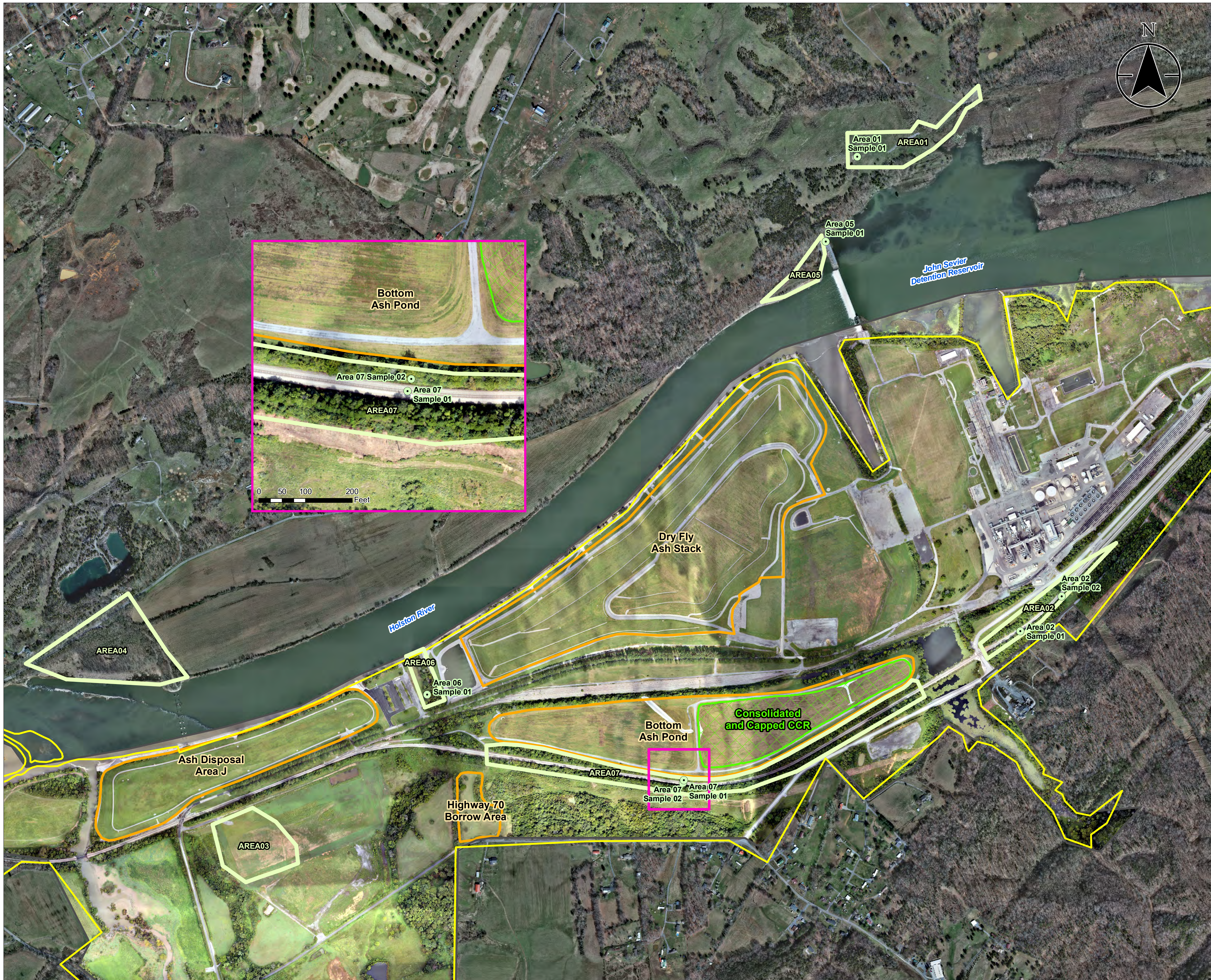
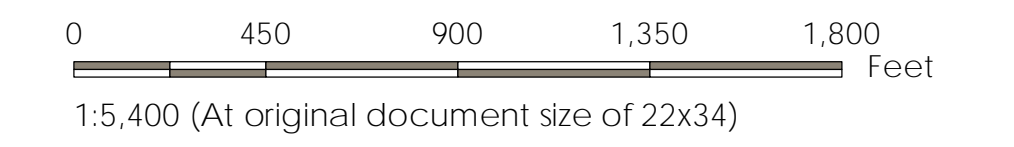


Exhibit No. **A.3**
 Title **Rock Outcrop Survey Area**

Client/Project
 Tennessee Valley Authority
 John Sevier Fossil (JSF) Plant TDEC Order

Project Location
 Rogersville, Tennessee

175568225
 Prepared by DMB on 2020-10-15
 Technical Review by RH on 2020-10-15



Legend

- Rock Sample
- Rock Outcrop Survey Area
- TVA Property Boundary
- 2018 Imagery Boundary
- CCR Unit Area (Approximate)
- Consolidated & Capped CCR Area (Approximate)

Notes

1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
2. Imagery Provided by Tuck Mapping (2017-03-08) and TVA (2018-09-11)



APPENDIX B - TABLES



TABLE B.1 – Summary of Background Soil Samples
John Sevier Fossil Plant
January - October 2019

Location ID	Sample ID	Sample Type	Analysis Type						
			% Ash	Total Metals	Total Mercury	Anions	pH (laboratory)	pH (field)	Radium-226, Radium-228, Radium-226+228
JSF-106	JSF-BS-JSF106-9.0/12.0-20190124	Normal Environmental Sample		x	x	x	x	x	x
JSF-110	JSF_BS_JS110_9.9/12.0_20190129	Normal Environmental Sample		x	x	x	x	x	x
JSF-BG01ALT	JSF-BS-BG01ALT-0.0/0.5-20190205	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG01ALT-0.5/2.5-20190205	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG01ALT-6.8/8.8-20190205	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG01ALT-10.0/12.4-20190205	Normal Environmental Sample		x	x	x	x	x	x
JSF-BG02ALT	JSF-BS-BG02ALT-0.0/0.5-20190204	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-FD03-20190204	Field Duplicate Sample		x	x	x	x		x
	JSF-BS-BG02ALT-0.9/2.9-20190204	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG02ALT-5.9/7.9-20190204	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG02ALT-11.5/13.5-20190204	Normal Environmental Sample		x	x	x	x	x	x
JSF-BG03	JSF-BS-BG02ALT-16.5/18.5-20190204	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG03-0.0/0.5-20190129	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG03-1.5/3.5-20190129	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG03-5.0/6.6-20190129	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG03-7.2/9.2-20190129	Normal Environmental Sample		x	x	x	x	x	x
JSF-BG04ALT	JSF-BS-BG03-11.5/13.5-20190129	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG04ALT-0.0/0.5-20190130	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG04ALT-0.9/2.9-20190130	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG04ALT-7.2/9.2-20190130	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG04ALT-15.5/18.5-20190130	Normal Environmental Sample		x	x	x	x	x	x
JSF-BG05ALT	JSF-BS-FD02-20190130	Field Duplicate Sample		x	x	x	x		x
	JSF-BS-BG05ALT-0.0/0.5-20190131	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG05ALT-1.3/3.3-20190131	Normal Environmental Sample		x	x	x	x	x	x
JSF-BG06ALT	JSF-BS-BG05ALT-6.0/8.0-20190131	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG06ALT-0.0/0.5-20190201	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG06ALT-1.5/3.5-20190201	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG06ALT-6.5/8.5-20190201	Normal Environmental Sample		x	x	x	x	x	x
JSF-BG07	JSF-BS-BG06ALT-11.2/13.2-20190201	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG07-0.0/0.5-20190129	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG07-1.4/4.1-20190129	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG07-6.2/8.2-20190129	Normal Environmental Sample		x	x	x	x	x	x
JSF-BG08	JSF-BS-BG07-11.0/14.0-20190129	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG08-0.0/0.5-20190128	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG08-2.0/4.0-20190128	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG08-6.5/8.5-20190128	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG08-11.5/13.5-20190128	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG08-16.5/18.5-20190128	Normal Environmental Sample		x	x	x	x	x	x

See notes on last page.

TABLE B.1 – Summary of Background Soil Samples
John Sevier Fossil Plant
January - October 2019

Location ID	Sample ID	Sample Type	Analysis Type						
			% Ash	Total Metals	Total Mercury	Anions	pH (laboratory)	pH (field)	Radium-226, Radium-228, Radium-226+228
JSF-BG09	JSF-BS-BG09-0.0/0.5-20190125	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG09-1.0/4.0-20190125	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG09-6.1/8.1-20190125	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG09-10.0/11.7-20190125	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG09-12.7/14.7-20190125	Normal Environmental Sample		x	x	x	x	x	x
JSF-BG10	JSF-BS-BG09-16.1/18.1-20190125	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG10-0.0/0.5-20190124	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG10-1.4/3.4-20190124	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG10-6.5/8.5-20190124	Normal Environmental Sample		x	x	x	x	x	x
JSF-BG11	JSF-BS-BG10-10.5/12.5-20190124	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG11-0.0/0.5-20190124	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG11-1.1/3.1-20190124	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG11-5.5/8.5-20190124	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-FD01-20190124	Field Duplicate Sample		x	x	x	x		x
JSF-BG12	JSF-BS-BG11-11.3/13.3-20190124	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG12-0.0/0.5-20190123	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG12-0.8/2.8-20190123	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG12-5.0/10.0-20190123	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG12-10.75/12.75-20190123	Normal Environmental Sample		x	x	x	x	x	x
JSF-BG13	JSF-BS-BG12-13.5/15.0-20190123	Normal Environmental Sample		x	x	x	x	x	x
	JSF-BS-BG13-0.0/0.5-20191008	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG13-1.5/3.5-20191007	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG13-6.5/8.5-20191007	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG13-11.5/13.5-20191007	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG13-16.5/18.5-20191007	Normal Environmental Sample	x	x	x	x	x	x	x
JSF-BG14	JSF-BS-BG13-21.5/23.5-20191007	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG13-26.5/28.5-20191007	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG14-0.0/0.5-20191008	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG14-3.0/5.0-20191008	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG14-6.5/8.5-20191008	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG14-11.5/13.5-20191008	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG14-16.5/18.5-20191008	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG14-21.5/23.5-20191008	Normal Environmental Sample	x	x	x	x	x	x	x

See notes on last page.

TABLE B.1 – Summary of Background Soil Samples
John Sevier Fossil Plant
January - October 2019

Location ID	Sample ID	Sample Type	Analysis Type						
			% Ash	Total Metals	Total Mercury	Anions	pH (laboratory)	pH (field)	Radium-226, Radium-228, Radium-226+228
JSF-BG15	JSF-BS-BG15-0.0/0.5-20191008	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG15-1.5/3.5-20191008	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG15-6.5/8.5-20191008	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG15-11.0/14.0-20191008	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-DUP01-20191008	Field Duplicate Sample		x	x	x	x		x
	JSF-BS-BG15-16.5/18.5-20191008	Normal Environmental Sample	x	x	x	x	x	x	x
	JSF-BS-BG15-21.5/23.5-20191008	Normal Environmental Sample	x	x	x	x	x	x	x

Notes:

% Ash	PLM
Total Metals	SW-846 6020A
Total Mercury	SW-846 7471B
Anions	SW-846 9056A
pH (laboratory)	SW-846 9045D
Radium-226, Radium-228, Radium-226+228	EPA 901.1
ID	identification

1. Field and laboratory quality control sample results except for field duplicates are not included in report tables but were used for data validation.
2. Boring JSF-106 and JSF-110 under hydrogeological investigation scope of work; sample collected within well screen interval.
3. CEC collected split samples from JSF-BG07 and JSF-110

TABLE B.2 - Soil Analytical Results for Percent Ash, Metals, Anions, and General Chemistry
John Sevier Fossil Plant
January - October 2019

Sample Location		JSF-106	JSF-110	JSF-BG01ALT				JSF-BG02ALT	
Sample Date		24-Jan-19	29-Jan-19	5-Feb-19	5-Feb-19	5-Feb-19	5-Feb-19	4-Feb-19	4-Feb-19
Sample ID		JSF-BS-JSF106-9.0/12.0-20190124	JSF_BS_JSF110_9.9/12.0_20190129	JSF-BS-BG01ALT-0.0/0.5-20190205	JSF-BS-BG01ALT-0.5/2.5-20190205	JSF-BS-BG01ALT-6.8/8.8-20190205	JSF-BS-BG01ALT-10.0/12.4-20190205	JSF-BS-BG02ALT-0.0/0.5-20190204	JSF-BS-FD03-20190204
Sample Depth		9 - 12 ft	9.9 - 12 ft	0 - 0.5 ft	0.5 - 2.5 ft	6.8 - 8.8 ft	10 - 12.4 ft	0 - 0.5 ft	0 - 0.5 ft
Sample Type		Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Field Duplicate Sample
Level of Review		Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified
Units									
PLM									
% ASH	%	-	-	<1	-	-	-	2	-
Total Metals									
Antimony	mg/kg	0.0794 UJ	0.0753 UJ	0.0663 UJ	0.0729 UJ	0.0686 UJ	0.0762 UJ	0.109 J	0.161 J
Arsenic	mg/kg	2.90 J	3.86 J	0.915	1.74	0.993	5.86	3.29	3.20
Barium	mg/kg	103 J	21.4	3.57	27.4	72.1	207	24.1	20.5
Beryllium	mg/kg	1.09 J	0.466	0.0674 J	0.168	0.205	1.94	0.313	0.276
Boron	mg/kg	2.54 J	1.81 J	1.78 J	<1.59	<1.49	2.39 J	<1.82	<1.70
Cadmium	mg/kg	0.107 U*	<0.0206	<0.0182	<0.0200	<0.0188	0.0619 J	0.0319 J	0.0214 J
Calcium	mg/kg	1,920	36.1 J	299,000	2,490	1,250	3,690	268	155
Chromium	mg/kg	16.6 J	6.50	1.43	5.53	5.35	24.6	9.97	8.43
Cobalt	mg/kg	13.8 J	2.53	0.419	2.44	1.97	17.2	1.81	1.49
Copper	mg/kg	12.1 J	7.28	2.57 J	2.66 J	1.68 J	22.3 J	5.26 J	4.16 J
Lead	mg/kg	14.7	10.1	2.25	7.46	5.13	13.2	16.1 J	29.2 J
Lithium	mg/kg	23.0 J	5.65 J	0.727	4.74	6.30	40.3	5.55	4.87
Mercury	mg/kg	0.0251 J	<0.0165	<0.0148	0.0234 J	0.0257 J	<0.0194	0.0802	0.0650
Molybdenum	mg/kg	0.318 U*	0.433 J	0.194 J	0.419 J	<0.180	<0.200	0.485 J	0.633
Nickel	mg/kg	25.4 J	6.08	1.48	2.06	3.38	33.8	4.77	3.73
Selenium	mg/kg	0.578 J	0.600 J	<0.131	0.466 J	0.215 J	1.05	0.686	0.702
Silver	mg/kg	0.0179 UR	<0.0170	<0.0289	<0.0317	<0.0299	<0.0332	<0.0365	<0.0339
Thallium	mg/kg	0.134 U*	0.0877 J	0.0342 J	0.116 J	0.0811 J	0.0718 J	0.133 J	0.132
Vanadium	mg/kg	15.1 J	11.3	3.31	12.6	8.55	19.1	19.6	17.2
Zinc	mg/kg	60.7 J	17.0	3.42 J	8.07 J	8.47 J	90.6 J	17.4 J	12.8 J
Anions									
Chloride	mg/kg	<4.83	8.46 J	<4.01	<4.46	12.7	<4.88	<5.15	<5.06
Fluoride	mg/kg	0.846 UJ	<0.815	0.702 UJ	2.19 J	0.873 J	1.15 J	0.902 UJ	0.888 J
Sulfate	mg/kg	75.3	<8.14	<7.01	67.7	97.5	15.7	14.2	25.3
General Chemistry									
pH (lab)	SU	6.8	4.8	8.9	6.0	7.0	7.4	4.6	4.8

See notes on last page.

TABLE B.2 - Soil Analytical Results for Percent Ash, Metals, Anions, and General Chemistry
John Sevier Fossil Plant
January - October 2019

Sample Location	Units	JSF-BG02ALT				JSF-BG03		JSF-BG03		JSF-BG03	
		4-Feb-19 JSF-BS-BG02ALT-0.9/2.9-20190204 0.9 - 2.9 ft Normal Environmental Sample Final-Verified	4-Feb-19 JSF-BS-BG02ALT-5.9/7.9-20190204 5.9 - 7.9 ft Normal Environmental Sample Final-Verified	4-Feb-19 JSF-BS-BG02ALT-11.5/13.5-20190204 11.5 - 13.5 ft Normal Environmental Sample Final-Verified	4-Feb-19 JSF-BS-BG02ALT-16.5/18.5-20190204 16.5 - 18.5 ft Normal Environmental Sample Final-Verified	29-Jan-19 JSF-BS-BG03-0.0/0.5-20190129 0 - 0.5 ft Normal Environmental Sample Final-Verified	29-Jan-19 JSF-BS-BG03-1.5/3.5-20190129 1.5 - 3.5 ft Normal Environmental Sample Final-Verified	29-Jan-19 JSF-BS-BG03-5.0/6.6-20190129 5 - 6.6 ft Normal Environmental Sample Final-Verified	29-Jan-19 JSF-BS-BG03-7.2/9.2-20190129 7.2 - 9.2 ft Normal Environmental Sample Final-Verified	29-Jan-19 JSF-BS-BG03-11.5/13.5-20190129 11.5 - 13.5 ft Normal Environmental Sample Final-Verified	
PLM											
% ASH	%	-	-	-	-	<1	-	-	-	-	
Total Metals											
Antimony	mg/kg	0.0746 J	0.0697 UJ	0.0878 UJ	0.0995 J	0.148 J	0.116 J	0.0680 UJ	0.0852 UJ	0.0893 UJ	
Arsenic	mg/kg	1.24	0.409	7.94	8.07	4.57 J	2.22 J	1.88 J	2.75 J	5.69 J	
Barium	mg/kg	19.5	32.1	46.7	30.3	28.8	33.1	18.1	25.3	52.0	
Beryllium	mg/kg	0.0872 J	0.195	1.81	1.97	0.486	0.322	0.348	1.84	2.43	
Boron	mg/kg	<1.58	<1.52	4.27 J	4.97 J	2.30 J	1.77 J	1.13 J	2.50 J	3.32 J	
Cadmium	mg/kg	<0.0198	<0.0191	0.0849 J	0.0499 J	0.0216 J	<0.0218	<0.0186	<0.0234	0.0506 J	
Calcium	mg/kg	178	71.6	1,640	11,500	465	405	55.5	116	444	
Chromium	mg/kg	4.83	6.42	23.8	20.4	11.3	13.8	6.09	13.7	19.1	
Cobalt	mg/kg	0.552	0.624	24.1	20.8	2.16	1.39	1.15	3.72	18.5	
Copper	mg/kg	1.43 J	4.30 J	31.9 J	25.0 J	10.7	6.07	5.40	14.7	19.9	
Lead	mg/kg	5.65	5.97	8.38	14.6	14.5	12.4	6.29	14.4	7.45	
Lithium	mg/kg	4.01	4.52	36.5	43.6	7.11 J	5.91 J	3.81 J	9.51 J	43.8 J	
Mercury	mg/kg	0.0241 J	0.0164 UJ	<0.0197	<0.0170	0.0415	0.218	<0.0140	<0.0182	<0.0162	
Molybdenum	mg/kg	0.399 J	0.265 J	0.285 J	0.385 J	0.811	0.510 J	0.223 J	0.179 J	0.191 J	
Nickel	mg/kg	1.10	2.04	36.3	36.3	6.49	3.89	3.01	9.12	32.3	
Selenium	mg/kg	0.472 J	0.317 J	2.15	1.23	0.787	0.893	0.646	1.18	2.40	
Silver	mg/kg	<0.0315	<0.0303	<0.0382	<0.0341	<0.0171	<0.0179	<0.0153	<0.0192	<0.0202	
Thallium	mg/kg	0.121	0.108 J	0.136 J	0.0867 J	0.189	0.223	0.0877 J	0.124 J	0.0882 J	
Vanadium	mg/kg	12.0	8.38	22.6	17.4	28.1	26.7	7.16	13.7	18.2	
Zinc	mg/kg	5.07 J	7.95	84.6 J	89.6 J	20.4	17.9	10.5	29.8	82.6	
Anions											
Chloride	mg/kg	<4.48	<4.19	<5.42	<4.75	<4.60	20.8	6.62 J	9.07 J	9.32 J	
Fluoride	mg/kg	0.785 UJ	0.735 UJ	0.950 UJ	0.832 UJ	<0.806	<0.865	<0.773	<0.883	<0.923	
Sulfate	mg/kg	21.4	42.5	49.7	28.4	70.0	82.2	9.93 J	19.7	9.83 J	
General Chemistry											
pH (lab)	SU	5.3	4.4	5.9	8.2	5.2	4.5	4.4	4.4	4.8	

See notes on last page.

TABLE B.2 - Soil Analytical Results for Percent Ash, Metals, Anions, and General Chemistry
John Sevier Fossil Plant
January - October 2019

Sample Location		JSF-BG04ALT					JSF-BG05ALT		
Sample Date		30-Jan-19	30-Jan-19	30-Jan-19	30-Jan-19	30-Jan-19	31-Jan-19	31-Jan-19	31-Jan-19
Sample ID		JSF-BS-BG04ALT-0.0/0.5-20190130	JSF-BS-BG04ALT-0.9/2.9-20190130	JSF-BS-BG04ALT-7.2/9.2-20190130	JSF-BS-BG04ALT-15.5/18.5-20190130	JSF-BS-FD02-20190130	JSF-BS-BG05ALT-0.0/0.5-20190131	JSF-BS-BG05ALT-1.3/3.3-20190131	JSF-BS-BG05ALT-6.0/8.0-20190131
Sample Depth		0 - 0.5 ft	0.9 - 2.9 ft	7.2 - 9.2 ft	15.5 - 18.5 ft	15.5 - 18.5 ft	0 - 0.5 ft	1.3 - 3.3 ft	6 - 8 ft
Sample Type		Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Field Duplicate Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample
Level of Review		Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified
Units									
PLM									
% ASH	%	3	-	-	-	-	2	-	-
Total Metals									
Antimony	mg/kg	0.0964 J	0.208 J	0.112 J	0.185 J	0.114 J	0.0808 UJ	0.0907 J	0.0708 UJ
Arsenic	mg/kg	2.86	6.03	5.85	9.24	7.51	2.38 J	2.91 J	0.799 J
Barium	mg/kg	49.9	26.9	248	51.9	41.5	31.9	33.1	56.8
Beryllium	mg/kg	0.393	0.314	0.325	2.16	1.84	0.294	0.256	1.87
Boron	mg/kg	3.76 J	1.52 J	1.35 J	3.30 J	2.54 J	1.20 J	1.47 J	1.15 J
Cadmium	mg/kg	3.09 J	0.0215 UJ	0.0361 J	0.0608 J	0.0451 J	0.0924 J	<0.0193	<0.0194
Calcium	mg/kg	52,300	450	48.6 J	371	286	1,330	658	1,090
Chromium	mg/kg	6.35	20.8	17.4	15.5	13.1	6.48	10.6	8.71
Cobalt	mg/kg	1.92	2.45	8.36	31.0	37.0	2.00	2.13	8.89
Copper	mg/kg	7.70	9.95	7.92	27.3	25.4	3.27	3.43	6.52
Lead	mg/kg	12.2	8.83	9.45	15.2	14.8	10.2	8.53	11.0
Lithium	mg/kg	2.76	9.86	3.23	38.6	38.0	5.56 J	10.0 J	13.0 J
Mercury	mg/kg	0.0434 J	0.0435	<0.0143	0.0163 J	<0.0167	0.0190 J	0.0286 J	0.0199 J
Molybdenum	mg/kg	0.624 J	1.26	0.853	0.322 J	0.261 J	0.404 J	0.493 J	0.200 J
Nickel	mg/kg	3.53	5.91	6.69	33.8	30.2	2.48	4.10	11.8
Selenium	mg/kg	0.828 J	0.807 J	0.375 J	0.927 J	0.639 J	0.448 J	0.493 J	1.43 J
Silver	mg/kg	<0.0199	<0.0177	<0.0159	<0.0186	<0.0188	<0.0183	<0.0159	<0.0160
Thallium	mg/kg	0.111 J	0.201	0.303	0.114 J	0.0938 J	0.0918 J	0.130	0.0705 J
Vanadium	mg/kg	9.05 J	38.9 J	11.1 J	17.1 J	16.5 J	12.1	19.3	10.2
Zinc	mg/kg	704	20.4	15.8	96.3	86.4	22.3	13.6	32.4
Anions									
Chloride	mg/kg	<5.15	<4.80	<4.38	26.4	26.8	<5.15	<4.61	<4.45
Fluoride	mg/kg	1.42 J	0.841 UJ	0.768 UJ	0.886 UJ	0.883 UJ	3.97 J	0.808 UJ	4.45 J
Sulfate	mg/kg	11.1 J	105	8.90 J	<8.85	<8.81	14.6 J	51.7 J	32.6 J
General Chemistry									
pH (lab)	SU	7.4	6.4	4.8	4.5	4.5	7.0	4.7	6.7

See notes on last page.

TABLE B.2 - Soil Analytical Results for Percent Ash, Metals, Anions, and General Chemistry
John Sevier Fossil Plant
January - October 2019

Sample Location	Units	JSF-BG06ALT				JSF-BG07			
		1-Feb-19 JSF-BS-BG06ALT-0.0/0.5-20190201 0 - 0.5 ft Normal Environmental Sample Final-Verified	1-Feb-19 JSF-BS-BG06ALT-1.5/3.5-20190201 1.5 - 3.5 ft Normal Environmental Sample Final-Verified	1-Feb-19 JSF-BS-BG06ALT-6.5/8.5-20190201 6.5 - 8.5 ft Normal Environmental Sample Final-Verified	1-Feb-19 JSF-BS-BG06ALT-11.2/13.2-20190201 11.2 - 13.2 ft Normal Environmental Sample Final-Verified	29-Jan-19 JSF-BS-BG07-0.0/0.5-20190129 0 - 0.5 ft Normal Environmental Sample Final-Verified	29-Jan-19 JSF-BS-BG07-1.4/4.1-20190129 1.4 - 4.1 ft Normal Environmental Sample Final-Verified	29-Jan-19 JSF-BS-BG07-6.2/8.2-20190129 6.2 - 8.2 ft Normal Environmental Sample Final-Verified	29-Jan-19 JSF-BS-BG07-11.0/14.0-20190129 11 - 14 ft Normal Environmental Sample Final-Verified
PLM									
% ASH	%	2	-	-	-	<1	-	-	-
Total Metals									
Antimony	mg/kg	0.173 J	0.107 J	0.110 J	0.115 J	0.133 J	0.176 J	0.117 J	0.0896 J
Arsenic	mg/kg	5.76 J	4.34 J	5.13 J	3.73 J	2.26 J	4.33 J	3.86 J	4.13 J
Barium	mg/kg	171	57.8	66.5	36.6	20.0	30.1	44.3	81.8
Beryllium	mg/kg	1.92	1.11	1.26	1.69	0.210	0.346	0.596	1.98
Boron	mg/kg	3.49 J	1.96 J	2.15 J	2.00 J	5.01 J	1.85 J	1.71 J	2.88 J
Cadmium	mg/kg	0.156	0.0423 J	0.0548 J	0.0618 J	0.233	0.0491 J	0.0224 J	0.0489 J
Calcium	mg/kg	687	72.2	89.5	203	165,000	2,240	234	487
Chromium	mg/kg	21.3	12.3	11.1	17.2	4.53	15.1	15.3	17.5
Cobalt	mg/kg	16.7	13.9	27.1	15.1	1.65	2.02	2.50	31.9
Copper	mg/kg	13.5	21.7	21.9	21.5	5.75	4.43	8.93	24.2
Lead	mg/kg	23.4	12.9	13.2	14.1	17.1	11.0	16.1	13.6
Lithium	mg/kg	5.18 J	23.3 J	24.3 J	36.3 J	3.72 J	9.09 J	10.9 J	38.9 J
Mercury	mg/kg	0.0430	<0.0205	<0.0179	<0.0186	0.0238 J	0.0791	0.0342 J	<0.0211
Molybdenum	mg/kg	0.699	<0.215	<0.220	<0.218	0.582 J	0.880	0.425 J	0.562 J
Nickel	mg/kg	17.0	19.0	19.8	32.3	3.20	4.60	8.27	29.1
Selenium	mg/kg	1.94 J	1.68 J	1.23 J	1.18 J	0.392 J	0.772	1.12	1.12
Silver	mg/kg	<0.0327	<0.0356	<0.0364	<0.0361	<0.0165	<0.0178	<0.0175	<0.0193
Thallium	mg/kg	0.294	0.119 J	0.111 J	0.0709 J	0.0875 J	0.228	0.229	0.0816 J
Vanadium	mg/kg	31.2	18.2	18.8	19.8	7.35	31.4	24.5	17.8
Zinc	mg/kg	31.1	61.2	58.3	102	55.6	17.6	23.1	84.5
Anions									
Chloride	mg/kg	<4.84	56.4	63.1	82.3	<4.42	<4.65	<4.83	<5.08
Fluoride	mg/kg	<0.849	<0.877	<0.876	<0.878	1.21	<0.816	<0.846	<0.890
Sulfate	mg/kg	33.3	<8.75	<8.75	<8.77	14.1	256	98.9	<8.89
General Chemistry									
pH (lab)	SU	6.4	4.2	4.5	4.5	8.1	7.3	4.4	5.1

See notes on last page.

TABLE B.2 - Soil Analytical Results for Percent Ash, Metals, Anions, and General Chemistry
John Sevier Fossil Plant
January - October 2019

Sample Location		JSF-BG08			JSF-BG09					
Sample Date		28-Jan-19	28-Jan-19	28-Jan-19	28-Jan-19	28-Jan-19	25-Jan-19	25-Jan-19	25-Jan-19	25-Jan-19
Sample ID		JSF-BS-BG08-0.0/0.5-20190128	JSF-BS-BG08-2.0/4.0-20190128	JSF-BS-BG08-6.5/8.5-20190128	JSF-BS-BG08-11.5/13.5-20190128	JSF-BS-BG08-16.5/18.5-20190128	JSF-BS-BG09-0.0/0.5-20190125	JSF-BS-BG09-1.0/4.0-20190125	JSF-BS-BG09-6.1/8.1-20190125	JSF-BS-BG09-10.0/11.7-20190125
Sample Depth		0 - 0.5 ft	2 - 4 ft	6.5 - 8.5 ft	11.5 - 13.5 ft	16.5 - 18.5 ft	0 - 0.5 ft	1 - 4 ft	6.1 - 8.1 ft	10 - 11.7 ft
Sample Type		Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample
Level of Review		Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified
Units										
PLM										
% ASH	%	<1	-	-	-	-	2	-	-	-
Total Metals										
Antimony	mg/kg	0.129 J	<0.0754	0.104 J	<0.0775	<0.0711	0.134 J	0.115 J	0.150 J	0.123 J
Arsenic	mg/kg	3.30	1.64	8.47	5.67	2.33	3.11 J	6.60 J	2.49 J	3.29 J
Barium	mg/kg	32.5	11.4	65.2	168	88.2	27.5	32.6	31.3	89.0
Beryllium	mg/kg	0.447	0.0999 J	1.10	4.96	0.717	0.363	0.478	0.479	0.466
Boron	mg/kg	3.75 J	1.09 J	<0.957	1.24 J	1.63 J	3.83 J	2.24 J	2.16 J	1.89 J
Cadmium	mg/kg	0.0601 J	<0.0207	<0.0213	0.206	0.0458 J	0.0294 J	0.0349 J	<0.0203	0.0317 J
Calcium	mg/kg	19,200	376	2,490	2,080	1,470	59,900	67,600	378	101
Chromium	mg/kg	8.03	4.38	15.3	11.7	9.29	6.85	11.1	9.80	15.9
Cobalt	mg/kg	4.15	0.599	7.45	14.1	6.48	3.12	3.61	2.77	17.6
Copper	mg/kg	8.36	1.79	9.86	13.6	9.74	5.49	7.65	8.56	9.11
Lead	mg/kg	12.4	5.09	19.5	12.7	7.13	11.6	11.5	12.6	22.0
Lithium	mg/kg	8.81	3.47	6.15	9.91	9.60	7.85 J	9.16 J	6.65 J	5.05 J
Mercury	mg/kg	0.0329 J	0.0453	<0.0184	0.0270 J	0.0182 J	0.0420 J	0.0819	0.0393	0.0292 J
Molybdenum	mg/kg	0.484 J	0.377 J	0.475 J	0.754	0.335 J	0.520 J	0.640 J	0.634	1.29
Nickel	mg/kg	6.73	0.808	8.01	27.0	10.9	5.51	5.90	6.43	7.74
Selenium	mg/kg	0.803	0.325 J	1.15	4.27	1.03	0.476 J	0.739	0.504 J	0.384 J
Silver	mg/kg	<0.0177	<0.0170	<0.0176	<0.0175	<0.0161	<0.0180	<0.0196	<0.0167	<0.0175
Thallium	mg/kg	0.107 J	0.0773 J	0.150	0.169	0.0831 J	0.0932 J	0.157	0.139	0.173
Vanadium	mg/kg	13.2	11.2	20.1	21.9	12.0	11.5	19.0	21.3	12.9
Zinc	mg/kg	27.1	3.59	29.0	56.8	36.5	22.0	19.9	19.0	16.4
Anions										
Chloride	mg/kg	<4.80	<4.42	<4.67	<4.69	<4.51	<4.80	<5.22	6.24 J	<4.84
Fluoride	mg/kg	1.35	<0.774	<0.818	<0.822	<0.790	2.62 J	1.21 J	0.809 UJ	0.848 UJ
Sulfate	mg/kg	<8.40	83.8	43.9	11.0 J	12.7	8.47 J	80.0	114	65.4
General Chemistry										
pH (lab)	SU	8.1	5.5	6.0	7.5	7.7	8.1	7.7	5.4	4.7

See notes on last page.

TABLE B.2 - Soil Analytical Results for Percent Ash, Metals, Anions, and General Chemistry
John Sevier Fossil Plant
January - October 2019

Sample Location	Units	JSF-BG09		JSF-BG10		JSF-BG11				
		25-Jan-19 JSF-BS-BG09-12.7/14.7-20190125 12.7 - 14.7 ft Normal Environmental Sample Final-Verified	25-Jan-19 JSF-BS-BG09-16.1/18.1-20190125 16.1 - 18.1 ft Normal Environmental Sample Final-Verified	24-Jan-19 JSF-BS-BG10-0.0/0.5-20190124 0 - 0.5 ft Normal Environmental Sample Final-Verified	24-Jan-19 JSF-BS-BG10-0.0/0.5-20190124 0 - 0.5 ft Normal Environmental Sample Validated	24-Jan-19 JSF-BS-BG10-1.4/3.4-20190124 1.4 - 3.4 ft Normal Environmental Sample Validated	24-Jan-19 JSF-BS-BG10-6.5/8.5-20190124 6.5 - 8.5 ft Normal Environmental Sample Validated	24-Jan-19 JSF-BS-BG10-10.5/12.5-20190124 10.5 - 12.5 ft Normal Environmental Sample Validated	24-Jan-19 JSF-BS-BG11-0.0/0.5-20190124 0 - 0.5 ft Normal Environmental Sample Final-Verified	24-Jan-19 JSF-BS-BG11-0.0/0.5-20190124 0 - 0.5 ft Normal Environmental Sample Validated
PLM										
% ASH	%	-	-	2	-	-	-	-	2	-
Total Metals										
Antimony	mg/kg	0.203 J	0.0823 J	-	0.179 J	0.258 J	0.135 J	0.0976 J	-	0.183 J
Arsenic	mg/kg	8.59 J	6.33 J	-	4.11	6.06	4.57	3.52	-	10.8
Barium	mg/kg	94.8	214	-	32.5	31.3	36.6	48.4	-	64.7
Beryllium	mg/kg	2.00	3.63	-	0.521	0.856	1.39	1.80	-	0.778
Boron	mg/kg	4.67 J	3.06 J	-	5.89 J	2.42 J	2.36 J	2.44 J	-	2.51 J
Cadmium	mg/kg	0.0661 J	0.399	-	0.0860 J	<0.0227	0.0442 J	0.0635 J	-	0.0907 J
Calcium	mg/kg	484	1,400	-	48,400	1,000	33.8 J	271	-	3,550
Chromium	mg/kg	11.9	11.9	-	9.59	15.5	18.2	22.8	-	13.9
Cobalt	mg/kg	16.8	32.6	-	4.00	4.47	12.4	14.2	-	6.60
Copper	mg/kg	27.3	26.7	-	7.45	20.2	26.6	25.4	-	11.2
Lead	mg/kg	19.7	24.8	-	16.5	25.3	20.9	14.8	-	15.7
Lithium	mg/kg	38.2 J	54.3 J	-	11.7	16.1	25.8	37.4	-	15.2
Mercury	mg/kg	0.0214 J	<0.0165	-	0.107	0.0342 J	<0.0223	<0.0193	-	0.0568
Molybdenum	mg/kg	0.284 J	0.293 J	-	0.634 J	0.543 J	0.223 J	0.197 J	-	0.633 J
Nickel	mg/kg	24.3	36.5	-	6.75	14.1	27.0	30.8	-	11.1
Selenium	mg/kg	1.74	2.55	-	0.618 J	0.718	0.999	1.26	-	0.876
Silver	mg/kg	<0.0199	<0.0184	-	0.108 U*	<0.0187	<0.0189	<0.0196	-	<0.0198
Thallium	mg/kg	0.141 J	0.269	-	0.119 J	0.126 J	0.0908 J	0.0995 J	-	0.186
Vanadium	mg/kg	18.5	15.4	-	14.8	21.8	18.7	18.3	-	17.9
Zinc	mg/kg	64.2	110	-	22.0	36.0	66.9	91.4	-	39.0
Anions										
Chloride	mg/kg	<5.33	<5.30	-	<5.12	<5.02	<5.14	<5.27	-	<5.26
Fluoride	mg/kg	0.934 UJ	0.929 UJ	-	0.898 UJ	0.880 UJ	0.901 UJ	0.924 UJ	-	1.43 J
Sulfate	mg/kg	12.5 J	<9.28	-	<8.97	29.6	<9.00	<9.23	-	13.1 J
General Chemistry										
pH (lab)	SU	5.8	5.5	-	7.9	6.4	5.3	5.4	-	8.0

See notes on last page.

TABLE B.2 - Soil Analytical Results for Percent Ash, Metals, Anions, and General Chemistry
John Sevier Fossil Plant
January - October 2019

Sample Location	Units	JSF-BG11								JSF-BG12	
		24-Jan-19 JSF-BS-BG11-1.1/3.1-20190124 1.1 - 3.1 ft Normal Environmental Sample Validated	24-Jan-19 JSF-BS-BG11-5.5/8.5-20190124 5.5 - 8.5 ft Normal Environmental Sample Validated	24-Jan-19 JSF-BS-FD01-20190124 5.5 - 8.5 ft Field Duplicate Sample Validated	24-Jan-19 JSF-BS-BG11-11.3/13.3-20190124 11.3 - 13.3 ft Normal Environmental Sample Validated	23-Jan-19 JSF-BS-BG12-0.0/0.5-20190123 0 - 0.5 ft Normal Environmental Sample Final-Verified	23-Jan-19 JSF-BS-BG12-0.0/0.5-20190123 0 - 0.5 ft Normal Environmental Sample Validated	23-Jan-19 JSF-BS-BG12-0.8/2.8-20190123 0.8 - 2.8 ft Normal Environmental Sample Validated	23-Jan-19 JSF-BS-BG12-5.0/10.0-20190123 5 - 10 ft Normal Environmental Sample Validated	23-Jan-19 JSF-BS-BG12-10.75/12.75-20190123 10.75 - 12.75 ft Normal Environmental Sample Validated	
PLM											
% ASH	%	-	-	-	-	2	-	-	-	-	
Total Metals											
Antimony	mg/kg	0.154 J	<0.0786	<0.0813	0.0920 J	-	0.541	0.0876 J	0.0802 J	0.0899 J	
Arsenic	mg/kg	6.19	3.71	4.80	2.55	-	4.90	4.21	1.21	1.75	
Barium	mg/kg	86.0	33.1	43.8	119	-	41.3	100	83.7	92.0	
Beryllium	mg/kg	0.910	0.430	0.619	1.09	-	0.759	1.42	0.739	1.13	
Boron	mg/kg	1.92 J	0.989 J	<1.00	1.23 J	-	17.8	1.53 J	1.41 J	2.23 J	
Cadmium	mg/kg	0.0688 J	<0.0215	0.0226 J	0.0673 J	-	0.122 J	<0.0203	0.0212 J	0.0925 J	
Calcium	mg/kg	6,540	640	723	1,550	-	77,300	2,990	1,350	1,690	
Chromium	mg/kg	11.8	9.99	11.7	13.2	-	8.01	11.9	10.5	12.8	
Cobalt	mg/kg	10.1	4.40 J	8.20 J	11.5	-	4.56	11.1	3.73	7.30	
Copper	mg/kg	8.29	6.26	6.17	9.87	-	13.3	5.28	5.98	10.5	
Lead	mg/kg	15.4	9.91	12.7	10.3	-	16.6	10.3	8.62	9.57	
Lithium	mg/kg	12.3	10.5	9.46	10.3	-	12.1	8.29	9.47	11.5	
Mercury	mg/kg	0.0411	<0.0152	0.0235 J	<0.0184	-	0.0369 J	<0.0168	0.0472	0.0320 J	
Molybdenum	mg/kg	0.480 U*	0.312 U*	0.383 U*	0.383 J	-	0.444 U*	0.585 U*	0.266 U*	0.580 U*	
Nickel	mg/kg	10.3	7.25	7.37	12.9	-	9.76	9.28	7.04	11.6	
Selenium	mg/kg	0.988	0.545 J	0.923	1.15	-	1.42	1.45	0.869	1.14	
Silver	mg/kg	<0.0176	<0.0177	<0.0184	<0.0172	-	0.0224 U*	<0.0167	<0.0163	0.0209 U*	
Thallium	mg/kg	0.0991 J	0.0878 J	0.0943 J	0.129	-	0.114 J	0.139	0.132	0.151	
Vanadium	mg/kg	16.5	13.0	14.0	20.1	-	10.4	21.7	16.9	20.4	
Zinc	mg/kg	36.6	22.5	23.0	39.1	-	35.9	25.0	26.2	42.1	
Anions											
Chloride	mg/kg	<4.63	<4.64	<4.76	<4.48	-	<5.41	<4.57	<4.47	6.51 J	
Fluoride	mg/kg	2.18 J	0.814 UJ	0.833 UJ	1.55 J	-	0.948 UJ	0.801 UJ	1.36 J	2.63 J	
Sulfate	mg/kg	629	370	361	149	-	27.6	795	231	77.7	
General Chemistry											
pH (lab)	SU	7.3	5.4	5.5	7.9	-	7.7	6.7	7.3	8.0	

See notes on last page.

TABLE B.2 - Soil Analytical Results for Percent Ash, Metals, Anions, and General Chemistry
John Sevier Fossil Plant
January - October 2019

Sample Location		JSF-BG12				JSF-BG13				
Sample Date		23-Jan-19	8-Oct-19	7-Oct-19	7-Oct-19	7-Oct-19	7-Oct-19	7-Oct-19	7-Oct-19	7-Oct-19
Sample ID		JSF-BS-BG12-13.5/15.0-20190123	JSF-BS-BG13-0.0/0.5-20191008	JSF-BS-BG13-6.5/8.5-20191007	JSF-BS-BG13-1.5/3.5-20191007	JSF-BS-BG13-11.5/13.5-20191007	JSF-BS-BG13-16.5/18.5-20191007	JSF-BS-BG13-21.5/23.5-20191007	JSF-BS-BG13-26.5/28.5-20191007	
Sample Depth		13.5 - 15 ft	0 - 0.5 ft	6.5 - 8.5 ft	1.5 - 3.5 ft	11.5 - 13.5 ft	16.5 - 18.5 ft	21.5 - 23.5 ft	26.5 - 28.5 ft	
Sample Type		Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	
Level of Review		Validated	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	
Units										
PLM										
% ASH	%	-	1	<1	<1	1	2	2	3	
Total Metals										
Antimony	mg/kg	<0.0781	0.214 J	0.157 J	0.115 J	0.147 J	0.156 J	0.110 J	0.0791 UJ	
Arsenic	mg/kg	1.16	3.45	5.17	3.46	3.28	3.95	3.08	1.34	
Barium	mg/kg	41.4	74.9	160	74.6	161	193	140	59.1	
Beryllium	mg/kg	0.478	1.03	1.56	1.01	1.50	1.65	1.34	0.785	
Boron	mg/kg	1.17 J	5.51 J	3.09 J	3.15 J	3.72 J	3.85 J	3.85 J	3.64 J	
Cadmium	mg/kg	0.0695 J	0.121 J	0.321	0.0961 J	0.308	0.284	0.285	0.0296 J	
Calcium	mg/kg	623	7,850	1,850	1,100	3,390	2,820	2,060	1,410	
Chromium	mg/kg	7.24	12.0	16.6	12.1	16.0	17.2	13.5	10.0	
Cobalt	mg/kg	3.57	11.4	13.0	5.09	11.4	12.0	9.66	4.37	
Copper	mg/kg	4.05	12.8	13.3	10.6	23.8	14.3	11.4	6.52	
Lead	mg/kg	4.02	20.1	16.1	11.2	16.4	15.1	11.6	6.54	
Lithium	mg/kg	4.86	16.9	24.7	17.0	22.1	28.2	22.6	12.2	
Mercury	mg/kg	<0.0176	0.0371 J	0.0562	0.0385	0.0461	0.0350 J	0.0299 J	<0.0165	
Molybdenum	mg/kg	0.209 U*	0.727	1.09	0.833	0.661	0.718	0.577 J	<0.208	
Nickel	mg/kg	4.65	11.6	16.6	9.88	13.2	17.1	13.7	6.94	
Selenium	mg/kg	0.576 J	0.258 J	0.152 J	0.203 J	0.367 J	<0.148	<0.145	0.283 J	
Silver	mg/kg	<0.0176	<0.0351	<0.0325	<0.0335	0.0422 J	0.0346 J	<0.0321	<0.0344	
Thallium	mg/kg	0.0630 J	0.181	0.289	0.448	0.221	0.223	0.182	0.0859 J	
Vanadium	mg/kg	8.96	25.4	27.3	25.8	22.7	24.1	18.6	10.3	
Zinc	mg/kg	16.4	46.6	60.2	36.9	58.6	62.3	48.4	25.8	
Anions										
Chloride	mg/kg	<4.77	<5.09	<4.56	<4.46	<4.74	<4.71	<4.78	<5.11	
Fluoride	mg/kg	1.50 J	1.87	<0.800	<0.781	1.27	1.43	1.16 J	0.950 J	
Sulfate	mg/kg	45.6	14.9	49.0	67.2	30.2	29.2	40.5	24.6	
General Chemistry										
pH (lab)	SU	7.6	7.7	6.4	6.9	6.9	7.4	6.8	7.1	

See notes on last page.

TABLE B.2 - Soil Analytical Results for Percent Ash, Metals, Anions, and General Chemistry
John Sevier Fossil Plant
January - October 2019

Sample Location	Units	JSF-BG14									JSF-BG15		
		8-Oct-19 JSF-BS-BG14-0.0/0.5-20191008 0 - 0.5 ft Normal Environmental Sample Final-Verified	8-Oct-19 JSF-BS-BG14-3.0/5.0-20191008 3 - 5 ft Normal Environmental Sample Final-Verified	8-Oct-19 JSF-BS-BG14-6.5/8.5-20191008 6.5 - 8.5 ft Normal Environmental Sample Final-Verified	8-Oct-19 JSF-BS-BG14-11.5/13.5-20191008 11.5 - 13.5 ft Normal Environmental Sample Final-Verified	8-Oct-19 JSF-BS-BG14-16.5/18.5-20191008 16.5 - 18.5 ft Normal Environmental Sample Final-Verified	8-Oct-19 JSF-BS-BG14-21.5/23.5-20191008 21.5 - 23.5 ft Normal Environmental Sample Final-Verified	8-Oct-19 JSF-BS-BG15-0.0/0.5-20191008 0 - 0.5 ft Normal Environmental Sample Final-Verified	8-Oct-19 JSF-BS-BG15-1.5/3.5-20191008 1.5 - 3.5 ft Normal Environmental Sample Final-Verified	8-Oct-19 JSF-BS-BG15-6.5/8.5-20191008 6.5 - 8.5 ft Normal Environmental Sample Final-Verified			
PLM													
% ASH	%	1	2	1	<1	2	<1	3	3	2			
Total Metals													
Antimony	mg/kg	0.210 J	0.172 J	0.210 J	0.170 J	0.112 J	0.0679 UJ	0.221 J	0.203 J	0.153 J			
Arsenic	mg/kg	3.88	3.98	4.03	4.64	3.73	4.29	4.58	4.01	3.53			
Barium	mg/kg	77.8	178	172	90.4	66.2	55.8	150	182	139			
Beryllium	mg/kg	1.12	1.64	1.57	1.08	0.886	0.551	1.46	1.62	1.20			
Boron	mg/kg	8.05 J	4.72 J	4.54 J	4.07 J	3.87 J	3.76 J	7.66 J	7.13 J	3.78 J			
Cadmium	mg/kg	0.251	0.236	0.200	0.194	0.156	0.0315 J	0.282	0.260	0.182			
Calcium	mg/kg	43,300	2,320	2,500	1,230	1,010	23,700	21,100	14,500	1,540			
Chromium	mg/kg	11.4	16.0	17.4	13.2	10.5	10.1	17.2	17.1	12.0			
Cobalt	mg/kg	7.88	12.2	13.5	10.1	7.33	9.35	11.1	12.7	8.84			
Copper	mg/kg	11.5	11.0	14.7	10.7	8.35	7.79	13.5	16.3	8.87			
Lead	mg/kg	35.7	15.0	15.9	12.7	9.18	7.76	27.1	16.1	10.2			
Lithium	mg/kg	16.9	24.3	26.2	19.7	12.8	13.6	25.0	23.9	18.5			
Mercury	mg/kg	0.0257 J	0.0564	0.0373 J	0.0495	0.0258 J	<0.0152	0.0345 J	0.0566	0.0767			
Molybdenum	mg/kg	0.706	0.771	0.751	0.854	0.644	0.389 J	0.839	0.717	0.603			
Nickel	mg/kg	11.8	15.8	17.6	14.1	10.9	16.3	17.3	18.7	13.9			
Selenium	mg/kg	0.462 J	0.412 J	0.177 J	0.267 J	<0.149	0.145 J	0.654	0.507 J	0.255 J			
Silver	mg/kg	0.0362 J	0.0416 J	0.0342 J	<0.0334	<0.0330	<0.0296	0.0447 J	0.0368 J	<0.0307			
Thallium	mg/kg	0.356	0.217	0.231	0.167	0.122	0.0655 J	0.231	0.234	0.165			
Vanadium	mg/kg	26.2	25.1	26.0	21.8	16.8	8.54	25.1	25.5	19.8			
Zinc	mg/kg	45.6	51.2	57.7	41.6	32.1	31.4	71.5	61.7	38.8			
Anions													
Chloride	mg/kg	<4.31	<4.54	<4.56	<4.55	<4.46	<4.43	<4.70	<4.54	<4.40			
Fluoride	mg/kg	1.11 J	2.11	<0.799	0.847 J	0.792 J	1.00 J	2.13 J	3.68 J	1.30 J			
Sulfate	mg/kg	9.91 J	50.6	22.2	37.0	23.0	52.2	10.6 J	28.9	19.4			
General Chemistry													
pH (lab)	SU	7.8	7.5	7.0	6.8	6.9	8.0	7.7	7.9	7.3			

See notes on last page.

TABLE B.2 - Soil Analytical Results for Percent Ash, Metals, Anions, and General Chemistry
John Sevier Fossil Plant
January - October 2019

Sample Location	Sample Date	JSF-BG15			
		8-Oct-19 JSF-BS-BG15-11.0/14.0-20191008 11 - 14 ft Normal Environmental Sample Final-Verified	8-Oct-19 JSF-BS-DUP01-20191008 11 - 14 ft Field Duplicate Sample Final-Verified	8-Oct-19 JSF-BS-BG15-16.5/18.5-20191008 16.5 - 18.5 ft Normal Environmental Sample Final-Verified	8-Oct-19 JSF-BS-BG15-21.5/23.5-20191008 21.5 - 23.5 ft Normal Environmental Sample Final-Verified
Sample ID	Sample Depth	Sample Type	Level of Review	Units	
PLM					
% ASH	%	1	-	2	2
Total Metals					
Antimony	mg/kg	0.106 J	0.150 J	0.145 J	0.112 J
Arsenic	mg/kg	4.33	4.25	4.46	4.91
Barium	mg/kg	121	114	103	29.9
Beryllium	mg/kg	1.29	1.27	1.18	0.572
Boron	mg/kg	4.94 J	3.70 J	4.08 J	3.28 J
Cadmium	mg/kg	0.187	0.198	0.209	0.0768 J
Calcium	mg/kg	1,360	1,160	1,160	593
Chromium	mg/kg	13.1	11.9	12.2	11.7
Cobalt	mg/kg	11.5	9.51	9.14	4.79
Copper	mg/kg	11.4	10.3	10.0	5.79
Lead	mg/kg	13.3	11.4	10.8	6.48
Lithium	mg/kg	24.0	20.4	19.5	7.50
Mercury	mg/kg	0.0625	0.0666	0.0628	<0.0152
Molybdenum	mg/kg	0.830	0.748	0.719	0.516 J
Nickel	mg/kg	15.2	16.8	15.6	11.2
Selenium	mg/kg	<0.152	<0.147	0.254 J	<0.145
Silver	mg/kg	<0.0337	<0.0325	<0.0345	<0.0321
Thallium	mg/kg	0.181	0.183	0.161	0.0813 J
Vanadium	mg/kg	22.3	20.5	20.7	10.7
Zinc	mg/kg	49.6	42.8	42.4	21.4
Anions					
Chloride	mg/kg	<4.89	<4.74	<4.71	<4.48
Fluoride	mg/kg	0.946 J	1.10 J	0.826 UJ	0.811 J
Sulfate	mg/kg	44.6	51.7	44.2	12.2
General Chemistry					
pH (lab)	SU	6.9	6.7	6.1	7.4

Notes:

- <0.03 analyte was not detected at a concentration greater than the Method Detection Limit
- parameter not analyzed / not available
- % percent
- ft feet below ground surface
- ID identification
- J quantitation is approximate due to limitations identified during data validation
- mg/kg milligrams per kilogram
- PLM Polarized Light Microscope - analysis for % ash
- SU Standard Unit
- U* this result should be considered "not detected" because it was detected in an associated field or laboratory blank at a similar level
- UJ this compound was not detected, but the reporting or detection limit should be considered estimated due to a bias identified during data validation
- UR unreliable reporting or detection limit; compound may or may not be present in sample.

1. Level of review is defined in the Quality Assurance Project Plan.
2. Non-detect (ND) results reported by RJ Lee Group for percent (%) ash expressed as <1 in table.
3. The 0-0.5 foot sample was collected using a hand auger when accessible during the drilling operations at that boring location; it may or may not have been the first sample obtained and thus could have a different sample date.
4. Level of review for % ash samples is Final-Verified.

TABLE B.3 – Soil Analytical Results for Radiological Parameters
John Sevier Fossil Plant
January - October 2019

Sample Location		JSF-106	JSF-110	JSF-BG01ALT			JSF-BG02ALT		
Sample Date		24-Jan-19	29-Jan-19	5-Feb-19	5-Feb-19	5-Feb-19	5-Feb-19	4-Feb-19	4-Feb-19
Sample ID		JSF-BS-JSF106-9.0/12.0-20190124	JSF_BS_JSJF110_9.9/12.0_20190129	JSF-BS-BG01ALT-0.0/0.5-20190205	JSF-BS-BG01ALT-0.5/2.5-20190205	JSF-BS-BG01ALT-6.8/8.8-20190205	JSF-BS-BG01ALT-10.0/12.4-20190205	JSF-BS-BG02ALT-0.0/0.5-20190204	JSF-BS-FD03-20190204
Sample Depth		9 - 12 ft	9.9 - 12 ft	0 - 0.5 ft	0.5 - 2.5 ft	6.8 - 8.8 ft	10 - 12.4 ft	0 - 0.5 ft	0 - 0.5 ft
Sample Type		Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Field Duplicate Sample
Level of Review		Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified
Units									
Radiological Parameters									
Radium-226	pCi/g	0.902 +/- (0.233)	0.440 +/- (0.120)	0.124 +/- (0.103)U	1.06 +/- (0.256)	0.828 +/- (0.196)	0.598 +/- (0.222)	0.993 +/- (0.262)	0.921 +/- (0.227)
Radium-228	pCi/g	1.62 +/- (0.370)	0.697 +/- (0.260)	-0.0110 +/- (0.176)U	0.536 +/- (0.204)	0.952 +/- (0.312)	1.54 +/- (0.327)	1.04 +/- (0.342)	0.916 +/- (0.290)
Radium-226+228	pCi/g	2.52 +/- (0.437)	1.14 +/- (0.286)	0.124 +/- (0.204)U	1.60 +/- (0.327)	1.78 +/- (0.368)	2.14 +/- (0.395)	2.03 +/- (0.431)	1.84 +/- (0.368)

See notes on last page.

TABLE B.3 – Soil Analytical Results for Radiological Parameters
John Sevier Fossil Plant
January - October 2019

Sample Location	Units	JSF-BG02ALT								JSF-BG03	
		4-Feb-19 JSF-BS-BG02ALT-0.9/2.9-20190204 0.9 - 2.9 ft Normal Environmental Sample Final-Verified	4-Feb-19 JSF-BS-BG02ALT-5.9/7.9-20190204 5.9 - 7.9 ft Normal Environmental Sample Final-Verified	4-Feb-19 JSF-BS-BG02ALT-11.5/13.5-20190204 11.5 - 13.5 ft Normal Environmental Sample Final-Verified	4-Feb-19 JSF-BS-BG02ALT-16.5/18.5-20190204 16.5 - 18.5 ft Normal Environmental Sample Final-Verified	29-Jan-19 JSF-BS-BG03-0.0/0.5-20190129 0 - 0.5 ft Normal Environmental Sample Final-Verified	29-Jan-19 JSF-BS-BG03-1.5/3.5-20190129 1.5 - 3.5 ft Normal Environmental Sample Final-Verified	29-Jan-19 JSF-BS-BG03-5.0/6.6-20190129 5 - 6.6 ft Normal Environmental Sample Final-Verified	29-Jan-19 JSF-BS-BG03-7.2/9.2-20190129 7.2 - 9.2 ft Normal Environmental Sample Final-Verified	29-Jan-19 JSF-BS-BG03-11.5/13.5-20190129 11.5 - 13.5 ft Normal Environmental Sample Final-Verified	
Radiological Parameters											
Radium-226	pCi/g	0.913 +/- (0.213)	0.486 +/- (0.156)	1.16 +/- (0.277)	1.06 +/- (0.252)	0.208 +/- (0.132)U	0.914 +/- (0.259)	0.574 +/- (0.200)	0.774 +/- (0.255)	0.893 +/- (0.267)	
Radium-228	pCi/g	1.05 +/- (0.281)	0.636 +/- (0.335)	1.65 +/- (0.317)	1.58 +/- (0.362)	1.32 +/- (0.272)	1.52 +/- (0.326)	1.14 +/- (0.252)	2.05 +/- (0.369)	1.50 +/- (0.380)	
Radium-226+228	pCi/g	1.96 +/- (0.353)	1.12 +/- (0.370)	2.81 +/- (0.421)	2.64 +/- (0.441)	1.53 +/- (0.302)J	2.43 +/- (0.416)	1.71 +/- (0.322)	2.82 +/- (0.449)	2.39 +/- (0.464)	

See notes on last page.

TABLE B.3 – Soil Analytical Results for Radiological Parameters
John Sevier Fossil Plant
January - October 2019

Sample Location		30-Jan-19	30-Jan-19	JSF-BG04ALT 30-Jan-19	30-Jan-19	30-Jan-19	31-Jan-19	JSF-BG05ALT 31-Jan-19	31-Jan-19	
Sample Date		30-Jan-19	30-Jan-19	30-Jan-19	30-Jan-19	30-Jan-19	30-Jan-19	31-Jan-19	31-Jan-19	
Sample ID		JSF-BS-BG04ALT-0.0/0.5-20190130	JSF-BS-BG04ALT-0.9/2.9-20190130	JSF-BS-BG04ALT-7.2/9.2-20190130	JSF-BS-BG04ALT-15.5/18.5-20190130	JSF-BS-FD02-20190130	JSF-BS-BG05ALT-0.0/0.5-20190131	JSF-BS-BG05ALT-1.3/3.3-20190131	JSF-BS-BG05ALT-6.0/8.0-20190131	
Sample Depth		0 - 0.5 ft	0.9 - 2.9 ft	7.2 - 9.2 ft	15.5 - 18.5 ft	15.5 - 18.5 ft	0 - 0.5 ft	1.3 - 3.3 ft	6 - 8 ft	
Sample Type		Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Field Duplicate Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	
Level of Review		Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	
Units										
Radiological Parameters										
Radium-226	pCi/g	0.747 +/- (0.185)	0.722 +/- (0.228)	0.375 +/- (0.155)	0.772 +/- (0.311)	0.817 +/- (0.220)	0.849 +/- (0.200)	0.837 +/- (0.298)	0.543 +/- (0.218)	
Radium-228	pCi/g	0.630 +/- (0.210)	1.30 +/- (0.335)	0.483 +/- (0.210)	1.54 +/- (0.455)	1.68 +/- (0.471)	0.990 +/- (0.412)	1.27 +/- (0.524)	0.965 +/- (0.246)	
Radium-226+228	pCi/g	1.38 +/- (0.280)	2.02 +/- (0.405)	0.858 +/- (0.261)	2.31 +/- (0.551)	2.50 +/- (0.520)	1.84 +/- (0.458)	2.11 +/- (0.603)	1.51 +/- (0.329)	

See notes on last page.

TABLE B.3 – Soil Analytical Results for Radiological Parameters
John Sevier Fossil Plant
January - October 2019

Sample Location	Units	JSF-BG06ALT				JSF-BG07			
		1-Feb-19 JSF-BS-BG06ALT-0.0/0.5-20190201 0 - 0.5 ft Normal Environmental Sample Final-Verified	1-Feb-19 JSF-BS-BG06ALT-1.5/3.5-20190201 1.5 - 3.5 ft Normal Environmental Sample Final-Verified	1-Feb-19 JSF-BS-BG06ALT-6.5/8.5-20190201 6.5 - 8.5 ft Normal Environmental Sample Final-Verified	1-Feb-19 JSF-BS-BG06ALT-11.2/13.2-20190201 11.2 - 13.2 ft Normal Environmental Sample Final-Verified	29-Jan-19 JSF-BS-BG07-0.0/0.5-20190129 0 - 0.5 ft Normal Environmental Sample Final-Verified	29-Jan-19 JSF-BS-BG07-1.4/4.1-20190129 1.4 - 4.1 ft Normal Environmental Sample Final-Verified	29-Jan-19 JSF-BS-BG07-6.2/8.2-20190129 6.2 - 8.2 ft Normal Environmental Sample Final-Verified	29-Jan-19 JSF-BS-BG07-11.0/14.0-20190129 11 - 14 ft Normal Environmental Sample Final-Verified
Radiological Parameters									
Radium-226	pCi/g	0.790 +/- (0.209)	0.845 +/- (0.259)	0.743 +/- (0.247)	0.749 +/- (0.214)	0.289 +/- (0.131)	0.778 +/- (0.193)	0.786 +/- (0.196)	0.973 +/- (0.241)
Radium-228	pCi/g	1.24 +/- (0.346)	1.30 +/- (0.411)	1.71 +/- (0.408)	1.76 +/- (0.409)	0.303 +/- (0.150)	1.08 +/- (0.237)	1.42 +/- (0.306)	1.69 +/- (0.391)
Radium-226+228	pCi/g	2.03 +/- (0.404)	2.15 +/- (0.486)	2.45 +/- (0.477)	2.51 +/- (0.462)	0.592 +/- (0.199)	1.86 +/- (0.306)	2.21 +/- (0.363)	2.66 +/- (0.459)

See notes on last page.

TABLE B.3 – Soil Analytical Results for Radiological Parameters
John Sevier Fossil Plant
January - October 2019

Sample Location		JSF-BG08		JSF-BG09			JSF-BG09			
Sample Date		28-Jan-19	28-Jan-19	28-Jan-19	28-Jan-19	28-Jan-19	25-Jan-19	25-Jan-19	25-Jan-19	25-Jan-19
Sample ID		JSF-BS-BG08-0.0/0.5-20190128	JSF-BS-BG08-2.0/4.0-20190128	JSF-BS-BG08-6.5/8.5-20190128	JSF-BS-BG08-11.5/13.5-20190128	JSF-BS-BG08-16.5/18.5-20190128	JSF-BS-BG09-0.0/0.5-20190125	JSF-BS-BG09-1.0/4.0-20190125	JSF-BS-BG09-6.1/8.1-20190125	JSF-BS-BG09-10.0/11.7-20190125
Sample Depth		0 - 0.5 ft	2 - 4 ft	6.5 - 8.5 ft	11.5 - 13.5 ft	16.5 - 18.5 ft	0 - 0.5 ft	1 - 4 ft	6.1 - 8.1 ft	10 - 11.7 ft
Sample Type		Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample
Level of Review		Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified
Units										
Radiological Parameters										
Radium-226	pCi/g	0.626 +/- (0.215)	0.947 +/- (0.219)	1.08 +/- (0.310)	0.565 +/- (0.187)	0.416 +/- (0.160)	0.175 +/- (0.329)U	0.860 +/- (0.223)	0.512 +/- (0.177)	0.594 +/- (0.212)
Radium-228	pCi/g	0.989 +/- (0.336)	1.23 +/- (0.311)	1.48 +/- (0.345)	1.16 +/- (0.309)	0.754 +/- (0.203)	0.768 +/- (0.258)	1.03 +/- (0.296)	1.15 +/- (0.324)	1.08 +/- (0.292)
Radium-226+228	pCi/g	1.62 +/- (0.399)	2.18 +/- (0.380)	2.56 +/- (0.464)	1.73 +/- (0.361)	1.17 +/- (0.258)	0.943 +/- (0.418)J	1.89 +/- (0.371)	1.66 +/- (0.369)	1.67 +/- (0.361)

See notes on last page.

TABLE B.3 – Soil Analytical Results for Radiological Parameters
John Sevier Fossil Plant
January - October 2019

Sample Location	Units	JSF-BG09		JSF-BG10				JSF-BG11		24-Jan-19 JSF-BS-BG11-5.5/8.5-20190124 5.5 - 8.5 ft Normal Environmental Sample Validated
		25-Jan-19 JSF-BS-BG09-12.7/14.7-20190125 12.7 - 14.7 ft Normal Environmental Sample Final-Verified	25-Jan-19 JSF-BS-BG09-16.1/18.1-20190125 16.1 - 18.1 ft Normal Environmental Sample Final-Verified	24-Jan-19 JSF-BS-BG10-0.0/0.5-20190124 0 - 0.5 ft Normal Environmental Sample Validated	24-Jan-19 JSF-BS-BG10-1.4/3.4-20190124 1.4 - 3.4 ft Normal Environmental Sample Validated	24-Jan-19 JSF-BS-BG10-6.5/8.5-20190124 6.5 - 8.5 ft Normal Environmental Sample Validated	24-Jan-19 JSF-BS-BG10-10.5/12.5-20190124 10.5 - 12.5 ft Normal Environmental Sample Validated	24-Jan-19 JSF-BS-BG11-0.0/0.5-20190124 0 - 0.5 ft Normal Environmental Sample Validated	24-Jan-19 JSF-BS-BG11-1.1/3.1-20190124 1.1 - 3.1 ft Normal Environmental Sample Validated	
Radiological Parameters										
Radium-226	pCi/g	0.842 +/- (0.232)	1.53 +/- (0.354)	0.927 +/- (0.239)	0.647 +/- (0.205)	1.35 +/- (0.300)	0.780 +/- (0.256)	0.737 +/- (0.204)	0.829 +/- (0.226)	0.897 +/- (0.198)
Radium-228	pCi/g	1.26 +/- (0.360)	2.28 +/- (0.526)	0.538 +/- (0.284)U	1.56 +/- (0.310)	2.37 +/- (0.503)	1.75 +/- (0.385)	1.30 +/- (0.436)	1.53 +/- (0.314)	1.43 +/- (0.283)
Radium-226+228	pCi/g	2.10 +/- (0.428)	3.81 +/- (0.634)	1.47 +/- (0.371)J	2.21 +/- (0.372)	3.72 +/- (0.586)	2.53 +/- (0.462)	2.04 +/- (0.481)	2.36 +/- (0.387)	2.33 +/- (0.345)

See notes on last page.

TABLE B.3 – Soil Analytical Results for Radiological Parameters
John Sevier Fossil Plant
January - October 2019

Sample Location	Units	JSF-BG11		JSF-BG12		JSF-BG12		JSF-BG13		
		24-Jan-19 JSF-BS-FD01-20190124 5.5 - 8.5 ft Field Duplicate Sample Validated	24-Jan-19 JSF-BS-BG11-11.3/13.3-20190124 11.3 - 13.3 ft Normal Environmental Sample Validated	23-Jan-19 JSF-BS-BG12-0.0/0.5-20190123 0 - 0.5 ft Normal Environmental Sample Validated	23-Jan-19 JSF-BS-BG12-0.8/2.8-20190123 0.8 - 2.8 ft Normal Environmental Sample Validated	23-Jan-19 JSF-BS-BG12-5.0/10.0-20190123 5 - 10 ft Normal Environmental Sample Validated	23-Jan-19 JSF-BS-BG12-10.75/12.75-20190123 10.75 - 12.75 ft Normal Environmental Sample Validated	23-Jan-19 JSF-BS-BG12-13.5/15.0-20190123 13.5 - 15 ft Normal Environmental Sample Validated	8-Oct-19 JSF-BS-BG13-0.0/0.5-20191008 0 - 0.5 ft Normal Environmental Sample Final-Verified	7-Oct-19 JSF-BS-BG13-1.5/3.5-20191007 1.5 - 3.5 ft Normal Environmental Sample Final-Verified
Radiological Parameters										
Radium-226	pCi/g	0.872 +/- (0.234)	0.820 +/- (0.185)	0.254 +/- (0.149)U	1.08 +/- (0.304)	0.603 +/- (0.233)	0.779 +/- (0.213)	0.752 +/- (0.223)	0.920 +/- (0.207)	1.01 +/- (0.216)
Radium-228	pCi/g	1.22 +/- (0.348)	1.37 +/- (0.278)	0.744 +/- (0.250)	1.60 +/- (0.418)	1.57 +/- (0.328)	1.26 +/- (0.265)	1.04 +/- (0.273)	1.09 +/- (0.277)	1.80 +/- (0.365)
Radium-226+228	pCi/g	2.09 +/- (0.419)	2.19 +/- (0.334)	0.998 +/- (0.291)J	2.68 +/- (0.517)	2.17 +/- (0.402)	2.04 +/- (0.340)	1.79 +/- (0.353)	2.01 +/- (0.346)	2.81 +/- (0.424)

See notes on last page.

TABLE B.3 – Soil Analytical Results for Radiological Parameters
John Sevier Fossil Plant
January - October 2019

Sample Location	Units	7-Oct-19		JSF-BG13			JSF-BG14			8-Oct-19	
		Sample ID	Sample Depth	Sample ID	Sample Depth	Sample ID	Sample Depth	Sample ID	Sample Depth	Sample ID	Sample Depth
Sample Date		7-Oct-19	7-Oct-19	7-Oct-19	7-Oct-19	7-Oct-19	8-Oct-19	8-Oct-19	8-Oct-19	8-Oct-19	
Sample ID		JSF-BS-BG13-6.5/8.5-20191007	JSF-BS-BG13-11.5/13.5-20191007	JSF-BS-BG13-16.5/18.5-20191007	JSF-BS-BG13-21.5/23.5-20191007	JSF-BS-BG13-26.5/28.5-20191007	JSF-BS-BG14-0.0/0.5-20191008	JSF-BS-BG14-3.0/5.0-20191008	JSF-BS-BG14-6.5/8.5-20191008	JSF-BS-BG14-11.5/13.5-20191008	
Sample Depth		6.5 - 8.5 ft	11.5 - 13.5 ft	16.5 - 18.5 ft	21.5 - 23.5 ft	26.5 - 28.5 ft	0 - 0.5 ft	3 - 5 ft	6.5 - 8.5 ft	11.5 - 13.5 ft	
Sample Type		Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	Normal Environmental Sample	
Level of Review		Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	Final-Verified	
Radiological Parameters											
Radium-226	pCi/g	1.63 +/- (0.315)	1.03 +/- (0.213)	1.51 +/- (0.267)	0.880 +/- (0.190)	1.24 +/- (0.306)	0.569 +/- (0.206)	1.35 +/- (0.251)	1.13 +/- (0.224)	1.08 +/- (0.240)	
Radium-228	pCi/g	1.97 +/- (0.383)	1.90 +/- (0.338)	1.52 +/- (0.356)	1.34 +/- (0.257)	1.61 +/- (0.443)	0.842 +/- (0.286)	1.54 +/- (0.297)	1.40 +/- (0.251)	1.19 +/- (0.289)	
Radium-226+228	pCi/g	3.60 +/- (0.496)	2.93 +/- (0.400)	3.03 +/- (0.445)	2.22 +/- (0.320)	2.85 +/- (0.538)	1.41 +/- (0.352)	2.89 +/- (0.389)	2.53 +/- (0.336)	2.27 +/- (0.376)	

See notes on last page.

TABLE B.3 – Soil Analytical Results for Radiological Parameters
John Sevier Fossil Plant
January - October 2019

Sample Location	Units	JSF-BG14		8-Oct-19 JSF-BS-BG15-0.0/0.5-20191008 Normal Environmental Sample Final-Verified	8-Oct-19 JSF-BS-BG15-1.5/3.5-20191008 Normal Environmental Sample Final-Verified	8-Oct-19 JSF-BS-BG15-6.5/8.5-20191008 Normal Environmental Sample Final-Verified	JSF-BG15		8-Oct-19 JSF-BS-DUP01-20191008 Field Duplicate Sample Final-Verified	8-Oct-19 JSF-BS-BG15-16.5/18.5-20191008 Normal Environmental Sample Final-Verified	8-Oct-19 JSF-BS-BG15-21.5/23.5-20191008 Normal Environmental Sample Final-Verified
		8-Oct-19 JSF-BS-BG14-16.5/18.5-20191008 Normal Environmental Sample Final-Verified	8-Oct-19 JSF-BS-BG14-21.5/23.5-20191008 Normal Environmental Sample Final-Verified				8-Oct-19 JSF-BS-BG15-11.0/14.0-20191008 Normal Environmental Sample Final-Verified	8-Oct-19 JSF-BS-BG15-11.0/14.0-20191008 Normal Environmental Sample Final-Verified			
Radiological Parameters											
Radium-226	pCi/g	0.996 +/- (0.225)	0.546 +/- (0.129)	0.993 +/- (0.249)	1.54 +/- (0.276)	1.34 +/- (0.235)	1.16 +/- (0.261)	1.13 +/- (0.234)	1.03 +/- (0.205)	0.727 +/- (0.177)	
Radium-228	pCi/g	1.28 +/- (0.260)	0.733 +/- (0.240)	1.17 +/- (0.289)	1.40 +/- (0.266)	1.59 +/- (0.302)	1.52 +/- (0.368)	1.57 +/- (0.324)	1.66 +/- (0.331)	0.931 +/- (0.217)	
Radium-226+228	pCi/g	2.28 +/- (0.344)	1.28 +/- (0.272)	2.16 +/- (0.381)	2.94 +/- (0.383)	2.93 +/- (0.383)	2.68 +/- (0.451)	2.70 +/- (0.400)	2.69 +/- (0.389)	1.66 +/- (0.280)	

Notes:

- ft feet below ground surface
- ID identification
- J quantitation is approximate due to limitations identified during data validation
- pCi/g picoCurie per gram
- U not detected

1. Level of review is defined in the Quality Assurance Project Plan.
2. The 0-0.5 foot sample was collected using a hand auger when accessible during the drilling operations at that boring location; it may or may not have been the first sample obtained and thus could have a different sample date.

TABLE B.4 - Soil Field pH Results
John Sevier Fossil Plant
January - October 2019

Sample Location	Sample ID	Sample Date	Sample Depth	pH (field)
				SU
JSF-106	JSF-BS-JSF106-9.0/12.0-20190124	24-Jan-19	9 - 12 ft	6.67
JSF-110	JSF_BS_JS110_9.9/12.0_20190129	29-Jan-19	9.9 - 12 ft	3.86
JSF-BG01ALT	JSF-BS-BG01ALT-0.0/0.5-20190205	5-Feb-19	0 - 0.5 ft	8.92
	JSF-BS-BG01ALT-0.5/2.5-20190205	5-Feb-19	0.5 - 2.5 ft	6.02
	JSF-BS-BG01ALT-6.8/8.8-20190205	5-Feb-19	6.8 - 8.8 ft	6.15
	JSF-BS-BG01ALT-10.0/12.4-20190205	5-Feb-19	10 - 12.4 ft	6.02
JSF-BG02ALT	JSF-BS-BG02ALT-0.0/0.5-20190204	4-Feb-19	0 - 0.5 ft	5.10
	JSF-BS-BG02ALT-0.9/2.9-20190204	4-Feb-19	0.9 - 2.9 ft	5.30
	JSF-BS-BG02ALT-5.9/7.9-20190204	4-Feb-19	5.9 - 7.9 ft	4.55
	JSF-BS-BG02ALT-11.5/13.5-20190204	4-Feb-19	11.5 - 13.5 ft	5.63
JSF-BG03	JSF-BS-BG02ALT-16.5/18.5-20190204	4-Feb-19	16.5 - 18.5 ft	6.98
	JSF-BS-BG03-0.0/0.5-20190129	29-Jan-19	0 - 0.5 ft	6.03
	JSF-BS-BG03-1.5/3.5-20190129	29-Jan-19	1.5 - 3.5 ft	4.86
	JSF-BS-BG03-5.0/6.6-20190129	29-Jan-19	5 - 6.6 ft	4.74
JSF-BG04ALT	JSF-BS-BG03-7.2/9.2-20190129	29-Jan-19	7.2 - 9.2 ft	4.83
	JSF-BS-BG03-11.5/13.5-20190129	29-Jan-19	11.5 - 13.5 ft	5.01
	JSF-BS-BG04ALT-0.0/0.5-20190130	30-Jan-19	0 - 0.5 ft	8.41
	JSF-BS-BG04ALT-0.9/2.9-20190130	30-Jan-19	0.9 - 2.9 ft	6.43
JSF-BG05ALT	JSF-BS-BG04ALT-7.2/9.2-20190130	30-Jan-19	7.2 - 9.2 ft	5.45
	JSF-BS-BG04ALT-15.5/18.5-20190130	30-Jan-19	15.5 - 18.5 ft	5.04
	JSF-BS-BG05ALT-0.0/0.5-20190131	31-Jan-19	0 - 0.5 ft	6.43
JSF-BG06ALT	JSF-BS-BG05ALT-1.3/3.3-20190131	31-Jan-19	1.3 - 3.3 ft	5.26
	JSF-BS-BG05ALT-6.0/8.0-20190131	31-Jan-19	6 - 8 ft	6.79
JSF-BG07	JSF-BS-BG06ALT-0.0/0.5-20190201	1-Feb-19	0 - 0.5 ft	8.17
	JSF-BS-BG06ALT-1.5/3.5-20190201	1-Feb-19	1.5 - 3.5 ft	4.64
	JSF-BS-BG06ALT-6.5/8.5-20190201	1-Feb-19	6.5 - 8.5 ft	4.78
	JSF-BS-BG06ALT-11.2/13.2-20190201	1-Feb-19	11.2 - 13.2 ft	5.00
JSF-BG08	JSF-BS-BG07-0.0/0.5-20190129	29-Jan-19	0 - 0.5 ft	7.54
	JSF-BS-BG07-1.4/4.1-20190129	29-Jan-19	1.4 - 4.1 ft	6.81
	JSF-BS-BG07-6.2/8.2-20190129	29-Jan-19	6.2 - 8.2 ft	4.72
	JSF-BS-BG07-11.0/14.0-20190129	29-Jan-19	11 - 14 ft	5.41
JSF-BG09	JSF-BS-BG08-0.0/0.5-20190128	28-Jan-19	0 - 0.5 ft	7.25
	JSF-BS-BG08-2.0/4.0-20190128	28-Jan-19	2 - 4 ft	6.86
	JSF-BS-BG08-6.5/8.5-20190128	28-Jan-19	6.5 - 8.5 ft	5.68
	JSF-BS-BG08-11.5/13.5-20190128	28-Jan-19	11.5 - 13.5 ft	6.62
JSF-BG10	JSF-BS-BG08-16.5/18.5-20190128	28-Jan-19	16.5 - 18.5 ft	6.24
	JSF-BS-BG09-0.0/0.5-20190125	25-Jan-19	0 - 0.5 ft	8.80
	JSF-BS-BG09-1.0/4.0-20190125	25-Jan-19	1 - 4 ft	8.15
	JSF-BS-BG09-6.1/8.1-20190125	25-Jan-19	6.1 - 8.1 ft	5.99
	JSF-BS-BG09-10.0/11.7-20190125	25-Jan-19	10 - 11.7 ft	4.85
	JSF-BS-BG09-12.7/14.7-20190125	25-Jan-19	12.7 - 14.7 ft	5.50
JSF-BG11	JSF-BS-BG09-16.1/18.1-20190125	25-Jan-19	16.1 - 18.1 ft	5.76
	JSF-BS-BG10-0.0/0.5-20190124	24-Jan-19	0 - 0.5 ft	6.89
	JSF-BS-BG10-1.4/3.4-20190124	24-Jan-19	1.4 - 3.4 ft	6.30
	JSF-BS-BG10-6.5/8.5-20190124	24-Jan-19	6.5 - 8.5 ft	5.24
JSF-BG11	JSF-BS-BG10-10.5/12.5-20190124	24-Jan-19	10.5 - 12.5 ft	5.31
	JSF-BS-BG11-0.0/0.5-20190124	24-Jan-19	0 - 0.5 ft	7.28
	JSF-BS-BG11-1.1/3.1-20190124	24-Jan-19	1.1 - 3.1 ft	6.58
	JSF-BS-BG11-5.5/8.5-20190124	24-Jan-19	5.5 - 8.5 ft	6.28
	JSF-BS-BG11-11.3/13.3-20190124	24-Jan-19	11.3 - 13.3 ft	6.54

See notes on last page.

TABLE B.4 - Soil Field pH Results
John Sevier Fossil Plant
January - October 2019

Sample Location	Sample ID	Sample Date	Sample Depth	pH (field)
				SU
JSF-BG12	JSF-BS-BG12-0.0/0.5-20190123	23-Jan-19	0 - 0.5 ft	7.84
	JSF-BS-BG12-0.8/2.8-20190123	23-Jan-19	0.8 - 2.8 ft	7.04
	JSF-BS-BG12-5.0/10.0-20190123	23-Jan-19	5 - 10 ft	6.73
	JSF-BS-BG12-10.75/12.75-20190123	23-Jan-19	10.75 - 12.75 ft	6.80
	JSF-BS-BG12-13.5/15.0-20190123	23-Jan-19	13.5 - 15 ft	7.07
JSF-BG13	JSF-BS-BG13-0.0/0.5-20191008	8-Oct-19	0 - 0.5 ft	6.87
	JSF-BS-BG13-1.5/3.5-20191007	7-Oct-19	1.5 - 3.5 ft	7.22
	JSF-BS-BG13-6.5/8.5-20191007	7-Oct-19	6.5 - 8.5 ft	6.30
	JSF-BS-BG13-11.5/13.5-20191007	7-Oct-19	11.5 - 13.5 ft	6.58
	JSF-BS-BG13-16.5/18.5-20191007	7-Oct-19	16.5 - 18.5 ft	6.85
	JSF-BS-BG13-21.5/23.5-20191007	7-Oct-19	21.5 - 23.5 ft	7.06
	JSF-BS-BG13-26.5/28.5-20191007	7-Oct-19	26.5 - 28.5 ft	7.15
JSF-BG14	JSF-BS-BG14-0.0/0.5-20191008	8-Oct-19	0 - 0.5 ft	8.56
	JSF-BS-BG14-3.0/5.0-20191008	8-Oct-19	3 - 5 ft	6.88
	JSF-BS-BG14-6.5/8.5-20191008	8-Oct-19	6.5 - 8.5 ft	6.65
	JSF-BS-BG14-11.5/13.5-20191008	8-Oct-19	11.5 - 13.5 ft	6.87
	JSF-BS-BG14-16.5/18.5-20191008	8-Oct-19	16.5 - 18.5 ft	6.55
	JSF-BS-BG14-21.5/23.5-20191008	8-Oct-19	21.5 - 23.5 ft	9.67
JSF-BG15	JSF-BS-BG15-0.0/0.5-20191008	8-Oct-19	0 - 0.5 ft	5.11
	JSF-BS-BG15-1.5/3.5-20191008	8-Oct-19	1.5 - 3.5 ft	9.14
	JSF-BS-BG15-6.5/8.5-20191008	8-Oct-19	6.5 - 8.5 ft	5.54
	JSF-BS-BG15-11.0/14.0-20191008	8-Oct-19	11 - 14 ft	4.99
	JSF-BS-BG15-16.5/18.5-20191008	8-Oct-19	16.5 - 18.5 ft	4.98
	JSF-BS-BG15-21.5/23.5-20191008	8-Oct-19	21.5 - 23.5 ft	4.90

Notes:

ft feet below ground surface
ID identification
SU Standard Unit

APPENDIX C - SUBSURFACE LOGS



Subsurface Boring Legend

Lithology Graphics

Symbol	Lithology
	Fill
	Top Soil
	Gravel
	Well Graded Gravel (GW)
	Poorly Graded Gravel (GP)
	Silty Gravel (GM)
	Silty, Clayey Gravel (GC-GM)
	Clayey Gravel (GC)
	Well Graded Gravel with Silt (GW-GM)
	Well Graded Gravel with Clay (GW-GC)
	Poorly Graded Gravel with Silt (GP-GM)
	Poorly Graded Gravel with Clay (GP-GC)
	Well Graded Sand (SW)
	Poorly Graded Sand (SP)
	Silty Sand (SM)
	Silty, Clayey Sand (SC-SM)
	Clayey Sand (SC)
	Well Graded Sand with Silt (SW-SM)
	Well Graded Sand with Clay (SW-SC)
	Poorly Graded Sand with Silt (SP-SM)
	Poorly Graded Sand with Clay (SP-SC)
	Silt (ML)
	Silty Clay (CL-ML)
	Lean Clay (CL)
	Organic Silt (OL)
	Elastic Silt (MH)
	Fat Clay (CH)
	Organic Clay (OH)
	Shale
	Siltstone
	Coal
	Limestone
	Sandstone

Other Graphics

Symbol	Description
	Denotes environmental analytical sample interval
	Denotes SS sample interval
	Denotes ST sample interval
	Denotes DP sample interval
	Denotes RS sample interval
	Denotes RC sample interval
	First water level reading
	Second water level reading

Common Abbreviations

Abbreviation	Definition
DP	Direct Push
HA	Hand Auger
HSA	Hollow Stem Auger
N/A	Not Applicable
NR	Not Recorded
RC	Rock Core
RQD	Rock Quality Designation
RS	Rotary Sonic
SS	Split Spoon
ST	Shelby Tube
WH	Weight of Hammer
WR	Weight of Rod

General Notes

The boring logs include sample numbering used during drilling. For assigned Environmental Analytical Sample ID numbers, see relevant Environmental Chain-of-Custody forms from the drilling date range listed on each log.

For pH readings and additional field data, see applicable field documentation (e.g., Soil pH Data Form) from the drilling date range listed on each log.

Client Borehole ID <u>N/A</u>	Stantec Boring No. JSF-106
Client <u>Tennessee Valley Authority</u>	Boring Location <u>733,018.92 N; 2,887,105.85 E NAD27 Plant Local</u>
Project Number <u>175568225</u>	Surface Elevation <u>1094.8 ft</u> Elevation Datum <u>NGVD29</u>
Project Name <u>JSF TDEC Order</u>	Date Started <u>1/23/19</u> Completed <u>1/24/19</u>
Project Location <u>Hawkins Co, Rogersville, Tennessee</u>	Depth to Water <u>7.5 ft</u> Date/Time <u>1/23/19 16:00</u>
Inspector <u>C. Sexton</u> Logger <u>C. Sexton</u>	Depth to Water <u>5.6 ft</u> Date/Time <u>1/24/19 08:30</u>
Drilling Contractor <u>Stantec Consulting Services Inc.</u>	Drill Rig Type and ID <u>CME 55T#2, #711</u>
Overburden Drilling and Sampling Tools (Type and Size) <u>4-1/4" HSA, 2" SS w/o liners,</u>	
Rock Drilling and Sampling Tools (Type and Size) <u>N/A</u>	
Overdrill Tooling (Type and Size) <u>8-1/4" HSA</u>	Overdrill Depth <u>15.0 ft</u>
Sampler Hammer Type <u>Automatic</u> Weight <u>140 lb</u> Drop <u>30"</u> Efficiency <u>N/A</u>	
Borehole Azimuth <u>N/A</u>	Borehole Inclination (from Vertical) <u>N/A</u>
Reviewed By <u>B. Evans</u>	Approved By <u>P. Dunne</u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	1094.8	Top of Hole					
0.5	1094.3		Topsoil					
1			SILTY LEAN CLAY, CL, 10YR 5/3 (brown) and 10YR 6/8 (brownish yellow), low plasticity, soft to medium stiff, dry to moist Trace Mn nodules from 0.5' to 2.5' Color change to 10YR 5/4 (yellowish brown) at 1.5'		SS01G	0.0 - 1.5	1.5	WH-3-4
2					SS02G	1.5 - 3.0	1.5	3-5-4
3	3.0	1091.8	SILTY LEAN CLAY, CL, 10YR 6/4 (light yellowish brown), medium plasticity, soft, dry to moist, trace Mn nodules		SS03G	3.0 - 4.5	1.0	2-1-2
4			Low to medium plasticity, stiff at 4.5'		SS04G	4.5 - 6.0	1.5	3-5-5
6	6.0	1088.8	SILTY LEAN CLAY, CL, 10YR 6/4 (light yellowish brown) and 10YR 7/1 (light gray), medium plasticity, medium stiff, dry to moist, mottled		SS05G	6.0 - 7.5	1.5	3-3-4
8			Color change to 10YR 6/6 (brownish yellow) and 10YR 7/1 (light gray), low to medium plasticity, moist at 7.5'		SS06G	7.5 - 9.0	1.3	2-3-3
9			Color change to 10YR 5/8 (yellowish brown) and 10YR 7/1 (light gray), trace Mn nodules at 9.0'		SS07E	9.0 - 10.5	1.5	2-2-4

TVA/EIP BORING LOG 175568225 JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 11/4/20

Client Borehole ID N/A Stantec Boring No. **JSF-106**
 Client Tennessee Valley Authority Boring Location 733,018.92 N; 2,887,105.85 E NAD27 Plant Local
 Project Number 175568225 Surface Elevation 1094.8 ft Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
10								
10.5	1084.3							
10.8	1084.0		SILTY LEAN CLAY TRACE GRAVEL, CL, 10YR 6/4 (light yellowish brown) with 10YR 7/1 (light gray), low to medium plasticity, soft, moist	9.0/12.0-20/190124	SS08E	10.5 - 12.0	1.5	2-1-3
11			SILTY LEAN CLAY, CL, 10YR 5/6 (yellowish brown) and 10Y 7/1 (light greenish gray), non-plastic, stiff, dry, thinly laminated weathered shale, high angle laminations					
12			Color change to 10YR 6/4 (light yellowish brown) and 10Y 7/1 (light gray), low to medium plasticity, soft, moist, mottled; 0.3' dry brittle brown silty clay at 12.0'		SS09G	12.0 - 13.5	1.5	2-1-3
13								
14	14.2	1080.6	Color change to 10YR 5/3 (brown) and 10YR 6/1 (gray) at 13.5'					
14.9	1079.9		SILTY LEAN CLAY, CL, 10YR 4/2 (dark grayish brown) and 10YR 4/1 (dark gray), low to medium plasticity, stiff, dry, thinly laminated		SS10G	13.5 - 15.0	1.5	2-6-40
15	15.0	1079.8						

Shale, dry
 Refusal /
 Bottom of Hole at 15.0 Ft.
 Top of Rock = 14.9 Ft.
 Top of Rock Elevation = 1079.9 Ft.

See installation log for permanent well JSF-106 for backfill information.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface

TVA/EIP BORING LOG 175568225--JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 11/4/20



SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	JSF-110
Client	Tennessee Valley Authority	Boring Location	732,649.53 N; 2,889,835.21 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1139.0 ft
Project Name	JSF TDEC Order	Elevation Datum	NGVD29
Project Location	Hawkins Co, Rogersville, Tennessee	Date Started	1/28/19
Inspector	C. Sexton	Completed	1/30/19
Logger	C. Sexton	Depth to Water	10.2 ft
Drilling Contractor	Stantec Consulting Services Inc.	Date/Time	1/29/19 11:28
Overburden Drilling and Sampling Tools (Type and Size)	4-1/4" HSA, 2" and 3" SS w/o liners		
Rock Drilling and Sampling Tools (Type and Size)	N/A		
Overdrill Tooling (Type and Size)	8-1/4" HSA	Overdrill Depth	17.2 ft
Sampler Hammer Type	Automatic	Weight	140 lb
Drop	30"	Efficiency	N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A
Reviewed By	B. Evans	Approved By	P. Dunne

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	1139.0	Top of Hole					
			Topsoil					
1	0.8	1138.2			SS01G	0.0 - 1.5	1.5	1-1-4
2			SILTY LEAN CLAY, CL, 10YR 6/4 (light yellowish brown), low plasticity, soft to medium stiff, dry to moist					
3			Color change to 10Y 6/4 (pale olive) and 10Y 7/1 (light greenish gray) low to medium plasticity, medium stiff to stiff, with trace gravel at 1.5'		SS02G	1.5 - 3.0	1.5	4-6-6
4			Color change to 10YR 6/6 (brownish yellow), medium stiff at 3.0'		SS03G	3.0 - 4.5	1.0	3-5-8
5			Root blocking recovery in SS03					
6			Color change to 10YR 6/4 (light yellowish brown) and 10Y 7/1 (light greenish gray), very stiff, with sand at 4.5'		SS04G	4.5 - 6.0	1.5	4-6-10
7			Color change to 10YR 6/6 (brownish yellow), soft to medium stiff, dry at 5.0'		SS05G	6.0 - 7.5	0.5	2-2-7
8			Stiff, dry to moist, with trace gravel at 6.0'					
9			With trace gravel at 7.5'		SS06G	7.5 - 9.0	1.1	6-11-13
10			3-inch SS used from 7.5' to refusal					
11			Medium stiff with trace gravel at 9.0'		SS07aG	9.0 - 9.9	1.2	4-6-11
12	9.9	1129.1			SS07bE	9.9 - 10.5		
13			CLAYEY SAND SOME GRAVEL, SC, 10YR 5/6 (yellowish brown), medium, loose, dry to moist					
14			Gravel is coarse to very coarse, rounded		SS08E	10.5 - 12.0	0.9	4-7-10
15			Loose to medium dense at 10.5'					
16	12.0	1127.0			SS09G	12.0 - 13.5	1.5	10-7-12
17			LEAN CLAY, CL, 10YR 6/6 (brownish yellow), low plasticity, very stiff, dry to moist, Mn staining					

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 11/4/20

9.9/12.0-20190129

Client Borehole ID	N/A	Stantec Boring No.	JSF-110
Client	Tennessee Valley Authority	Boring Location	732,649.53 N; 2,889,835.21 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1139.0 ft Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
14			LEAN CLAY, CL, 10YR 6/6 (brownish yellow), low plasticity, very stiff, dry to moist, Mn staining <i>(Continued)</i> LEAN CLAY, CL, 10YR 6/4 (light yellowish brown), low plasticity, stiff to very stiff, dry to moist, laminated, Mn staining Color change to 10G 5/1 (greenish gray), low to medium plasticity, stiff with gravel at 16.5'					
15	15.0	1124.0		SS10G	13.5 - 15.0	13.5 - 15.0	0.0	4-7-10
16				SS11G	15.0 - 16.5	15.0 - 16.5	1.5	9-9-18
17	17.6	1121.4		SS12G	16.5 - 18.0	16.5 - 18.0	0.2	6-50+-10
18	18.0	1121.0	Shale, dark gray					

Refusal /
Bottom of Hole at 18.0 Ft.

Top of Rock = 17.6 Ft.
Top of Rock Elevation = 1121.4 Ft.

See well installation log for permanent well JSF-110 for backfill information.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface

Client Borehole ID <u>N/A</u>	Stantec Boring No. JSF-BG01AIt
Client <u>Tennessee Valley Authority</u>	Boring Location <u>732,654.15 N; 2,890,399.54 E NAD27 Plant Local</u>
Project Number <u>175568225</u>	Surface Elevation <u>1132.1 ft</u> Elevation Datum <u>NGVD29</u>
Project Name <u>JSF TDEC Order</u>	Date Started <u>2/5/19</u> Completed <u>2/5/19</u>
Project Location <u>Hawkins Co, Rogersville, Tennessee</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Inspector <u>M. Edmunds</u> Logger <u>M. Edmunds</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Drilling Contractor <u>Stantec Consulting Services Inc.</u>	Drill Rig Type and ID <u>Geoprobe 7730DT</u>
Overburden Drilling and Sampling Tools (Type and Size) <u>Direct Push - Dual Tube</u>	
Rock Drilling and Sampling Tools (Type and Size) <u>N/A</u>	
Overdrill Tooling (Type and Size) <u>N/A</u>	Overdrill Depth <u>N/A</u>
Sampler Hammer Type <u>N/A</u> Weight <u>N/A</u> Drop <u>N/A</u> Efficiency <u>N/A</u>	
Borehole Azimuth <u>N/A</u>	Borehole Inclination (from Vertical) <u>N/A</u>
Reviewed By <u>K. Carey</u>	Approved By <u>P. Dunne</u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	1132.1	Top of Hole					
0.1	1132.0		Gravel pad material	HA 0.5/2.5-20190205	HA01	0.0 - 0.5	0.5	
1			SANDY FAT CLAY WITH SILT, CH, 7.5YR 5/4 (brown) to 7.5YR 5/8 (strong brown), medium plasticity, soft, moist		DP01	0.0 - 5.0	2.6	N/A
5.0	1127.1		FAT CLAY WITH SILT, CH, 7.5YR 5/1 (gray) to 7.5YR 5/6 (strong brown), medium to high plasticity, firm, moist, trace gravel throughout	6.8/8.8-20190205	DP02	5.0 - 10.0	4.3	N/A
10.0	1122.1		Saprolitic bedding structure visible from 9.5' to 10.0'					
11			LEAN CLAY WITH SILT, CL, 7.5YR 4/3 (brown) to 7.5YR 4/6 (strong brown), non-plastic, firm to stiff, dry to moist	10.0/12.4-20190205	DP03	10.0 - 12.4	2.9	N/A
12.4	1119.7		Recovery greater than run length due to swell Trace gravel from 12.1' to 12.4'					

Bedrock Refusal /
Bottom of Hole at 12.4 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface
- 4: Grab sample (0.0/0.5-20190205) sampled using hand auger


TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 3/16/20

Client Borehole ID <u>N/A</u>		Stantec Boring No. JSF-BG02Alt	
Client <u>Tennessee Valley Authority</u>		Boring Location <u>732,179.98 N; 2,889,116.93 E NAD27 Plant Local</u>	
Project Number <u>175568225</u>		Surface Elevation <u>1137.5 ft</u> Elevation Datum <u>NGVD29</u>	
Project Name <u>JSF TDEC Order</u>		Date Started <u>2/4/19</u> Completed <u>2/4/19</u>	
Project Location <u>Hawkins Co, Rogersville, Tennessee</u>		Depth to Water <u>N/A</u> Date/Time <u>N/A</u>	
Inspector <u>M. Edmunds</u> Logger <u>M. Edmunds</u>		Depth to Water <u>N/A</u> Date/Time <u>N/A</u>	
Drilling Contractor <u>Stantec Consulting Services Inc.</u>		Drill Rig Type and ID <u>Geoprobe 7730DT</u>	
Overburden Drilling and Sampling Tools (Type and Size) <u>Direct Push - Dual Tube</u>			
Rock Drilling and Sampling Tools (Type and Size) <u>N/A</u>			
Overdrill Tooling (Type and Size) <u>N/A</u> Overdrill Depth <u>N/A</u>			
Sampler Hammer Type <u>N/A</u> Weight <u>N/A</u> Drop <u>N/A</u> Efficiency <u>N/A</u>			
Borehole Azimuth <u>N/A</u>		Borehole Inclination (from Vertical) <u>N/A</u>	
Reviewed By <u>K. Carey</u>		Approved By <u>P. Dunne</u>	

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	1137.5						
	0.5	1137.0			HA01	0.0 - 0.5	0.5	
1			Topsoil, roots	HA ¹				
2			SANDY LEAN CLAY WITH SILT, CL, 10YR 5/3 (brown), medium plasticity, very soft to soft, moist, moderately fat, medium-graded sand and organics/roots throughout layer	0.9/2.9-20/19/20/24	DP01	0.0 - 5.0	3.7	N/A
3								
4								
5	5.0	1132.5						
6			GRAVELLY CLAYEY SAND, SC, 10YR 6/1 (gray) to 10YR 6/6 (brownish yellow), fine to medium, medium dense, moist, subrounded, with gravel cobbles	5.9/7.9-20/19/20/24	DP02	5.0 - 10.0	3.7	N/A
7			FAT CLAY, CH, 5YR 3/1 (very dark gray) to 5YR 4/4 (reddish brown), medium to high plasticity, very soft to firm, moist, iron oxide staining, some saprolitic bedding structure visible					
8	7.5	1130.0						
9								
10								
11								
12								
13								
14								
15	15.0	1122.5			DP03	10.0 - 15.0	5.0	N/A
16								
17								

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 3/16/20

Client Borehole ID <u> N/A </u>	Stantec Boring No. JSF-BG02Alt
Client <u> Tennessee Valley Authority </u>	Boring Location <u> 732,179.98 N; 2,889,116.93 E NAD27 Plant Local </u>
Project Number <u> 175568225 </u>	Surface Elevation <u> 1137.5 ft </u> Elevation Datum <u> NGVD29 </u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
17 18 19	19.5 1118.0		FAT CLAY WITH SILT, CH, 5YR 4/1 (dark gray) to 5YR 3/2 (dark reddish brown), medium to high plasticity, soft to firm, moist, with some lean, non-plastic intervals, saprolitic bedding structure, shale gravel, and inclined bedding (~40 deg) <i>(Continued)</i>	16.5/18.5-20190204	DP04	15.0 - 19.5	4.5	N/A

Bedrock Refusal /
Bottom of Hole at 19.5 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
 G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface
- 4: Grab sample (0.0/0.5-20190204) sampled using hand auger

Client Borehole ID <u>N/A</u>	Stantec Boring No. JSF-BG03 (JSF-BG03Alt)
Client <u>Tennessee Valley Authority</u>	Boring Location <u>732,227.96 N; 2,888,268.92 E NAD27 Plant Local</u>
Project Number <u>175568225</u>	Surface Elevation <u>1132.5 ft</u> Elevation Datum <u>NGVD29</u>
Project Name <u>JSF TDEC Order</u>	Date Started <u>1/29/19</u> Completed <u>1/29/19</u>
Project Location <u>Hawkins Co, Rogersville, Tennessee</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Inspector <u>M. Edmunds</u> Logger <u>M. Edmunds</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Drilling Contractor <u>Stantec Consulting Services Inc.</u>	Drill Rig Type and ID <u>Geoprobe 7730DT</u>
Overburden Drilling and Sampling Tools (Type and Size) <u>Direct Push - Dual Tube</u>	
Rock Drilling and Sampling Tools (Type and Size) <u>N/A</u>	
Overdrill Tooling (Type and Size) <u>N/A</u>	Overdrill Depth <u>N/A</u>
Sampler Hammer Type <u>N/A</u> Weight <u>N/A</u> Drop <u>N/A</u> Efficiency <u>N/A</u>	
Borehole Azimuth <u>N/A</u>	Borehole Inclination (from Vertical) <u>N/A</u>
Reviewed By <u>K. Carey</u>	Approved By <u>P. Dunne</u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	1132.5	Top of Hole					
0.5	1132.0		Topsoil	HA ⁴	HA01	0.0 - 0.5	0.5	
1			SILTY LEAN CLAY WITH SAND, CL, 7.5YR 6/6 (reddish yellow) to 7.5YR 6/1 (gray), very fine to fine, medium plasticity, dense, moist, with silt, stiff	1.5/3.5-20190129	DP01	0.0 - 5.0	5.0	N/A
5.0	1127.5		Occasional vegetation roots from 4.0' to 5.0'					
6.5	1126.0		Increased sand from 4.5' to 5.0'	5.0/6.6-20190129				
7			POORLY GRADED SAND WITH SILT WITH CLAY, SP-SM, 7.5YR 5/8 (strong brown), medium, loose to medium dense, moist, subrounded, some subangular	7.2/9.2-20190129	DP02	5.0 - 10.0	5.0	N/A
10.0	1122.5		LEAN CLAY TRACE SILT, CL, 7.5YR 7/2 (pinkish gray), non-plastic, stiff, moist Sand lens from 7.9' to 8.4'					
11			LEAN CLAY WITH SILT, CL, 7.5YR 5/6 (strong brown), medium plasticity, firm, moist, trace sand, some saprolitic bedding structure, trace organic inclusions throughout	11.5/13.5-20190129	DP03	10.0 - 14.4	5.0	N/A
14.4	1118.1		Recovery greater than run length due to swell					

Bedrock Refusal /
Bottom of Hole at 14.4 Ft.

1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
 G = Geotechnical Sample Custody
 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
 3: Depths are reported in feet below ground surface
 4: Grab sample (0.0/0.5-20190129) sampled using hand auger

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 12/2/20



SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	JSF-BG04Alt	
Client	Tennessee Valley Authority	Boring Location	731,221.53 N; 2,888,415.22 E NAD27 Plant Local	
Project Number	175568225	Surface Elevation	1164.9 ft	Elevation Datum NGVD29
Project Name	JSF TDEC Order	Date Started	1/30/19	Completed 1/30/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A	Date/Time N/A
Inspector	M. Edmunds	Logger	M. Edmunds	Depth to Water N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	Geoprobe 7730DT	
Overburden Drilling and Sampling Tools (Type and Size)	Direct Push - Dual Tube			
Rock Drilling and Sampling Tools (Type and Size)	N/A			
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A	
Sampler Hammer Type	N/A	Weight	N/A	Drop N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A	
Reviewed By	K. Carey	Approved By	P. Dunne	

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	1164.9	Top of Hole					
0.1	1164.8		Topsoil, grass, and roots	HA1	HA01	0.0 - 0.5	0.5	
1			SILTY LEAN CLAY SOME GRAVEL, CL, 5YR 5/6 (yellowish red) to 5YR 5/8 (yellowish red), medium plasticity, soft to firm, moist, fine to medium sand and occasional gravel clasts throughout	0.9/2.9-20/190130	DP01	0.0 - 5.0	3.3	N/A
5	1159.9		GRAVELLY WELL GRADED SAND WITH CLAY, SW-SC, 5YR 5/8 (yellowish red), medium to coarse, medium dense, moist, well graded, subangular to subrounded cobble-sized gravel throughout	7.2/9.2-20/190130	DP02	5.0 - 10.0	3.6	N/A
10	1154.9		No sample, malfunction in sample tube					
15	1149.9		LEAN CLAY WITH SILT, CL, 10YR 7/6 (yellow), non-plastic, stiff, moist, organic inclusions throughout		DP03	10.0 - 15.0	0.0	N/A

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 3/16/20



SUBSURFACE LOG

Client Borehole ID	<u>N/A</u>	Stantec Boring No.	JSF-BG04AIt
Client	<u>Tennessee Valley Authority</u>	Boring Location	<u>731,221.53 N; 2,888,415.22 E NAD27 Plant Local</u>
Project Number	<u>175568225</u>	Surface Elevation	<u>1164.9 ft</u> Elevation Datum <u>NGVD29</u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
17			LEAN CLAY WITH SILT, CL, 10YR 7/6 (yellow), non-plastic, stiff, moist, organic inclusions throughout <i>(Continued)</i> Recovery greater than run length due to swell	15.5/18.5-20190130	DP04	15.0 - 18.9	4.0	N/A
18	18.9							

Bedrock Refusal /
Bottom of Hole at 18.9 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface
- 4: Grab sample (0.0/0.5-20190130) sampled using hand auger

TVA EIP BORING LOG - 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 3/16/20

Client Borehole ID	N/A	Stantec Boring No.	JSF-BG05AIt	
Client	Tennessee Valley Authority	Boring Location	731,311.74 N; 2,886,883.91 E NAD27 Plant Local	
Project Number	175568225	Surface Elevation	1087.7 ft	Elevation Datum NGVD29
Project Name	JSF TDEC Order	Date Started	1/31/19	Completed 1/31/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A	Date/Time N/A
Inspector	M. Edmunds	Logger	M. Edmunds	Depth to Water N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	Geoprobe 7730DT	
Overburden Drilling and Sampling Tools (Type and Size)	Direct Push - Dual Tube			
Rock Drilling and Sampling Tools (Type and Size)	N/A			
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A	
Sampler Hammer Type	N/A	Weight	N/A	Drop N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A	
Reviewed By	K. Carey	Approved By	P. Dunne	

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	1087.7		Top of Hole					
0.1	1087.6		Parking lot material, dirt, roots, gravel	HA ⁴	HA01	0.0 - 0.5	0.5	
1			SANDY LEAN CLAY, CL, 7.5YR 6/1 (gray) to 7.5YR 6/6 (reddish yellow), medium plasticity, firm, moist, trace subround gravel, silty	1.3/3.3-20/190131	DP01	0.0 - 5.0	4.7	N/A
5.0	1082.7		CLAYEY SAND TRACE GRAVEL, SC, 7.5YR 6/1 (gray) to 7.5YR 6/6 (reddish yellow), medium dense, moist, subrounded, poorly graded	6.0/8.0-20/190131	DP02	5.0 - 10.0	4.0	N/A
10.0	1077.7		Shale, dark gray to brown, highly weathered, rotten, saprolitic		DP03	10.0 - 11.8	1.4	N/A
11.4	1076.3		Shale, dark gray to black, very soft, laminated, highly weathered, moist, horizontal, saprolitic					

Bedrock Refusal /
Bottom of Hole at 11.8 Ft.

Top of Rock = 10.0 Ft.
Top of Rock Elevation = 1077.7 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface
- 4: Grab sample (0.0/0.5-20190131) sampled using hand auger

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 11/4/20

Client Borehole ID <u>N/A</u>	Stantec Boring No. JSF-BG06Alt
Client <u>Tennessee Valley Authority</u>	Boring Location <u>732,724.08 N; 2,887,093.42 E NAD27 Plant Local</u>
Project Number <u>175568225</u>	Surface Elevation <u>1120.8 ft</u> Elevation Datum <u>NGVD29</u>
Project Name <u>JSF TDEC Order</u>	Date Started <u>2/1/19</u> Completed <u>2/1/19</u>
Project Location <u>Hawkins Co, Rogersville, Tennessee</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Inspector <u>M. Edmunds</u> Logger <u>M. Edmunds</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Drilling Contractor <u>Stantec Consulting Services Inc.</u>	Drill Rig Type and ID <u>Geoprobe 7730DT</u>
Overburden Drilling and Sampling Tools (Type and Size) <u>Direct Push - Dual Tube</u>	
Rock Drilling and Sampling Tools (Type and Size) <u>N/A</u>	
Overdrill Tooling (Type and Size) <u>N/A</u>	Overdrill Depth <u>N/A</u>
Sampler Hammer Type <u>N/A</u> Weight <u>N/A</u> Drop <u>N/A</u> Efficiency <u>N/A</u>	
Borehole Azimuth <u>N/A</u>	Borehole Inclination (from Vertical) <u>N/A</u>
Reviewed By <u>K. Carey</u>	Approved By <u>P. Dunne</u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	1120.8						
0	0.5	1120.3	Top of Hole					
1			Topsoil and grass	HA4	HA01	0.0 - 0.5	0.5	
2			LEAN CLAY WITH SILT, CL, 7.5YR 5/8 (strong brown), non-plastic, soft to firm, moist, trace organic material	1.5/3.5-20190201	DP01	0.0 - 5.0	5.0	N/A
3			Increased organic material from 5.0' to 11.0'					
4								
5								
6								
7								
8								
9			Saprolite with bedded structure from 8.5' to 10.0'	6.5/8.5-20190201	DP02	5.0 - 10.0	5.0	N/A
10								
11	11.0	1109.8	LEAN CLAY TRACE SILT, CL, 7.5YR 4/6 (strong brown), non-plastic, firm to stiff, damp to moist	11.2/13.2-20190201	DP03	10.0 - 14.5	5.0	N/A
12			Recovery greater than run length due to swell					
13								
14	14.5	1106.3	Saprolite with bedded structure, some shale chunks/gravel from 13.5' to 14.5'					

Bedrock Refusal /
Bottom of Hole at 14.5 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface
- 4: Grab sample (0.0/0.5-20190201) sampled using hand auger

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 3/16/20

Client Borehole ID <u>N/A</u>	Stantec Boring No. JSF-BG07
Client <u>Tennessee Valley Authority</u>	Boring Location <u>731,693.73 N; 2,887,903.64 E NAD27 Plant Local</u>
Project Number <u>175568225</u>	Surface Elevation <u>1134.8 ft</u> Elevation Datum <u>NGVD29</u>
Project Name <u>JSF TDEC Order</u>	Date Started <u>1/29/19</u> Completed <u>1/29/19</u>
Project Location <u>Hawkins Co, Rogersville, Tennessee</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Inspector <u>M. Edmunds</u> Logger <u>M. Edmunds</u>	Depth to Water <u>N/A</u> Date/Time <u>N/A</u>
Drilling Contractor <u>Stantec Consulting Services Inc.</u>	Drill Rig Type and ID <u>Geoprobe 7730DT</u>
Overburden Drilling and Sampling Tools (Type and Size) <u>Direct Push - Dual Tube</u>	
Rock Drilling and Sampling Tools (Type and Size) <u>N/A</u>	
Overdrill Tooling (Type and Size) <u>N/A</u>	Overdrill Depth <u>N/A</u>
Sampler Hammer Type <u>N/A</u> Weight <u>N/A</u> Drop <u>N/A</u> Efficiency <u>N/A</u>	
Borehole Azimuth <u>N/A</u>	Borehole Inclination (from Vertical) <u>N/A</u>
Reviewed By <u>K. Carey</u>	Approved By <u>P. Dunne</u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	1134.8						
			Top of Hole					
1	1.4	1133.4	Gravel fill from 0.0' to 1.4'	HA ⁴	HA01	0.0 - 0.5	0.5	
2			FAT CLAY WITH SILT, CH, 7.5YR 6/4 (light brown) to 7.5YR 4/6 (strong brown), medium to high plasticity, firm, moist	1.4/1.20190129	DP01	0.0 - 5.0	4.1	N/A
3								
4								
5								
6								
7								
8	8.5	1126.3		6.2/8.2-20190129	DP02	5.0 - 10.0	4.8	N/A
9			CLAYEY SAND WITH GRAVEL, SC, 7.5YR 6/6 (reddish yellow) to 7.5YR 4/2 (brown), medium to coarse, medium dense, moist, poorly graded gravel is subangular to subrounded, gravel cobble count increases with depth					
10	10.5	1124.3						
11								
12			LEAN CLAY WITH SILT, CL, 10YR 4/4 (dark yellowish brown), non-plastic, firm to stiff, moist, trace sand and trace organic inclusions throughout layer	11.0/14.0-20190129	DP03	10.0 - 14.2	5.0	N/A
13								
14	14.2	1120.6	Shale rock from 14.0' to 14.2'					

Bedrock Refusal /
Bottom of Hole at 14.2 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface
- 4: Grab sample (0.0/0.5-20190129) sampled using hand auger

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 11/4/20




SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	JSF-BG08	
Client	Tennessee Valley Authority	Boring Location	732,700.27 N; 2,892,122.11 E NAD27 Plant Local	
Project Number	175568225	Surface Elevation	1143.9 ft	Elevation Datum NGVD29
Project Name	JSF TDEC Order	Date Started	1/28/19	Completed 1/28/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A	Date/Time N/A
Inspector	M. Edmunds	Logger	M. Edmunds	Depth to Water N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	Geoprobe 7730DT	
Overburden Drilling and Sampling Tools (Type and Size)	Direct Push - Dual Tube			
Rock Drilling and Sampling Tools (Type and Size)	N/A			
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A	
Sampler Hammer Type	N/A	Weight	N/A	Drop N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A	
Reviewed By	K. Carey	Approved By	P. Dunne	

Depth Ft ³	Lithology		Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	1143.9	Top of Hole					
0.1	1143.8		Topsoil, roots, and gravel	HA ¹	HA01	0.0 - 0.5	0.5	
1			LEAN CLAY WITH SILT, CL, 7.5YR 6/6 (reddish yellow), non-plastic, soft to firm, moist, lean					
2				2.0/4.0-20/190/28	DP01	0.0 - 5.0	4.0	N/A
3								
4								
5	5.0	1138.9	LEAN CLAY WITH SILT, CL, 7.5YR 5/4 (brown) to 7.5YR 7/4 (pink), non-plastic, firm to stiff, moist, some sand					
6								
7				6.5/8.5-20/190/28	DP02	5.0 - 10.0	5.0	N/A
8			Lens of gravel (limestone) from 7.9' to 8.4'					
9								
10	10.0	1133.9	SILTY LEAN CLAY WITH SAND, CL-ML, 7.5YR 5/3 (brown) to 7.5YR 5/8 (strong brown), medium plasticity, firm to hard, moist, medium-grained sand lens mixed well with clay, organic inclusions throughout interval					
11								
12				11.5/13.5-20/190/28	DP03	10.0 - 15.0	5.0	N/A
13								
14								
15	15.0	1128.9						
16								
17								

TVA EIP BORING LOG - JSF TDEC ORDER.GPJ - TDEC SUBSURF DT 20190530.GDT 3/16/20

Client Borehole ID <u> N/A </u>	Stantec Boring No. JSF-BG08
Client <u> Tennessee Valley Authority </u>	Boring Location <u> 732,700.27 N; 2,892,122.11 E NAD27 Plant Local </u>
Project Number <u> 175568225 </u>	Surface Elevation <u> 1143.9 ft </u> Elevation Datum <u> NGVD29 </u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI	
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %	
17			CLAYEY SAND WITH GRAVEL, SC, 7.5YR 5/4 (brown) to 7.5YR 5/8 (strong brown), medium to coarse, soft to medium dense, moist, poorly graded, subround to subangular gravel strains, gravel content increases with depth <i>(Continued)</i>	16.5/18.5-20190128	DP04	15.0 - 19.3	15.0 - 19.3	3.7	N/A
18									
19	19.3			1124.6					

Bedrock Refusal /
Bottom of Hole at 19.3 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
 G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface
- 4: Grab sample (0.0/0.5-20190128) sampled using hand auger



SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	JSF-BG09	
Client	Tennessee Valley Authority	Boring Location	733,250.92 N; 2,892,599.19 E NAD27 Plant Local	
Project Number	175568225	Surface Elevation	1141.4 ft	Elevation Datum NGVD29
Project Name	JSF TDEC Order	Date Started	1/25/19	Completed 1/25/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A	Date/Time N/A
Inspector	M. Edmunds	Logger	M. Edmunds	Depth to Water N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	Geoprobe 7730DT	
Overburden Drilling and Sampling Tools (Type and Size)	Direct Push - Dual Tube			
Rock Drilling and Sampling Tools (Type and Size)	N/A			
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A	
Sampler Hammer Type	N/A	Weight	N/A	Drop N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A	
Reviewed By	K. Carey	Approved By	P. Dunne	

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	1141.4	Top of Hole					
0.5	1140.9		Topsoil, roots, clay, and gravel	HA ⁴	HA01	0.0 - 0.5	0.5	
1			SILTY LEAN CLAY TRACE GRAVEL, CL, 10YR 6/6 (brownish yellow) to 7.5YR 4/6 (strong brown), non-plastic, firm to stiff	1.0/4.0-20190125	DP01	0.0 - 5.0	4.5	N/A
5.0	1136.4		Soft from 4.5' to 5.0'					
6			CLAYEY SAND WITH SILT, SC, 7.5YR 6/8 (reddish yellow) to 7.5YR 5/8 (strong brown), fine to medium, low to medium plasticity, loose, moist	6.1/8.1-20190125	DP02	5.0 - 10.0	4.2	N/A
10.0	1131.4		Organic material in gravel at base of deposit at 10.0'					
11.6	1129.8		WELL GRADED GRAVEL WITH SAND, GW-GM, medium to coarse, non-plastic, loose to medium dense, moist, with sand, silt, and clay	10.0/11.7-20190125				
12			SILTY LEAN CLAY TRACE SAND, CL-ML, 7.5YR 6/8 (reddish yellow), non-plastic, stiff, moist, small organic inclusions throughout layer, trace gravel, saprolitic bedding structure visible	12.7/14.7-20190125	DP03	10.0 - 15.0	5.0	N/A
15.0	1126.4		LEAN CLAY WITH SILT, CL, 7.5YR 5/3 (brown), non-plastic, stiff to hard, moist, trace sand, some organic inclusions in places					

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 3/16/20



SUBSURFACE LOG

Client Borehole ID <u> N/A </u>	Stantec Boring No. JSF-BG09
Client <u> Tennessee Valley Authority </u>	Boring Location <u> 733,250.92 N; 2,892,599.19 E NAD27 Plant Local </u>
Project Number <u> 175568225 </u>	Surface Elevation <u> 1141.4 ft </u> Elevation Datum <u> NGVD29 </u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
17		/ / / / /	LEAN CLAY WITH SILT, CL, 7.5YR 5/3 (brown), non-plastic, stiff to hard, moist, trace sand, some organic inclusions in places <i>(Continued)</i> Shale gravel with bedding from 17.1' to 19.1', saprolitic bedding visible Recovery greater than run length due to swell Bedrock Refusal / Bottom of Hole at 19.1 Ft.	16/1/8.1-20190125	DP04	15.0 - 19.1	5.0	N/A
18		/ / / / /						
19	19.1	1122.3						

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
 G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface
- 4: Grab sample (0.0/0.5-20190125) sampled using hand auger

TVA EIP BORING LOG - 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 3/16/20

Client Borehole ID <u> N/A </u>	Stantec Boring No. JSF-BG10
Client <u> Tennessee Valley Authority </u>	Boring Location <u> 734,574.59 N; 2,894,284.42 E NAD27 Plant Local </u>
Project Number <u> 175568225 </u>	Surface Elevation <u> 1130.6 ft </u> Elevation Datum <u> NGVD29 </u>
Project Name <u> JSF TDEC Order </u>	Date Started <u> 1/24/19 </u> Completed <u> 1/24/19 </u>
Project Location <u> Hawkins Co, Rogersville, Tennessee </u>	Depth to Water <u> N/A </u> Date/Time <u> N/A </u>
Inspector <u> M. Edmunds </u> Logger <u> M. Edmunds </u>	Depth to Water <u> N/A </u> Date/Time <u> N/A </u>
Drilling Contractor <u> Stantec Consulting Services Inc. </u>	Drill Rig Type and ID <u> Geoprobe 7730DT </u>
Overburden Drilling and Sampling Tools (Type and Size) <u> Direct Push - Dual Tube </u>	
Rock Drilling and Sampling Tools (Type and Size) <u> N/A </u>	
Overdrill Tooling (Type and Size) <u> N/A </u> Overdrill Depth <u> N/A </u>	
Sampler Hammer Type <u> N/A </u> Weight <u> N/A </u> Drop <u> N/A </u> Efficiency <u> N/A </u>	
Borehole Azimuth <u> N/A </u> Borehole Inclination (from Vertical) <u> N/A </u>	
Reviewed By <u> K. Carey </u>	Approved By <u> P. Dunne </u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	1130.6						
	0.5	1130.1			HA01	0.0 - 0.5	0.5	
1				HA ⁴	DP01	0.0 - 5.0	4.8	N/A
2				1.4/3.4-20190124				
3								
4								
5	5.0	1125.6			DP02	5.0 - 10.0	5.0	N/A
6				6.5/8.5-20190124				
7								
8								
9								
10								
11			Color change to 10YR 5/6 (yellowish brown) to 10YR 5/8 (yellowish brown) at 10.0'		DP03	10.0 - 12.9	5.0	N/A
12				10.5/12.5-20190124				
12.9	1117.7		Saprolitic bedding structure visible from 11.9' to 12.9'					

Bedrock Refusal /
Bottom of Hole at 12.9 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface
- 4: Grab sample (0.0/0.5-20190124) sampled using hand auger

TVA EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 10/15/20



SUBSURFACE LOG

Client Borehole ID	N/A	Stantec Boring No.	JSF-BG11	
Client	Tennessee Valley Authority	Boring Location	736,964.98 N; 2,896,841.17 E NAD27 Plant Local	
Project Number	175568225	Surface Elevation	1106.8 ft	Elevation Datum NGVD29
Project Name	JSF TDEC Order	Date Started	1/24/19	Completed 1/24/19
Project Location	Hawkins Co, Rogersville, Tennessee	Depth to Water	N/A	Date/Time N/A
Inspector	M. Edmunds	Logger	M. Edmunds	Depth to Water N/A
Drilling Contractor	Stantec Consulting Services Inc.	Drill Rig Type and ID	Geoprobe 7730DT	
Overburden Drilling and Sampling Tools (Type and Size)	Direct Push - Dual Tube			
Rock Drilling and Sampling Tools (Type and Size)	N/A			
Overdrill Tooling (Type and Size)	N/A	Overdrill Depth	N/A	
Sampler Hammer Type	N/A	Weight	N/A	Drop N/A
Borehole Azimuth	N/A	Borehole Inclination (from Vertical)	N/A	
Reviewed By	K. Carey	Approved By	P. Dunne	

Depth Ft ³	Lithology		Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	1106.8	Top of Hole					
0.1	1106.7		Topsoil	HA ⁴	HA01	0.0 - 0.5	0.5	
1			SILTY LEAN CLAY WITH SAND, CL, 7.5YR 5/6 (strong brown) to 7.5YR 4/1 (dark gray), non-plastic, firm, dry to moist Trace gravel inclusions from 0.1' to 1.1' Red sand and clay interval from 2.1' to 2.3'	1.1/3.1-20190124	DP01	0.0 - 5.0	4.3	N/A
2								
3								
5.0	1101.8		LEAN CLAY WITH SILT, CL, 7.5YR 6/8 (reddish yellow) to 7.5YR 4/6 (strong brown), medium to high plasticity, soft to stiff, moist to wet	5.5/8.5-20190124	DP02	5.0 - 10.0	4.1	N/A
6			SILTY LEAN CLAY TRACE SAND, CL, 7.5YR 5/4 (brown) to 7.5YR 4/4 (brown), non-plastic to low plasticity, firm to stiff, moist					
7								
8								
10.0	1096.8			1.1.3/13.3-20190124	DP03	10.0 - 14.6	4.6	N/A
11								
12								
13								
14	14.6	1092.2						

Bedrock Refusal /
Bottom of Hole at 14.6 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface
- 4: Grab sample (0.0/0.5-20190124) sampled using hand auger


TVA/EIP BORING LOG 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 3/16/20

Client Borehole ID	<u>N/A</u>	Stantec Boring No.	JSF-BG12
Client	<u>Tennessee Valley Authority</u>	Boring Location	<u>737,493.41 N; 2,895,501.86 E NAD27 Plant Local</u>
Project Number	<u>175568225</u>	Surface Elevation	<u>1086.8 ft</u> Elevation Datum <u>NGVD29</u>
Project Name	<u>JSF TDEC Order</u>	Date Started	<u>1/23/19</u> Completed <u>1/23/19</u>
Project Location	<u>Hawkins Co, Rogersville, Tennessee</u>	Depth to Water	<u>N/A</u> Date/Time <u>N/A</u>
Inspector	<u>M. Edmunds</u> Logger <u>M. Edmunds</u>	Depth to Water	<u>N/A</u> Date/Time <u>N/A</u>
Drilling Contractor	<u>Stantec Consulting Services Inc.</u>	Drill Rig Type and ID	<u>Geoprobe 7300DT</u>
Overburden Drilling and Sampling Tools (Type and Size)	<u>Direct Push - Dual Tube</u>		
Rock Drilling and Sampling Tools (Type and Size)	<u>N/A</u>		
Overdrill Tooling (Type and Size)	<u>N/A</u>	Overdrill Depth	<u>N/A</u>
Sampler Hammer Type	<u>N/A</u> Weight <u>N/A</u> Drop <u>N/A</u> Efficiency <u>N/A</u>		
Borehole Azimuth	<u>N/A</u>	Borehole Inclination (from Vertical)	<u>N/A</u>
Reviewed By	<u>K. Carey</u>	Approved By	<u>P. Dunne</u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	0.0	1086.8						
	0.5	1086.3	Top of Hole					
			Topsoil, grass, roots, some gravel, pad material (anthropogenic)	HA1	HA01	0.0 - 0.5	0.5	
1			SILTY LEAN CLAY WITH SAND, CL, 7.5YR 5/6 (strong brown) to 7.5YR 5/8 (strong brown), non-plastic to low plasticity, stiff to hard, dry	0.8/2.8-2.0/190123				
2				DP01		0.0 - 5.0	3.6	N/A
3								
4								
5	5.0	1081.8	CLAYEY SAND, SC, 7.5YR 6/1 (gray) to 7.5YR 6/3 (light brown), medium dense, moist	5.0/10.0-20/190123				
6			Color change to 7.5YR 5/6 (strong brown), fine, loose to medium dense, moderately graded at 10.0'					
7				DP02		5.0 - 10.0	1.0	N/A
8								
9			Some manganese inclusions from 13.0' to 13.5'					
10								
11			POORLY GRADED SAND, SP, 10YR 6/6 (brownish yellow) to 10YR 5/3 (brown), medium to coarse, loose, wet, oxidation banding in sand throughout					
12								
13	13.5	1073.3						
14								
15	15.0	1071.8						

TVA EIP BORING LOG 175568225 JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 3/16/20

Client Borehole ID <u> N/A </u>	Stantec Boring No. JSF-BG12
Client <u> Tennessee Valley Authority </u>	Boring Location <u> 737,493.41 N; 2,895,501.86 E NAD27 Plant Local </u>
Project Number <u> 175568225 </u>	Surface Elevation <u> 1086.8 ft </u> Elevation Datum <u> NGVD29 </u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
15			No recovery		DP04	15.0 - 15.9	0.0	N/A

Bedrock Refusal /
Bottom of Hole at 15.9 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
 G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface
- 4: Grab sample (0.0/0.5-20190123) sampled using hand auger

Client Borehole ID	N/A	Stantec Boring No.	JSF-BG13
Client	Tennessee Valley Authority	Boring Location	734,206.45 N; 2,886,552.61 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1086.0 ft Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
18			FAT CLAY, CH, 10YR 3/6 (dark yellowish brown) to 10YR 4/4 (dark yellowish brown), medium plasticity, moist (Continued)					
20	1066.0							
21			FAT CLAY, CH, 7.5YR 4/4 (brown), medium to high plasticity, soft, moist					
25	1061.0							
26			SILTY SAND, SM, 7.5YR 4/3 (brown) to 10YR 4/2 (dark grayish brown), fine to medium, moist to wet					
29	1057.0							

Angular limestone pebbles/cobbles from 28.7' to 29'
 Bedrock Refusal /
 Bottom of Hole at 29.0 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
 G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface
- 4: Grab sample (0.0/0.5-20191008) sampled using hand auger

TVA EIP BORING LOG - 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 11/4/20

Client Borehole ID <u>N/A</u>		Stantec Boring No. JSF-BG14	
Client <u>Tennessee Valley Authority</u>		Boring Location <u>734,503.56 N; 2,886,376.22 E NAD27 Plant Local</u>	
Project Number <u>175568225</u>		Surface Elevation <u>1079.2 ft</u> Elevation Datum <u>NGVD29</u>	
Project Name <u>JSF TDEC Order</u>		Date Started <u>10/8/19</u> Completed <u>10/8/19</u>	
Project Location <u>Hawkins Co, Rogersville, Tennessee</u>		Depth to Water <u>N/A</u> Date/Time <u>N/A</u>	
Inspector <u>K. Carey</u> Logger <u>K. Carey</u>		Depth to Water <u>N/A</u> Date/Time <u>N/A</u>	
Drilling Contractor <u>Hawkston (Subcontractor)</u>		Drill Rig Type and ID <u>Geoprobe 3230DT</u>	
Overburden Drilling and Sampling Tools (Type and Size) <u>DPT 2.0" liner</u>			
Rock Drilling and Sampling Tools (Type and Size) <u>N/A</u>			
Overdrill Tooling (Type and Size) <u>N/A</u> Overdrill Depth <u>N/A</u>			
Sampler Hammer Type <u>N/A</u> Weight <u>N/A</u> Drop <u>N/A</u> Efficiency <u>N/A</u>			
Borehole Azimuth <u>N/A</u>		Borehole Inclination (from Vertical) <u>N/A</u>	
Reviewed By <u>P. Dunne</u>		Approved By <u>L. Price</u>	

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
0	1079.2		Top of Hole					
1			CLAYEY GRAVEL, GC, 10YR 4/4 (dark yellowish brown) to 10YR 4/3 (brown), dry Fill from 0.0' to 2.0' Angular, gray gravel zone from 1.4' to 2.0'	HA ¹	HA01	0.0 - 0.5	0.5	
2.8	1076.4				DP01	0.0 - 5.0	2.8	N/A
3			FAT CLAY, CH, 10YR 3/3 (dark brown) to 10YR 4/4 (dark yellowish brown), low to medium plasticity, firm, dry to moist	3.0/5.0-20.19/1008				
5					DP02	5.0 - 10.0	5.0	N/A
10	1069.2		FAT CLAY, CH, 10YR 4/4 (dark yellowish brown), medium plasticity, moist		DP03	10.0 - 15.0	5.0	N/A
13.3	1065.9			11.5/13.5-20.19/1008				
14			SILTY SAND, SM, 10YR 4/4 (dark yellowish brown), fine to medium, moist Transitions to a sandy material at 13.3'					
15	1064.2				DP04	15.0 - 20.0	3.4	N/A
16			POORLY GRADED SAND, SP, 7.5YR 4/4 (brown), fine to medium, moist	16.5/18.5-20.19/1008				

TVA EIP BORING LOG - 175568225 - JSF TDEC ORDER.GPJ - TDEC SUBSURF DT 20190530.GDT, 11/5/20

Client Borehole ID	N/A	Stantec Boring No.	JSF-BG14
Client	Tennessee Valley Authority	Boring Location	734,503.56 N; 2,886,376.22 E NAD27 Plant Local
Project Number	175568225	Surface Elevation	1079.2 ft Elevation Datum NGVD29

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
18			POORLY GRADED SAND, SP, 7.5YR 4/4 (brown), fine to medium, moist <i>(Continued)</i>					
20.0	1059.2		Grades to a poorly graded, medium sand from 19.7' to 20.0'					
21			WELL GRADED GRAVEL WITH SAND, GW, 10YR 4/6 (dark yellowish brown), coarse, moist to wet					
23.7	1055.5			21.9/23.5-20191008	DP05	20.0 - 25.0	3.3	N/A
25.0	1054.2		WELL GRADED GRAVEL WITH SAND, GW, 10YR 3/1 (very dark gray), coarse, moist, light gray weathered bedrock fragments/ pebbles and cobbles					

Rock encountered at 23.7' Terminated boring at 25.0' to not advance further into bedrock

Bedrock Refusal /
Bottom of Hole at 25.0 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface
- 4: Grab sample (0.0/0.5-20191008) sampled using hand auger

TVA EIP BORING LOG - 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 11/5/20

Client Borehole ID <u> N/A </u>	Stantec Boring No. JSF-BG15
Client <u> Tennessee Valley Authority </u>	Boring Location <u> 734,653.36 N; 2,886,121.92 E NAD27 Plant Local </u>
Project Number <u> 175568225 </u>	Surface Elevation <u> 1078.7 ft </u> Elevation Datum <u> NGVD29 </u>

Lithology			Description	Overburden:	Sample ^{1,2}	Depth Ft ³	Rec. Ft	Blows/PSI
Depth Ft ³	Elevation	Graphic		Rock Core:	RQD %	Run Ft	Rec. Ft	Rec. %
18			SILTY SAND, SM, 7.5YR 4/4 (brown), very fine to medium, moist to wet (Continued)					
19								
20	20.0	1058.7	POORLY GRADED SAND, SP, 7.5YR 4/4 (brown), fine to medium, moist to wet, subangular and subrounded pebbles/cobbles within sand, alluvial material.	21.5/23.5-20191008	DP05	20.0 - 24.5	2.7	N/A
21								
22								
23								
24	24.5	1054.2	Encountered water from 23.5' to 24.5'					

Bedrock Refusal /
Bottom of Hole at 24.5 Ft.

- 1: E = Environmental Sample Custody (two Split Spoons may be required to obtain sufficient sample)
G = Geotechnical Sample Custody
- 2: a,b,c denote Split Spoon divided between Environmental and Geotechnical Samples
- 3: Depths are reported in feet below ground surface
- 4: Grab sample (0.0/0.5-20191008) sampled using hand auger

TVA/EIP BORING LOG - 175568225 - JSF TDEC ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 1/14/21

APPENDIX D - PHOTOGRAPHIC LOGS



ATTACHMENT D.1

PHOTOGRAPHIC LOGS OF SOIL CORES



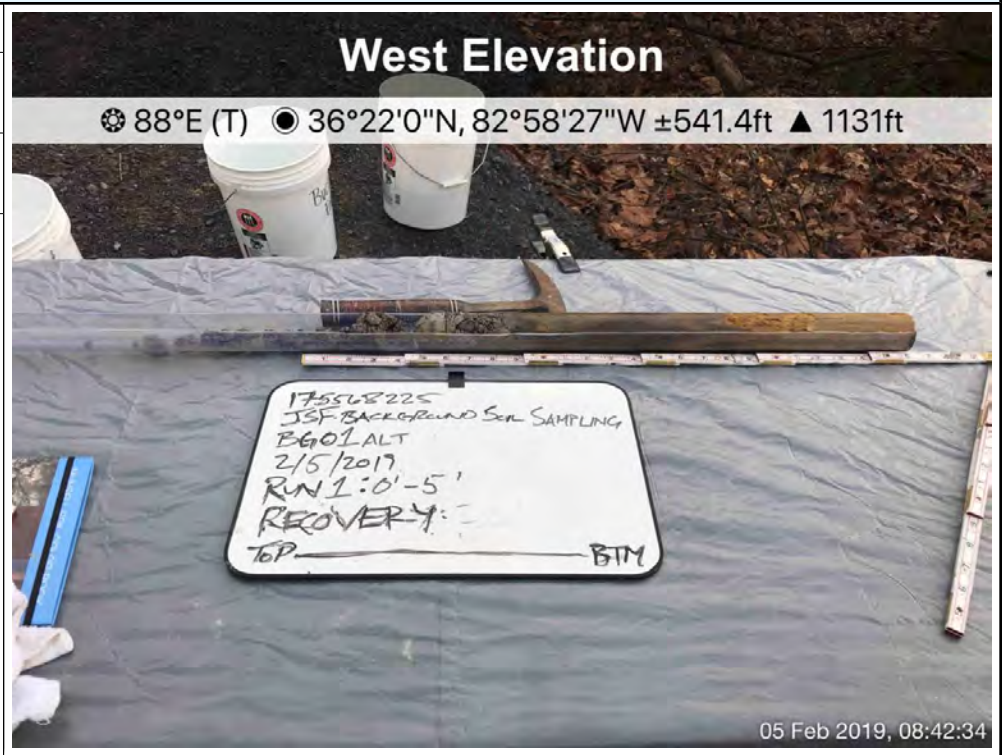
Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 1

Photo Location:
JSF-BG01Alt

Photo Date:
2/5/2019

Comments:
Interval (0.0-5.0 feet). Photo location shown on white board should be JSF-BG01Alt. Recovery shown on white board should be 2.6.

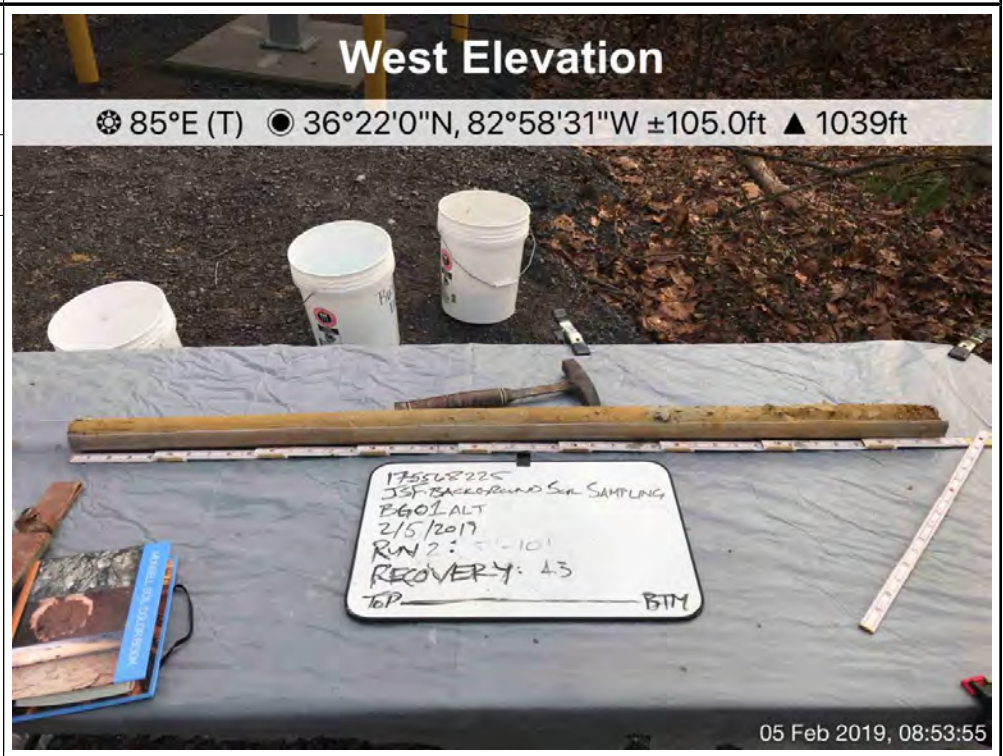


Photograph ID: 2

Photo Location:
JSF-BG01Alt

Photo Date:
2/5/2019

Comments:
Interval (5.0-10.0 feet). Photo location shown on white board should be JSF-BG01Alt. Depth interval shown on white board should be 5.0-10.0.



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 3

Photo Location:
JSF-BG01Alt

Photo Date:
2/5/2019

Comments:
Interval (10.0-12.4 feet). Photo location shown on white board should be JSF-BG01Alt. Recovery shown on white board should be 2.9.

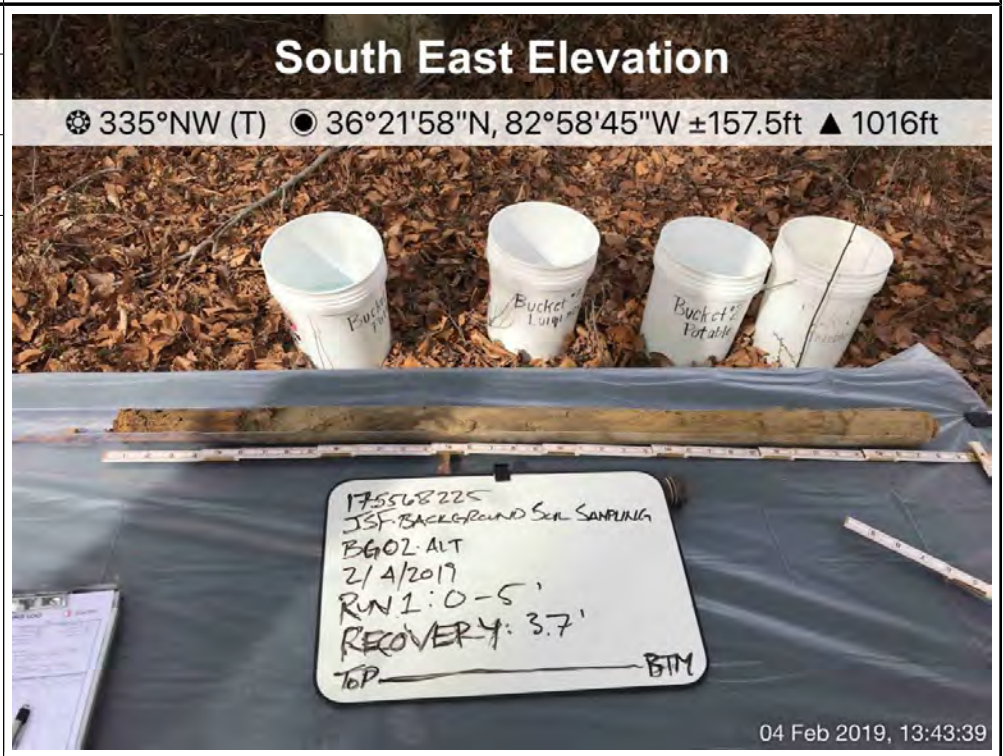


Photograph ID: 4

Photo Location:
JSF-BG02Alt

Photo Date:
2/4/2019

Comments:
Interval (0.0-5.0 feet). Photo location shown on white board should be JSF-BG02Alt.



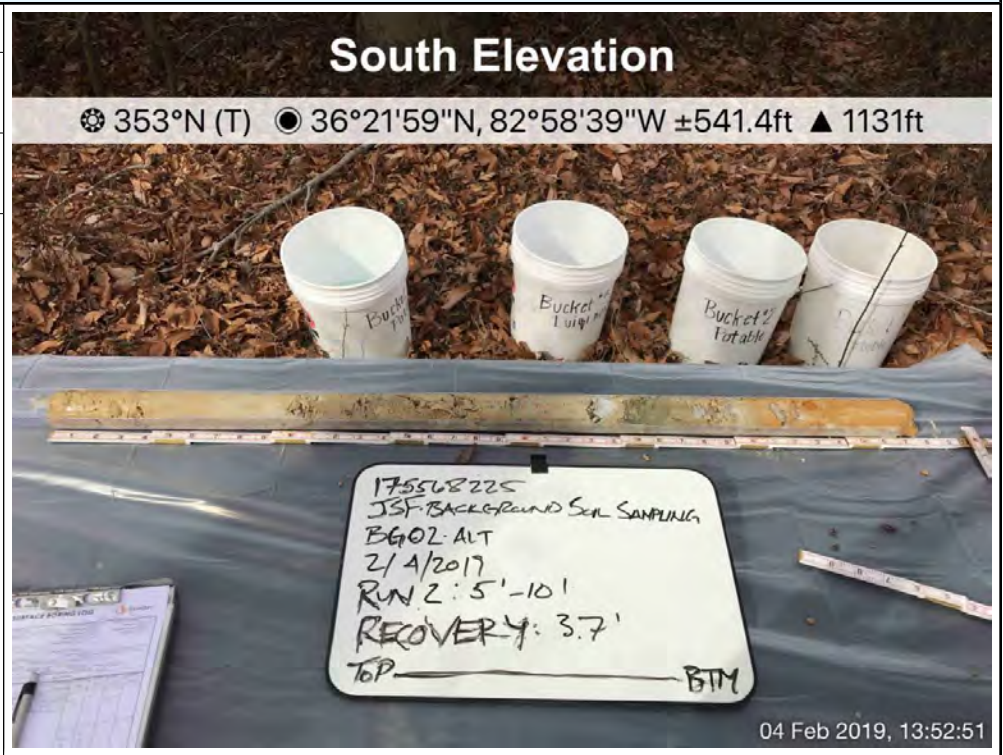
Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 5

Photo Location:
JSF-BG02Alt

Photo Date:
2/4/2019

Comments:
Interval (5.0-10.0 feet).
Photo location shown on white board should be JSF-BG02Alt.

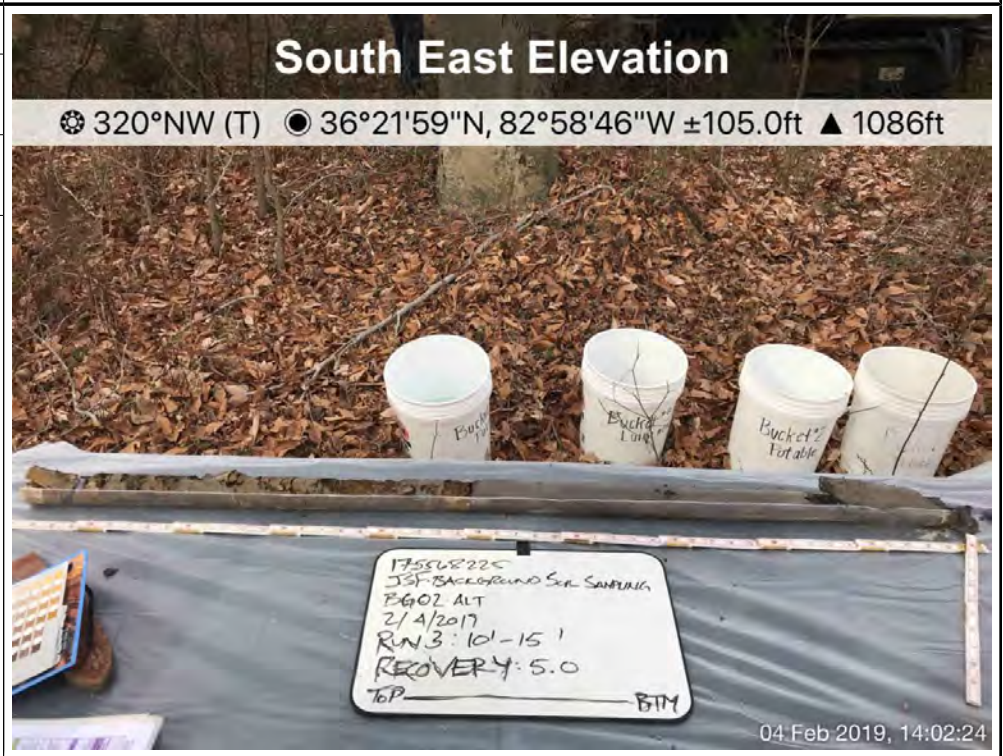


Photograph ID: 6

Photo Location:
JSF-BG02Alt

Photo Date:
2/4/2019

Comments:
Interval (10.0-15.0 feet).
Photo location shown on white board should be JSF-BG02Alt.



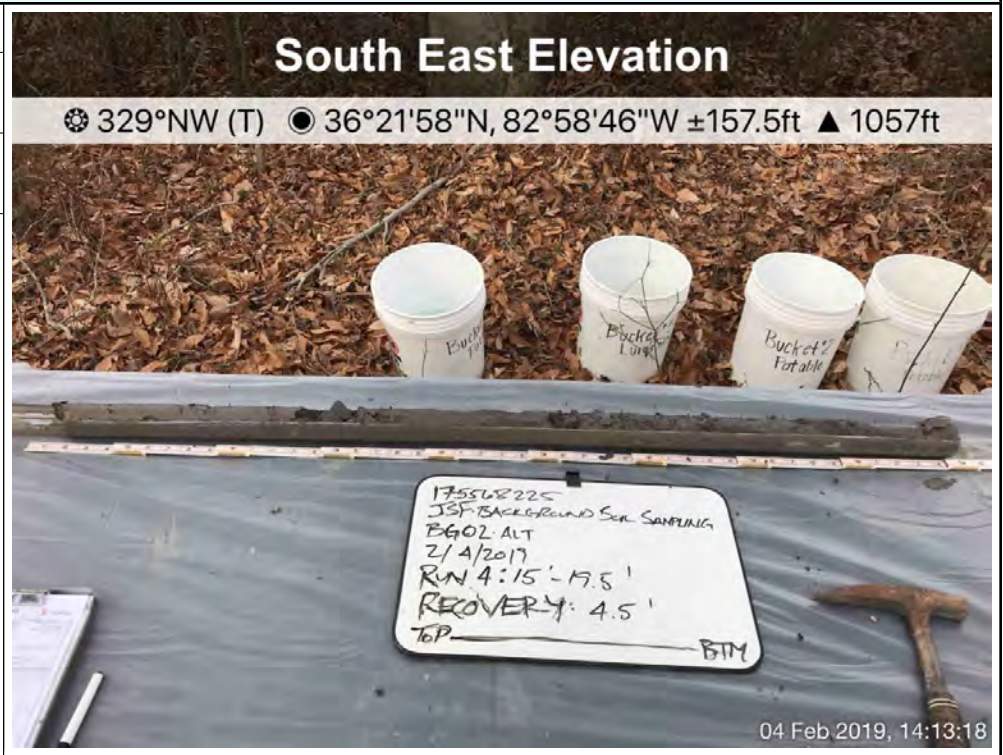
Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 7

Photo Location:
JSF-BG02Alt

Photo Date:
2/4/2019

Comments:
Interval (15.0-19.5 feet).
Photo location shown on white board should be JSF-BG02Alt.

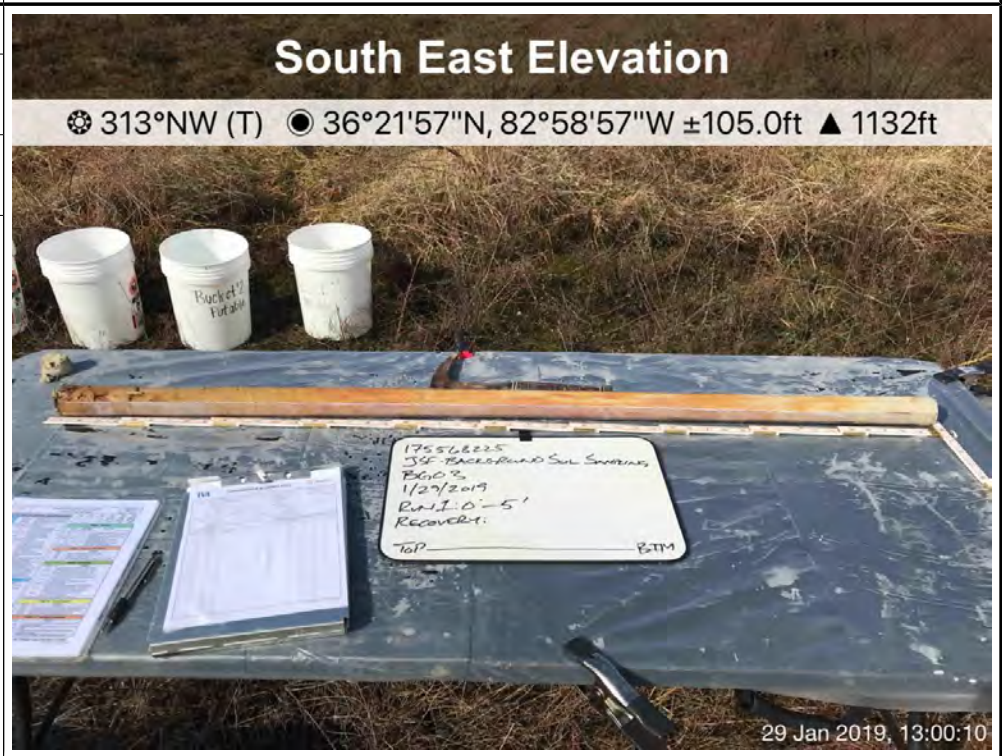


Photograph ID: 8

Photo Location:
JSF-BG03

Photo Date:
1/29/2019

Comments:
Interval (0.0-5.0 feet).
Photo location shown on white board should be JSF-BG03. Recovery shown on white board should be 5.0.



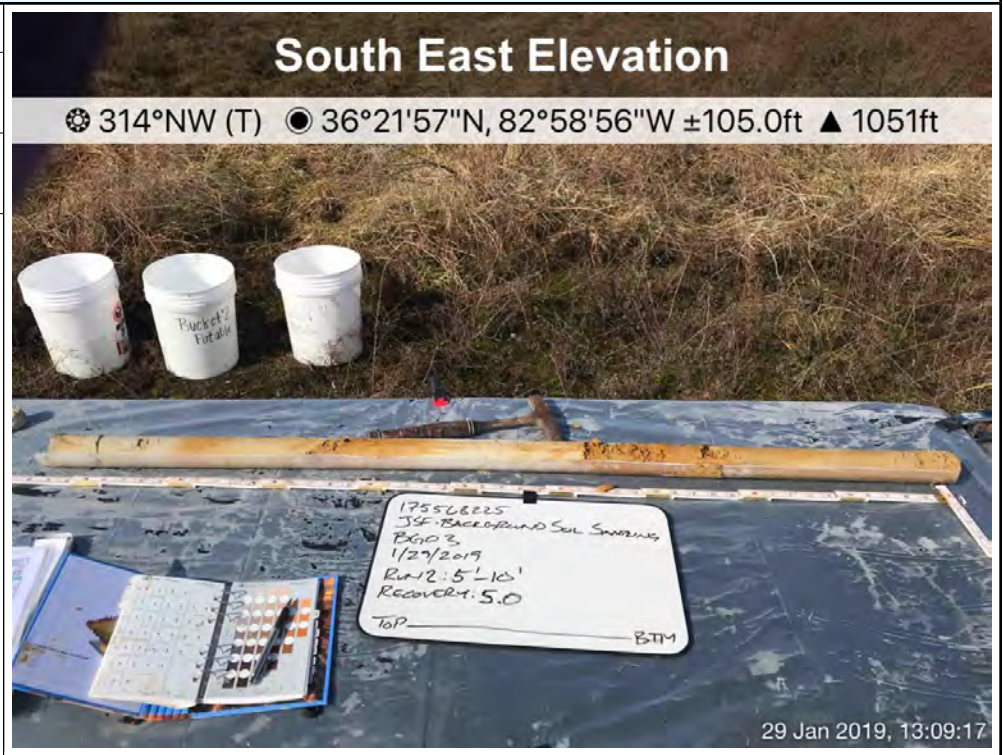
Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 9

Photo Location:
JSF-BG03

Photo Date:
1/29/2019

Comments:
Interval (5.0-10.0 feet).
Photo location shown on white board should be JSF-BG03.

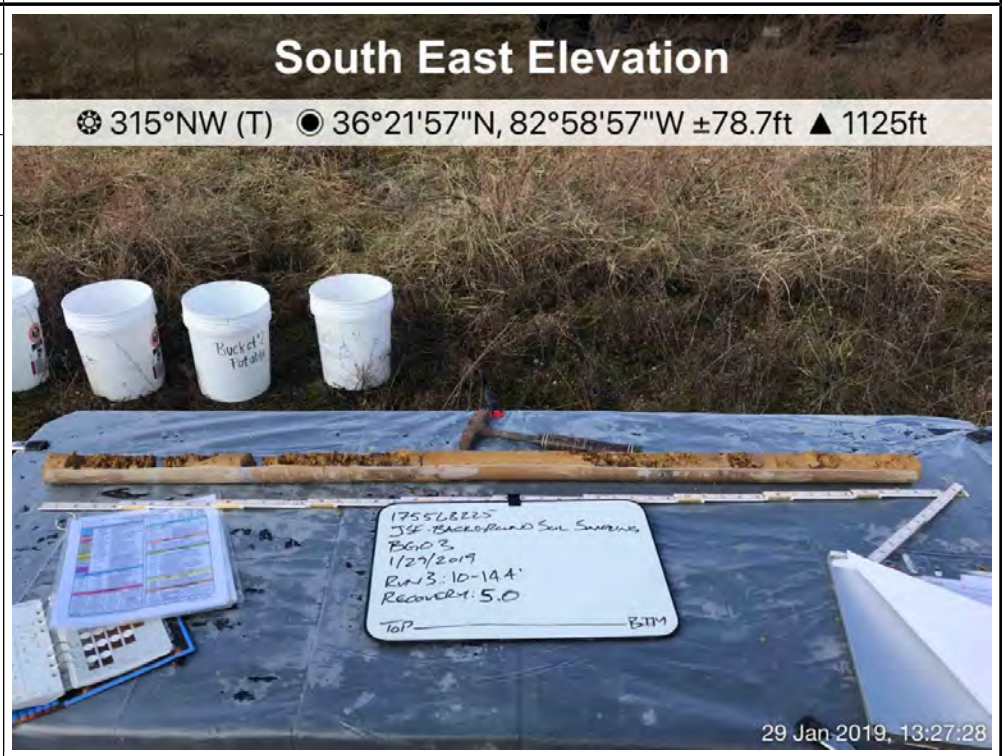


Photograph ID: 10

Photo Location:
JSF-BG03

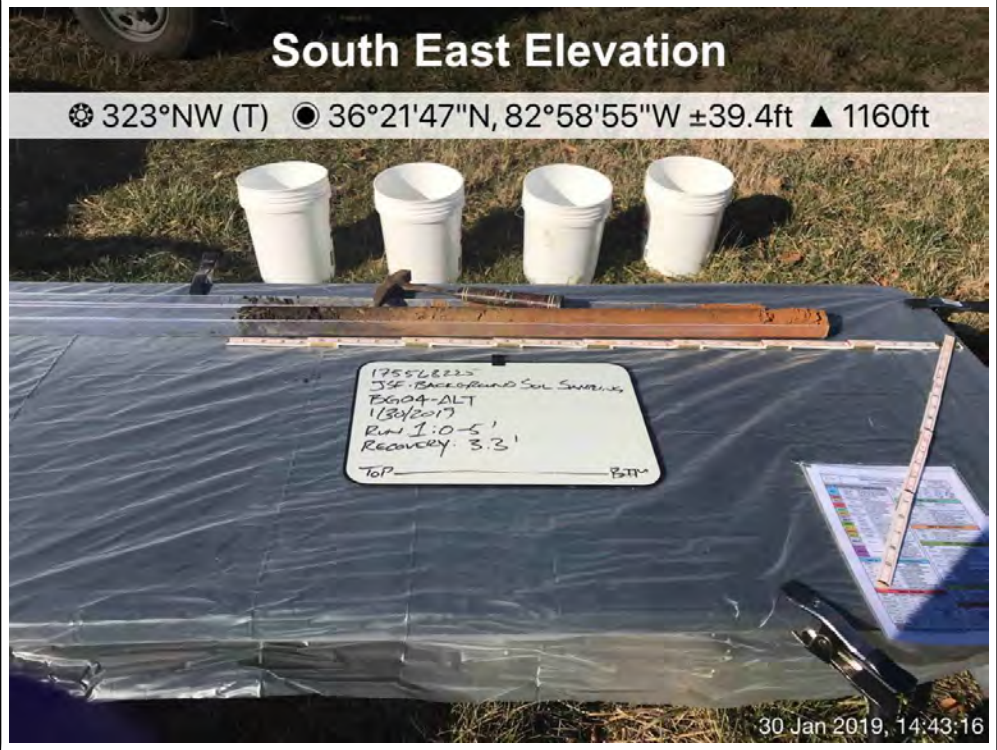
Photo Date:
1/29/2019

Comments:
Interval (10.0-14.4 feet).
Photo location shown on white board should be JSF-BG03.

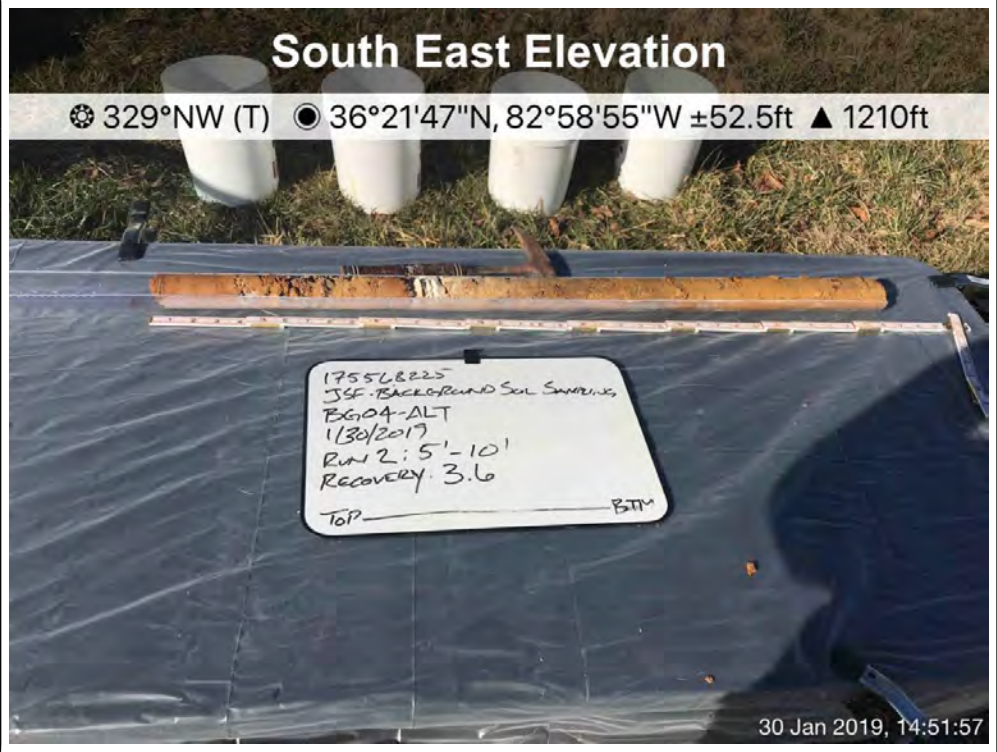


Client: Tennessee Valley Authority Project: TDEC Order
 Site Name: John Sevier Fossil (JSF) Plant Site Location: Rogersville, Tennessee

Photograph ID: 11
Photo Location: JSF-BG04Alt
Photo Date: 1/30/2019
Comments:
 Interval (0.0-5.0 feet).
 Photo location shown on white board should be JSF-BG04Alt.

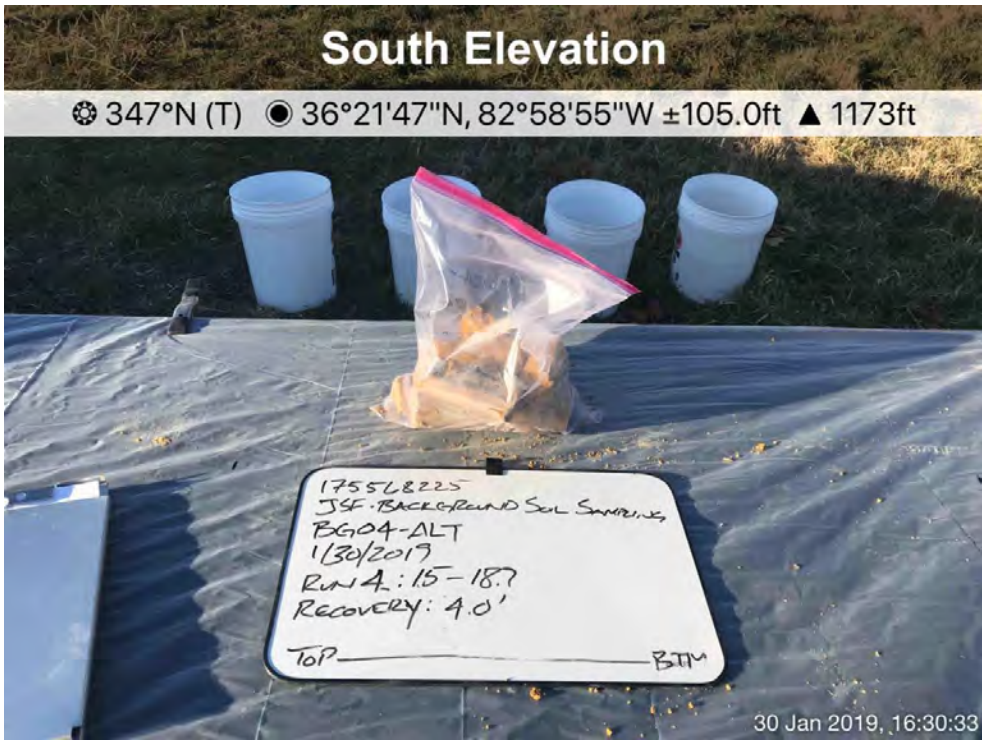


Photograph ID: 12
Photo Location: JSF-BG04Alt
Photo Date: 1/30/2019
Comments:
 Interval (5.0-10.0 feet).
 Photo location shown on white board should be JSF-BG04Alt.



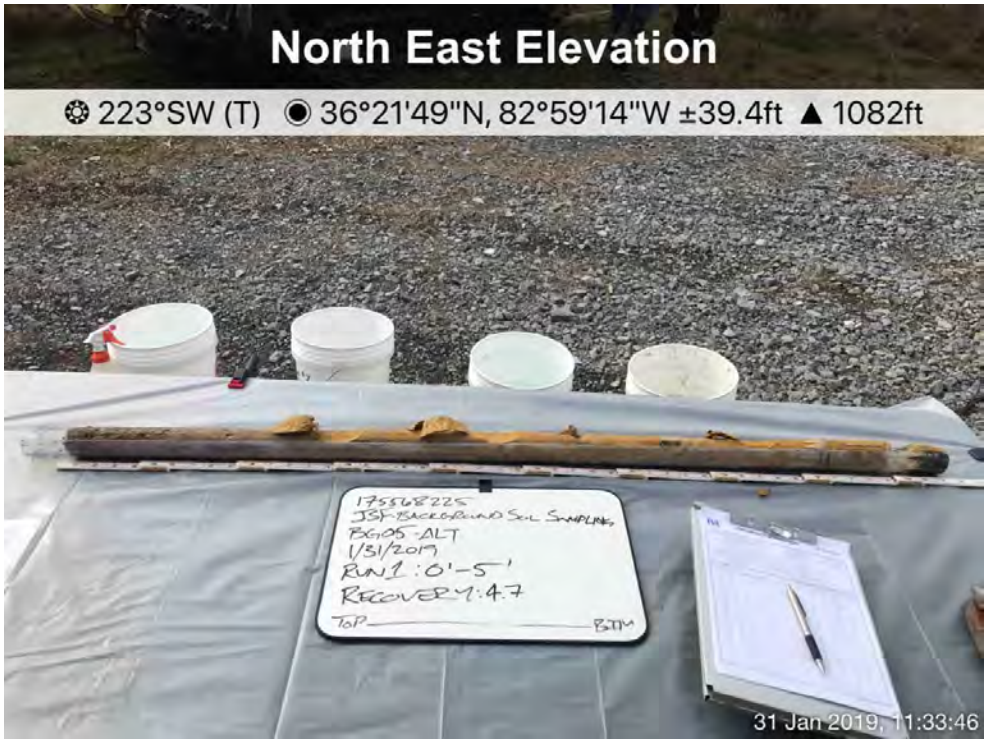
Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

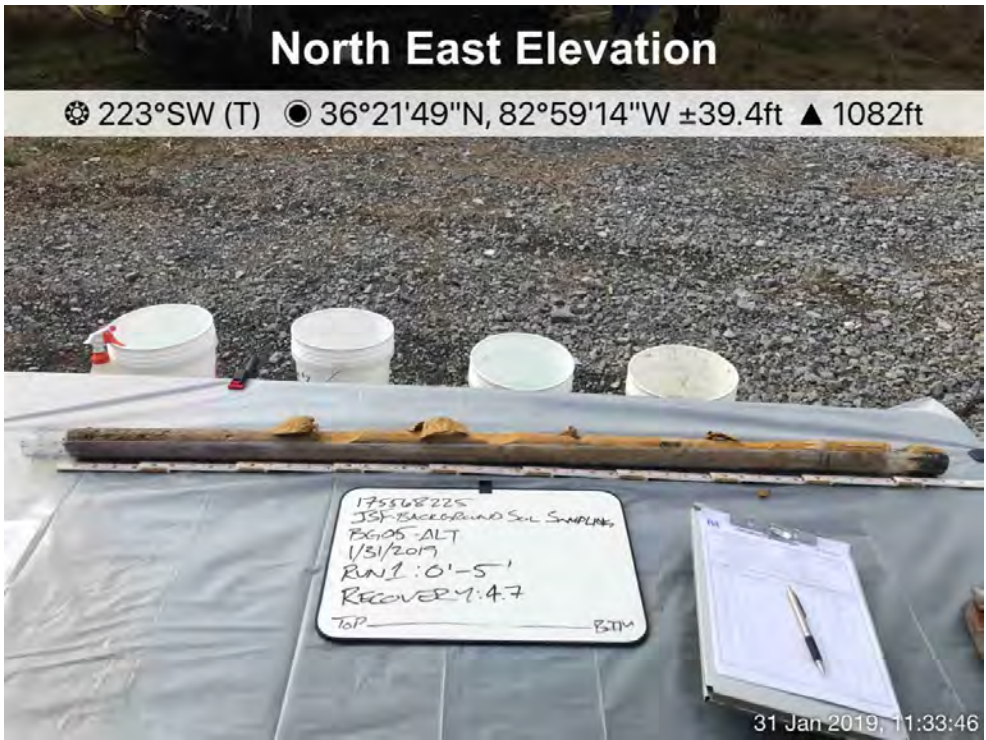
Photograph ID: 13	No Photo Applicable
Photo Location: JSF-BG04Alt	
Photo Date: 1/30/2019	
Comments: Photo of interval (10.0-15.0 feet) unavailable.	

Photograph ID: 14	
Photo Location: JSF-BG04Alt	
Photo Date: 1/30/2019	
Comments: Interval (15.0-18.9 feet). Photo location shown on white board should be JSF-BG04Alt. Depth interval shown on white board should be 15.0-18.9.	

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 15	No Photo Applicable
Photo Location: JSF-BG05Alt	
Photo Date: 1/31/2019	
Comments: First boring location interval (0.0-5.0 feet), low recovery, photo unavailable.	

Photograph ID: 16	
Photo Location: JSF-BG05Alt	
Photo Date: 1/31/2019	
Comments: Second boring location interval (0.0-5.0 feet). Offset 2 feet to the west of the first boring. Photo location shown on white board should be JSF-BG05Alt.	



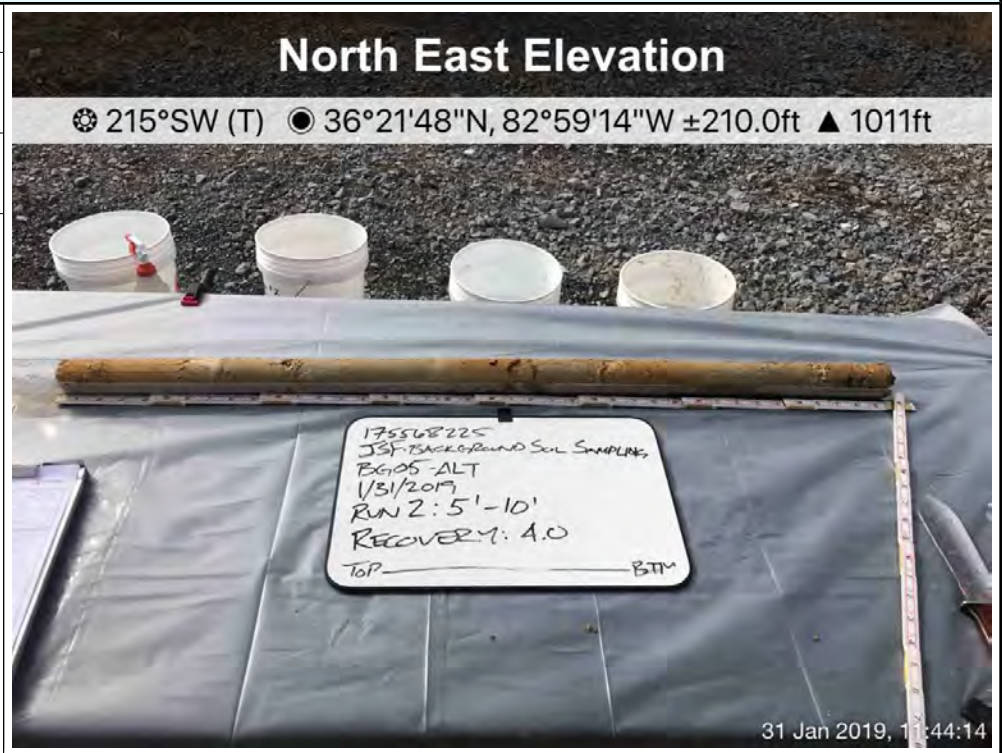
Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 17

Photo Location:
JSF-BG05Alt

Photo Date:
1/31/2019

Comments:
Interval (5.0-10.0 feet).
Photo location shown on white board should be JSF-BG05Alt.

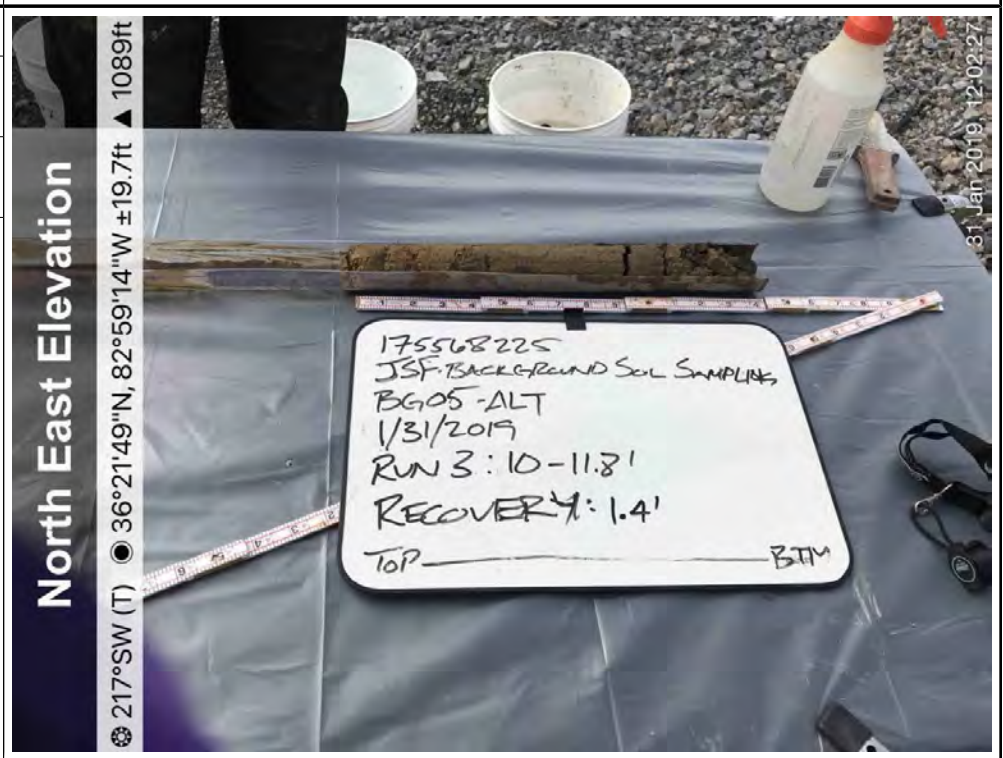


Photograph ID: 18

Photo Location:
JSF-BG05Alt

Photo Date:
1/31/2019

Comments:
Interval (10.0-11.8 feet).
Boring refusal at 11.8 feet.
Photo location shown on white board should be JSF-BG05Alt.



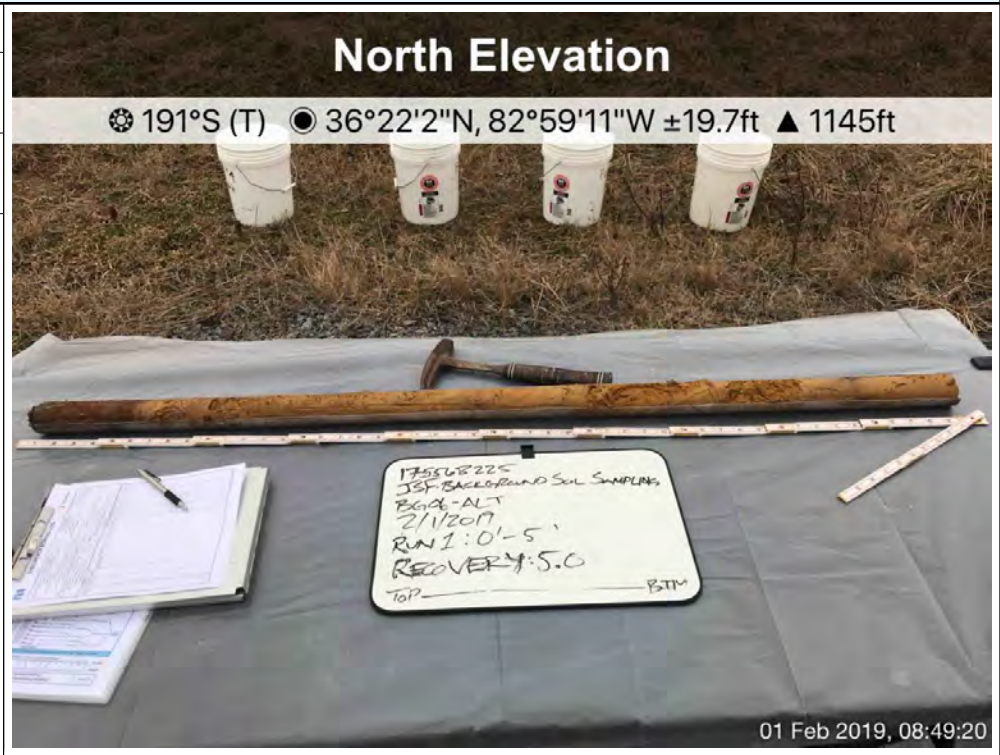
Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 19

Photo Location:
JSF-BG06Alt

Photo Date:
2/1/2019

Comments:
Interval (0.0-5.0 feet).
Photo location shown on white board should be JSF-BG06Alt.

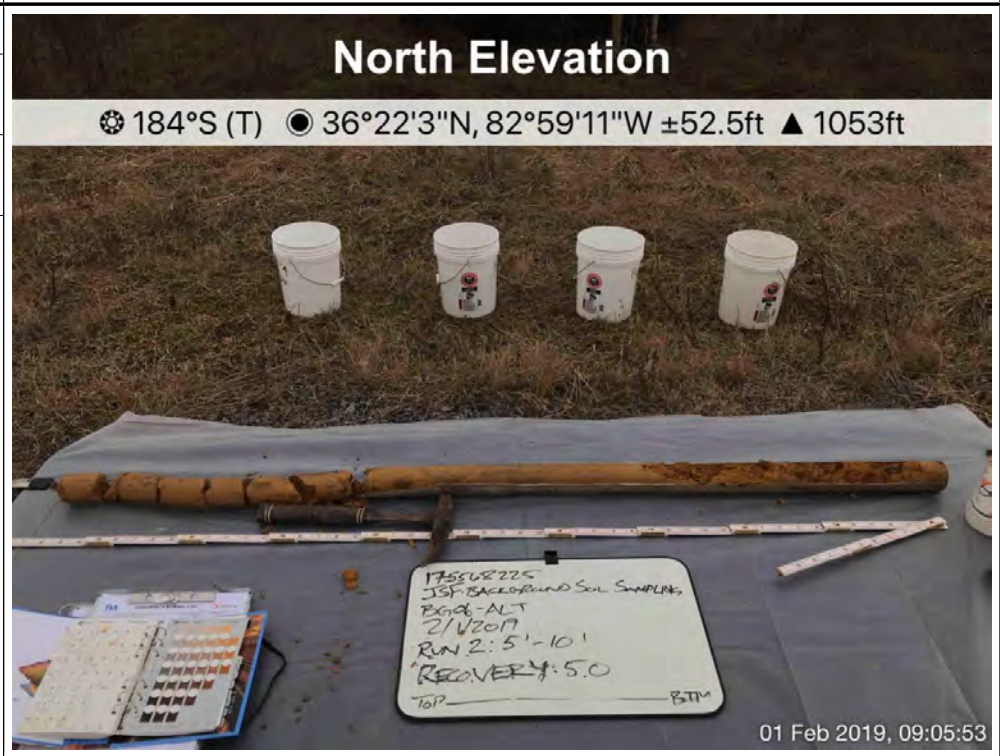


Photograph ID: 20

Photo Location:
JSF-BG06Alt

Photo Date:
2/1/2019

Comments:
Interval (5.0-10.0 feet).
Photo location shown on white board should be JSF-BG06Alt.



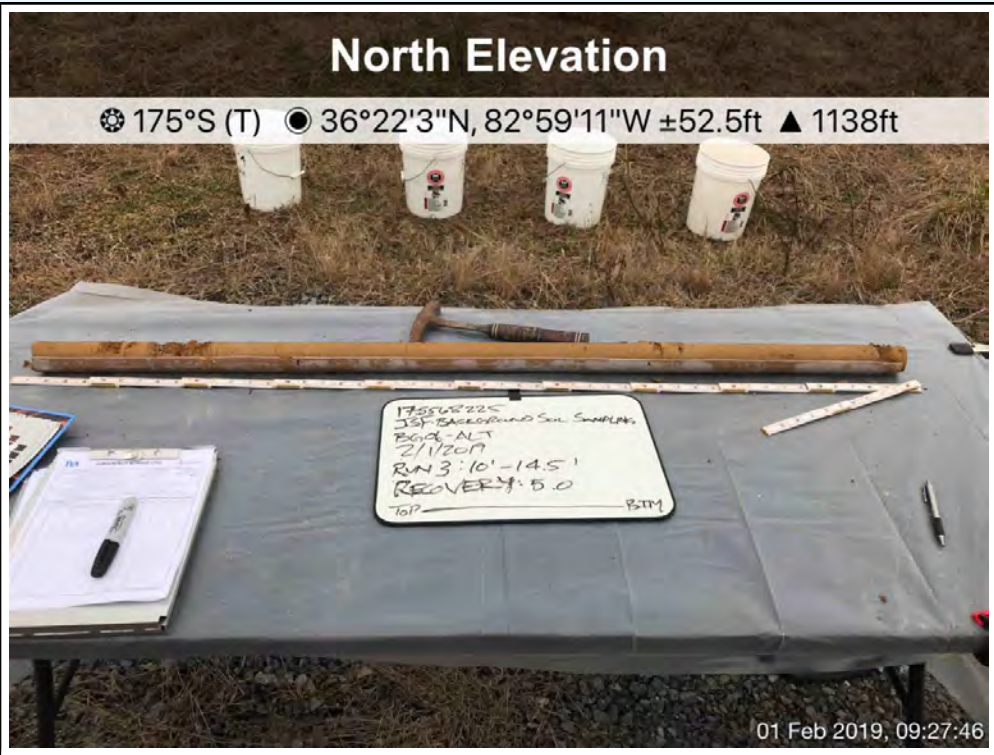
Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 21

Photo Location:
JSF-BG06Alt

Photo Date:
2/1/2019

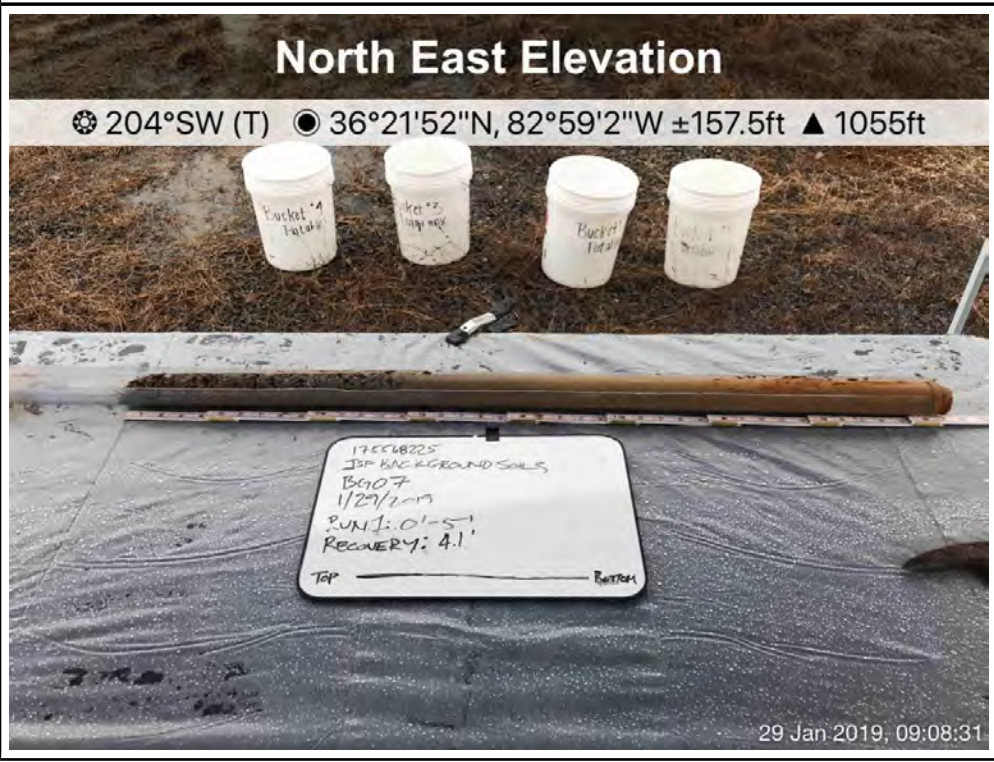
Comments:
Interval (10.0-14.5 feet).
Photo location shown on white board should be JSF-BG06Alt.



Photograph ID: 22

Photo Location:
JSF-BG07

Photo Date:
1/29/2019



Comments:
Interval (0.0-5.0 feet).
Photo location shown on white board should be JSF-BG07.

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 23

Photo Location:
JSF-BG07

Photo Date:
1/29/2019

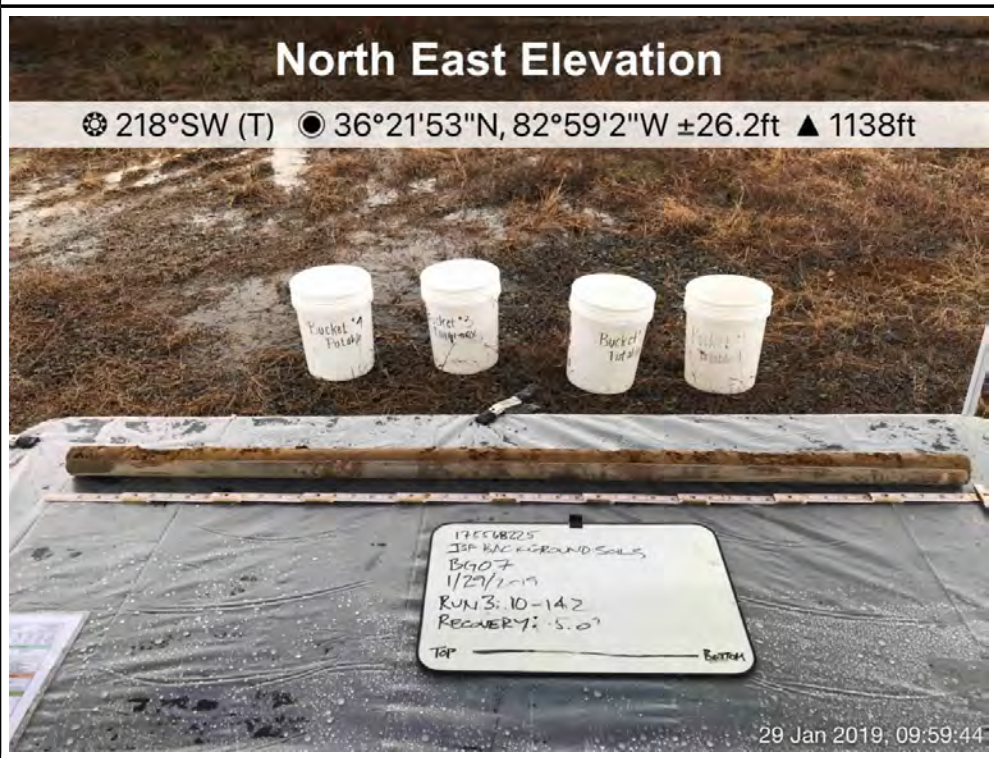
Comments:
Interval (5.0-10.0 feet). Photo location shown on white board should be JSF-BG07. Recovery shown on white board should be 4.8.



Photograph ID: 24

Photo Location:
JSF-BG07

Photo Date:
1/29/2019



Comments:
Interval (10.0-14.2 feet). Photo location shown on white board should be JSF-BG07.

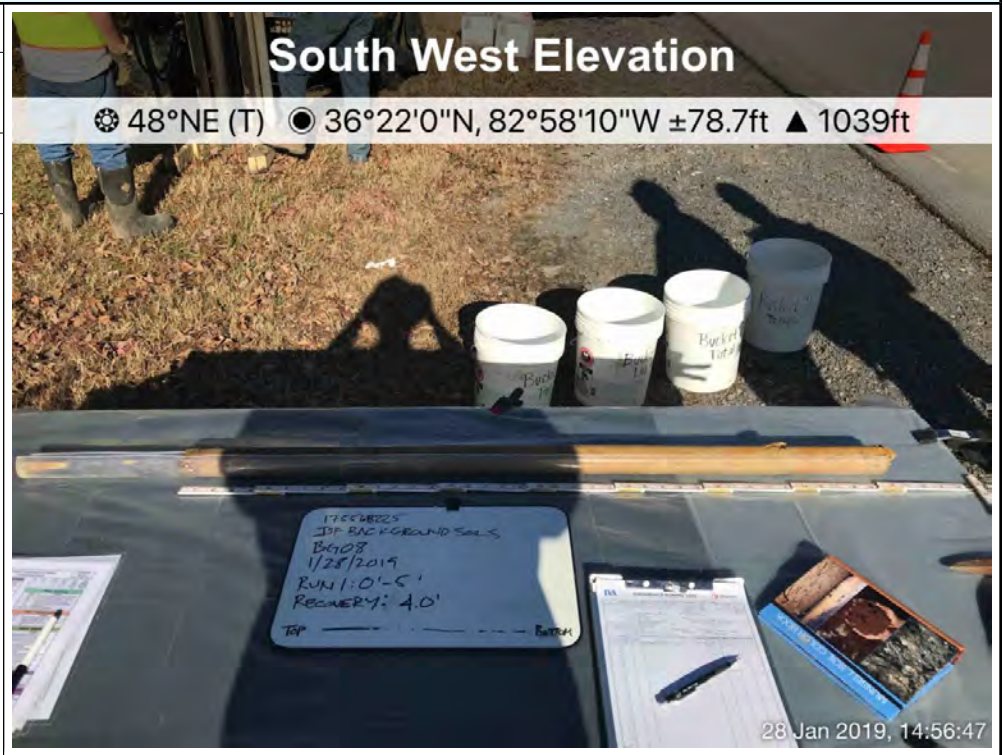
Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 25

Photo Location:
JSF-BG08

Photo Date:
1/28/2019

Comments:
Interval (0.0-5.0 feet).
Photo location shown on white board should be JSF-BG08.

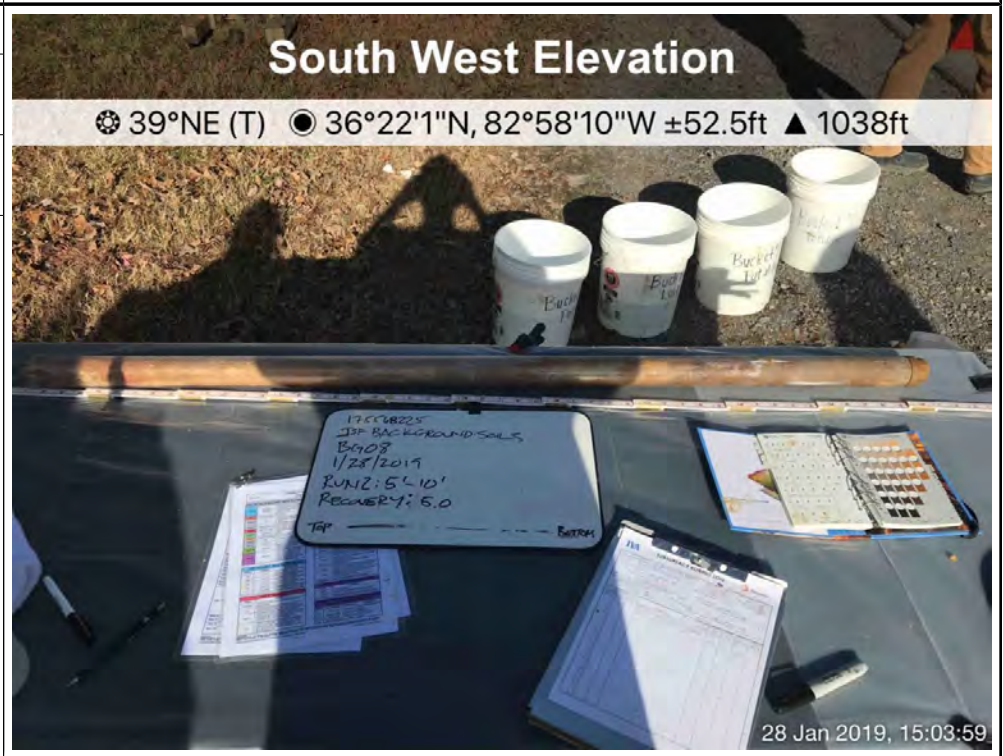


Photograph ID: 26

Photo Location:
JSF-BG08

Photo Date:
1/28/2019

Comments:
Interval (5.0-10.0 feet).
Photo location shown on white board should be JSF-BG08. Recovery shown on white board should be 5.0.



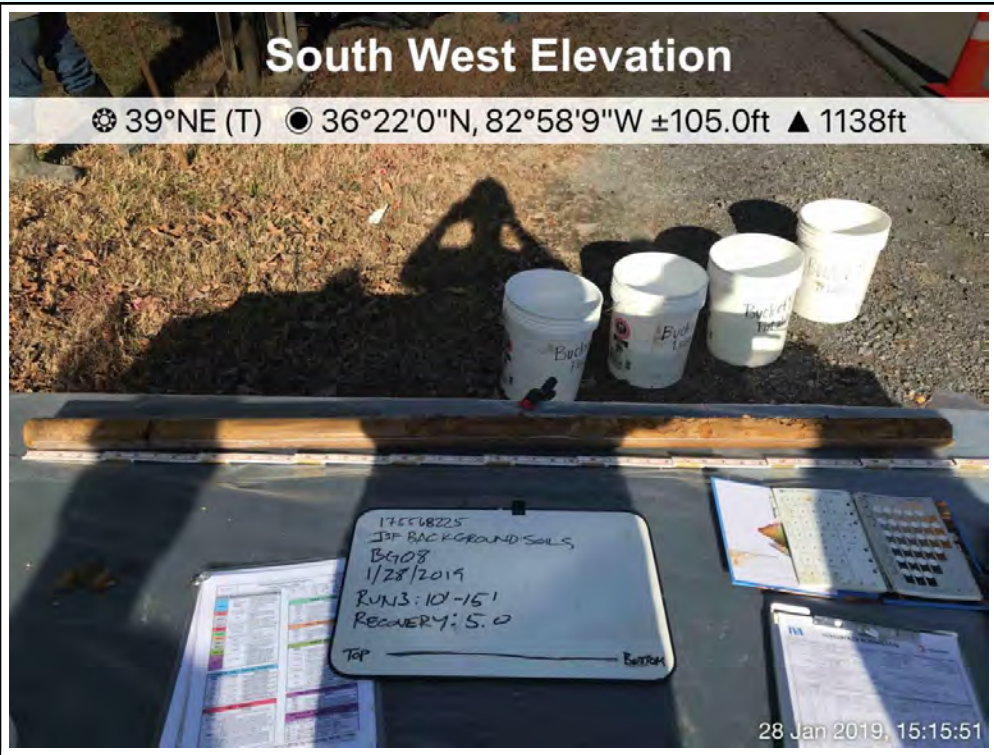
Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 27

Photo Location:
JSF-BG08

Photo Date:
1/28/2019

Comments:
Interval (10.0-15.0 feet).
Photo location shown on white board should be JSF-BG08.

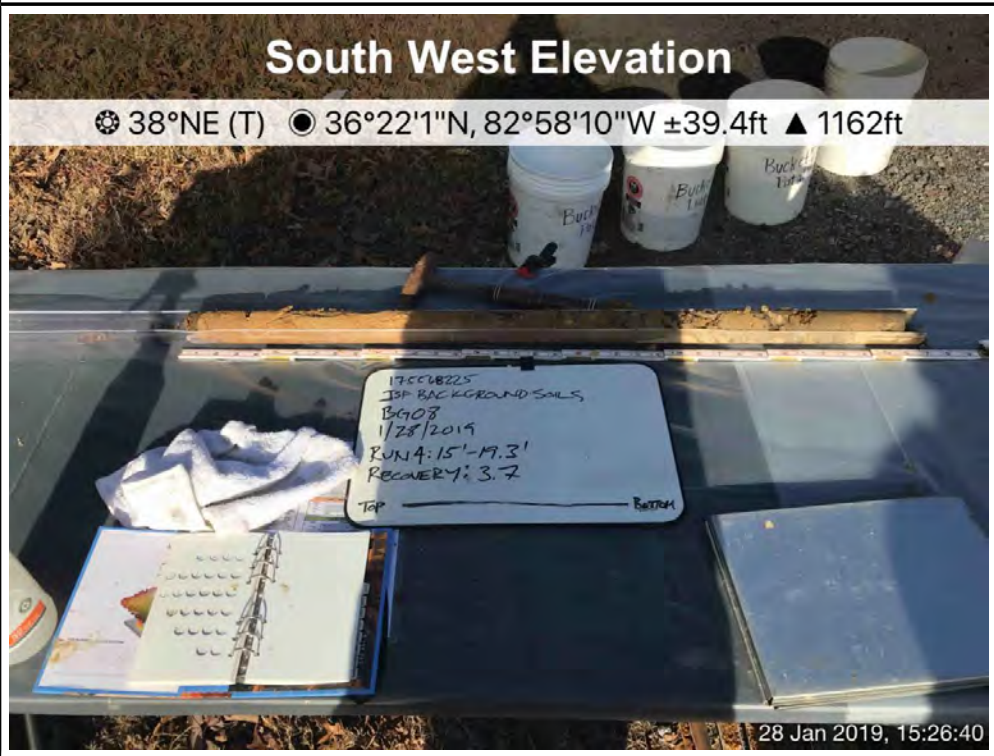


Photograph ID: 28

Photo Location:
JSF-BG08

Photo Date:
1/28/2019

Comments:
Interval (15.0-19.3 feet).
Photo location shown on white board should be JSF-BG08.



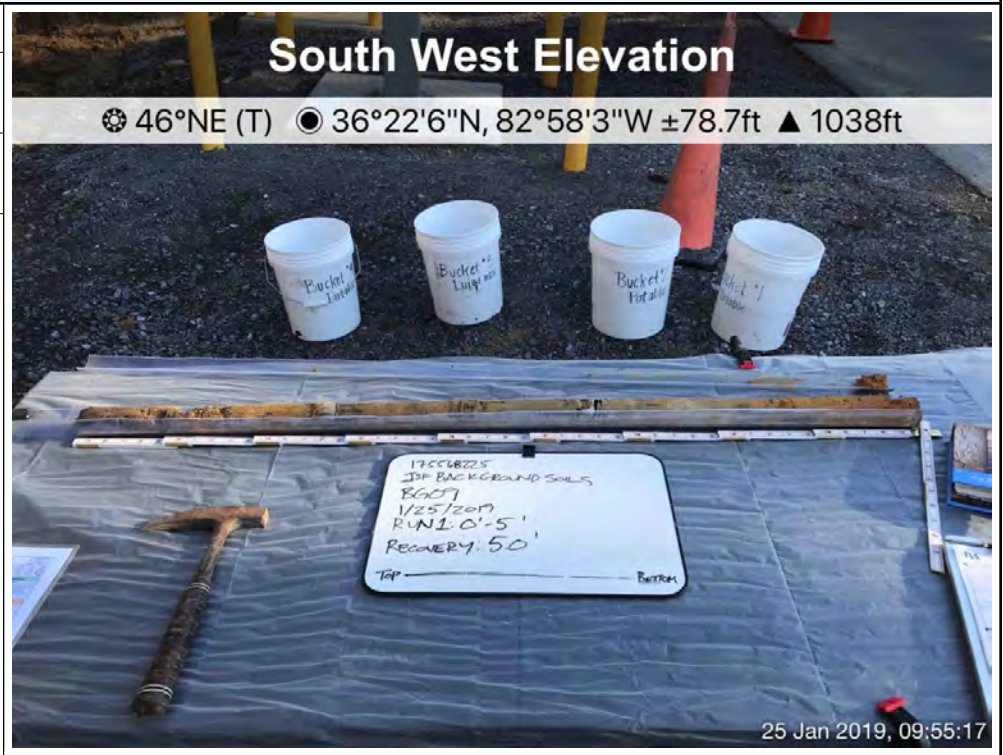
Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 29

Photo Location:
JSF-BG09

Photo Date:
1/25/2019

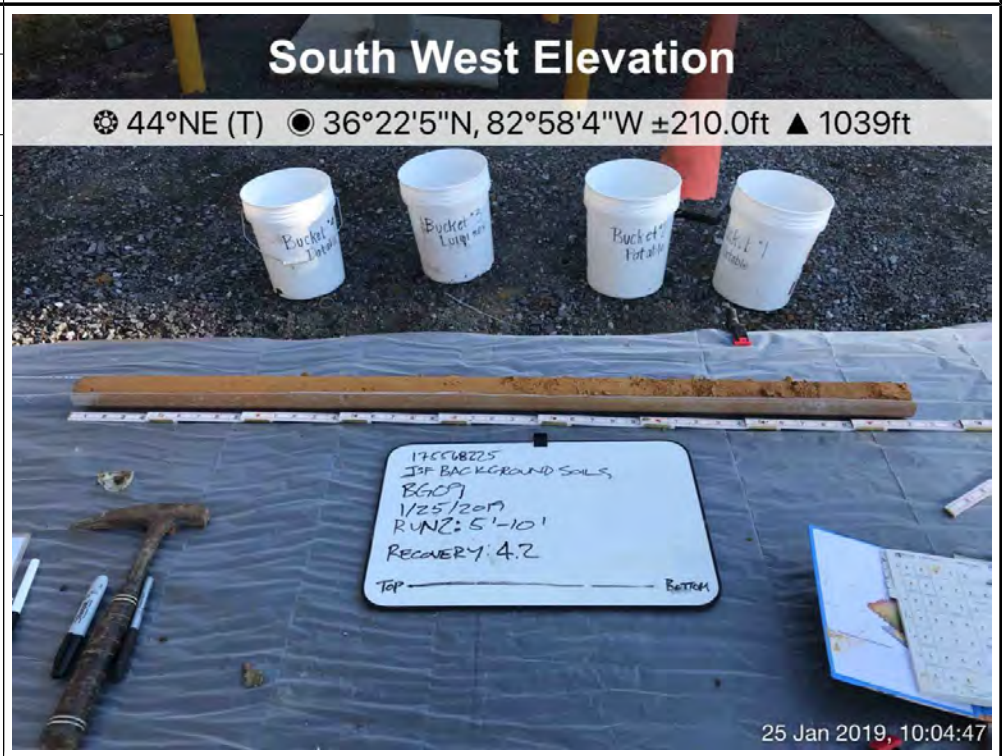
Comments:
Interval (0.0-5.0 feet).
Photo location shown on white board should be JSF-BG09. Recovery shown on white board should be 4.5.



Photograph ID: 30

Photo Location:
JSF-BG09

Photo Date:
1/25/2019



Comments:
Interval (5.0-10.0 feet).
Photo location shown on white board should be JSF-BG09.

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 31

Photo Location:
JSF-BG09

Photo Date:
1/25/2019

Comments:
Interval (10.0-15.0 feet).
Photo location shown on white board should be JSF-BG09.

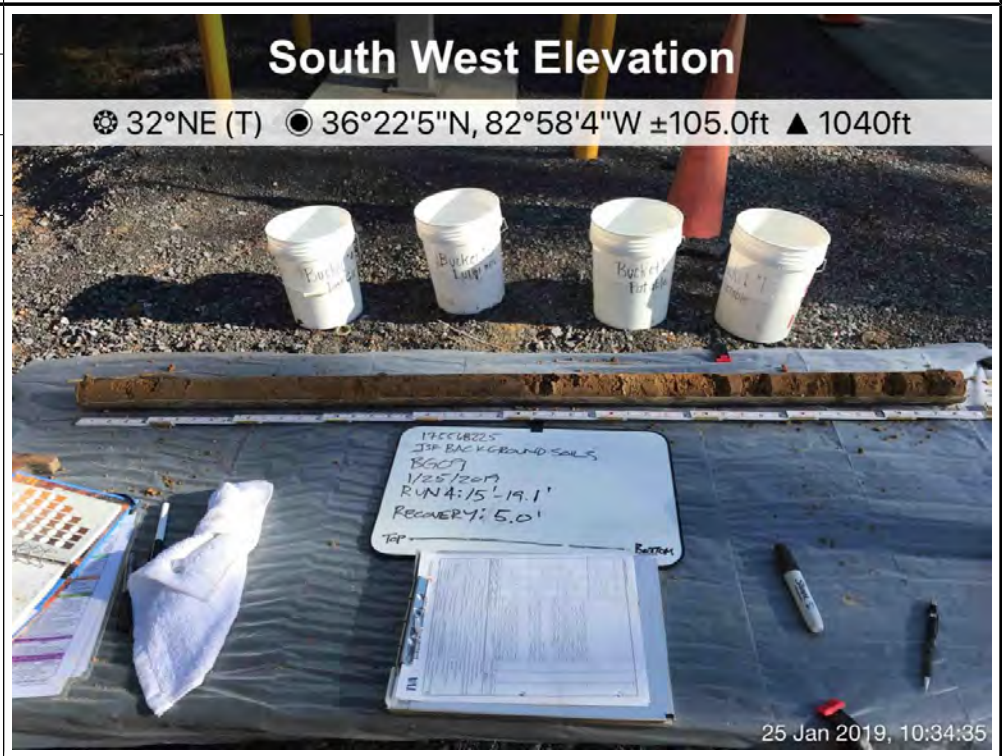


Photograph ID: 32

Photo Location:
JSF-BG09

Photo Date:
1/25/2019

Comments:
Interval (15.0-19.1 feet).
Photo location shown on white board should be JSF-BG09.



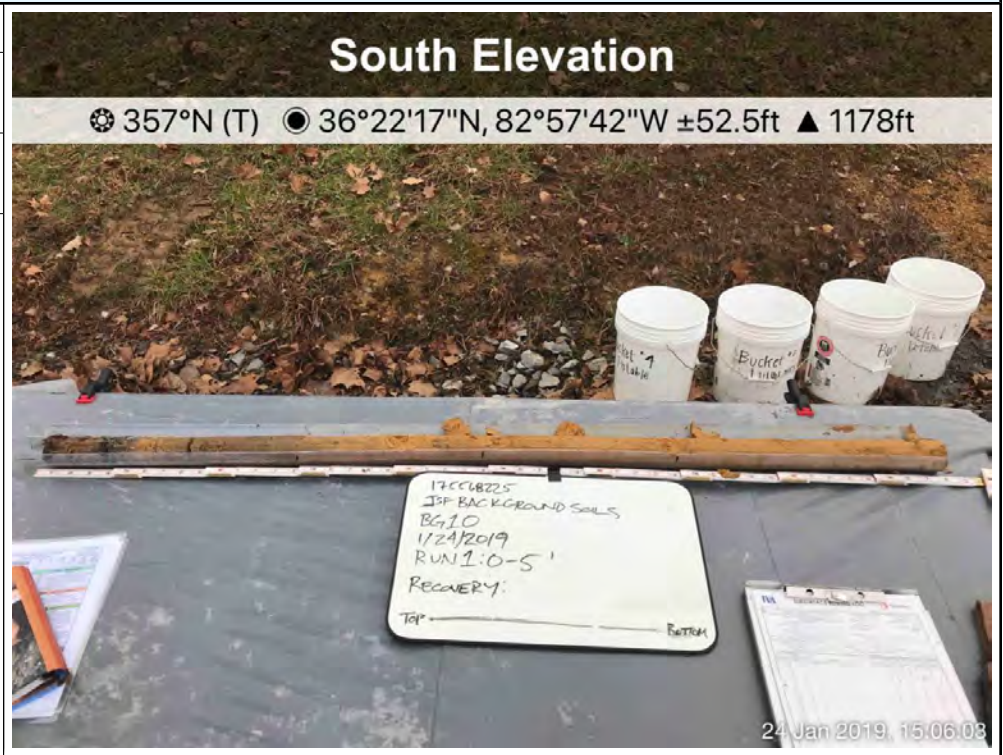
Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 33

Photo Location:
JSF-BG10

Photo Date:
1/24/2019

Comments:
Interval (0.0-5.0 feet).
Photo location shown on white board should be JSF-BG10. Recovery shown on white board should be 4.8.

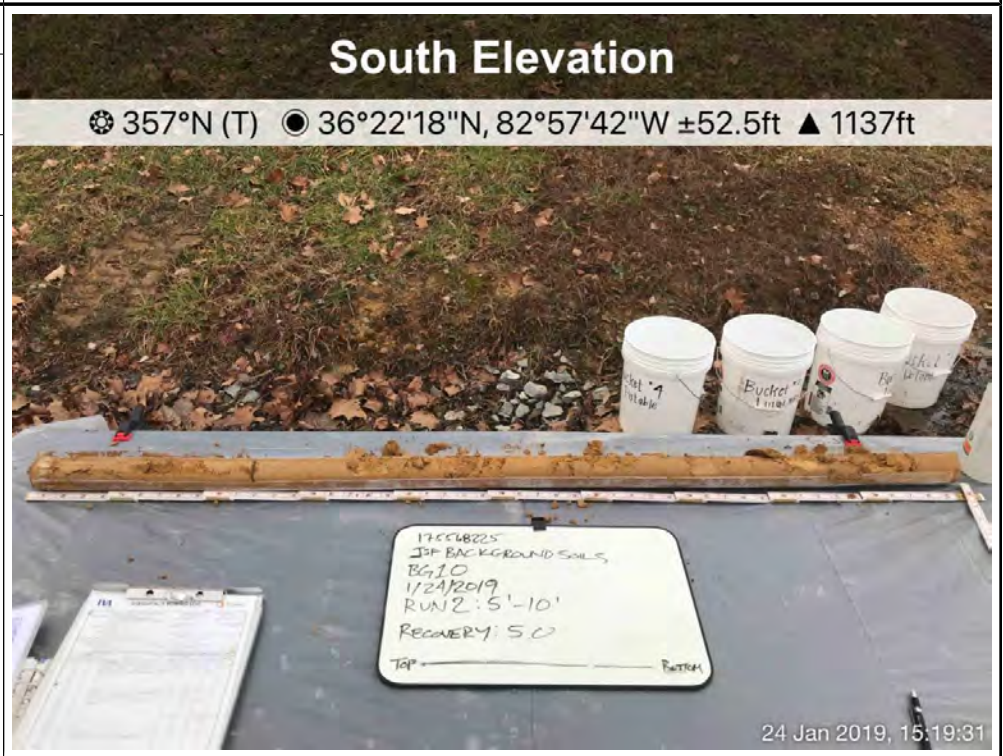


Photograph ID: 34

Photo Location:
JSF-BG10

Photo Date:
1/24/2019

Comments:
Interval (5.0-10.0 feet).
Photo location shown on white board should be JSF-BG10.



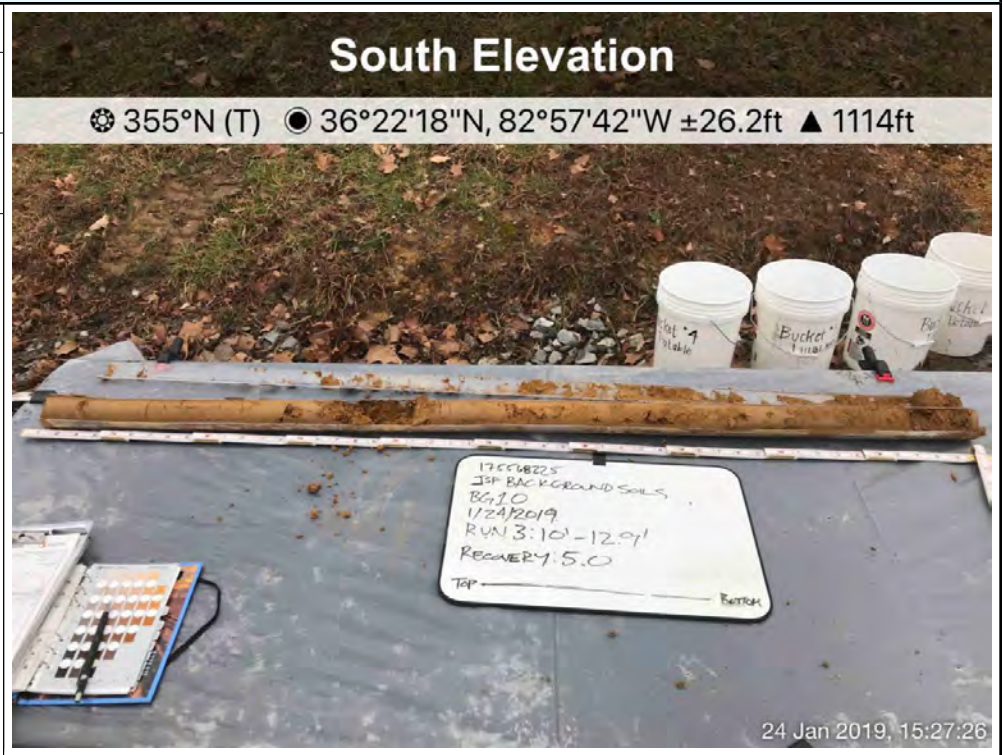
Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 35

Photo Location:
JSF-BG10

Photo Date:
1/24/2019

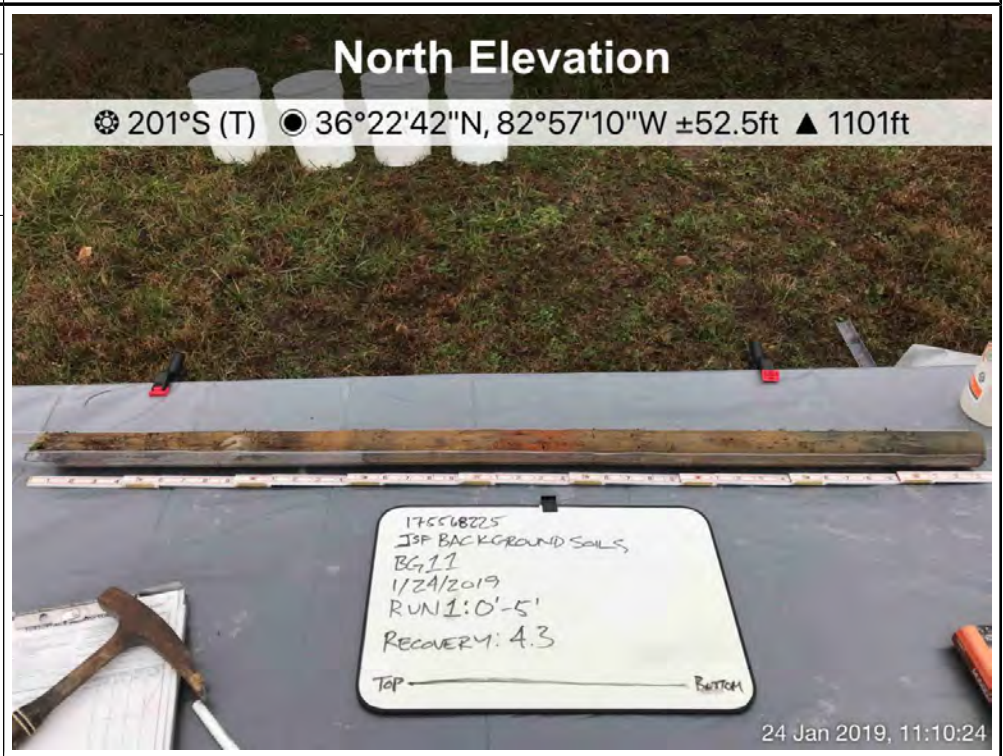
Comments:
Interval (10.0-12.9 feet).
Photo location shown on white board should be JSF-BG10.



Photograph ID: 36

Photo Location:
JSF-BG11

Photo Date:
1/24/2019



Comments:
Interval (0.0-5.0 feet).
Photo location shown on white board should be JSF-BG11.

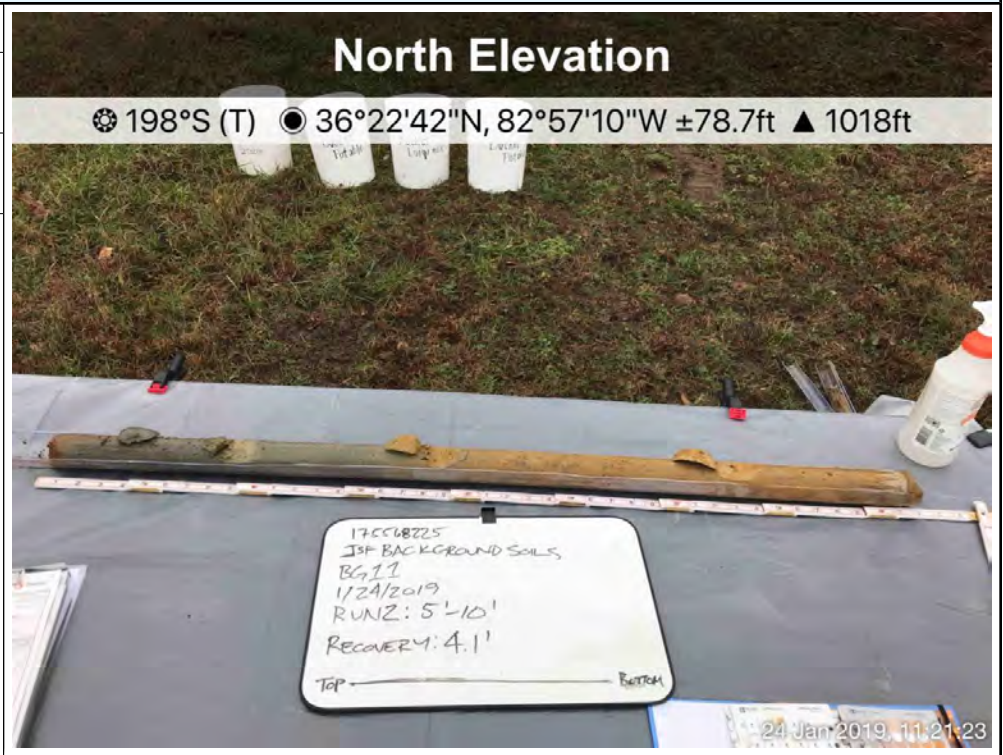
Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 37

Photo Location:
JSF-BG11

Photo Date:
1/24/2019

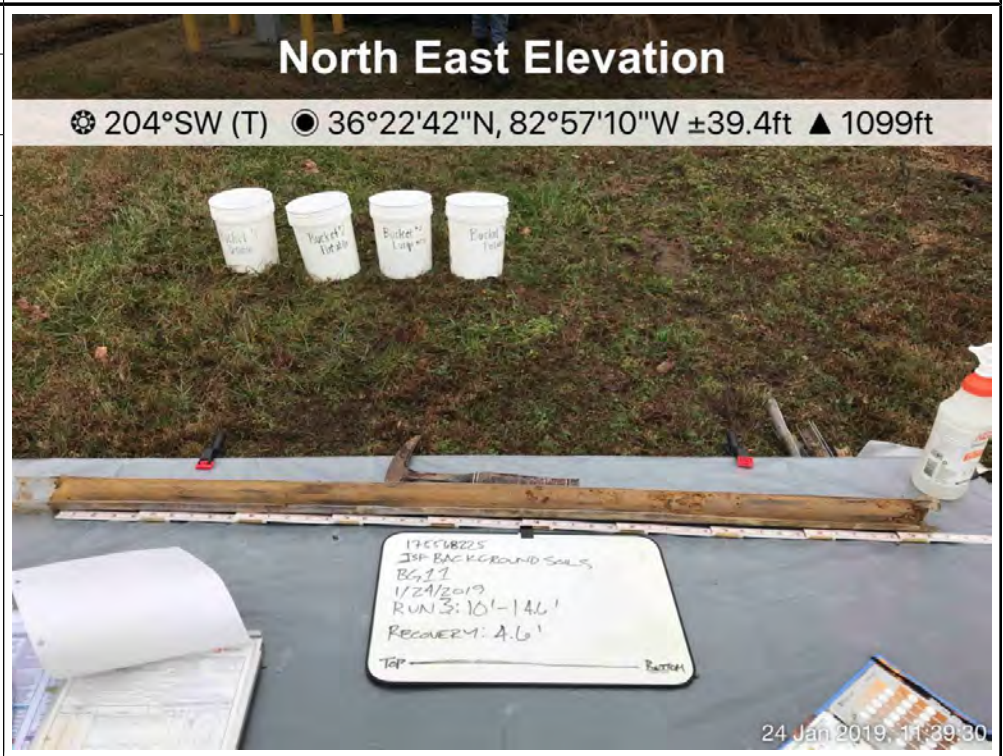
Comments:
Interval (5.0-10.0 feet).
Photo location shown on white board should be JSF-BG11.



Photograph ID: 38

Photo Location:
JSF-BG11

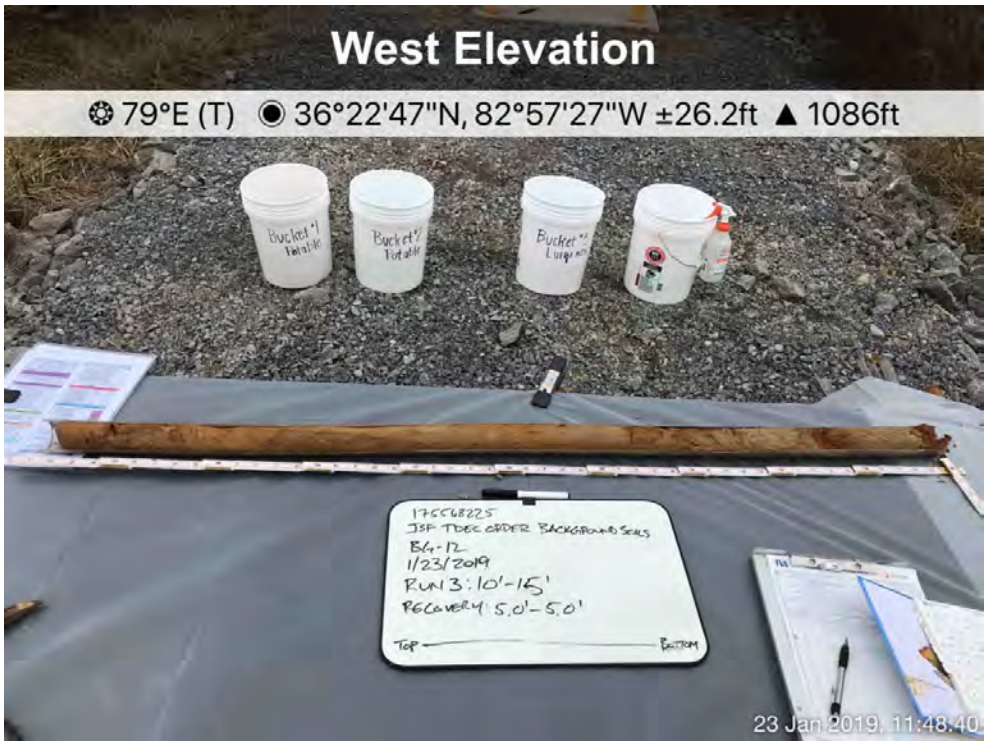
Photo Date:
1/24/2019



Comments:
Interval (10.0-14.6 feet).
Photo location shown on white board should be JSF-BG11.

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee
Photograph ID: 39			
Photo Location: JSF-BG12			
Photo Date: 1/23/2019			
Comments: Interval (0.0-5.0 feet). Photo location shown on white board should be JSF-BG12.			
Photograph ID: 40			
Photo Location: JSF-BG12			
Photo Date: 1/23/2019			
Comments: Interval (5.0-10.0 feet). Photo location shown on white board should be JSF-BG12.			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 41	
Photo Location: JSF-BG12	
Photo Date: 1/23/2019	
Comments: Interval (10.0-15.0 feet). Photo location shown on white board should be JSF-BG12.	

Photograph ID: 42	
Photo Location: JSF-BG12	
Photo Date: 1/23/2019	
Comments: Interval (15.0-15.9 feet), no recovery, photo unavailable.	No Photo Applicable

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 43

Photo Location:
JSF-BG13

Photo Date:
10/7/2019

Comments:
Interval (0.0-5.0 feet).



Photograph ID: 44

Photo Location:
JSF-BG13

Photo Date:
10/7/2019

Comments:
Interval (5.0-10.0 feet).
Recovery shown on white board should be 5.0.



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 45

Photo Location:
JSF-BG13

Photo Date:
10/7/2019

Comments:
Interval (10.0-15.0 feet).



Photograph ID: 46

Photo Location:
JSF-BG13

Photo Date:
10/7/2019

Comments:
Interval (15.0-20.0 feet).



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 47	
Photo Location: JSF-BG13	
Photo Date: 10/7/2019	
Comments: Interval (20.0-25.0 feet).	

Photograph ID: 48	
Photo Location: JSF-BG13	
Photo Date: 10/7/2019	
Comments: Interval (25.0-29.0 feet).	

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 49

Photo Location:
JSF-BG14

Photo Date:
10/8/2019

Comments:
Interval (0.0-5.0 feet).



Photograph ID: 50

Photo Location:
JSF-BG14


Photo Date:
10/8/2019

Comments:
Interval (5.0-10.0 feet).



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 51	
Photo Location: JSF-BG14	
Photo Date: 10/8/2019	
Comments: Interval (10.0-15.0 feet).	

Photograph ID: 52	
Photo Location: JSF-BG14	
Photo Date: 10/8/2019	
Comments: Interval (15.0-20.0 feet).	

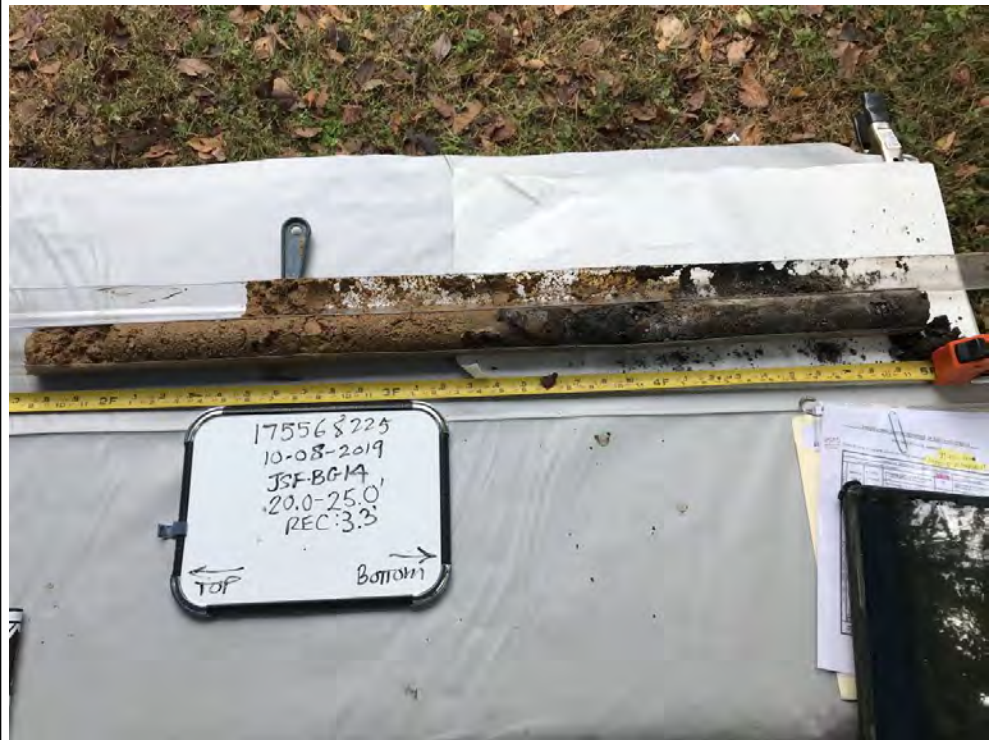
Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 53

Photo Location:
JSF-BG14

Photo Date:
10/8/2019

Comments:
Interval (20.0-25.0 feet).



Photograph ID: 54

Photo Location:
JSF-BG15

Photo Date:
10/8/2019

Comments:
Interval (0.0-5.0 feet).



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 55

Photo Location:
JSF-BG15

Photo Date:
10/8/2019

Comments:
Interval (5.0-10.0 feet).



Photograph ID: 56

Photo Location:
JSF-BG15


Photo Date:
10/8/2019

Comments:
Interval (10.0-15.0 feet).



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 57	No Photo Applicable
Photo Location: JSF-BG15	
Photo Date: 10/8/2019	
Comments: Photo of interval (15.0-20.0 feet) unavailable.	

Photograph ID: 58	
Photo Location: JSF-BG15	
Photo Date: 10/8/2019	
Comments: Interval (20.0-24.5 feet).	

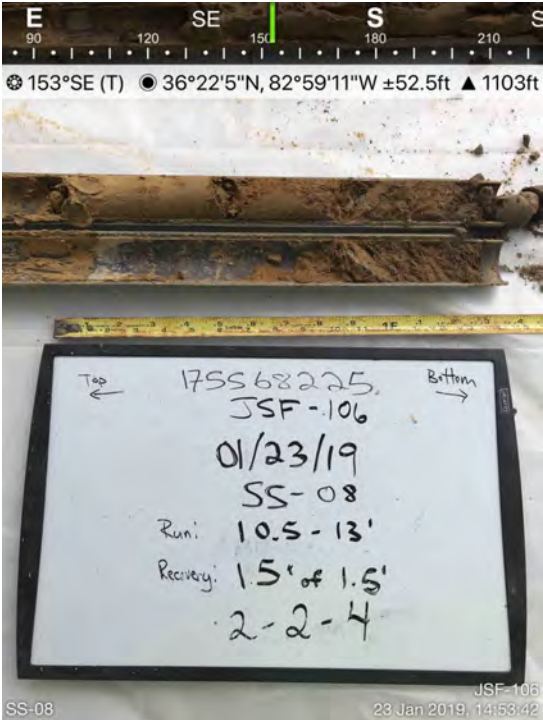
ATTACHMENT D.2

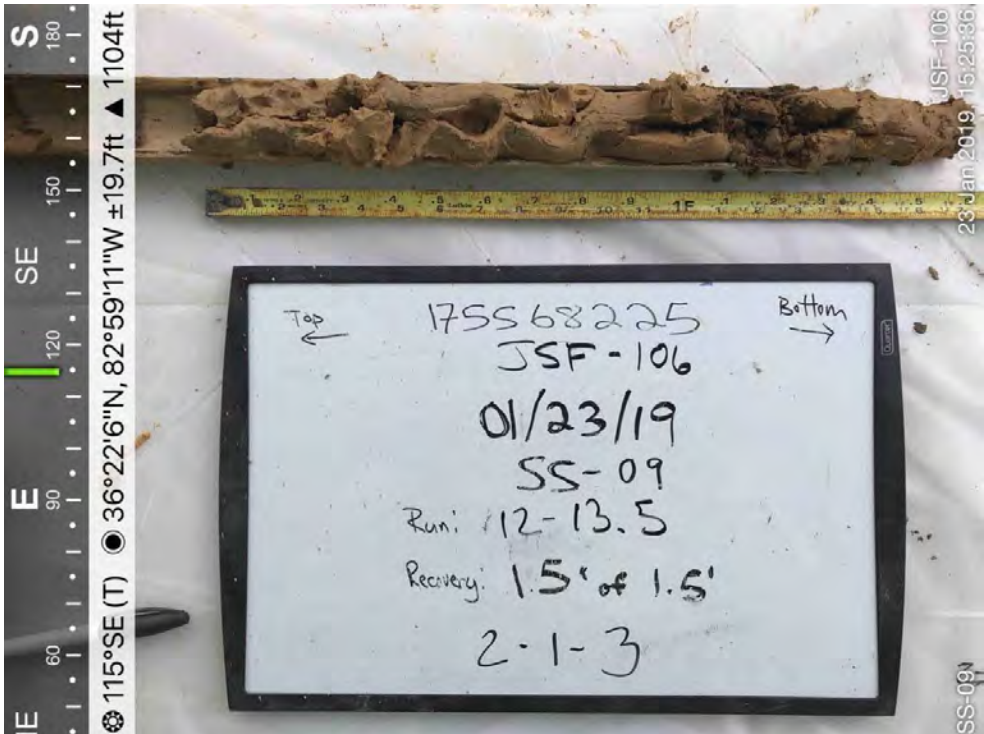
PHOTOGRAPHIC LOGS OF SOIL CORES – BACKGROUND WELLS




Client: Tennessee Valley Authority Project: TDEC Order	
Site Name: John Sevier Fossil (JSF) Plant Site Location: Rogersville, Tennessee	
Photograph ID: 1	
Photo Location: JSF-106	
Photo Date: 1/23/2019	
Comments: Interval (7.5-9.0 feet).	
Photograph ID: 2	
Photo Location: JSF-106	
Photo Date: 1/23/2019	
Comments: Interval (9.0-10.5 feet).	

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

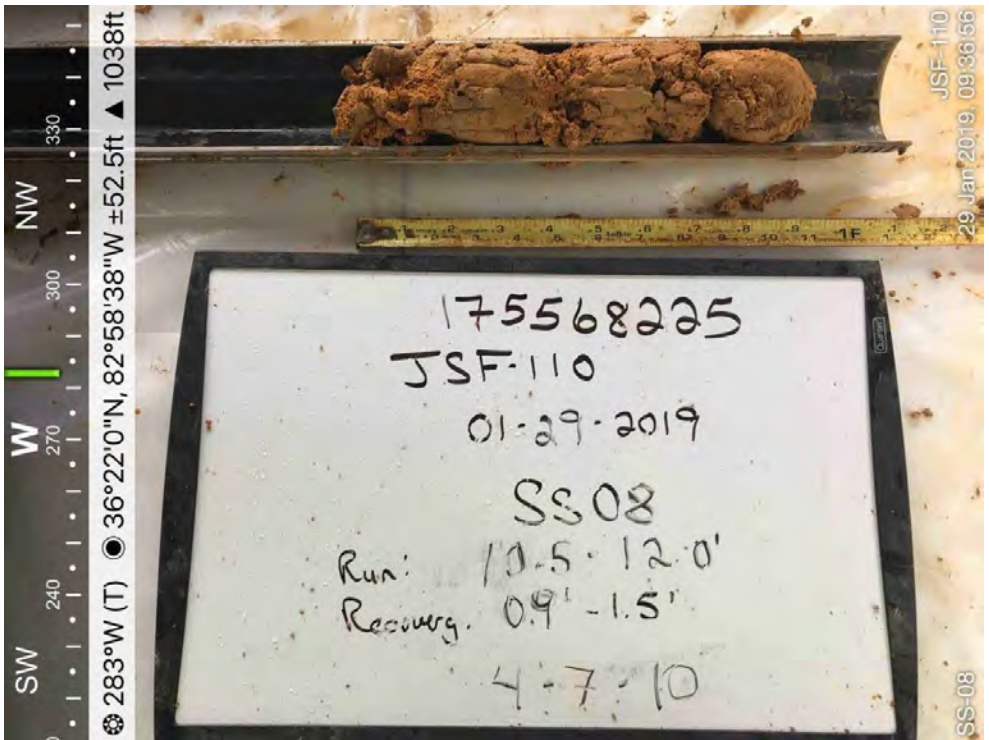
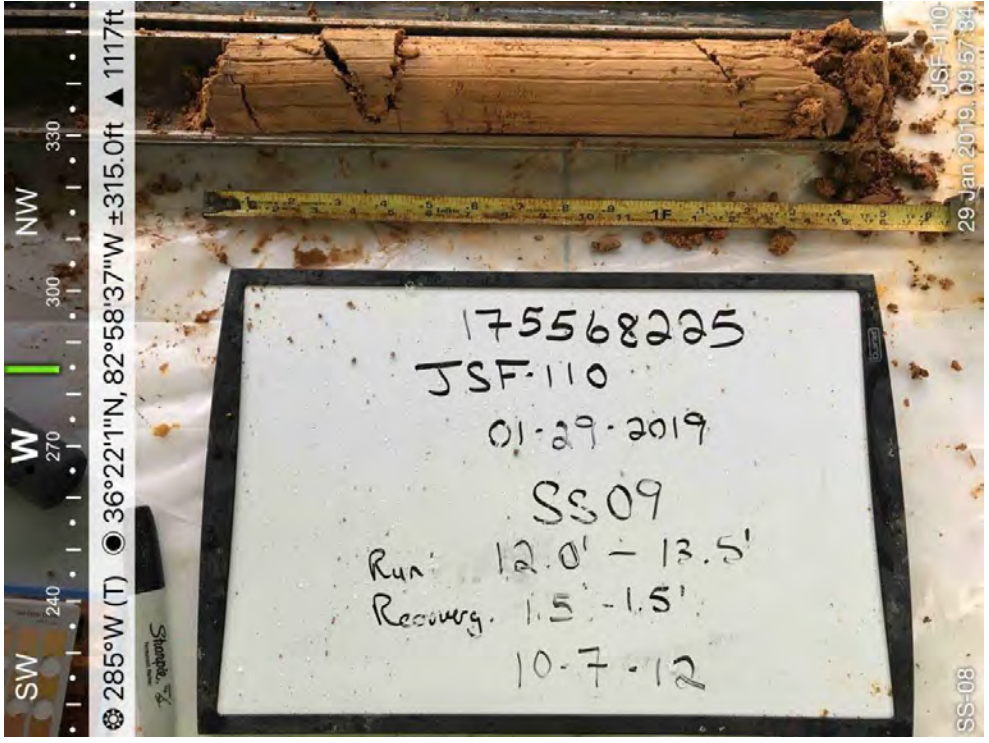
Photograph ID: 3	
Photo Location: JSF-106	
Photo Date: 1/23/2019	
Comments: Interval (10.5-12.0 feet). Depth interval shown on white board should be 10.5-12.0. Blow counts shown on white board should be 2-1-3.	

Photograph ID: 4	
Photo Location: JSF-106	
Photo Date: 1/23/2019	
Comments: Interval (12.0-13.5 feet).	

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee

Photograph ID: 5	
Photo Location: JSF-106	
Photo Date: 1/23/2019	
Comments: Interval (13.5-15.0 feet).	



Photograph ID: 6	
Photo Location: JSF-110	
Photo Date: 1/29/2019	
Comments: Interval (9.0-10.5 feet).	



Client:	Tennessee Valley Authority	Project:	TDEC Order	
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee	
Photograph ID: 7				
Photo Location:				JSF-110
Photo Date:				1/29/2019
Comments:				Interval (10.5-12.0 feet).
Photograph ID: 8				
Photo Location:				JSF-110
Photo Date:				1/29/2019
Comments:				Interval (12.0-13.5 feet). Meta data should show SS-09.



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee
Photograph ID: 9	No Photo Applicable		
Photo Location: JSF-110			
Photo Date: 1/29/2019			
Comments: Photo of interval (13.5-15.0 feet) unavailable.			


ATTACHMENT D.3
PHOTOGRAPHIC LOGS OF ROCK OUTCROPS






Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee
Photograph ID: 1			
Photo Location: Area 01			
Direction: Northwest			
Photo Date: 1/13/2020			
Comments: JSF-ROC-Area01-01			
Photograph ID: 2			
Photo Location: Area 01			
Direction: West			
Photo Date: 1/13/2020			
Comments: JSF-ROC-Area01-01			



Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee
Photograph ID: 3			
Photo Location:			
Area 01			
Direction:			
Northwest			
Photo Date:			
1/13/2020			
Comments:			
JSF-ROC-Area01-01			
Photograph ID: 4			
Photo Location:			
Area 02			
Direction:			
North			
Photo Date:			
1/14/2020			
Comments:			
JSF-ROC-Area02-01			


Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee
Photograph ID: 5			
Photo Location: Area 02			
Direction: North			
Photo Date: 1/14/2020			
Comments: JSF-ROC-Area02-01			
Photograph ID: 6			
Photo Location: Area 02			
Direction: North			
Photo Date: 1/14/2020			
Comments: JSF-ROC-Area02-01			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee
Photograph ID: 7			
Photo Location: Area 02			
Direction: North			
Photo Date: 1/14/2020			
Comments: JSF-ROC-Area02-02			
Photograph ID: 8	<p style="text-align: center;">No Photo Applicable</p>		
Photo Location: Area 03			
Direction: N/A			
Photo Date: 1/14/2020			
Comments: JSF-ROC-Area03, No outcrop observed, photos unavailable.			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee
Photograph ID: 9			
Photo Location: Area 04			
Direction: West			
Photo Date: 1/14/2020			
Comments: JSF-ROC-Area04, No outcrop observed			
Photograph ID: 10			
Photo Location: Area 04			
Direction: South-southwest			
Photo Date: 1/14/2020			
Comments: JSF-ROC-Area04, No outcrop observed			


Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee
Photograph ID: 11			
Photo Location: Area 05			
Direction: Northwest			
Photo Date: 1/13/2020			
Comments: JSF-ROC-Area05-01			
Photograph ID: 12			
Photo Location: Area 05			
Direction: West			
Photo Date: 1/13/2020			
Comments: JSF-ROC-Area05-01			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee
Photograph ID: 13			
Photo Location:			
Area 05			
Direction:			
Northwest			
Photo Date:			
1/13/2020			
Comments:			
JSF-ROC-Area05-01			
Photograph ID: 14			
Photo Location:			
Area 06			
Direction:			
North-northwest			
Photo Date:			
1/14/2020			
Comments:			
JSF-ROC-Area06-01			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee
Photograph ID: 15	 <p>Jan 14, 2020 at 10:58:14 AM Rogersville</p>		
Photo Location: Area 06			
Direction: North			
Photo Date: 1/14/2020			
Comments: JSF-ROC-Area06-01			
Photograph ID: 16	 <p>Jan 14, 2020 at 10:28:29 AM Rogersville</p>		
Photo Location: Area 06			
Direction: North			
Photo Date: 1/14/2020			
Comments: JSF-ROC-Area06-01, Outcrop			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee
Photograph ID: 17			
Photo Location: Area 06			
Direction: Southwest			
Photo Date: 1/14/2020			
Comments: JSF-ROC-Area06, Polly's Branch			
Photograph ID: 18			
Photo Location: Area 06			
Direction: West			
Photo Date: 1/14/2020			
Comments: JSF-ROC-Area06, Polly's Branch			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee
Photograph ID: 19			
Photo Location: Area 07			
Direction: North			
Photo Date: 1/14/2020			
Comments: JSF-ROC-Area07-01			
Photograph ID: 20			
Photo Location: Area 07			
Direction: North			
Photo Date: 1/14/2020			
Comments: JSF-ROC-Area07-01			

Client:	Tennessee Valley Authority	Project:	TDEC Order
Site Name:	John Sevier Fossil (JSF) Plant	Site Location:	Rogersville, Tennessee
Photograph ID: 21			
Photo Location: Area 07			
Direction: Northeast			
Photo Date: 1/14/2020			
Comments: JSF-ROC-Area07-02			