HISTORY OF CONSTRUCTION

40 CFR 257.73(c)

Bottom Ash Pond Complex

Philo Site

Philo, Ohio

February 2026

Prepared for: Ohio Franklin Realty

Prepared by: American Electric Power Service Corporation

1 Riverside Plaza

Columbus, OH 43215

Philo Bottom Ash Pond

History of Construction

PREPARED BY Blake Arthur, PE Digitally signed by Blake Arthur, PE DN: cn=Blake Arthur, PE, c=US, email=barthur@aep.com Date: 2026.02.02 14:15:39 -05'00' DATE _____

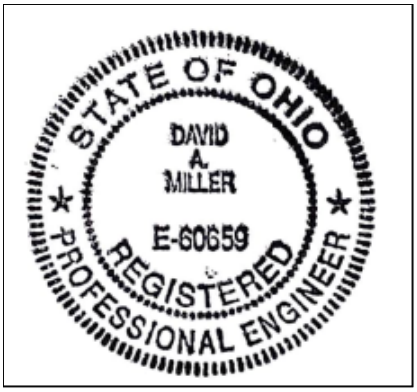
Blake Arthur, P.E.

REVIEWED BY Dan Murphy Digitally signed by Dan Murphy DN: cn=Dan Murphy, c=US, email=dsmurphy1@aep.com Date: 2026.02.02 14:33:31 -05'00' DATE _____

Dan Murphy, P.E.

APPROVED BY David A. Miller DATE 02.02.2026

David A. Miller, P.E.
Director – Ash Management Services



I certify to the best of my knowledge, information and belief that the information contained in this report meets the requirements of 40 CFR § 257.73(c).

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Attachments

- Attachment A – Location Map
- Attachment B – Geologic Data Report
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1.0 OBJECTIVE

The "Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Legacy CCR Surface Impoundments", 89 Fed. Reg. 38950 (May 8, 2024) (amending 40 C.F.R. §257) requires owners and operators of facilities with a legacy coal combustion residual (CCR) surface impoundment to prepare a history of construction document for each legacy CCR surface impoundment at the facility.

The Bottom Ash Pond Complex at the Philo Site is subjected to this rule.

2.0 DESCRIPTION OF CCR THE IMPOUNDMENT

The Former Philo Site is located approximately 0.25 miles east of the Village of Philo, Ohio. The latitude/longitude of the facility is: 39°51'43.69"N/ 81°54'10.97"W. The Philo Plant was placed in service in October 1924 and subsequently retired in 1975.

The Bottom Ash Pond Complex is formed by a 27-foot-tall earthen embankment along the banks of the Muskingum River. The surrounding grades in the areas to the North, West and South of the Bottom Ash Pond Complex were filled in to elevate the site out of the floodplain with a variety of materials for fill.

The embankment is approximately 900 feet long. The downstream slope of the berm varies between 1.6 H:1V to 2H:1V. The interior slopes are approximately 2H:1V. The Bottom Ash Pond Complex encompasses approximately 5 acres.

3.0 SUMMARY OF OWNERSHIP 275.73(C)(1)(I)

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

The name associated with the CCR unit is Bottom Ash Pond Complex. Ohio Franklin Realty LLC is the owner of the Bottom Ash Pond Complex at the Philo Site. There are no known state identification numbers for the Bottom Ash Pond Complex at the Philo Site.

Ohio Franklin Realty, LLC
Attn: Gary Spitznogle
1 Riverside Plaza
Columbus, OH 43215
Phone: 614-716-1774
Email: aepccrhelp@aep.com

4.0 LOCATION OF THE CCR UNIT 275.73 (C)(1)(II)

[The location of the CCR unit identified on the most recent U.S. Geological Survey (USGS) 7 ½ minute or 15-minute topographic quadrangle map, or a topographic map of equivalent scale if a USGS map is not available.]

A location map is included in Attachment A.

5.0 STATEMENT OF PURPOSE 275.73 (C)(1)(III)

[A statement of the purpose for which the CCR unit is being used.]

When the Philo Plant was operational, the Bottom Ash Pond Complex was a surface impoundment for settling and storing of coal ash.

6.0 NAME AND SIZE OF WATERSHED THE CCR UNIT IS LOCATED 275.73 (C)(1)(IV)

[The name and size in acres of the watershed within which the CCR unit is located.]

The Bottom Ash Pond Complex is located within the Region 5 - Ohio Region Watershed and is part of the subgroup Hydrologic Unit Code = 050400040803 Duncan Run-Muskingum River watershed area. The drainage area of the Bottom Ash Pond Complex is equal to the footprint of the pond itself and is approximately 5 acres.

7.0 DESCRIPTION OF THE FOUNDATION AND ABUTMENT MATERIALS 275.73(C)(1)(V)

[A description of the physical and engineering properties of the foundation and abutment materials on which the CCR unit is located.]

Based on a Geologic Investigation conducted in 2025, and provided in Appendix B, Geologic Data Report, the Philo Bottom Ash Pond is situated in the unglaciated portion of Muskingum-Pittsburgh Plateau of Ohio, with alluvium and alluvial terraces across the majority of the site.

Fill was encountered at all boring locations underlying the CCR material with a thickness ranging from approximately 6.0 to 25.0 feet. The fill soil consisted of silty sand (SM), lean clay (CL), poorly graded sand (SP), and sandy silt (ML). These fill materials exhibited very loose to medium dense relative densities for the granular soils and very soft to soft densities for the cohesive soils, and were brown in color, distinguishing these fill materials from the CCR materials. Field SPT N-values within the fill soils encountered at the boring locations ranged from "weight-of-hammer" resistance to 53 bpf.

Beneath the fill soils, natural soils were encountered at depths ranging from approximately 26.0 feet to 40.5 feet below the existing ground surface, with the exception of Boring B-06 which encountered bedrock beneath the fill material. The natural soils were predominantly granular and consisted of poorly graded sand (SP) and well graded sand (SW) with varying amounts of silt and gravel size particles. Well graded gravel (GW) with sand was encountered on occasion. These granular soils generally exhibited medium dense to dense relative densities, with very loose to loose zones encountered at approximately 5 to 20 feet beneath the fill material at the locations of Borings B-03 and B-04. Finer-grained soils were generally predominant at the locations of Borings B-02, B-03, B04, and B-07 consisting of soft lean clay (CL), very soft to soft silty clay (CL-ML), very loose silt with clay (ML) and very loose to medium dense silty sand (SM). Field SPT N-values ranged from 2 to 49 bpf with the lower end of the range (2 to 7 bpf) concentrated within the uppermost approximately 15 feet of the natural soils at the location of Boring B-04.

8.0 DESCRIPTION OF EACH CONSTRUCTED ZONE OR STAGE OF THE CCR UNIT 275.73 (C)(1)(VI)

[A statement of the type, size, range, and physical and engineering properties of the materials used in constructing each zone or stage of the CCR unit; and the approximate dates of construction of each successive stage of construction of the CCR unit.]

Readily available drawings for the Philo Bottom Ash Pond Complex are presented in Attachment B. Prior to 1972 the Bottom Ash Pond Complex operated as a singular pond. While in operation, ash would have been excavated from the pond and hauled away via rail car.

Sometime around 1972, the Bottom Ash Pond Complex was modified to create three treatment cells, known as Pond A, Pond B and Clearwater Pond. These three cells would have operated with active sluicing occurring in either Pond A or Pond B while the other pond is being cleaned out. Discharges from both Pond A and Pond B would enter the Clearwater Pond before being discharged to the former outfall at the Muskingum River.

At the closure of the plant, all stop logs in the concrete risers were removed, so the ponds no longer hold any water.

9.0 ENGINEERING STRUCTURES AND APPURTENANCES, 275.73 (C)(1)(VII)

[At a scale that details engineering structures and appurtenances relevant to the design, construction, operation, and maintenance of the CCR unit, detailed dimensional drawings of the CCR unit, including a plan view and cross sections of the length and width of the CCR unit, showing all zones, foundation improvements, drainage provisions, spillways, diversion ditches, outlets, instrument locations, and slope protection…]

AEP performed an extensive review to locate historical files, drawings and other information for the Philo Bottom Ash Pond. All readily available drawings are included in Attachment C.

10.0 SUMMARY OF POOL SURFACE ELEVATIONS, AND MAXIMUM DEPTH OF CCR, 275.73 (C)(1)(VII)

[…in addition to the normal operating pool surface elevation and the maximum pool elevation following peak discharge from the inflow design flood, the expected maximum depth of CCR within the CCR surface impoundment.]

The Philo Bottom Ash Pond has CCR material roughly 13 to 36 feet deep and no longer receives CCR. The Bottom Ash Pond no longer has ponded water; the pool elevation sections are not applicable.

11.0 FEATURES THAT COULD ADVERSELY AFFECT OPERATION DUE TO MALFUNCTION OR MIS-OPERATION (275.73 (c)(1)(vii))

[…and any identifiable natural or manmade features that could adversely affect operations of the CCR unit due to malfunction or mis-operation]

There are no known features such as pipes underneath the Bottom Ash Pond Complex that could adversely affect operation due to malfunction or mis-operation.

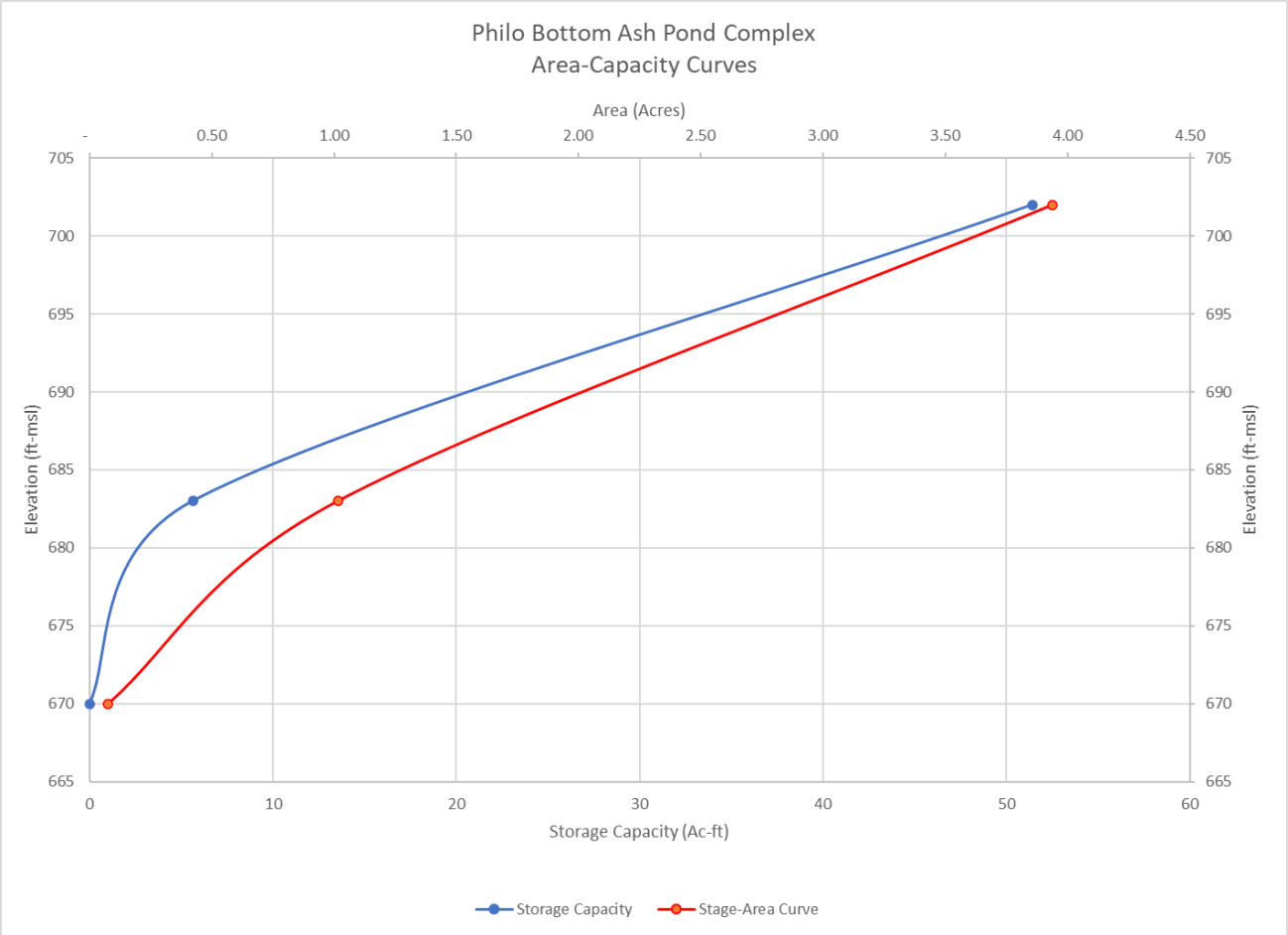
12.0 DESCRIPTION OF THE TYPE, PURPOSE AND LOCATION OF EXISTING INSTRUMENTATION 275.73 (C)(1)(VIII)

[A description of the type, purpose, and location of existing instrumentation.]

There is no instrumentation at the Philo Bottom Ash Pond Complex.

13.0 AREA – CAPACITY CURVES FOR THE CCR UNIT 275.73 (c)(1)(ix)

[Area-capacity curves for the CCR unit.]



14.0 275.73 (c)(1)(x) DESCRIPTION OF EACH SPILLWAY AND DIVERSION

[A description of each spillway and diversion design features and capacities and calculations used in their determination.]

Readily available drawings for the Philo Bottom Ash Pond Complex are presented in the appendix.

The spillways for Ponds A, B and the Clearwater pond are identical in configurations and consist of a vertical drainage shaft with an outlet pipe in the bottom of the drainage shaft. The vertical drainage shaft has grooves for retaining stoplogs that were used to control the pool elevation when the plant was operational. The stoplogs would behave as an 18" wide weir discharging to an outlet pipe in the bottom of the riser structure. A pedestrian footbridge provided access to the riser structure from the crest of the dam and has been removed. Water discharging from either Pond A or Pond B would flow into the Clearwater Pond. Water discharging from the Clearwater pond would discharge to the Muskingum River through a 36" diameter corrugated metal pipe at elevation 679 ft-msl.

15.0 SUMMARY CONSTRUCTION SPECIFICATIONS AND PROVISIONS FOR SURVEILLANCE, MAINTENANCE AND REPAIR 275.73 (C)(1)(XI)

[The construction specifications and provisions for surveillance, maintenance, and repair of the CCR unit.]

There are no readily available portions of the original construction specifications.

As required by the CCR rules the Auxiliary Ash Pond Complex is inspected at least every 7 days by a qualified person. Also, as a requirement of the CCR rules the impoundment is inspected annually by a qualified professional engineer.

If repairs are found to be necessary during any inspection they will be completed as soon as feasible.

16.0 RECORD OR KNOWLEDGE OF STRUCTURAL INSTABILITY 275.73 (C)(1)(XII)

[Any record or knowledge of the structural instability of the CCR unit.]

To date, there has been no known record or knowledge of a structural instability of the CCR unit.

ATTACHMENT A

LOCATION MAP

Philo Bottom Ash Pond

History of Construction 2026

0 500 1,000 2,000 Feet

N

ATTACHMENT B

Geologic Data Report

Geotechnical Data Report
Philo Plant Legacy CCR Impoundment
Philo, Ohio
S&ME Project No. 25170079

PREPARED FOR:

American Electric Power
8500 Smiths Mill Road
New Albany, OH 43054

PREPARED BY:

S&ME, Inc.
6190 Enterprise Court
Dublin, OH 43016

January 23, 2026

January 23, 2026

American Electric Power
1 Riverside Plaza
Columbus, OH 43215

Attention: Mr. Blake Arthur

Reference: **Geotechnical Data Report**
Philo Plant Legacy CCR Impoundment
Philo, Ohio
S&ME Project No. 25170079

Dear Mr. Arthur:

S&ME, Inc. (S&ME) has completed the Geotechnical Data Report for the Structural Integrity Assessment and the Safety Factor Assessment for the Legacy CCR Impoundment at the former Philo Power Plant located in Philo, Ohio. These services were performed in general accordance with S&ME Proposal 25170079 dated April 25. Our services were authorized on May 20, 2025 by issuance of AEP Contract No. 738673.

We appreciate the opportunity to be of service on this project. If you require additional assistance or have any questions, please feel free to contact us.

Sincerely,

S&ME, Inc.

Daniel J. Tobergte, PE
Project Engineer

Jason S. Reeves, PE (TN)
Technical Principal

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Appendices

1.0 Project Description

AEP requested that S&ME perform a Structural Integrity Assessment and a Safety Factor Assessment for the Legacy CRR Impoundment at the former Philo Power Plant site to fulfill requirements of Code of Federal Rules 40 CFR § 257.73 paragraphs (d) Periodic Structural Stability Assessments and (e) Periodic Safety Factor Assessments of the USEPA Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments. It is understood that AEP will address the remaining parts of this rule.

Per our proposal dated April 25, 2025, these assessments are being performed by S&ME by completing several individual tasks. This Geotechnical Data Report completes Task 2.0 (Geotechnical Investigation) which included the completion of a geologic site review, thirteen (13) soil borings, laboratory testing, and geophysical testing. A draft report was submitted to AEP on December 22, 2025, which did not include specialty laboratory testing (i.e. triaxial testing and permeability testing) due to delays in the laboratory schedule. These tests have been completed and the results are included in this report. The general location of the site is shown on the Vicinity Map included as Figure 1 included in Appendix I.

The subject site is located near Philo, Ohio at the former Philo Plant site and adjacent to the Muskingam River as shown on Figure 1 included in Appendix I. Based on information provided by AEP, two coal combustion residuals (CCR) impoundments were utilized at the former Philo Plant site including a bottom ash basin and a fly ash basin. The bottom ash basin, situated south of the existing electrical station, is comprised of three sub-basins which currently stores a nominal amount of CCR material. The fly ash basin is situated further south of the bottom ash basin. Both basins are adjacent to the Muskingum River and the fly ash basin is also adjacent to the Duncan Run. Neither basin stores water above the CCR surface (i.e. a water normal pool level does not currently exist).

The former Philo Plant was constructed in 1924 and was considered one of the largest coal-fired electrical generation stations in the world at the time. The plant was retired in 1975. Based on historical photos, a significant amount of fill was placed throughout the site to provide a relatively level ground surface. According to a topographic map developed by USGS dated 1910 (prior to construction of the plant), the ground surface elevation across the site was roughly El. 680 feet (20-foot contours, NAVD 29). A portion of the site preparation activities included filling of a canal and lock which had previously served as part of the transportation system along the Muskingum River. The bottom ash and fly ash basin embankments were constructed primarily using bottom ash produced during operation of the plant. Construction drawings are not known to exist.

The most recent LiDAR survey (Ohio Geographically Referenced Information Program, 2007) of the site performed as part of OSIP I was performed in 2007 and references the Ohio State Plane South coordinates, NAD 83 (2011) and NAVD 88. The current ground surface elevations across the site within the CCR impoundments and the surrounding vicinity ranges from El. 680 to 705 feet. Based on this LiDAR survey, the bottom ash embankments appear to be up to approximately 20 to 30 feet in height with an outboard side slope inclination of 1.5H:1V to 2H:1V which transition into the fill and natural soil with a side slope inclination of approximately 2H:1V to 3H:1V. Note that a recent site survey has not been performed.

2.0 Geologic Review

According to the Physiographic Regions of Ohio[1] map, the site is situated in the Muskingum-Pittsburgh Plateau Region of the Allegheny Plateaus Section, Appalachian Plateaus Province, Appalachian Highlands Division. This region consists of a highly dissected plateau with broad major valleys and moderately high to high relief. The valleys typically contain outwash terraces with lacustrine terraces common in the tributaries. The subsurface profile broadly consists of Mississippian- and Pennsylvanian-age siltstones, shales, sandstones, and economically important coals and claystones throughout the region with Wisconsinan-age sand, gravel, and lacustrine silt deposits within the valleys and silt-loam colluvium generally along the slopes. This region is bounded by the maximum glacial margin to the north, the transition to finer-grained bedrock to the southeast, and the transition to coarser-grained bedrock in the southwest.

A review of the Ohio Geology Interactive Map[2] also indicates that the site is situated within the unglaciated portion of Ohio with alluvium and alluvial terraces across the majority of the site and outwash within the western edge of the site overlying bedrock of the Pennsylvanian age. Additionally, the drift thickness (apparently derived from glacially-derived outwash) varies from approximately 20 feet within the Muskingum River to around 70 feet within the southwestern portion of the site. The drift generally ranges from roughly 50 to 70 feet across the site with a general increase in thickness trending towards the southwest.

The bedrock beneath the site generally consists of undivided units incorporating the Allegheny and Pottsville formations. This undivided unit typically consists of shale, siltstone, sandstone, conglomerate, and lesser amounts of limestone, clay, flint, and coal. These formations contain economic beds of coal and clay and are characteristically predominantly gray in color of the unweathered rock with rapid horizontal and vertical changes of rock types. Refer to the Quaternary Geology Map and the Bedrock Geology Map included as Figures 3 and 4, respectively, in Appendix I for general boundaries of the recent (Holocene age) soil deposits and bedrock units. Note that the locations of these boundaries are considered approximate in a geological sense.

Groundwater information can also be found in the Ohio Geology Interactive Map[2] including water well logs. A cursory review of several water wells at the site and surrounding the site indicate static water levels within these wells ranging from around 20 to 50 feet and well test rates ranging widely from 2 to 300 gallons per minute. Note that the depths of the water surface are considered approximate in a geological sense.

Geologic hazards, such as karst features and underground mining, is another set of information that can be found in the Ohio Geology Interactive Map[2]. According to the interactive map, no karst features have been identified within the vicinity of the site, as is common for the geology in this area. Documentation of underground mining beneath the site is not present in the state archives. The nearest mining feature of unknown extent is situated approximately 0.5 miles northwest of the site at an elevation of roughly 700 feet above mean sea level and is assumed to extend into the hillside towards the west of this feature. As the crest elevation of the legacy units are

[1] Ohio Division of Geological Survey. (1998). *Physiographic regions of Ohio*. Ohio Department of Natural Resources.
[2] Office of Information Technology, GIS Services Section. (2024). *Ohio Geology Interactive Map*. Ohio Department of Natural Resources. https://gis.ohiodnr.gov/website/dgs/geologyviewer/#

at an approximate elevation of 700 feet above mean sea level and roughly 50 feet of soil is mapped beneath the ground surface, this mine feature is not believed to pose a hazard to this site.

3.0 Field Work

Field work performed at this site included geotechnical borings, surface and downhole seismic testing, and spillway investigations. These items are discussed in the following subsections.

3.1 Geotechnical Borings

Between September 11, 2025, and October 1, 2025, S&ME performed a total of thirteen (13) soil borings (designated as Borings B-1 through B-13) at the site as shown on Figure 2 included in Appendix I. All of the borings were located in the field by S&ME personnel on July 7, 2025 during a site meeting with AEP. The borings were advanced to depths ranging between approximately 47.4 to 89.1 feet below the existing ground surface.

The boring latitude/longitude coordinates and ground surface elevations at these locations were recorded by S&ME personnel utilizing a hand-held GPS unit. Note that the boring locations were not surveyed by a registered land surveyor and should be considered approximate. The approximate locations of the borings are shown on the Plan of Borings included as Figure 2 in Appendix I.

Borings B-01, B-03, and B-06 were drilled using a track-mounted Geoprobe 3126 drill rig and Borings B-02, B-04, B-05, and B-07 to B-13 were drilled by a track-mounted Mobile B-57 drill rig. The boreholes were advanced using mud-rotary methods with a 3-7/8 inch tricone bit in general accordance with ASTM D5783 *Standard Guide for Use of Direct Rotary Drilling with Water-Based Drilling Fluid for Geoenvironmental Exploration and the Installation of Subsurface Water-Quality Monitoring Devices*. Bentonite slurry was used as the circulating medium. Disturbed, but representative, soil samples were obtained by lowering a 2-inch O.D. split-barrel sampler through the auger stem to the bottom of the boring and then driving the sampler into the soil with blows from a 140-pound hammer freely falling 30 inches in general accordance with ASTM D1586 *Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils*.

Calibrated automatic hammers were used to drive the sampler from both drill rigs. The Mobile B-57 drill rig hammer had an energy ratio of 80.4% as tested on August 21, 2023, and the Geoprobe 3126 drill rig hammer had an energy ratio of 90.1% as tested on July 7, 2025. The SPT samples were obtained at 5-foot vertical intervals within the CCR material, at 2.5-foot intervals upon encountering the bottom of CCR material for approximately 20 feet, then at 5-foot intervals to the top of bedrock. The soil samples were visually classified in general accordance with ASTM D2488 *Standard Practice for Description and Identification of Soils (Visual-Manual Procedures)*.

Relatively undisturbed (intact) soil samples (Shelby tube samples) were attempted at selected depths in the borings based on the soils encountered during drilling in general accordance with ASTM D1587 *Standard Practice for Thin-Walled Tube Sampling of Fine-Grained Soils for Geotechnical Purposes*. The length of soil recovered in each Shelby tube was recorded and the tubes were extracted and sealed with paraffin wax and plastic caps. With the exception of Boring B-04, the borings were terminated upon encountering sampler refusal conditions on bedrock.

Coring of the bedrock was performed in Boring B-04, and extended the borehole approximately 20 feet below the sampler refusal conditions. Rock coring was performed using an NQ-2 double-tube core barrel with a diamond-tipped core bit in general accordance with ASTM D2113 *Practice for Rock Core Drilling and Sampling of Rock for Site Exploration*. Potable water was used as the circulating fluid to flush the cuttings and cool the core bit. Water was obtained from a municipal source.

Recovery and Rock Quality Designation (RQD) percentages for each core run were measured upon retrieval, and the recovered rock samples were preserved in compartmented core boxes for transportation to our laboratory for additional classification. Rock coring was not performed at the other boring locations.

In the field, S&ME personnel performed the following duties: 1) examined and preserved recovered soil and bedrock samples; 2) prepared a log of each boring; 3) recorded seepage and groundwater observations and measurements; 4) obtained hand penetrometer measurements in soil samples exhibiting cohesion; and, 5) provided liaison between the field work and the engineer so that any modifications to the exploration program could be expeditiously implemented in the event that unusual or unanticipated conditions were encountered. All recovered samples were transported to a soil laboratory of S&ME for further examination and testing.

3.1.1 Borehole Abandonment

Upon completion, each boring was abandoned using a cement-bentonite grout which was placed using the tremie method. The full depth of the boring was grouted. At the location of Boring B-04, the drill rods became stuck during retrieval after encountering the termination depth. Multiple attempts were made to retrieve the drill rods; however, the drill rig was not able to retrieve the rods. As such, approximately 50 feet of NWL core rod were grouted in-place in Boring B-04. Additionally, Boring B-04 was offset approximately 5 feet and re-drilled to the same depth for installation of 2.5-inch PVC casing for downhole seismic testing (this offset location was designated Boring B-04A). The casing was grouted in place with cement-bentonite grout using the tremie method. A construction log has been prepared for B-04A and is included as Figure 4 in Appendix II.

3.2 Geophysical Testing

S&ME performed seismic surface wave testing at two locations along the embankment and one downhole seismic test at the site. Frequency-domain electromagnetic (FDEM) imaging was also performed; however, the results of the FDEM survey will be provided in a separate submittal.

Regardless of the thoroughness of a geophysical survey, there is always a possibility that actual conditions may not match the interpretations. The results should be considered accurate only to the degree implied by the methods used and the method's limitations and data coverage. Accordingly, the possibility exists that not all features at a project site will be located due to either subsurface soil conditions or the occurrence of features outside the lateral limits and below the depth of penetration of the methods used. The geophysical methods used for this survey also have inherent limitations. Site activity (e.g., heavy vehicle traffic, etc.) can cause noise/interference in the data sets. Depth restrictions are also associated with the MASW/MAM methods and associated energy source.

3.2.1 Seismic Surface Wave Testing

S&ME determines the Site Class of a project location using seismic surface wave techniques that combine 1D MASW and Microtremor Array Measurement (MAM) to model seismic shear wave velocity (v_s). The test array was set up to obtain average V_s measurements representing the uppermost 100 feet of the soil/rock profile (V_{s100}). A combination of active MASW and passive MAM methods were used to perform the surface wave analysis. The passive MAM method uses ambient surface waves generated from natural (e.g., flowing water, earth tremors, etc.) or cultural (e.g., automobile traffic, train traffic, mine blasting, etc.) sources. The active MASW method utilizes the dispersion properties of surface waves produced from impact sources activated by the operator(s), such as a sledgehammer. Both passive and active methods are recorded by a multichannel recording system and a receiver array that consists of a specific number of low-frequency bandpass filters (i.e., geophones). Active sources typically generate relatively higher frequencies, providing better resolution for shallower depths, while passive sources typically generate relatively lower frequencies, providing greater depth of investigation. Active and passive measurements can be combined during post-processing to assist with providing a more comprehensive average V_{s100}.

Seismic measurements are transformed from time domain into frequency domain from which the dispersion relation of the surface waves can be calculated. A dispersion curve (i.e., a discrete frequency-phase velocity relationship) is developed and then transformed into a one-dimensional (1D) shear wave velocity profile through an inversion and iterative process in which V_{s100} is calculated.

S&ME performed seismic surface wave testing at two (2) test locations (designated SW-1 and SW-2) on October 9, 2025, to measure seismic shear wave velocities at the project site. A map view for the survey is located in Appendix IV, Figure 1. The MASW testing was conducted in the field using a Geometrics, Inc. Geode Exploration Seismograph equipped with twenty-four (24) 4.5 Hz vertical-component geophones, spaced 5 to 10 feet along a linear array via a takeout cable. A 16-lb sledgehammer was used as the signal energy source by striking a one (1) square-foot aluminum plate with an overhead swing. Data records were recorded with a sampling interval of 1.0 milliseconds and record lengths of 1.0 second. The MAM testing was conducted in the field using a Geometrics, Inc. Geode Exploration Seismograph equipped with eleven (11) to twenty four (24) 4.5 Hz vertical-component geophones, spaced 30 feet apart along a non-linear L-shaped array or spaced 10 feet apart along a linear array. Data was recorded with a sampling interval of 2.0 milliseconds and a record length of 30.0 seconds using ambient seismic noise as the signal source.

Seismic surface wave data processing and analysis were conducted using the Geogiga Technology Corp. Seismic Pro™ software (SURFACE PLUS module). Raw seismic data files (.dat) were imported into the SURFACE PLUS module, and the final geometry was assigned to each shot record. The spatial autocorrelation (SPAC) method of dispersion curve calculation was used to convert the shot records from the time domain into the frequency domain and generate spectral plots of the frequency-phase velocity relationship of the recorded surface waveforms.

Observed velocity-frequency data value pairs were selected from the fundamental mode dispersion curves (i.e., the coherent velocity-frequency relationship with the lowest observed velocity). The inversion of the observed data iterated a series of interval velocity models and calculated the best-fit model by minimizing the misfit between the observed data value pairs and each model's corresponding data value pairs produced by forward

modeling. A weighted average V_{s100} was calculated from the best-fit model as recommended in ASCE 7-16, Chapter 20, Section 4, Equation 1 for determination of Seismic Site Class.

3.2.1.1 Seismic Surface Wave Testing Results

The shear wave velocity profiles produced from the surface wave testing are presented in Appendix IV. The test at the SW-1 array location indicated a weighted average V_{s100} value of 959 feet per second with the upper horizon of the deepest soil layer estimated at a depth of approximately 67.1 feet below existing grades. The test at the SW-2 array location indicated a weighted average V_{s100} value of 995 feet per second with the upper horizon of the deepest soil layer estimated at a depth of approximately 70.0 feet below existing grades.

3.2.2 Downhole Seismic Testing

Downhole Seismic Testing allows for direct measurement of seismic P-wave and/or S-wave velocities in a single cased borehole. Geophones positioned at known depths within the borehole are used to detect the arrival of elastic waves generated by a seismic source at the surface. Activation of the seismic energy source triggers a seismograph to record the response of the geophone response, allowing for the calculation of the travel time of the P-wave and S-wave trains, from which their *in situ* velocities can be determined.

S&ME performed downhole testing in offset Boring B-04A on October 10, 2025, to measure seismic shear wave velocity at the test location (Appendix IV) The downhole seismic testing was conducted in the field using a Geometrics, Inc. Geode Exploration Seismograph and a Geostuff BHGC-4 Downhole Controller equipped with a Geostuff BHG-3 Borehole Geophone that houses three (3) geophone components in a triaxial arrangement. The triaxial geophone arrangement allows for the simultaneous recording of compressional waves, horizontally polarized shear waves, and vertically polarized shear waves generated by a seismic source. Shear waves were generated by striking opposite ends of a ground-coupled wooden beam with a 16-pound sledgehammer to produce two records with opposite polarity at each depth interval. Coupling of the beam with the ground was enhanced by parking the rear axle of a vehicle on top of it.

Data processing was performed in accordance with ASTM D7400 *Standard Test Methods for Downhole Seismic Testing*. Downhole seismic data processing and analysis were conducted using OYO Corporation's SeisImager/SW™ software (Pickwin™ and WaveEq™) in order to develop a one-dimensional (1D) shear wave velocity profile. Raw seismic data files (.dat) were imported into Pickwin™, and the final geometry was assigned to generate a shot record containing only the horizontally polarized shear component. Opposite polarity records with a common depth were superimposed atop one another to produce trace pairs associated with each depth interval. Reference points associated with the arrival of the shear wave train were identified on each trace pair. Corrections for the source offset and borehole casing stickup height were made, and a one-dimensional shear-wave velocity profile was calculated.

3.2.2.1 Downhole Seismic Testing Results

The results of the downhole seismic testing performed in Boring B-04A are presented in Appendix IV. The test at the B-04A location indicated a weighted average V_{s100} value of 924 feet per second with the upper horizon of the deepest soil layer estimated at a depth of approximately 60.0 feet below existing grades.

3.3 Spillway Investigation

On September 16 and 17, 2025, Bloodhound (subcontracted through S&ME) performed video camera services of the storm pipes and spillways at the site, as well as a vault room that had remained after demolition of the power plant. Photos, video footage, site sketches, and field notes were transmitted to AEP using the SharePoint site provided by AEP on October 14, 2025.

3.3.1 Bottom Ash Area

The video camera services performed within the bottom ash area included scanning five out of the six CMP segments that are present within the east embankment of this area. Based on observations made at the site, the original intent of the piping network appears to have allowed drainage of the northern two detention ponds into the southern detention pond through a shared pipe. The south detention pond, presumably used as a clearing pond, then drained to the Muskingum River through a pipe consisting of three segments with the middle segment oriented along the embankment alignment and the entrance and discharge pipe segments oriented perpendicular to the embankment alignment.

Two blockages were encountered in the pipe network between the northern two detention ponds and the south detention pond. One blockage appears to be a result of soil that had fallen into the pipe and the second blockage appears to be a crushed section of the pipe that possibly occurred during demolition at the facility. Additionally, the middle segment of the spillway pipe (draining the south detention pond which apparently served as a clearing pond) was unable to be inspected by camera due to inability to access the pipe. The pipes that were videoed appeared to be generally intact (with the exception of the possible crushed pipe section) with no obvious loss in section; however, the bituminous coating appears to have been delaminated within the flow path at the inlets, and rust was occasionally observed on the inside surface of the pipes between the detention ponds. Further details are included in the field notes.

3.3.2 Fly Ash Area

Camera inspection of the spillway pipe located at the southeast corner of the fly ash area was attempted; however, the riser pipe had become filled with debris. As such, the lateral pipe was not found within the riser. Additionally, the location of the outlet of the lateral pipe is currently unknown. Note that geophysical scanning using electro-magnetic methods was later performed per the request of AEP. Preliminarily, this scan indicated that the lateral pipe is situated at the base of the CCR material / fill soils, with the outlet situated above the terrace at this location.

4.0 Laboratory Testing

Following sample retrieval, the on-site S&ME staff preserved the recovered soil samples in airtight containers. The recovered samples were returned to our laboratory where applicable laboratory tests were assigned. S&ME conducted the following laboratory tests on representative soil samples collected in general accordance with the ASTM standards noted:

- Natural moisture contents (D2216)

- Atterberg Limits (D4318)
- Grain-Size Analyses (D422)
- Specific gravity of soil solids (D854)
- Consolidated Undrained (CU) Triaxial Compression Test (D4767)
- Hydraulic Conductivity - Permeability (D5084)

The laboratory testing results and descriptions of tests performed for the index soil testing (natural moisture contents, Atterberg limits, grain-size analyses, and specific gravity of soil solids) are provided in Appendix III. The consolidated-undrained (CU) triaxial compression tests and hydraulic conductivity tests (specialty laboratory testing) are presented in this report. The specialty laboratory testing were previously delayed due to a sudden increase in testing backlog at the time the borings were completed and availability of staffing. Results of the specialty testing are summarized in Table 4-1. The procedures used by S&ME for field and laboratory sampling and testing are in general accordance with ASTM procedures and established engineering practice.

Table 4-1: Laboratory Test Results – CU Triaxial and Flexible Wall Permeability

Boring	Sample No.	Approx. Depth (ft)	USCS	Effective Strength		Undrained Strength		Hydraulic Conductivity (cm/s)
				c′ (psf)	ϕ′ (deg)	C (psf)	ϕ (deg)	
B-02	S-06 (Section I)	26.0-27.0	CL	260	31.4	380	17.3	-
B-02	S-06 (Section II)	27.0-28.0	CL-ML	-	-	-	-	$4.0x10^{-6}$
B-04	S-12 (Sections I & II)	38.5-39.5	CL	80	32.3	290	17.3	$6.9x10^{-8}$
B-08	S-06	26.0-27.2	SM	-	-	-	-	$1.1x10^{-5}$
B-11	S-09	35.0-37.0	CL	100	33.2	230	17.1	-

- Indicates testing not performed

5.0 Exploration Findings

The subsurface conditions with the bottom ash and ash basin embankments were explored by performing Borings B-01 through B-13. As previously mentioned, offset Boring B-04A was performed and a 2.5-inch diameter casing was installed and grouted in place for downhole shear waved velocity testing. The subsurface conditions generally consisted of existing CCR fill underlain by soil fill, natural soils consisting of alluvial deposits, and SPT refusal materials and bedrock consisting of weathered to hard sandstone. The generalized subsurface conditions are depicted on the Boring Logs and Subsurface Profiles included in Appendix II.

5.1 Subsurface Conditions

5.1.1 CCR Material Fill

Existing CCR material fill was encountered at the ground surface at all of the boring locations with a thickness ranging from 13.5 feet to 36.0 feet below the existing ground surface along the embankment. The majority of the CCR fill material appeared to consist of bottom ash based on its grain-sizes (based on both visual observations

and gradation analysis) generally conforming to a poorly graded sand (SP), silty sand (SM), and well graded sand with silt (SP-SM) with varying amounts of silt and gravel size particles. The relative densities of the bottom ash material ranged from loose to dense. Fly ash was encountered in Borings B-01, B-05, B-06, B-07, B-08 generally at the base of the CCR material. The fly ash was visually classified as silt (ML), silty clay (CL-ML), and elastic silt (MH) with varying amounts of sand, and exhibited very soft to hard consistencies. Field SPT N-values ranged from 3 to 39 blows per foot (bpf) within the bottom ash material and "weight-of-hammer" resistance to 77 bpf in the fly ash material with no clear trend in the values.

5.1.2 Soil Fill

Existing soil fill was encountered underlying the CCR material in all the borings with a thickness ranging from approximately 6.0 to 25.0 feet. The fill soils consisted of silty sand (SM), lean clay (CL), poorly graded sand (SP), and sandy silt (ML). These fill materials exhibited very loose to medium dense relative densities for the granular soils and very soft to soft consisties for the cohesive soils, and were generally brown in color, distinguishing these fill materials from the CCR materials. Field SPT N-values obtained within the fill soils encountered in the borings ranged from "weight-of-hammer" resistance to 53 bpf.

5.1.3 Alluvial Soils

Beneath the fill soils, natural alluvial soils were encountered at depths ranging from approximately 26.0 feet to 40.5 feet below the existing ground surface, with the exception of Boring B-06 which encountered bedrock beneath the soil fill material. The natural soils were predominantly granular and consisted of poorly graded sand (SP) and well graded sand (SW) with varying amounts of silt and gravel size particles. Well graded gravel (GW) with sand was encountered on occasion. These granular soils generally exhibited medium dense to dense relative densities, with very loose to loose zones encountered at approximately 5 to 20 feet beneath the fill material at the locations of Borings B-03 and B-04. Finer-grained soils were generally predominant at the locations of Borings B-02, B-03, B-04, and B-07 consisting of soft lean clay (CL), very soft to soft silty clay (CL-ML), very loose silt with clay (ML) and very loose to medium dense silty sand (SM). Field SPT N-values ranged from 2 to 49 bpf with the lower end of the range (2 to 7 bpf) concentrated within the uppermost approximately 15 feet of the natural soils at the location of Boring B-04.

Weathered to hard sandstone was encountered in Borings B-01 through B-13 at depths ranging from approximately 44.5 to 88.5 feet below the existing ground surface. In general, the surface of the bedrock was shallowest within the vicinity of Borings B-5 and B-6, which coincidentally are within the vicinity of a filled-in navigable water way channel according to historical documents.

The bedrock in Boring B-04 was cored from approximately 47.1 to 88.5 feet. The bedrock consisted of strong to very strong sandstone. Core recoveries ranged from 92 to 96 percent with Rock Quality Designation (RQD) values ranging from 0 to 40 percent.

Please refer to the individual Boring Logs and Embankment Profiles included in Appendix II for more detailed information at each exploration location.

5.1.4 Water Levels

As the boreholes were drilled using mud-rotary methods and grouted upon completion, water level measurements were not obtained at the time of drilling. The depth to the top of drilling mud after removal of tools and prior to grouting was measured at all boring locations except for Borings B-01, B-02, B-03, and B-06, ranging from approximately 26.5 to 51.0 feet below the existing ground surface.

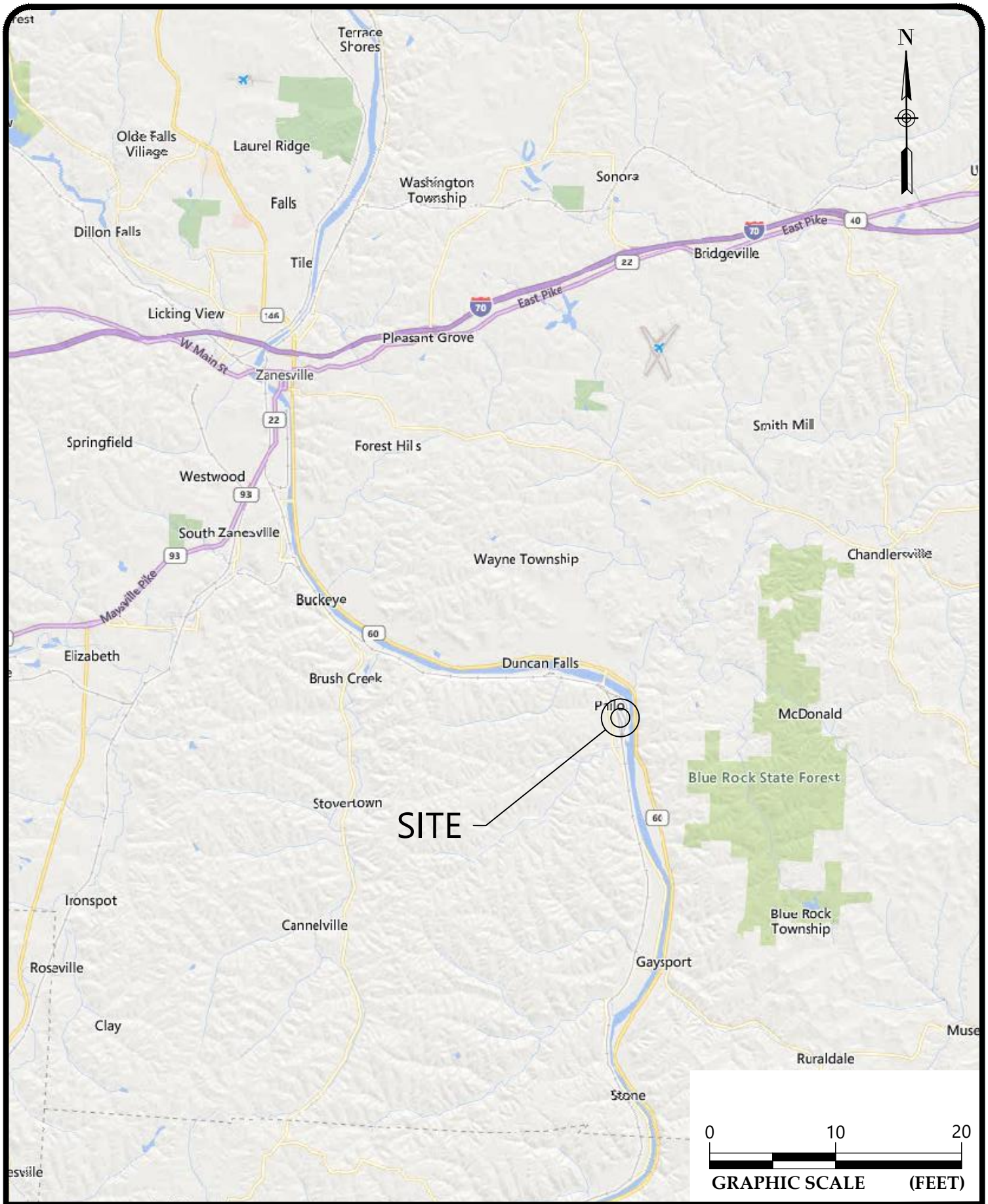
6.0 Limitations

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. Subsurface conditions can vary widely between explored areas. Some variations may not become evident until construction. If conditions are encountered which appear different than those described in our report, we should be notified. This report should not be construed to represent subsurface conditions for the entire site.

Our field exploration program did not include an assessment of regulatory compliance, environmental conditions or pollutants or presence of any biological materials (mold, fungi, bacteria). If there is a concern about these items, other studies should be performed. S&ME can provide a proposal and perform these services if requested.

Appendices

Appendix I – Figures



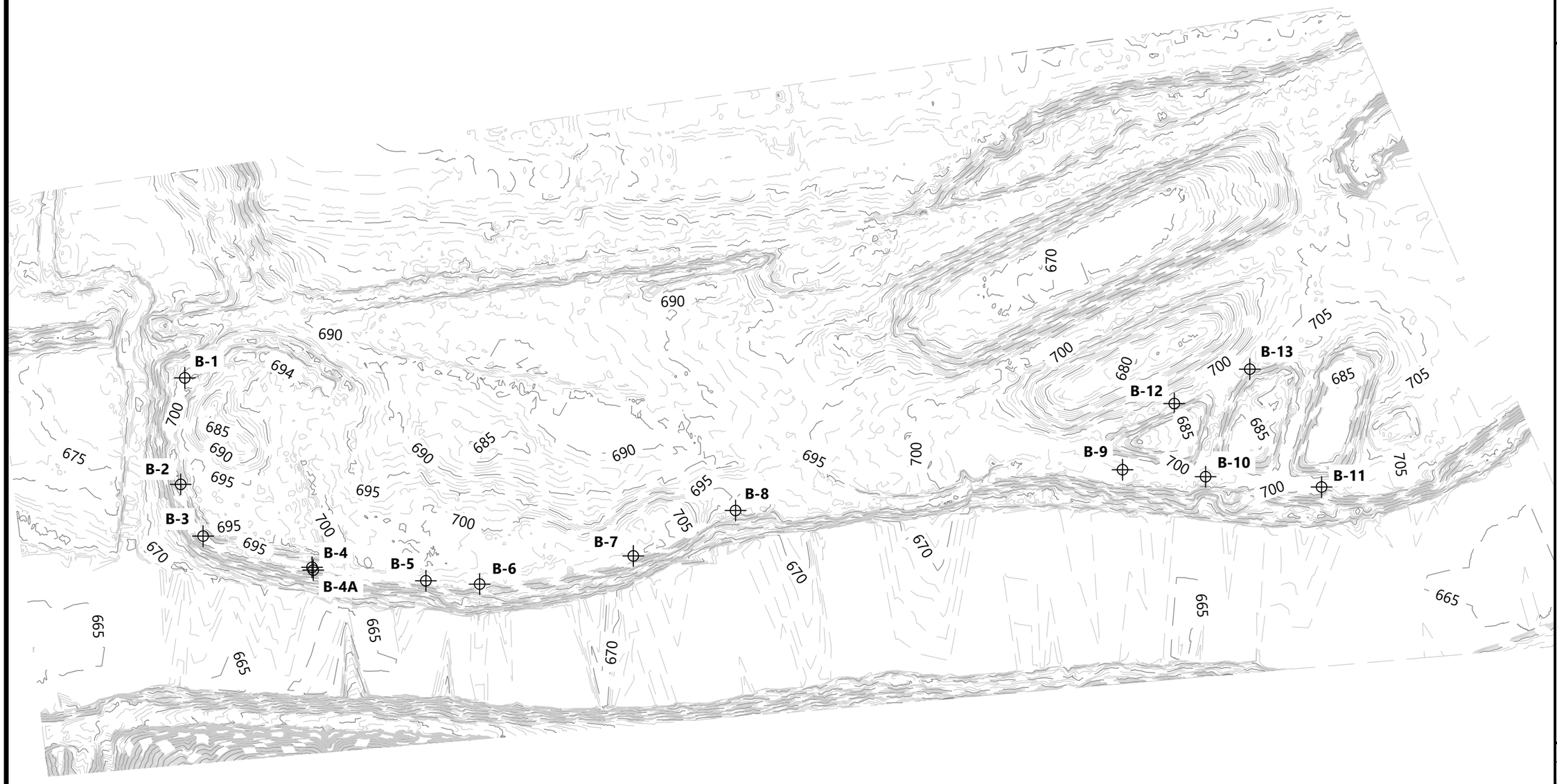
S&ME, Inc.

VICINITY MAP

AEP PHILO LEGACY CCR
AEP PHILO STATION
PHILO, OHIO

SCALE:	FIGURE NO.
1" = 2 Miles	1
DATE:	
19-DEC-2025	
PROJECT NUMBER	
25170079	

DRAWING PATH: T:\Columbus-1170\Projects\2025\25170079_AEP_Philo Legacy CCR Impoundments Eval\Civil\CAD\DWG\XREF\25170079 BASE-SURFACE.dwg **TAB:** 11x17L **SAVE DATE:** 2026-01-22 **PAGE SIZE:** ANSI full bleed B (11.00 x 17.00 Inches)



LEGEND:

- DENOTES APPROXIMATE LOCATION PLAN
- MAJOR CONTOUR
- MINOR CONTOUR

TOPOGRAPHIC SURVEY OBTAINED FROM OHIO STATEWIDE IMAGERY PROGRAM (OSIP) LIDAR DATA MANAGED BY THE OHIO GEOGRAPHICALLY REFERENCED INFORMATION PROGRAM (OGRIP). LIDAR SOURCE: OSIP I (2007) MUSKINGUM COUNTY LIDAR DATASET, OHIO STATE PLANE SOUTH, NAD 83 (2011) / NAVD 88.

N

0 300 600

GRAPHIC SCALE (FEET)

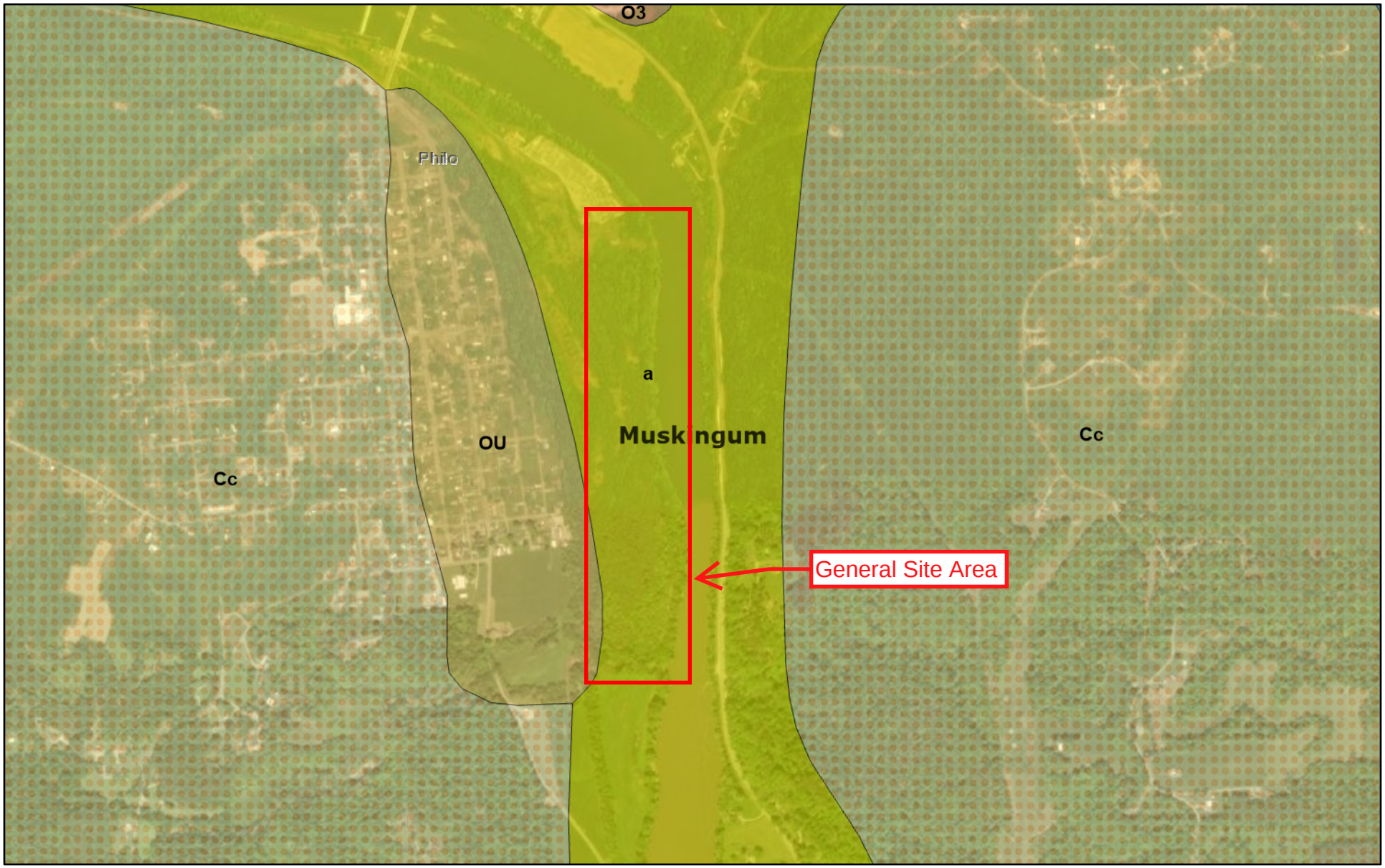
S&ME, Inc.

PLAN OF BORINGS

AEP PHILO LEGACY CCR
AEP PHILO STATION
PHILO, OHIO

SCALE:	1" = 300'
DATE:	22-JAN-2026
PROJECT NUMBER	25170079
FIGURE NO.	1

Quaternary Geology Map



December 10, 2025

Quaternary Geology 500K

- a - Alluvium and alluvial terraces
- LL - Lacustrine silt
- OU - Outwash, undifferentiated
- O3 - Low-level valley-train outwash
- Cc - Colluvium derived from local bedrock in unglaciated areas
- Counties

1:18,056

0 0.1 0.2 0.4 mi

0 0.17 0.35 0.7 km

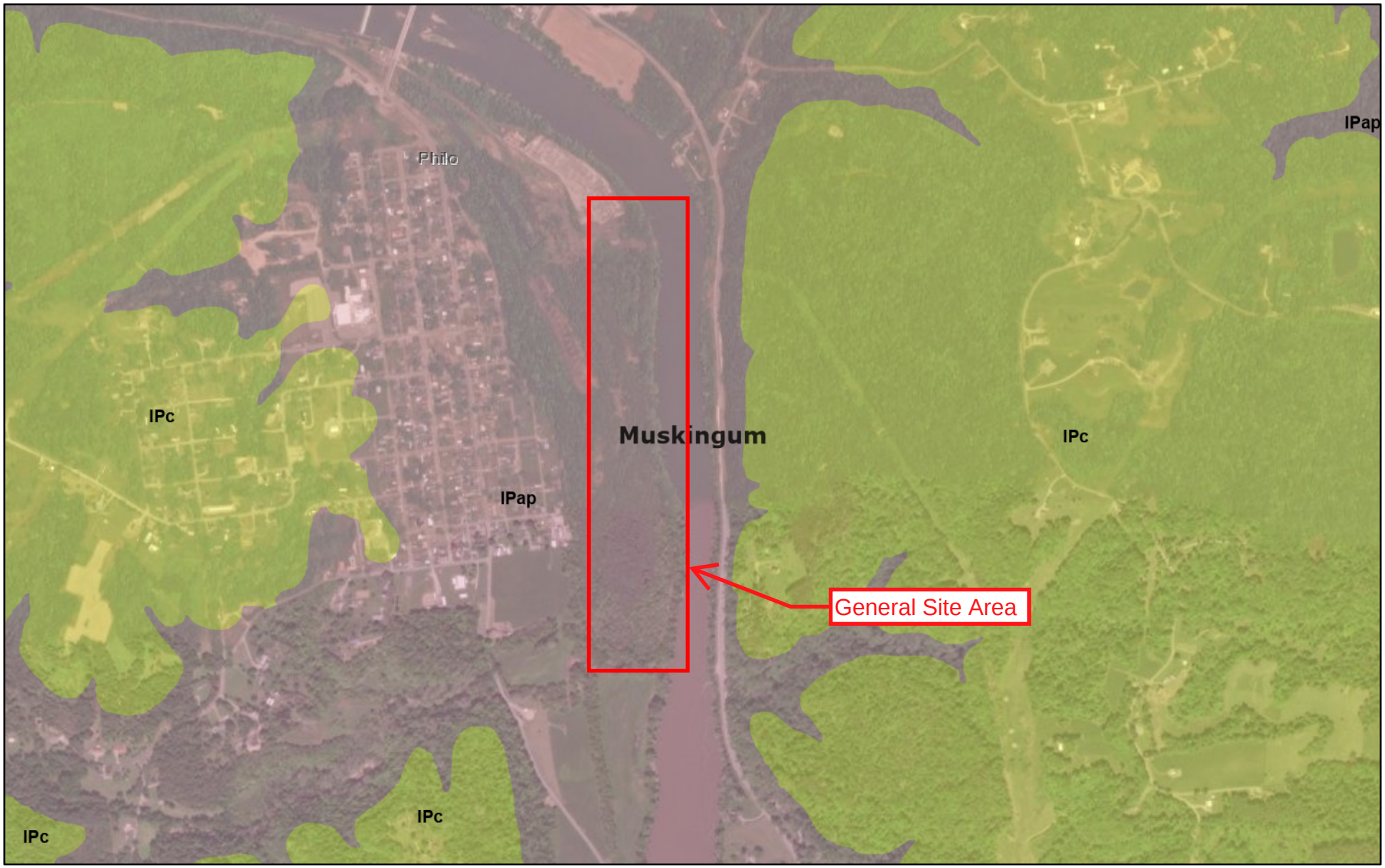
Vantor, Esri, HERE

Philo Legacy CCR Impoundment

Figure 3

ODNR - Div. of Geosurvey

Bedrock Geology Map



December 10, 2025

Bedrock Geology 24K

IPc - Conemaugh Group

IPap - Allegheny And Pottsville Groups Undivided

Counties

1:18,056

0 0.1 0.2 0.4 mi

0 0.17 0.35 0.7 km

Vantor, Esri, HERE

Philo Legacy CCR Impoundment

Figure 4

ODNR - Div. of Geosurvey

Appendix II – Boring Logs

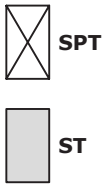
SOIL LOG LEGEND

SOIL PROPERTY SYMBOLS

N - Standard Penetration, bpf
LL - Liquid Limit, %
PPV - Pocket Penetrometer Value, tsf
NMC - Natural Moisture Content, %
PL - Plastic Limit, %
Qu - Unconfined Compressive Strength
F - Fines Content, %
PI - Plasticity Index, %
γd - Dry Unit Weight, pcf

The STANDARD PENETRATION TEST (SPT) as defined by ASTM D1586 (or AASHTO T206) is a method to obtain a disturbed soil sample for examination and testing and to obtain relative density and consistency information. A standard 1.4-inch I.D./2-inch O.D. split-barrel sampler is driven three 6-inch increments with a 140 lb. hammer freely falling 30 inches. The hammer can either be of a trip, free-fall design, or actuated by a rope and cathead. The SPT N Value is determined by adding the number of blows from the 2nd and 3rd 6-inch increments. A normalized blowcount (N_{60}) may be determined by the following equation: N_{60} = [Rig Energy Ratio (%) / 60] * N.

SHELBY TUBE (ST) samples are obtained by hydraulically pushing a thin-walled tube (typically 3-inches in diameter) to obtain a relatively undisturbed sample for testing of fine-grained soils to determine engineering properties such as strength, compressibility, permeability, and density. Shelby tubes are sampled in general accordance with ASTM D1587 (AASHTO T207).



Descriptive Order of Soil Strata: Geologic Disposition (i.e., Fill, Colluvium, Alluvium, etc.), ASTM Group Name (ASTM Group Symbol), quantified/qualified soil constituents, misc. constituents, consistency/density, color, organic description, moisture. ASTM group classifications is determined per ASTM D2487 where lab testing has been performed and ASTM D2488 where lab testing has not been performed.

ASTM GROUP NAME (SYMBOL) AND GRAPHIC

- WELL GRADED GRAVEL (GW)
- POORLY GRADED GRAVEL (GP)
- 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)
- SILTY GRAVEL (GM)
- CLAYEY GRAVEL (GC)
- CLAYEY GRAVEL WITH SILT (GC-GM)
- WELL GRADED SAND (SW)
- POORLY GRADED SAND (SP)
- 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)
- SILTY SAND (SM)
- CLAYEY SAND (SC)
- CLAYEY SAND WITH SILT (SC-SM)
- LEAN CLAY (CL)
- SILTY CLAY (CL-ML)
- SILT (ML)
- FAT CLAY (CH)
- ELASTIC SILT (MH)
- ORGANIC LOW PLASTICITY SILT OR CLAY (OL)
- ORGANIC HIGH PLASTICITY SILT OR CLAY (OH)
- PEAT (PT)
- TOPSOIL
- ASPHALT
- BASE - CEMENT MODIFIED
- BASE - CEMENT STABILIZED AGGREGATE
- BASE - GRAVEL
- CONCRETE
- VOID / NO RECOVERY
- IGM / PWR

FINE-GRAINED SOIL (Relative Consistency)

	N	PPV
Very Soft	< 2 bpf	< 0.25 tsf
Soft	2 - 4 bpf	> 0.25 - 0.5 tsf
Firm	5 - 8 bpf	> 0.5 - 1.0 tsf
Stiff	9 - 15 bpf	> 1.0 - 2.0 tsf
Very Stiff	16 - 30 bpf	> 2.0 - 4.0 tsf
Hard	> 30 bpf	> 4.0 tsf

COARSE-GRAINED SOIL (Relative Density)

	N
Very Loose	< 5 bpf
Loose	5 - 10 bpf
Medium Dense	11 - 30 bpf
Dense	31 - 50 bpf
Very Dense	> 50 bpf

MINOR CONSTITUENTS (% By Weight)

	Percentage
Trace	0% - 10%
Little	11% - 20%
Some	21% - 35%
"And"	≥ 36%

ORGANIC CONTENT OF SOIL (Determined by ASTM D2974 or AASHTO T267)

Classification	Percentage
With Organic Matter	4% - 15%
Organic Soil	16% - 30%
Peat	> 30%

MOISTURE CONDITION

Dry	Absense of moisture, dusty, dry to touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

At Time of Drilling (ATD) — Groundwater observation made anytime during the drilling process. Depending on time of reading and drilling methodologies, this value may be influenced by the drilling process.

End of Drilling — Groundwater measurement soon after the drilling processes are complete, and the borehole is at final depth. Drilling fluids, if introduced during drilling, may influence this measurement.

After Drilling — Groundwater measurements made in a borehole hours to days after drilling is complete. Depending on subsurface conditions, elapsed time, drilling process, etc. this observation may reflect a stabilized level.

REFERENCES:

FHWA NHI-16-072, Geotechnical Engineering Circular No. 5 "Geotechnical Site Characterization"
ASTM Specifications D2487 and D2488
DOT Specifications & Design Manuals from NC, SC, OH, MI, IN, PA, VA.

ROCK CORE LOG LEGEND

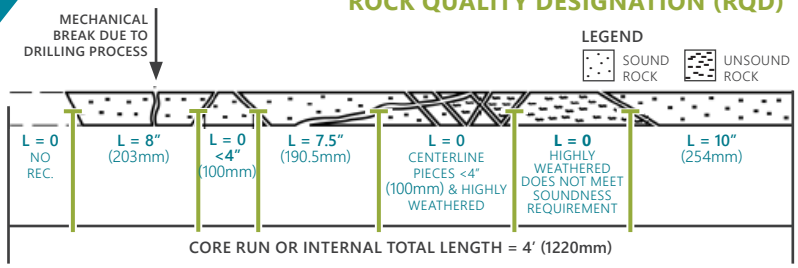
ROCK CORE RECOVERY

Core Diameter (I.D.)	Inches
BQ	1-7/16
NQ	1-7/8
HQ	2-1/2

Rock Core Sample

$$\text{REC (Recovery)} = \frac{\text{Length of Rock Core Recovered}}{\text{Length of Core Run}} \times 100$$

ROCK QUALITY DESIGNATION (RQD)



$$\text{RQD (Equation)} = \left(\frac{\sum \text{Sound Core with Length (L)} \geq 4\text{" (100mm)}}{\text{Core Run or Interval Total Length}}\right) \times 100$$

$$\text{RQD (Example)} = \left(\frac{8\text{"} + 7.5\text{"} + 10\text{"}}{48\text{"}}\right) \times 100 = 53\% \text{ (FAIR)}$$

ROCK QUALITY

Percent	Quality
>90–100	Excellent
>75–90	Good
>50–75	Fair
>25–50	Poor
0–25	Very Poor

(ASTM D6032)

GRAIN SIZE

Very Fine-Grained	<0.003 in. (<0.075 mm)
Fine-Grained	0.003 – 0.02 in. (0.075 – 0.425 mm)
Medium-Grained	0.02 – 0.8 in. (0.425 – 2 mm)
Coarse-Grained	0.8 – 2 in. (2 – 4.75 mm)
Very Coarse-Grained	>2 in. (>4.75 mm)

BEDDING

Very Thickly Bedded	>3 ft.
Thickly Bedded	3 ft. – 18 in.
Thinly Bedded	18 in. – 2 in.
Very Thinly Bedded	2 in. – 0.4 in.
Laminated	0.4 in. – 0.1 in.
Thinly Laminated	<0.1 in.

FRACTURE RATE / SPACING

Unfractured	>10 ft.
Intact	10 ft. – 3 ft.
Slightly Fractured	3 ft. – 1 ft.
Moderately Fractured	12 in. – 4 in.
Fractured	4 in. – 2 in.
Highly Fractured	< 2 in.

SURFACE ROUGHNESS

Very Rough	Near vertical steps and ridges occur on the discontinuity surface.
Slightly Rough	Asperities on the discontinuity surface are distinguishable and can be felt.
Smooth	Surface appears smooth and feels so to the touch.
Slickensided	Surface has a smooth, glassy finish with visual evidence of striation.

WEATHERING

Fresh	No visible sign of rock material weathering; slight discoloration on major discontinuity surfaces is possible.
Slightly Weathered	Discoloration indicates weathering of rock material and discontinuity surfaces. All rock material may be discolored by weathering and the external surface may be somewhat weaker than in its fresh condition.
Moderately Weathered	Less than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a discontinuous framework or as corestones. A minimum 2 in. diameter sample cannot be broken readily by hand.
Highly Weathered	More than half the rock is decomposed or disintegrated to soil. Fresh or discolored rock is present either as a discontinuous framework or as corestones. A minimum 2 in. diameter sample can be broken readily by hand across the rock fabric.
Completely Weathered	All rock material is decomposed and/or disintegrated to soil. The original mass structure is largely still intact. Material can by granulated by hand.
Residual Soil	All rock material is converted to soil. Material can be easily broken apart by hand.

STRENGTH

		APPROX. UNCONFINED COMPRESSIVE STRENGTH (PSI)
Extremely Strong Rock	Specimen can only be chipped with firm blows from the hammer end of a geological hammer.	> 36,250
Very Strong Rock	Specimen requires many firm blows from the hammer end of a geological hammer to fracture.	36,250 – 14,500
Strong Rock	Specimen requires more than one firm blow of the point of a geological hammer to fracture.	14,500 – 7,250
Medium Strong Rock	Specimen cannot be scraped or cut with a pocket knife. Specimen can be fractured with a single firm blow with a geological hammer point.	7,250 – 3,500
Weak Rock	Shallow cuts or scrapes can be made in a specimen with a pocket knife. A firm blow with a geological hammer creates shallow indents.	3,500 – 725
Very Weak Rock	Specimen crumbles under sharp blow with point of geological hammer and can be peeled with a pocket knife.	725 – 150
Extremely Weak Rock	Specimen can be indented by thumbnail.	150 – 35

HARDNESS

Very Hard	Cannot be scratched with a pocket knife; leaves knife steel marks on surface.
Hard	Can be scratched by a pocket knife with difficulty; scratch produces little powder and is only faintly visible; trace of knife's steel may be visible.
Moderately Hard	Can be readily scratched by a pocket knife; scratch leaves a heavy trace of dust and scratch is readily visible after the powder has been blown away.
Low Hardness	Can be gouged deeply or carved with a pocket knife.
Friable	Easily crumbled by hand, pulverized or reduced to powder sand is too soft to be cut by a pocket knife.
Soft	Very weak plastic material.

REFERENCES:

FHWA NHI-16-072, GEOTECHNICAL ENGINEERING CIRCULAR NO. 5 "GEOTECHNICAL SITE CHARACTERIZATION"
DOT SPECIFICATIONS & DESIGN MANUALS FROM NC, SC, OH, MI, IN, PA.

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-01 *Sheet 1 of 3*
DATE DRILLED: 09/11/2025	**ELEVATION:** 700 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: Geoprobe 3126	**DATUM:** NAVD88	
DRILLER: ADC / A. Unverzagt	**BORING DEPTH:** 78.7 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** W. Babiy	**LATITUDE:** 39.854280 **LONGITUDE:** -81.903142
SAMPLING METHOD: UD, SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
0					BOTTOM ASH: POORLY GRADED SAND WITH GRAVEL (SP), trace silt, loose to medium dense, red slag fragments sized fine to coarse gravel, wet.			700
5				S-01 (11 in)		3-4-4 N = 8		695
10				S-02 (6 in)		13-14-5 N = 19		690
15				S-03 (1 in)		18-20-15 N = 35		685
20				S-04 (6 in)		2-4-3 N = 7		680
25				S-05 (5 in)		4-3-5 N = 8		675
30	PPV = 0.0-0.1 28.5 30.0			S-06 (18 in)	FLY ASH: SILTY CLAY (CL-ML), very soft, dark gray, damp. Possible Fill: SILTY SAND WITH GRAVEL (SM), very loose, light brown, wet.	0-0-0 N = WOH		670

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽	09/11/2025		Not measured
END OF DRILLING	▼			
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-01 *Sheet 2 of 3*
DATE DRILLED: 09/11/2025	**ELEVATION:** 700 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: Geoprobe 3126	**DATUM:** NAVD88	
DRILLER: ADC / A. Unverzagt	**BORING DEPTH:** 78.7 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** W. Babiy	**LATITUDE:** 39.854280 **LONGITUDE:** -81.903142
SAMPLING METHOD: UD, SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
	Downfeed 400psi			S-07 REC-100%	Possible Fill: SILTY SAND WITH GRAVEL (SM), very loose, light brown, wet.			
	33.0			S-08 (18 in)	Possible Fill: LEAN CLAY (CL), little fine to coarse sand, very loose, dark brown transitioning to gray, wet.	3-1-1 N = 2	● ○ △	
35								665
				S-09 (18 in)		2-1-4 N = 5	● ○	
	38.5			S-10 (12 in)	POORLY-GRADED GRAVEL WITH SILT AND SAND (GP-GM), medium dense, brown, wet.	15-14-15 N = 29	●	
40								660
				S-11 (12 in)		19-14-12 N = 26	△ ○ ●	
				S-12 (12 in)		17-11-6 N = 17	○ ●	
45	45.0				POORLY GRADED SAND WITH SILT (SP-SM), trace fine gravel, medium dense, light brown, wet.			655
				S-13 (2 in)		10-11-14 N = 25	●	
				S-14 (10 in)		13-7-8 N = 15	△ ●	
50								650
	53.5			S-15 (8 in)	POORLY GRADED SAND (GP), trace fine coarse gravel, trace silt, medium dense to dense, gray, wet.	9-10-10 N = 20	●	
55								645
				S-16 (18 in)		10-9-10 N = 19	●	
60								640

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽	09/11/2025		Not measured
END OF DRILLING	▼			
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-01 *Sheet 3 of 3*
DATE DRILLED: 09/11/2025	**ELEVATION:** 700 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: Geoprobe 3126	**DATUM:** NAVD88	
DRILLER: ADC / A. Unverzagt	**BORING DEPTH:** 78.7 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** W. Babiy	**LATITUDE:** 39.854280 **LONGITUDE:** -81.903142
SAMPLING METHOD: UD, SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
65				S-17 (18 in)	POORLY GRADED SAND (GP), trace fine coarse gravel, trace silt, medium dense to dense, gray, wet.	8-14-14 N = 28	●	635
70				S-18 (18 in)		14-16-15 N = 31	●	630
75				S-19 (18 in)		11-13-16 N = 29	●	625
	76.5				SANDSTONE, gray, slightly weathered, soft.			
	78.7			S-20 (1 in)	Borehole terminated at 78.7 feet	50/2" N = 50/2"	●	
80								620
85								615
90								610
95								605

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽	09/11/2025		Not measured
END OF DRILLING	▼			
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-02 *Sheet 1 of 3*
DATE DRILLED: 09/15/2025	**ELEVATION:** 698 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC / A. Archer	**BORING DEPTH:** 81.2 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.854242 **LONGITUDE:** -81.902058
SAMPLING METHOD: UD, SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (SPT ● / % Fines △ / NMC ○ / PL---LL ⊢⊣; 20 40 60 80 100)	ELEVATION
0					BOTTOM ASH: POORLY GRADED SAND WITH GRAVEL (SP), trace silt, loose to medium dense, trace debris, red slag fragments sized fine to coarse gravel, wet.			698
				S-01 (18 in)		3-8-8 N = 16		
5								693
				S-02 (18 in)		23-20-19 N = 39		
10								688
				S-03 (12 in)		10-21-17 N = 38		
15								683
				S-04 (12 in)		15-14-13 N = 27		
20								678
	22.0				Possible Fill: LEAN CLAY WITH SAND (CL), very-stiff, brown to dark gray, wet.			
	PPV = 2.0-3.0			S-05 (18 in)		0-0-4 N = 4		
25	Hole caved at 26.0 feet							673
	Downfeed 200psi			S-06 REC-100%				
	27.4				Possible Fill: SANDY, SILTY CLAY (CL-ML), stiff to very-stiff, brown and gray, wet			
	PPV = 2.5			S-07 (18 in)		3-2-3 N = 5		
30								668
	PPV = 2.0-3.0							

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/16/2025		After removal of tools, prior to cementing borehole. Borehole caved at 26.0 feet.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-02 *Sheet 2 of 3*
DATE DRILLED: 09/15/2025	**ELEVATION:** 698 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC / A. Archer	**BORING DEPTH:** 81.2 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.854242 **LONGITUDE:** -81.902058
SAMPLING METHOD: UD, SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
				S-08 (12 in)	Possible Fill: SANDY, SILTY CLAY (CL-ML), stiff to very-stiff, brown and gray, wet	2-1-1 N = 2		
	PPV = 2.0			S-09 (18 in)		5-3-2 N = 5		
35								663
	PPV = 1.5-2.0			S-10 (18 in)		0-0-4 N = 4		
	PPV = 2.0			S-11 (18 in)		1-1-4 N = 5		
40								658
	40.5			S-12 (12 in)	Possible Fill: POORLY GRADED SAND (SP), trace silt, very loose to loose, gray to black, wet.	5-4-2 N = 6		
				S-13 (12 in)		3-5-11 N = 16		
45								653
	47.0				LEAN CLAY WITH SAND (CL), trace fine gravel, little silt, soft, gray with black spots, wet.			
	PPV = 2.0-3.0			S-14 (18 in)		3-4-12 N = 16		
50								648
	52.0				POORLY GRADED SAND WITH SILT (SP-SM), trace fine gravel, medium dense, gray, wet.			
				S-15 (18 in)		12-10-11 N = 21		
55								643
				S-16 (14 in)		12-8-12 N = 20		
60								638

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/16/2025		After removal of tools, prior to cementing borehole. Borehole caved at 26.0 feet.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-02 *Sheet 3 of 3*
DATE DRILLED: 09/15/2025	**ELEVATION:** 698 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC / A. Archer	**BORING DEPTH:** 81.2 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.854242 **LONGITUDE:** -81.902058
SAMPLING METHOD: UD, SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
65				S-17 (12 in)	POORLY GRADED SAND WITH SILT (SP-SM), trace fine gravel, medium dense, gray, wet.	15-15-18 N = 33	●	633
	67.0				WELL GRADED SAND (SW), trace fine to coarse gravel, medium dense, gray, wet.			
70				S-18 (7 in)		12-15-20 N = 35	●	628
	72.5				POORLY GRADED SAND (SP), trace coarse gravel, medium dense, gray, wet.			
75				S-19 (8 in)		12-13-14 N = 27	●	623
				S-20 (12 in)		22-20-22 N = 42	●	
80								618
	81.0			S-21 (2 in)	SHALE, gray, highly weathered, laminated.	50/2" N = 50/2"	●	
	81.2				Borehole terminated at 81.2 feet			
85								613
90								608
95								603

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/16/2025		After removal of tools, prior to cementing borehole. Borehole caved at 26.0 feet.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-03 *Sheet 1 of 3*
DATE DRILLED: 09/15/2025	**ELEVATION:** 701 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: Geoprobe 3126	**DATUM:** NAVD88	
DRILLER: ADC / A. Archer	**BORING DEPTH:** 76.2 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** W. Babiy	**LATITUDE:** 39.854415 **LONGITUDE:** -81.901530
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (SPT ● / % Fines △ / NMC ○ / PL---LL ⊢ ; 20 40 60 80 100)	ELEVATION
0					BOTTOM ASH: POORLY GRADED SAND (SP), trace fine gravel, loose to medium dense, trace debris, red slag fragments sized fine to coarse gravel, wet.			701
				S-01 (12 in)		3-12-21 N = 33		
5								696
				S-02 (12 in)		3-3-5 N = 8		
10								691
				S-03 (5 in)		3-3-4 N = 7		
15								686
				S-04 (4 in)		3-2-2 N = 4		
20								681
	PPV = 0.0-1.0			S-05 (16 in)	Possible Fill: SILTY CLAY (CL-ML), trace fine to coarse sand, firm to stiff, gray, moist.	0-3-4 N = 7		
25	23.5 PPV = 0.5-0.7 Downfeed 500psi			S-06A REC-0%				676
	PPV = 1.0-1.5			S-07 (18 in)		0-4-5 N = 9		
	PPV = 0.5-0.7			S-08 (18 in)		6-9-10 N = 19		
30								671
	PPV = 0.0-0.2				Possible Fill: SILT WITH SAND (ML), very loose, gray, wet.			
	31.0							

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽	09/15/2025		Not measured
END OF DRILLING	▼			
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-03 *Sheet 2 of 3*
DATE DRILLED: 09/15/2025	**ELEVATION:** 701 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: Geoprobe 3126	**DATUM:** NAVD88	
DRILLER: ADC / A. Archer	**BORING DEPTH:** 76.2 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** W. Babiy	**LATITUDE:** 39.854415 **LONGITUDE:** -81.901530
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
				S-09 (18 in)	Possible Fill: SILT WITH SAND (ML), very loose, gray, wet.	2-1-1 N = 2		
	PPV = 0.0-0.5			S-10 (18 in)	Possible Fill: LEAN CLAY (CL), trace fine to medium sand, very soft to firm, gray, wet, contains few lenses of sand.	1-1-1 N = 2		
35	PPV = 0.2-0.5			S-11 (18 in)		1-1-0 N = 1		666
	PPV = 0.5-0.7			S-12 (18 in)		0-0-0 N = WOH		
40	PPV = 0.0-0.2			S-13 (18 in)	SANDY SILT (ML), very loose, gray, wet.	7-4-0 N = 4		661
				S-14 (18 in)	SILTY SAND (SM), little fine gravel, loose to medium dense, gray to brown, wet.	5-4-3 N = 7		
45								656
				S-15 (8 in)		10-13-15 N = 28		
50								651
				S-16 (5 in)		17-13-10 N = 23		
55								646
				S-17 (6 in)	POORLY GRADED SAND WITH GRAVEL (SP), trace silt, medium dense, brown, wet	15-11-13 N = 24		
60								641

Boundaries: 33.5, 41.0, 43.5, 58.5

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽	09/15/2025		Not measured
END OF DRILLING	▼			
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-03 *Sheet 3 of 3*
DATE DRILLED: 09/15/2025	**ELEVATION:** 701 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: Geoprobe 3126	**DATUM:** NAVD88	
DRILLER: ADC / A. Archer	**BORING DEPTH:** 76.2 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** W. Babiy	**LATITUDE:** 39.854415 **LONGITUDE:** -81.901530
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
65				S-18 (4 in)	POORLY GRADED SAND WITH GRAVEL (SP), trace silt, medium dense, brown, wet	11-11-15 N = 26		636
70				S-19 (6 in)		16-16-17 N = 33		631
75				S-20 (8 in)		15-14-13 N = 27		626
	76.0			S-21 (1 in)	SANDSTONE, gray/blue, highly weathered, equiangular.	50/2" N = 50/2"		
	76.2				Borehole terminated at 76.2 feet			
80								621
85								616
90								611
95								606

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽	09/15/2025		Not measured
END OF DRILLING	▼			
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-04 *Sheet 1 of 3*
DATE DRILLED: 09/17/2025	**ELEVATION:** 703 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC / A. Unverzagt	**BORING DEPTH:** 89.0 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.855268 **LONGITUDE:** -81.901205
SAMPLING METHOD: UD, SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢PL---LL; 20 40 60 80 100)	ELEVATION
0					BOTTOM ASH: POORLY GRADED SAND WITH GRAVEL (SP), trace silt, loose to medium dense, trace debris, red slag fragments sized fine to coarse gravel, wet.			703
5				S-01 (18 in)		8-13-16 N = 29		698
10				S-02 (18 in)		11-13-16 N = 29		693
15				S-03 (18 in)		10-4-10 N = 14		688
20				S-04 (18 in)		15-14-10 N = 24		683
	20.5			S-05 (18 in)	Possible Fill: SILTY SAND (SM), loose to medium dense, bluish gray, moist.	7-6-7 N = 13		
25				S-06 (18 in)		3-4-5 N = 9		678
				S-07 (18 in)		4-5-6 N = 11		
30				S-08 (18 in)		3-4-3 N = 7		673
	30.5 PPV = 2.0-2.5				SILTY CLAY (CL-ML), very soft to soft, blueish gray with some black spots, moist.			

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/18/2025	40.0	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-04 *Sheet 2 of 3*
DATE DRILLED: 09/17/2025	**ELEVATION:** 703 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC / A. Unverzagt	**BORING DEPTH:** 89.0 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.855268 **LONGITUDE:** -81.901205
SAMPLING METHOD: UD, SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (SPT ● / % Fines △ / NMC ○ / PL---LL ⊢, 20 40 60 80 100)	ELEVATION
35	PPV = 1.5-2.0 Downfeed 250psi			S-09 (18 in) S-10 REC-0%	SILTY CLAY (CL-ML), very soft to soft, blueish gray with some black spots, moist.	1-1-2 N = 3		668
	35.5 PPV = 2.0-2.5			S-11 (18 in)	LEAN CLAY (CL), trace fine to medium sand, very soft to very-stiff, bluish gray, moist.	1-1-1 N = 2		
40	Downfeed 100psi			S-12 REC-50%				663
45	PPV = 2.0-3.0			S-13 (18 in)		0-0-4 N = 4		658
	47.5				SILTY SAND WITH GRAVEL (SM), medium dense, gray, wet.			
50				S-14 (18 in)		11-10-10 N = 20		653
55				S-15 (18 in)		8-6-7 N = 13		648
	57.5				WELL GRADED GRAVEL WITH SAND (GW), trace silt, medium dense to dense, gray, wet.			
60				S-16 (18 in)		15-13-11 N = 24		643

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/18/2025	40.0	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-04 *Sheet 3 of 3*
DATE DRILLED: 09/17/2025	**ELEVATION:** 703 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC / A. Unverzagt	**BORING DEPTH:** 89.0 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.855268 **LONGITUDE:** -81.901205
SAMPLING METHOD: UD, SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
65				S-17 (12 in)	WELL GRADED GRAVEL WITH SAND (GW), trace silt, medium dense to dense, gray, wet.	16-14-14 N = 28		638
	68.6			S-18 (1 in)	SANDSTONE, gray, highly weathered, strong-very strong, equiangular. Occasional black veins, increasing with depth.	50/1" N = 50/1"		
70				NQ-1 REC-92% RQD-40%				633
75				NQ-2 REC-94% RQD-0%				628
80				NQ-3 REC-96% RQD-26%				623
85				NQ-4 REC-96% RQD-22%				618
	89.0				Borehole terminated at 89.0 feet			
90								613
95								608

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/18/2025	40.0	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-05 *Sheet 1 of 2*
DATE DRILLED: 09/16/2025	**ELEVATION:** 705 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC / A. Unverzagt	**BORING DEPTH:** 47.4 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.856160 **LONGITUDE:** -81.901060
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
0					BOTTOM ASH: POORLY GRADED SAND WITH GRAVEL (SP), trace silt, loose to medium dense, trace debris, red slag fragments sized fine to coarse gravel, wet.			705
				S-01 (18 in)		4-11-21 N = 32		
5								700
	8.0							
	PPV = 2.5-3.0			S-02 (18 in)	FLY ASH: ELASTIC SILT (MH), trace fine to coarse sand, very stiff, dark gray, damp.	9-10-12 N = 22		
10								695
	12.0							
				S-03 (6 in)	BOTTOM ASH: POORLY GRADED SAND WITH GRAVEL (SP), trace silt, loose to medium dense, trace debris, red slag fragments sized fine to coarse gravel, wet.	2-2-2 N = 4		
15								690
	18.0							
	PPV = 1.5-2.0			S-04 (12 in)	Possible Fill: SILTY SAND (SM), trace fine gravel, soft, brown, damp.	2-1-2 N = 3		
20								685
	PPV = 1.5-2.0			S-05 (18 in)		5-28-25 N = 53		
25								680
	PPV = 2.0-3.0			S-06 (12 in)		7-11-12 N = 23		
30	30.5				SILTY SAND (SM), trace fine gravel, medium dense, brown, moist. Contains few cobbles.			675
	PPV = 2.5-3.0							

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/17/2025	45.0	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-05 *Sheet 2 of 2*
DATE DRILLED: 09/16/2025	**ELEVATION:** 705 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC / A. Unverzagt	**BORING DEPTH:** 47.4 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.856160 **LONGITUDE:** -81.901060
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (SPT ● / % Fines △ / NMC ○ / PL---LL ⊢, 20 40 60 80 100)	ELEVATION
35				S-07 (18 in)	SILTY SAND (SM), trace fine gravel, medium dense, brown, moist. Contains few cobbles.	5-6-9 N = 15		670
				(0 in)		8-5-9 N = 14		
				S-08 (6 in)		16 N = 16		
				S-09 (6 in)		3-7-2 N = 9		
	38.0				POORLY GRADED SAND WITH GRAVEL (SP), trace silt, medium dense, gray, moist. Contains several cobbles.			
40				S-10 (7 in)		19-11-6 N = 17		665
				S-11 (6 in)		9-3-5 N = 8		
	43.0				WELL GRADED GRAVEL WITH SILT AND SAND (GW-GM), medium dense, brown gray and black, wet.			
45	▽			S-12 (6 in)		4-4-5 N = 9		660
	46.7			S-13 (17 in)	POORLY GRADED SAND (SP), trace fine gravel, trace silt, medium dense to dense, bluish gray, wet.	6-10-50/5" N = 50/5"		
	47.1				SANDSTONE, gray/blue, highly weathered, equiangular.			
50	47.4				Borehole terminated at 47.4 feet			655
55								650
60								645

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/17/2025	45.0	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-06 *Sheet 1 of 2*
DATE DRILLED: 09/16/2025	**ELEVATION:** 694 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC / A. Archer	**BORING DEPTH:** 53.6 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** W. Babiy	**LATITUDE:** 39.856582 **LONGITUDE:** -81.901022
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
0					BOTTOM ASH: POORLY GRADED SAND WITH GRAVEL (SP), trace silt, loose to medium dense, trace debris, red slag fragments sized fine to coarse gravel, wet.			694
5				S-01 (12 in)		6-8-14 N = 22		689
10	10.0			S-02 (18 in)		6-14-12 N = 26		684
					BOTTOM ASH WITH OTHER FILL: SILTY, CLAYEY SAND WITH GRAVEL (SC-SM), medium dense, trace debris, red slag fragments sized fine to coarse gravel, wet.			
15				S-03 (12 in)		6-6-9 N = 15		679
20				S-04 (12 in)		11-14-21 N = 35		674
25				S-05 (12 in)		10-10-11 N = 21		669
	28.5							
30	PPV = 0.0			S-06 (18 in)	FLY ASH: ELASTIC SILT (MH), firm, dark gray, moist.	25-27-31 N = 58		664

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽	09/16/2025		Not measured
END OF DRILLING	▼			
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-06 *Sheet 2 of 2*
DATE DRILLED: 09/16/2025	**ELEVATION:** 694 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC / A. Archer	**BORING DEPTH:** 53.6 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** W. Babiy	**LATITUDE:** 39.856582 **LONGITUDE:** -81.901022
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
					FLY ASH: ELASTIC SILT (MH), firm, dark gray, moist.			
33.5	PPV = 0.5-1.0			S-07 (18 in)	FILL: SANDY LEAN CLAY (CL), trace fine gravel, loose to dense, dark gray, moist. Organic odor present. Occasional lenses of clay. Contains few wood fragments and sandstone fragments.	2-2-5 N = 7		
35								659
				S-08 (14 in)		19-28-11 N = 39		
40								654
				S-09 (8 in)		8-6-10 N = 16		
44.5					SANDSTONE, gray, slightly weathered, equiangular.			
45								649
				S-10 (2 in)		50/2" N = 50/2"		
50								644
53.6				S-11 (1 in)	Borehole terminated at 53.6 feet	50/1" N = 50/1"		
55								639
60								634

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽	09/16/2025		Not measured
END OF DRILLING	▼			
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

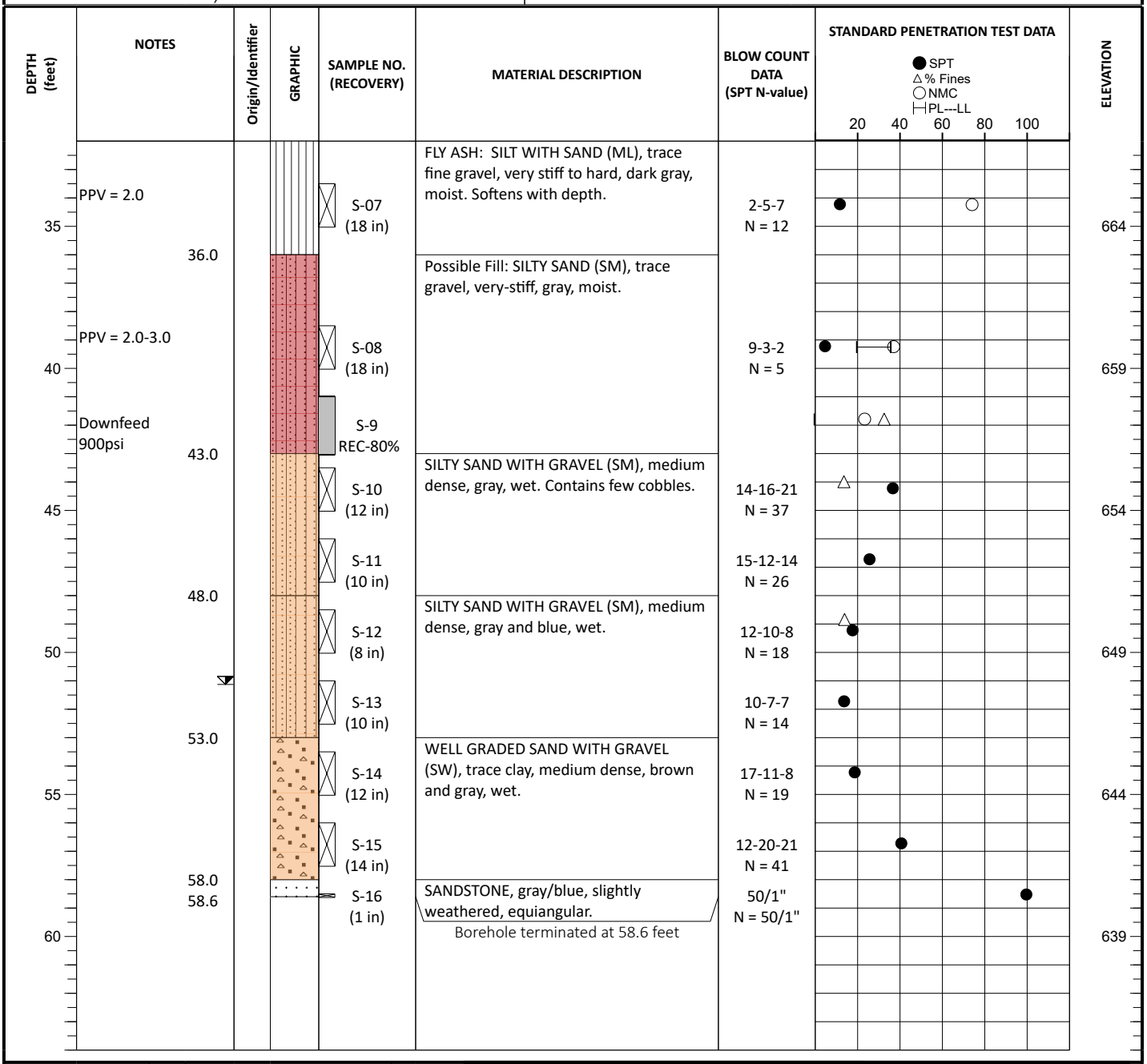
PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-07 *Sheet 1 of 2*
DATE DRILLED: 09/23/2025	**ELEVATION:** 699 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC / A. Unverzagt	**BORING DEPTH:** 58.6 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.857788 **LONGITUDE:** -81.901299
SAMPLING METHOD: UD, SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (SPT ● / % Fines △ / NMC ○ / PL---LL ⊢)	ELEVATION
0					BOTTOM ASH: SILTY SAND WITH GRAVEL (SM), loose to medium dense, trace debris, red slag fragments sized fine to coarse gravel, wet.		20 40 60 80 100	699
5				S-01 (18 in)		3-5-25 N = 30		694
10				S-02 (12 in)		10-9-8 N = 17		689
15				S-03 (12 in)		7-11-16 N = 27		684
20				S-04 (12 in)		18-13-16 N = 29		679
	22.0				FLY ASH: SILT WITH SAND (ML), trace fine gravel, very stiff to hard, dark gray, moist. Softens with depth.			
25	PPV = 3.0-4.0			S-05 (18 in)		11-32-45 N = 77		674
30	PPV = 2.0-2.5			S-06 (18 in)		10-10-10 N = 20		669

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/24/2025	51.0	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-07 *Sheet 2 of 2*
DATE DRILLED: 09/23/2025	**ELEVATION:** 699 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC / A. Unverzagt	**BORING DEPTH:** 58.6 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.857788 **LONGITUDE:** -81.901299
SAMPLING METHOD: UD, SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	



GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/24/2025	51.0	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-08 *Sheet 1 of 3*
DATE DRILLED: 09/23/2025	**ELEVATION:** 690 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC / A. Unverzagt	**BORING DEPTH:** 73.9 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.858593 **LONGITUDE:** -81.901755
SAMPLING METHOD: UD, SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (SPT ● / % Fines △ / NMC ○ / PL---LL ⊢, 20 40 60 80 100)	ELEVATION
0					BOTTOM ASH: POORLY GRADED SAND WITH GRAVEL (SP), trace silt, loose to medium dense, trace debris, red slag fragments sized fine to coarse gravel, wet.			690
				S-01 (18 in)		2-2-3 N = 5		
5								685
				S-02 (6 in)		2-2-1 N = 3		
10								680
13.0					FLY ASH: SILT (ML), very soft, dark gray, moist to wet.			
	PPV = 1.5-2.5			S-03 (18 in)		2-0-0 N = WOH		
15								675
17.0					Possible Fill: POORLY GRADED SAND (SP), loose, brown, damp.			
				S-04 (12 in)		4-3-3 N = 6		
20								670
20.0					Possible Fill: SILTY SAND (SM), very loose, gray, moist to wet.			
				S-05 (18 in)		0-0-0 N = WOH		
25								665
	Downfeed 200psi			S-6 REC-60%	SILTY SAND (SM), trace fine gravel, medium dense, brown mottled with gray, moist to wet. Contains some cobbles.			
28.0								
				S-07 (18 in)	POORLY GRADED SAND WITH SILT (SP-SM), little fine gravel, medium dense, brown mottled with gray, moist to wet. Contains some cobbles.	5-7-11 N = 18		
30								660
31.0								

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/24/2025	35.0	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

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LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-08 *Sheet 2 of 3*
DATE DRILLED: 09/23/2025	**ELEVATION:** 690 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC / A. Unverzagt	**BORING DEPTH:** 73.9 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.858593 **LONGITUDE:** -81.901755
SAMPLING METHOD: UD, SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
				S-08 (18 in)	POORLY GRADED SAND WITH SILT (SP-SM), little fine gravel, medium dense, brown mottled with gray, moist to wet. Contains some cobbles.	9-8-6 N = 14		
				S-09 (8 in)		11-23-26 N = 49		
35	35.5 ▽							655
				S-10 (7 in)	WELL GRADED GRAVEL WITH SAND (GW), dense, brown and gray, wet.	21-14-10 N = 24		
	38.0							
				S-11 (6 in)	WELL GRADED SAND WITH SILT (SW-SM), little fine gravel, dense, brown and gray, wet.	12-12-10 N = 22		
40								650
				S-12 (6 in)		15-15-15 N = 30		
				S-13 (18 in)		12-12-14 N = 26	△	
45								645
	49.0			S-14 (18 in)	WELL GRADED SAND WITH GRAVEL (SW), trace clay, dense, gray, wet.	11-12-13 N = 25		
50								640
				S-15 (18 in)		10-16-21 N = 37		
55								635
				S-16 (12 in)		13-12-11 N = 23		
60								630

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/24/2025	35.0	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-08 *Sheet 3 of 3*
DATE DRILLED: 09/23/2025	**ELEVATION:** 690 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC / A. Unverzagt	**BORING DEPTH:** 73.9 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.858593 **LONGITUDE:** -81.901755
SAMPLING METHOD: UD, SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
65				S-17 (12 in)	WELL GRADED SAND WITH GRAVEL (SW), trace clay, dense, gray, wet.	18-18-20 N = 38		625
70				S-18 (12 in)		12-10-18 N = 28		620
75	73.5 73.9			S-19 (5 in)	SANDSTONE, gray/blue, slightly weathered, equiangular. Borehole terminated at 73.9 feet	50/5" N = 50/5"		615
80								610
85								605
90								600
95								595

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/24/2025	35.0	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-09 *Sheet 1 of 3*
DATE DRILLED: 09/24/2025	**ELEVATION:** 702 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC/A. Unverzgat	**BORING DEPTH:** 88.9 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.861630 **LONGITUDE:** -81.902144
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
0					BOTTOM ASH: WELL GRADED SAND WITH SILT AND GRAVEL (SP-SM), loose to medium dense, trace debris, red slag fragments sized fine to coarse gravel, wet			702
				S-01 (18 in)		7-6-7 N = 13		
5								697
				S-02 (12 in)		13-10-8 N = 18		
10								692
				S-03 (18 in)		3-3-3 N = 6		
15								687
	18.0			S-04 (12 in)	FILL: SILTY SAND (SM), brown, loose, damp to moist	4-3-3 N = 6		
20								682
	22.0			S-05 (18 in)	Possible Fill: SANDY SILT (ML), brown, soft, damp to moist (increase sand content with depth)	2-3-2 N = 5		
25	PPV = 1.5-2.0			S-06 (18 in)		0-3-2 N = 5		677
	28.0			S-07 (18 in)	Possible Fill: POORLY GRADED SAND (SP), loose, brown, damp to moist.	3-5-10 N = 15		
30	30.5				POORLY GRADED SAND (SP), trace fine to coarse gravel, loose, brown, damp to moist. Contains some cobbles.			672

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/25/2025	36.0	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-09 *Sheet 2 of 3*
DATE DRILLED: 09/24/2025	**ELEVATION:** 702 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC/A. Unverzgat	**BORING DEPTH:** 88.9 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.861630 **LONGITUDE:** -81.902144
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (SPT ● / % Fines △ / NMC ○ / PL---LL ⊢, 20 40 60 80 100)	ELEVATION
				S-08 (12 in)	POORLY GRADED SAND (SP), trace fine to coarse gravel, loose, brown, damp to moist. Contains some cobbles.	11-10-9 N = 19		
				S-09 (8 in)		13-20-22 N = 42		
35								667
				S-10 (18 in)		14-10-8 N = 18		
				(0 in)		6-4-3 N = 7		
40	40.0			(0 in)	WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), brown, loose, wet			662
				S-11 (6 in)		5 N = 5		
				S-12 (6 in)	(contains cobbles)	5-4-5 N = 9		
				S-13 (12 in)		5-7-9 N = 16		
45								657
	47.5				POORLY GRADED SAND (SP), some gravel, brown, loose, wet			
				S-14 (6 in)		6-7-6 N = 13		
50								652
				S-15 (18 in)		13-14-14 N = 28		
55								647
				S-16 (8 in)		12-10-12 N = 22		
60								642
	62.5				WELL GRADED SAND WITH GRAVEL (SW), brown, loose, wet			
					(becomes gray at 80.0 ft.)			

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/25/2025	36.0	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-09 *Sheet 3 of 3*
DATE DRILLED: 09/24/2025	**ELEVATION:** 702 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC/A. Unverzgat	**BORING DEPTH:** 88.9 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.861630 **LONGITUDE:** -81.902144
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
65				S-17 (12 in)	WELL GRADED SAND WITH GRAVEL (SW), brown, loose, wet (becomes gray at 80.0 ft.)	9-10-14 N = 24		637
70				S-18 (12 in)		13-11-11 N = 22		632
75				S-19 (18 in)		14-17-21 N = 38		627
80				S-20 (18 in)		18-17-16 N = 33		622
85				S-21 (13 in)		12-12-18 N = 30		617
90	88.5 88.9			S-22 (5 in)	SANDSTONE, gray/blue, slightly weathered, equiangular. Borehole terminated at 88.9 feet	50/5" N = 50/5"		612
95								607

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/25/2025	36.0	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-10 *Sheet 1 of 3*

DATE DRILLED: 09/29/2025	**ELEVATION:** 702 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC/ A. Chang	**BORING DEPTH:** 89.1 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.862281 **LONGITUDE:** -81.902067
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
0				S-01 (18 in)	BOTTOM ASH: POORLY GRADED SAND WITH GRAVEL (SP), trace silt, loose to dense, trace debris, red slag fragments fine to coarse gravel in size	7-14-7 N = 21		702
5								697
10				S-02 (11 in)		44-50/5" N = 50/5"		692
15				S-03 (18 in)		3-2-1 N = 3		687
17.5								
20	PPV = 2.0			S-04 (12 in)	Possible Fill: LEAN CLAY WITH SAND (CL), trace fine gravel, brown, soft, damp to moist (increase in sand content with depth)	4-3-4 N = 7		682
25	PPV = 2.5-3.0			S-05 (18 in)		2-1-4 N = 5		677
				S-06 (6 in)		6-14-25 N = 39		
28.0								
30				(0 in) (0 in) S-07 (6 in)	POORLY GRADED SAND WITH GRAVEL (SP), traces silt, trace clay, brown, loose to dense, wet	9-11-12 N = 23 9 N = 9		672

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/30/2025	34.0	After removal of tools, prior to cementing borehole. Borehole caved at 39 ft.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-10 *Sheet 2 of 3*
DATE DRILLED: 09/29/2025	**ELEVATION:** 702 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC/ A. Chang	**BORING DEPTH:** 89.1 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.862281 **LONGITUDE:** -81.902067
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
				S-08 (18 in)	POORLY GRADED SAND WITH GRAVEL (SP), traces silt, trace clay, brown, loose to dense, wet	12-15-27 N = 42		
33.0				S-09 (18 in)	WELL GRADED SAND WITH SILT (SW-SM), trace fine gravel, brown, loose, wet	8-5-6 N = 11		
35								667
37.5	Hole caved at 39.0 feet			S-10 (10 in)	POORLY GRADED SAND (SP), trace fine gravel, gray, medium dense, wet	9-8-10 N = 18		
40								662
				S-11 (12 in)		10-11-9 N = 20		
45								657
47.5				S-12 (10 in)	WELL GRADED SAND (SW), trace fine gravel, gray, medium dense, wet	12-9-10 N = 19		
50								652
				S-13 (18 in)		18-20-21 N = 41		
55								647
				S-14 (13 in)		12-9-11 N = 20		
60								642

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/30/2025	34.0	After removal of tools, prior to cementing borehole. Borehole caved at 39 ft.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-10 *Sheet 3 of 3*
DATE DRILLED: 09/29/2025	**ELEVATION:** 702 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC/ A. Chang	**BORING DEPTH:** 89.1 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.862281 **LONGITUDE:** -81.902067
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
65				S-15 (18 in)	WELL GRADED SAND (SW), trace fine gravel, gray, medium dense, wet	12-12-10 N = 22		637
	67.5				WELL GRADED SAND WITH GRAVEL (SW), gray, medium dense, wet			
70				S-16 (18 in)		13-13-18 N = 31		632
75				S-17 (18 in)		24-24-25 N = 49		627
80				S-18 (16 in)		20-19-18 N = 37		622
85				S-19 (18 in)		19-16-17 N = 33		617
90	88.5 89.1			S-20 (7 in)	SANDSTONE, gray/blue, slightly weathered, equiangular. Borehole terminated at 89.1 feet	16-50/1" N = 50/1"		612
95								607

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/30/2025	34.0	After removal of tools, prior to cementing borehole. Borehole caved at 39 ft.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-11 *Sheet 1 of 2*
DATE DRILLED: 09/30/2025	**ELEVATION:** 701 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC/ A. Chang	**BORING DEPTH:** 53.7 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.863190 **LONGITUDE:** -81.901954
SAMPLING METHOD: UD, SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
0					BOTTOM ASH: SILTY SAND WITH GRAVEL (SM), loose to medium dense, trace debris, contains red slag fragments fine to coarse gravel in size			701
				S-01 (18 in)		7-6-5 N = 11		
5								696
				S-02 (12 in)		6-5-4 N = 9		
10								691
				S-03 (18 in)		3-3-3 N = 6		
15								686
				S-04 (16 in)		2-2-2 N = 4		
20								681
				S-05 (18 in)		2-2-2 N = 4		
25								676
	27.5				Possible Fill: POORLY GRADED SAND (SP), trace silt, brown, loose, moist to damp			
				S-06 (18 in)		3-3-4 N = 7		
30	30.5				Possible Fill: LEAN CLAY WITH SAND (CL), trace fine gravel, brown, soft, damp to moist			671
	PPV = 2.0-2.5							

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/30/2025	40.0	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-11 *Sheet 2 of 2*
DATE DRILLED: 09/30/2025	**ELEVATION:** 701 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC/ A. Chang	**BORING DEPTH:** 53.7 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.863190 **LONGITUDE:** -81.901954
SAMPLING METHOD: UD, SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
				S-07 (18 in)	Possible Fill: LEAN CLAY WITH SAND (CL), trace fine gravel, brown, soft, damp to moist	3-2-2 N = 4		
	PPV = 1.0-2.0			S-08 (18 in)		2-1-1 N = 2		
35	Downfeed 200psi			S-09 REC-100%				666
	PPV = 2.0-3.0			S-10 (18 in)		3-4-4 N = 8		
40	40.5			S-11 (13 in)	WELL GRADED SAND WITH GRAVEL (SW), trace clay, brown, medium dense, wet	18-14-13 N = 27		661
	43.0			S-12 (18 in)	WELL GRADED SAND WITH GRAVEL (SW), gray, medium dense, wet (encountered cobbles)	17-8-7 N = 15		
45	45.5			S-13 (14 in)	WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), gray, medium dense, wet	8-9-10 N = 19		656
				S-14 (12 in)		12-10-12 N = 22		
50								651
	53.5			S-15 (2 in)	SANDSTONE, gray/blue, slightly weathered, equiangular.	50/2" N = 50/2"		
55	53.7				Borehole terminated at 53.7 feet			646
60								641

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	09/30/2025	40.0	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-12 *Sheet 1 of 3*
DATE DRILLED: 10/01/2025	**ELEVATION:** 703 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC/ A. Chang	**BORING DEPTH:** 88.2 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.862040 **LONGITUDE:** -81.902814
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
0					BOTTOM ASH: POORLY GRADED SAND WITH GRAVEL (SP), trace silt, trace debris, black, loose to medium dense, red slag fragments fine to coarse gravel in size			703
				S-01 (18 in)		9-11-18 N = 29		
5								698
				S-02 (18 in)		2-2-1 N = 3		
10								693
				S-03 (18 in)		7-6-6 N = 12		
15								688
	PPV = 1.5-2.0			S-04 (18 in)		5-4-5 N = 9		
20								683
	22.0				Possible Fill: SANDY SILT (ML), brown, soft, damp to moist			
	PPV = 2.0			S-05 (18 in)		2-2-2 N = 4		
25								678
				S-06 (18 in)		2-2-8 N = 10		
	28.0				WELL GRADED SAND WITH GRAVEL (SW), trace clay, brown and gray, medium dense, moist to wet			
				S-07 (18 in)		10-10-13 N = 23		
30					(encountered few cobbles)			673

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	10/01/2025	37.0	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-12 *Sheet 2 of 3*
DATE DRILLED: 10/01/2025	**ELEVATION:** 703 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC/ A. Chang	**BORING DEPTH:** 88.2 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.862040 **LONGITUDE:** -81.902814
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (SPT ● / % Fines △ / NMC ○ / PL---LL ⊢, 20 40 60 80 100)	ELEVATION
				S-08 (16 in)	WELL GRADED SAND WITH GRAVEL (SW), trace clay, brown and gray, medium dense, moist to wet	23-25-24 N = 49		
	33.0			S-09 (6 in)	(encountered few cobbles)	14-13-9 N = 22		
35	35.5 ▽			S-10 (12 in)	POORLY GRADED SAND WITH GRAVEL (SP), brown and gray, medium dense, contains sandstone fragments, wet	6-9-9 N = 18		668
				S-11 (8 in)	(encountered cobbles) WELL GRADED SAND WITH SILT (SW-SM), trace fine gravel, gray, medium dense, wet	8-7-7 N = 14		
40				S-12 (10 in)		11-9-9 N = 18		663
				S-13 (6 in)	(becomes brown at 47.5') (shale fragments present at 59.0')	11-8-8 N = 16		
45								658
				S-14 (18 in)		9-8-7 N = 15		
50								653
				S-15 (18 in)		16-10-12 N = 22		
55								648
				S-16 (18 in)		12-12-13 N = 25		
60								643

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	10/01/2025	37.0	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

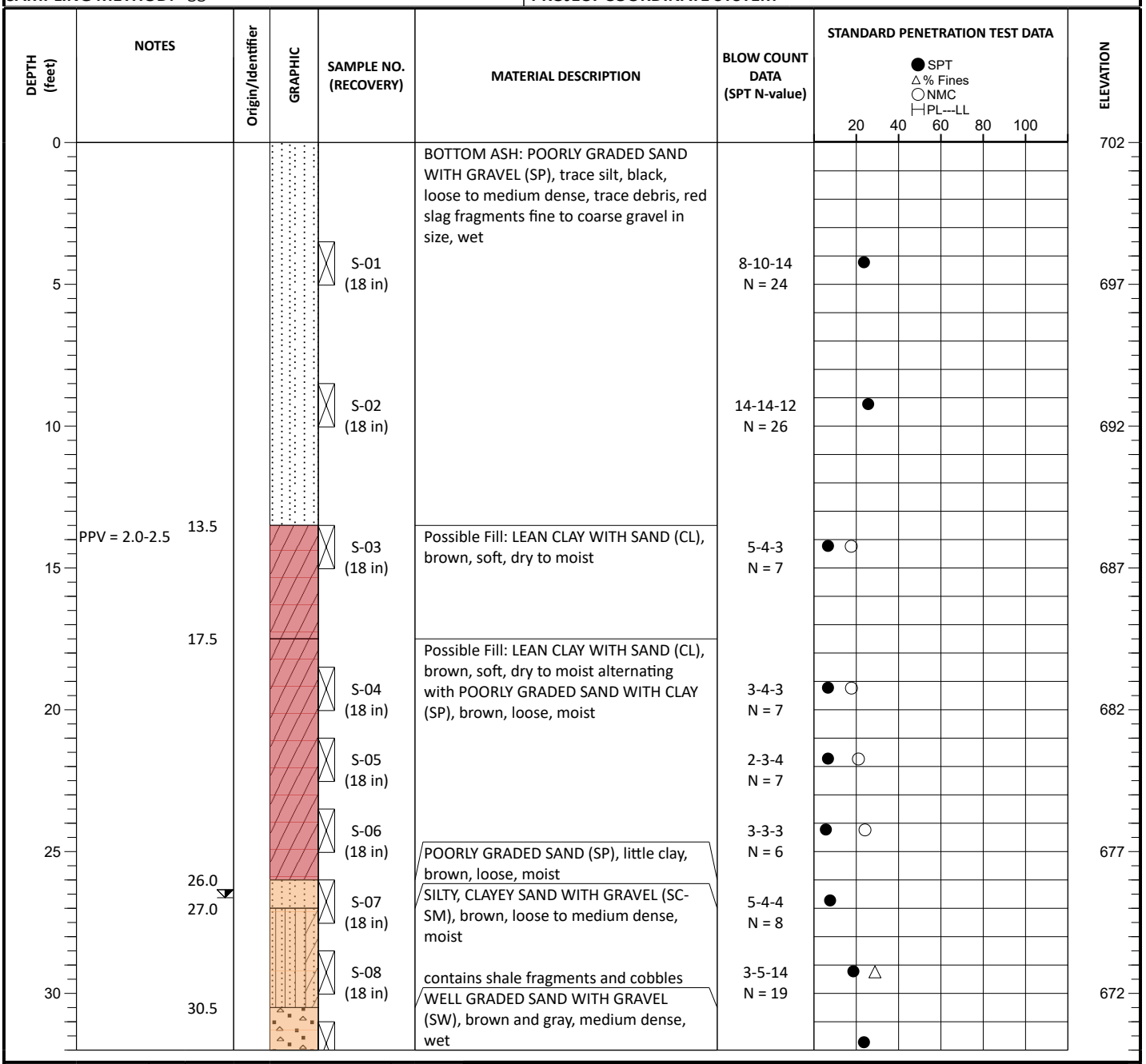
PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-12 *Sheet 3 of 3*
DATE DRILLED: 10/01/2025	**ELEVATION:** 703 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC/ A. Chang	**BORING DEPTH:** 88.2 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.862040 **LONGITUDE:** -81.902814
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
65				S-17 (18 in)	WELL GRADED SAND WITH SILT (SW-SM), trace fine gravel, gray, medium dense, wet	11-12-18 N = 30		638
					(becomes brown at 47.5')			
					(shale fragments present at 59.0')			
70				S-18 (6 in)		11-13-17 N = 30		633
	71.5				WELL GRADED SAND (SW), gray, medium dense, wet			
75				S-19 (18 in)		16-12-15 N = 27		628
80				S-20 (18 in)		14-13-10 N = 23		623
85				S-21 (18 in)		14-12-12 N = 24		618
	88.0 88.2			S-21 (1 in)	SHALE, gray, moderately weathered, friable, contains some clay. Borehole terminated at 88.2 feet	50/1" N = 50/1"		
90								613
95								608

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	10/01/2025	37.0	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-13 *Sheet 1 of 3*
DATE DRILLED: 10/01/2025	**ELEVATION:** 702 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC/ A. Chang	**BORING DEPTH:** 87.6 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.862634 **LONGITUDE:** -81.903159
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	



GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	10/02/2025	26.5	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-13 *Sheet 2 of 3*
DATE DRILLED: 10/01/2025	**ELEVATION:** 702 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC/ A. Chang	**BORING DEPTH:** 87.6 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.862634 **LONGITUDE:** -81.903159
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
				S-09 (12 in)	WELL GRADED SAND WITH GRAVEL (SW), brown and gray, medium dense, wet	14-10-14 N = 24		
	33.0			S-10 (12 in)	WELL GRADED GRAVEL WITH SAND (GW), trace clay, brown and gray, medium dense, wet	8-14-9 N = 23		
35				S-11 (12 in)		12-10-12 N = 22		667
	38.0			S-12 (10 in)	POORLY GRADED SAND WITH GRAVEL (SP), brown and gray, loose to medium dense, wet	7-7-7 N = 14		
40								662
				S-13 (16 in)		11-8-9 N = 17		
45								657
				S-14 (18 in)		12-9-9 N = 18		
50								652
				S-15 (18 in)		10-8-9 N = 17		
55								647
	57.5				WELL GRADED SAND WITH GRAVEL (SW), gray, loosed to medium dense, wet			
				S-16 (18 in)		7-7-7 N = 14		
60								642

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	10/02/2025	26.5	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

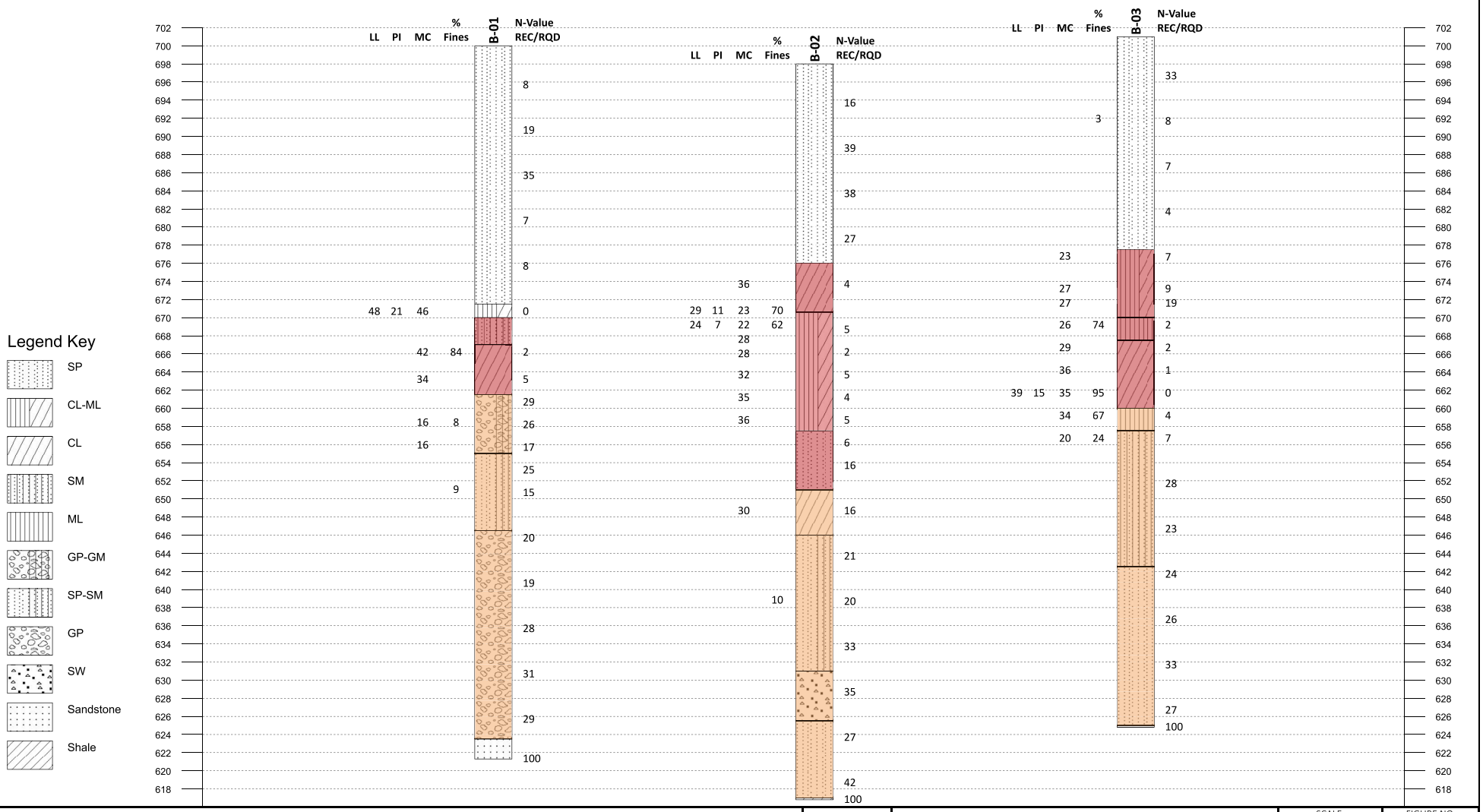
GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial

PROJECT:	Philo Plant Legacy CCR Impoundments Philo, OH S&ME Project No. 25170079	BORING LOG: B-13 *Sheet 3 of 3*
DATE DRILLED: 10/01/2025	**ELEVATION:** 702 ft	**NOTES:** Elevation estimated from Google Earth.
DRILL RIG: B-57 (Track)	**DATUM:** NAVD88	
DRILLER: ADC/ A. Chang	**BORING DEPTH:** 87.6 ft	
HAMMER TYPE: Auto Hammer (140 lb)	**CLOSURE:** Cement-Bentonite Grout (Tremie)	
DRILLING METHOD: Mud Rotary	**LOGGED BY:** A. Hall	**LATITUDE:** 39.862634 **LONGITUDE:** -81.903159
SAMPLING METHOD: SS	**PROJECT COORDINATE SYSTEM -** NAD 1983 StatePlane Ohio South FIPS 3402 Feet	

DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO. (RECOVERY)	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD PENETRATION TEST DATA (● SPT, △ % Fines, ○ NMC, ⊢ PL---LL; 20 40 60 80 100)	ELEVATION
65				S-17 (14 in)	WELL GRADED SAND WITH GRAVEL (SW), gray, loosed to medium dense, wet	12-11-8 N = 19		637
70				S-18 (18 in)		14-14-15 N = 29		632
75				S-19 (18 in)		13-13-11 N = 24		627
80				S-20 (18 in)		14-10-12 N = 22		622
85				S-21 (18 in)		9-24-14 N = 38		617
90	87.4 87.6			S-22 (2 in)	SHALE, gray/blue, highly weathered. Sample is shale frags contained within stiff clay matrix. Borehole terminated at 87.6 feet	50/2" N = 50/2"		612
95								607

GROUNDWATER		DATE	DEPTH (FT)	REMARKS
ATD	▽			
END OF DRILLING	▼	10/02/2025	26.5	After removal of tools, prior to cementing borehole.
AFTER DRILLING	▼			
AFTER DRILLING	▼			

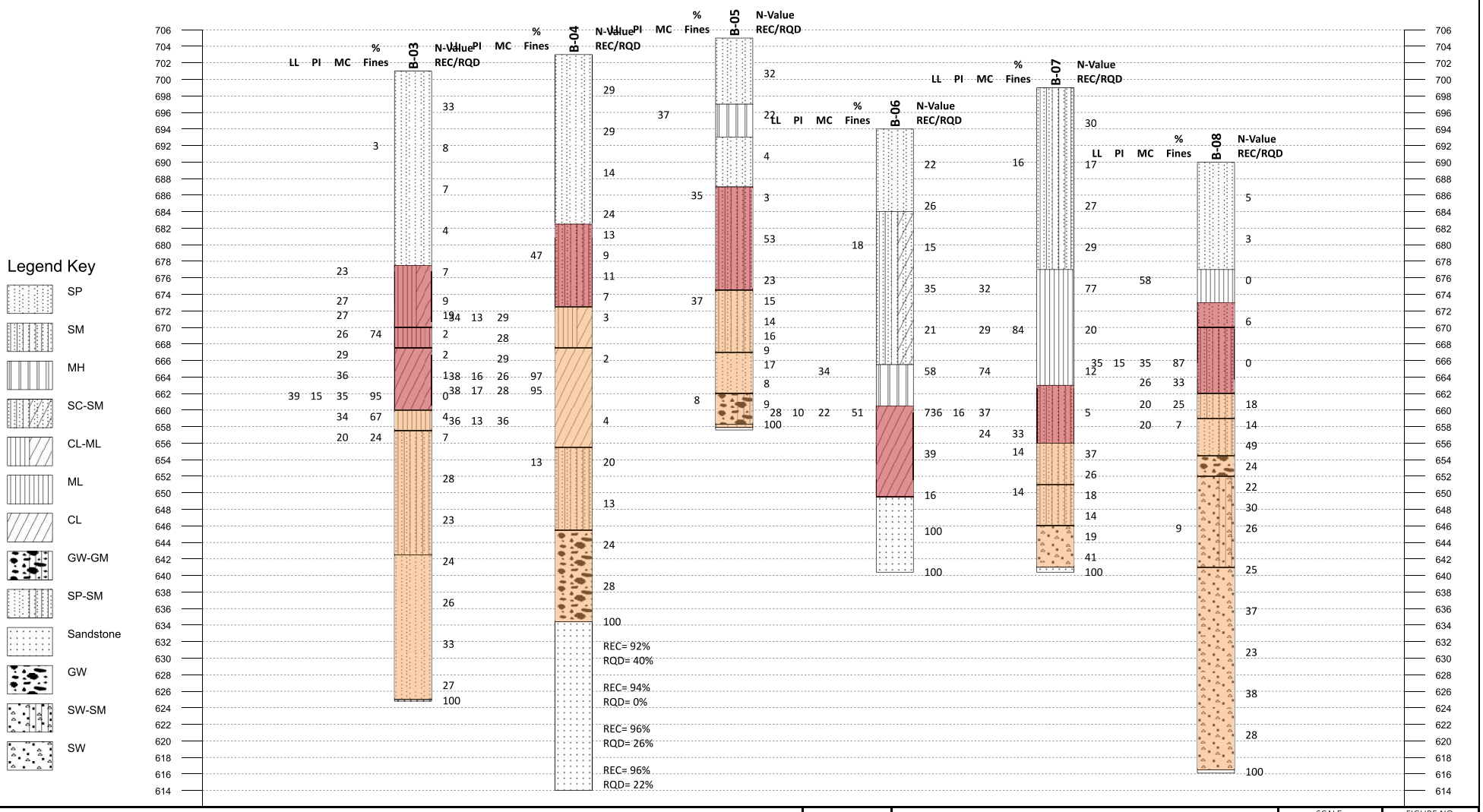
GROUNDWATER DEPTHS ARE NOT EXACT AND MAY VARY SUBSTANTIALLY FROM THOSE INDICATED. ATD = AT TIME OF DRILLING
LL=Liquid Limit, PL = Plastic Limit, NMC = Natural Moisture Content, PPV = Pocket Penetrometer (tsf), PTV = Pocket Torvane (tsf), AR = Auger Refusal, IGM = Intermediate Geomaterial



Subsurface Profile - Borings B-01 to B-03

Philo Plant Legacy CCR Impoundments
Philo, OH

SCALE:	Not to scale
DATE:	Jan 20, 2026
PROJECT NUMBER:	25170079
FIGURE NO.	1

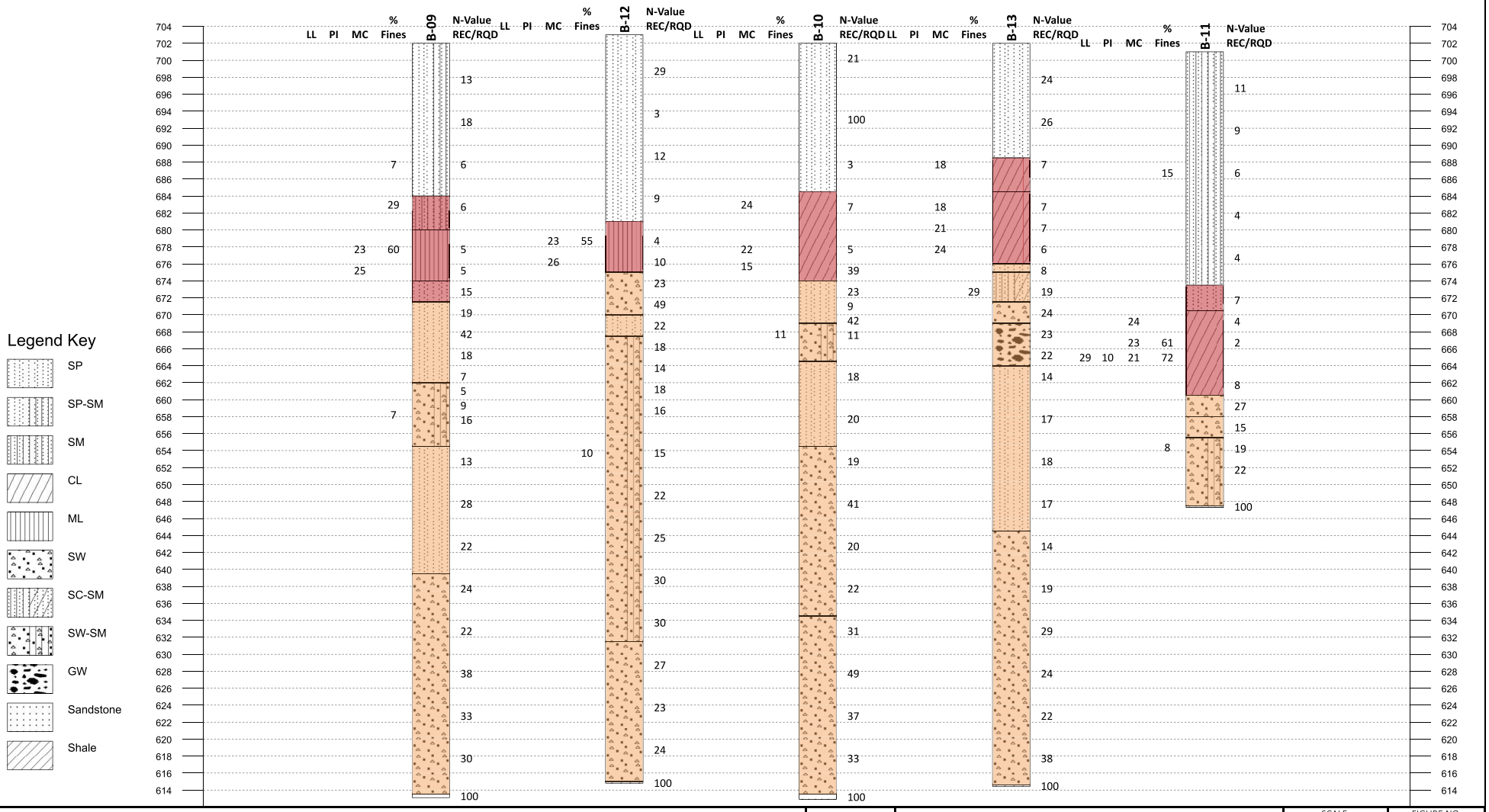


Subsurface Profile - Borings B-03 to B-08

Philo Plant Legacy CCR Impoundments
Philo, OH

SCALE: Not to scale
DATE: Jan 20, 2026
PROJECT NUMBER: 25170079

FIGURE NO. 2



Subsurface Profile - Borings B-09 to B-13

Philo Plant Legacy CCR Impoundments
Philo, OH

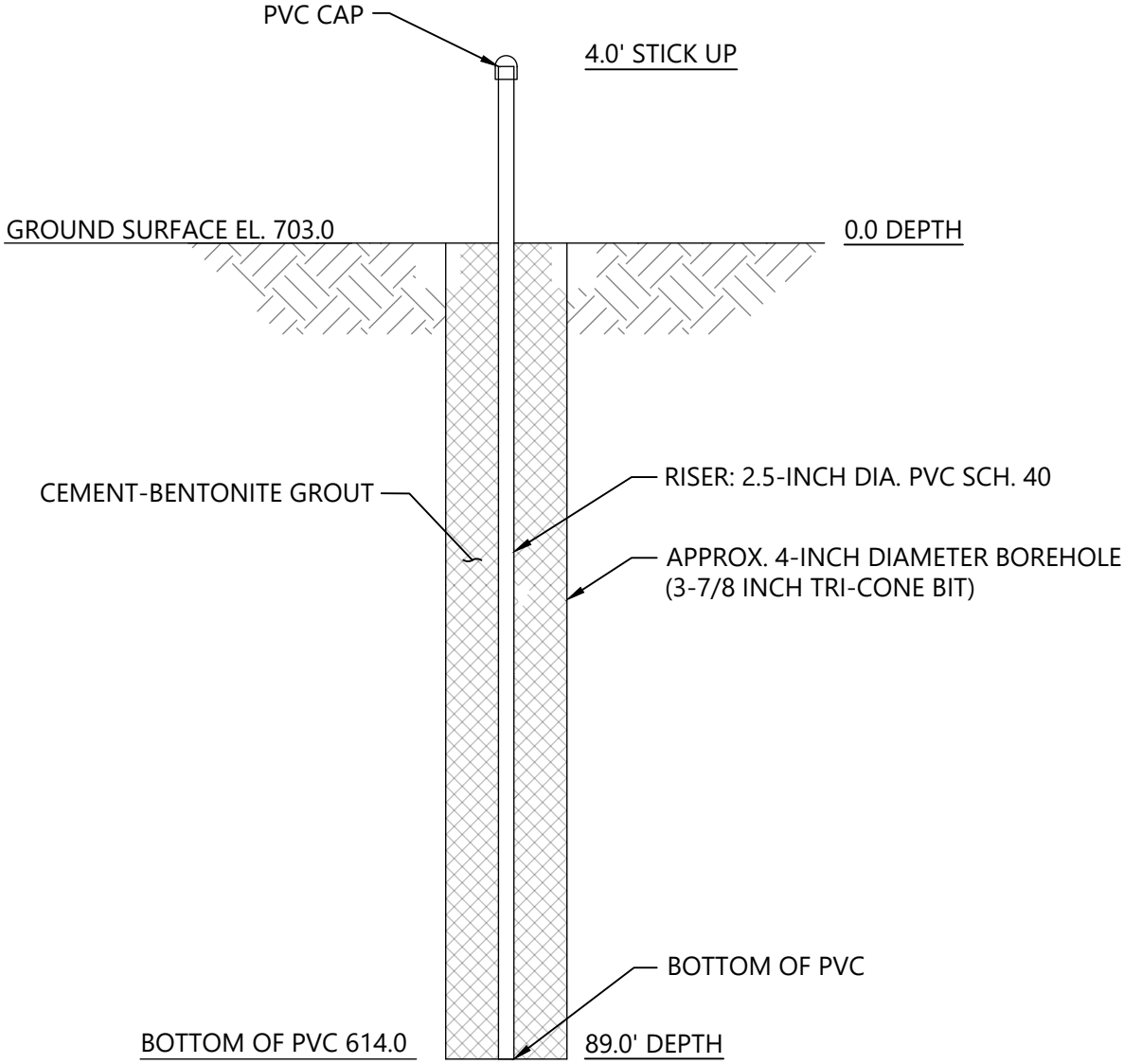
SCALE: Not to scale

DATE: Jan 20, 2026

PROJECT NUMBER: 25170079

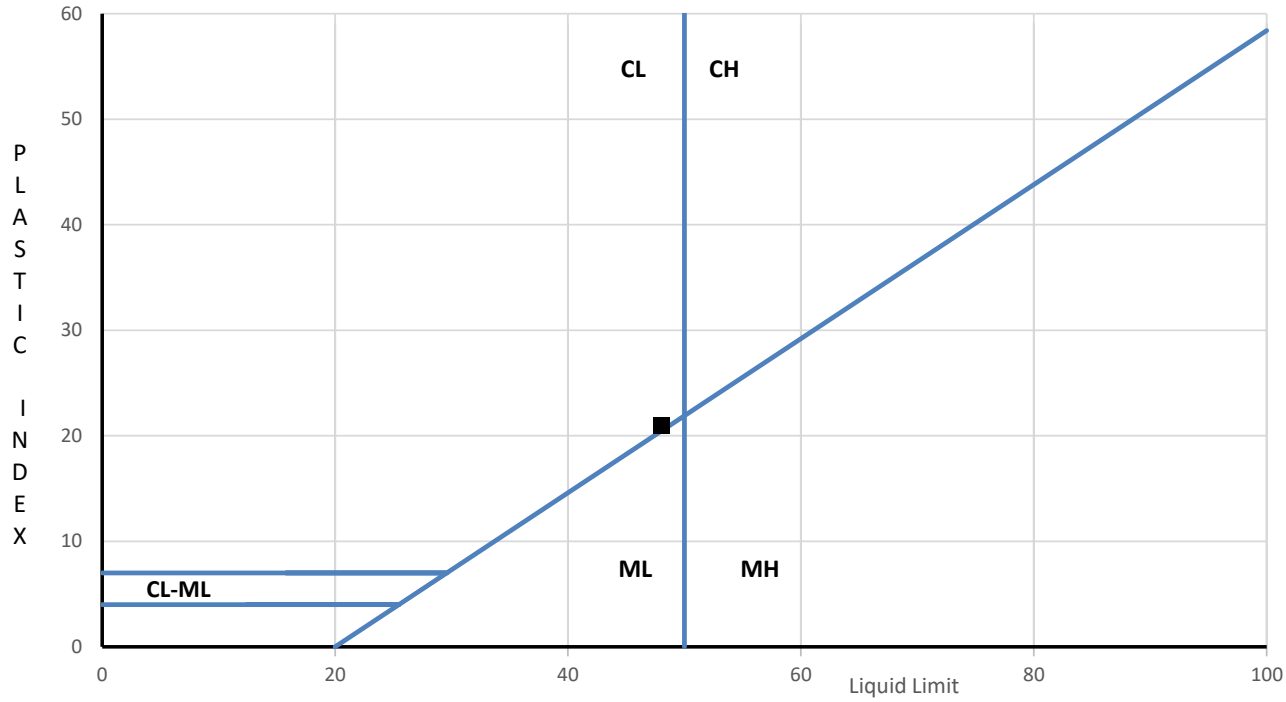
FIGURE NO. 3

INSTALL DATE: 09/17/2025
INSTALLER: A. UNVERZAGT
GEOPHYSICIST: A. GOSTIC
B-04A GEOPHYSICAL BORING



S&ME, Inc.	**GEOPHYSICAL TEST HOLE LOG - B-04A**	SCALE: NTS	FIGURE NO. 4
	PHILO PLANT LEGACY CCR IMPOUNDMENTS PHILO, OH	DATE: 01/23/2026 PROJECT NUMBER 25170079	

Appendix III – Laboratory Test Results

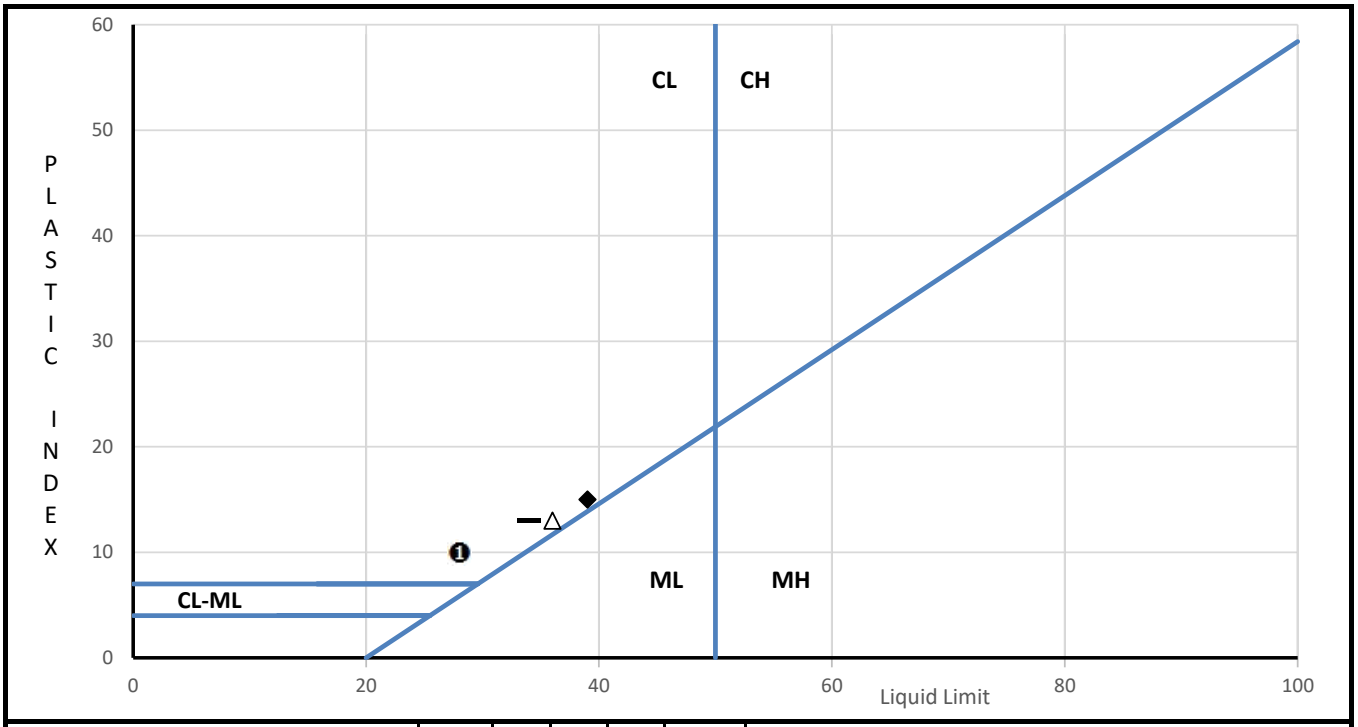


Specimen Identification				MC	LL	PL	PI	Fines	Classification (symbol is based on minus 40 material only when no grain size information is present.)	
	ID	No.	Top Depth						Symbol	Name
■	B-01	S-06	28.5	46.5	48	27	21		CL	
	B-01	S-08	33	42.4				83.8		
	B-01	S-09	36	34.1						
	B-01	S-11	41	15.8				8.4		
	B-01	S-12	43.5	15.9						
	B-01	S-14	48.5					8.9		
	B-02	S-05	23.5	36.1						
	B-02	S-07	28.5	27.7						
	B-02	S-08	31	27.8						
	B-02	S-09	33.5	32.3						
	B-02	S-10	36	34.8						
	B-02	S-11	38.5	35.7						
	B-02	S-14	48.5	30.0	NP	NP	NP			
	B-02	S-16	58.5					10.4		
	B-03	S-02	8.5					3.4		
	B-03	S-05	23.5	23.3						
	B-03	S-07	27	27.0						
	B-03	S-08	28.5	27.0						
	B-03	S-09	31	25.7	NP	NP	NP	74.1	ML	SILT WITH SAND
	B-03	S-10	33.5	29.2						

INDEX TEST RESULTS

Project Name	Philo Plant Legacy CCR Impoundments
Project Number	25170079
Approved by	Date
Paula J Manning	11/7/2025

Report Date 12/9/2025



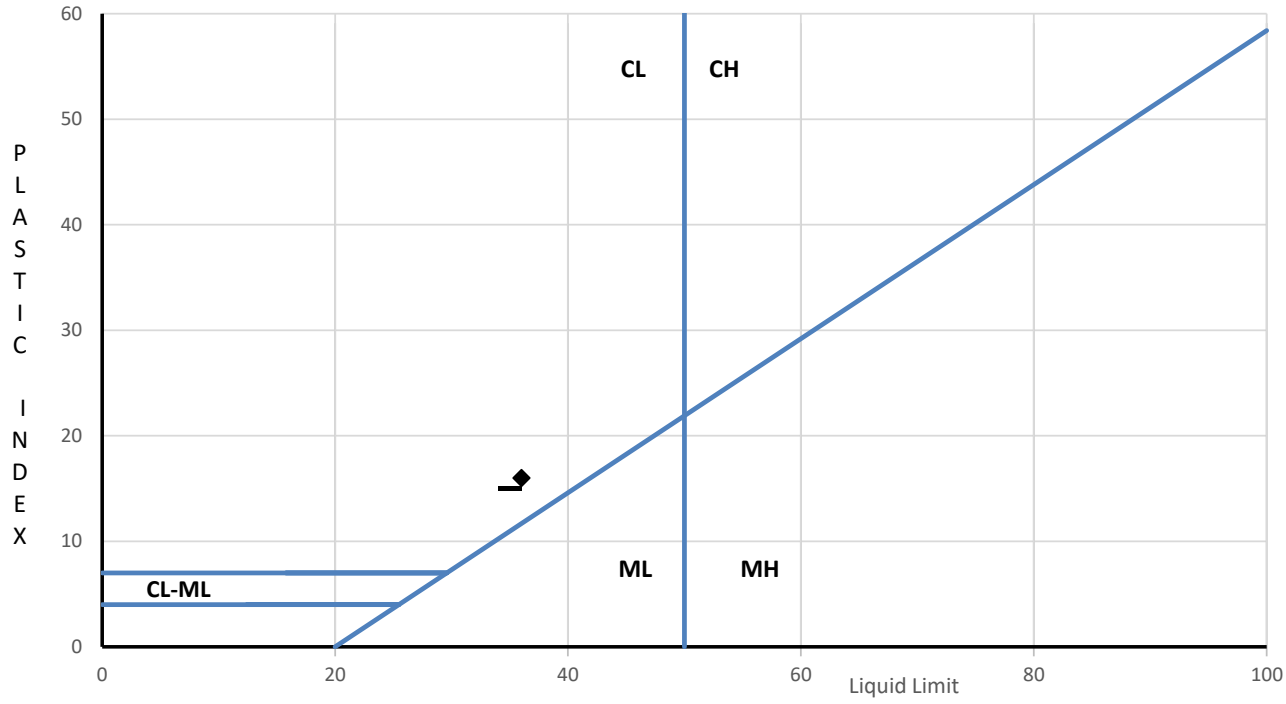
Specimen Identification				MC	LL	PL	PI	Fines	Classification (symbol is based on minus 40 material only when no grain size information is present.)	
	ID	No.	Top Depth						Symbol	Name
	B-03	S-11	36	35.8						
◆	B-03	S-12	38.5	34.8	39	24	15	95.2	CL	LEAN CLAY
	B-03	S-13	41	34.3				67.4		
	B-03	S-14	43.5	19.9				24.5		
	B-04	S-06	23.5					47.1		
▬	B-04	S-09	31	29.2	34	21	13		CL	
	B-04	S-10	33.5	28.2						
	B-04	S-11	36	29.3						
△	B-04	S-13	43.5	36.3	36	23	13		CL	
	B-04	S-14	48.5					13.2		
	B-05	S-02	8.5	36.9						
	B-05	S-04	18.5					34.7		
	B-05	S-07	31					37.3		
	B-05	S-12	43.5					8.0		
	B-06	S-03	13.5					18.0		
	B-06	S-06	28.5	33.7						
❶	B-06	S-07	33.5	22.2	28	18	10	51.4	CL	SANDY LEAN CLAY
	B-07	S-02	8.5					16.3		
	B-07	S-05	23.5	31.6						
	B-07	S-06	28.5	28.6	NP	NP	NP	84.5	ML	SILT WITH SAND

INDEX TEST RESULTS

Project Name	Philo Plant Legacy CCR Impoundments
Project Number	25170079

Approved by	Date
Christina Jauregui	12/5/2025

Report Date 12/9/2025



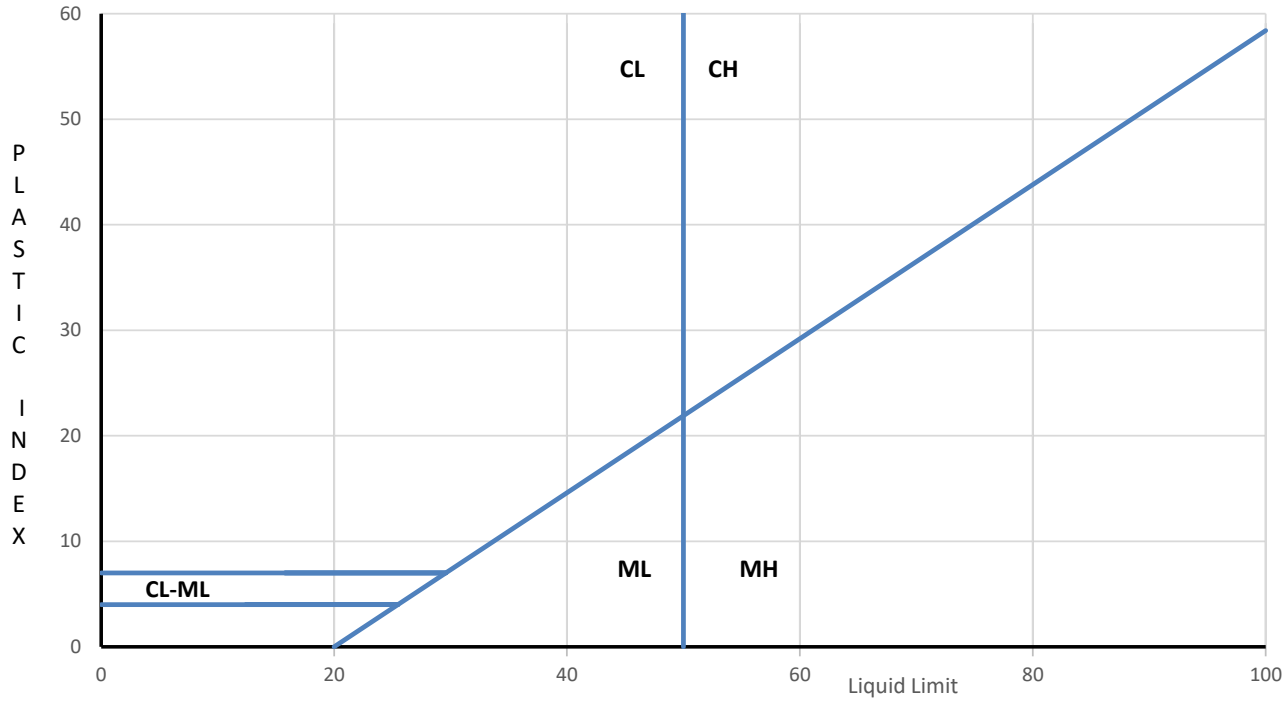
Specimen Identification				MC	LL	PL	PI	Fines	Classification (symbol is based on minus 40 material only when no grain size information is present.)	
	ID	No.	Top Depth						Symbol	Name
	B-07	S-07	33.5	74.2						
◆	B-07	S-08	38.5	37.2	36	20	16		CL	
	B-07	S-10	43.5					13.7		
	B-07	S-12	48.5					14.0		
	B-08	S-03	13.5	57.9						
▬	B-08	S-05	23.5	35.0	35	20	15	87.4	CL	LEAN CLAY
	B-08	S-07	28.5	19.6				24.8		
	B-08	S-08	31	19.9				7.4		
	B-08	S-13	43.5					8.8		
	B-09	S-03	13.5					7.2		
	B-09	S-04	18.5					28.9		
	B-09	S-05	23.5	23.4	NP	NP	NP	60.1	ML	SANDY SILT
	B-09	S-06	26	24.7						
	B-09	S-13	43.5					7.4		
	B-10	S-04	18.5	23.5						
	B-10	S-05	23.5	22.0	NP	NP	NP			
	B-10	S-06	26	14.8						
	B-10	S-09	33.5					10.7		
	B-11	S-03	13.5					14.8		
	B-11	S-07	31	23.5						

INDEX TEST RESULTS

Project Name	Philo Plant Legacy CCR Impoundments
Project Number	25170079

Approved by	Date
Christina Jauregui	12/5/2025

Report Date 12/9/2025



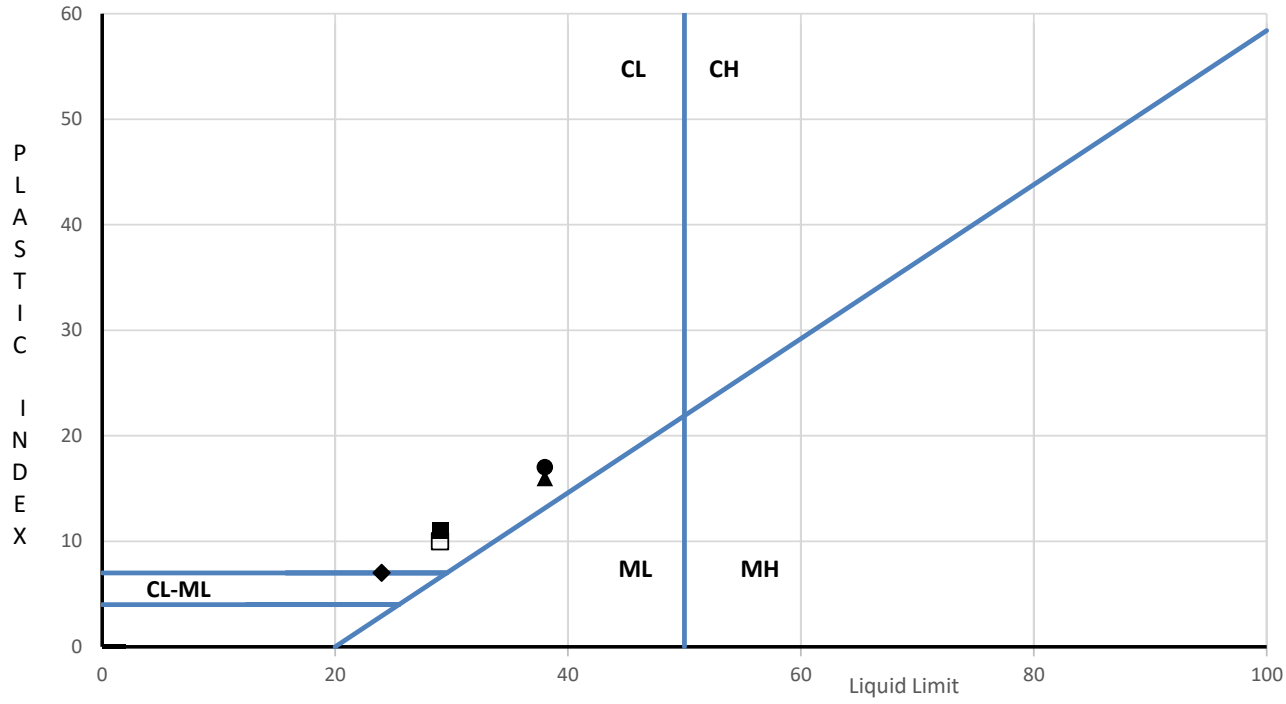
Specimen Identification				MC	LL	PL	PI	Fines	Classification (symbol is based on minus 40 material only when no grain size information is present.)	
	ID	No.	Top Depth						Symbol	Name
	B-11	**S-08**	**33.5**	**23.0**	**NP**	**NP**	**NP**	**61.2**	**ML**	**SANDY SILT**
	B-11	**S-09**	**35**	**24.6**						
	B-11	**S-13**	**46**					**8.2**		
	B-12	**S-05**	**23.5**	**23.1**	**NP**	**NP**	**NP**	**54.6**	**ML**	**SANDY SILT**
	B-12	**S-06**	**26**	**25.7**						
	B-12	**S-14**	**48.5**					**10.4**		
	B-13	**S-03**	**13.5**	**17.8**						
	B-13	**S-04**	**18.5**	**17.9**						
	B-13	**S-05**	**21**	**21.2**						
	B-13	**S-06**	**23.5**	**24.3**						
	B-13	**S-08**	**28.5**					**29.0**		

INDEX TEST RESULTS

Project Name	Philo Plant Legacy CCR Impoundments
Project Number	25170079

Approved by	Date
Paula J Manning	11/7/2025

Report Date 12/9/2025



Specimen Identification				MC	LL	PL	PI	Fines	Classification (symbol is based on minus 40 material only when no grain size information is present.)	
	ID	No.	Top Depth						Symbol	Name
■	B-02	S-06 I	26.9	22.7	29	18	11	70.4	CL	LEAN CLAY WITH SAND
◆	B-02	S-06 II	27.4	21.6	24	17	7	61.8	CL-ML	SANDY SILTY CLAY
▲	B-04	S-12 I	38.6	25.9	38	22	16	97.0	CL	LEAN CLAY
●	B-04	S-12 II	39.1	27.5	38	21	17	95.4	CL	LEAN CLAY
	B-07	S-09	41	23.5	NP	NP	NP	32.7	SM	SILTY SAND
	B-08	S-06	26	25.6	NP	NP	NP	33.0	SM	SILTY SAND
□	B-11	S-09	35	20.6	29	19	10	72.2	CL	LEAN CLAY WITH SAND

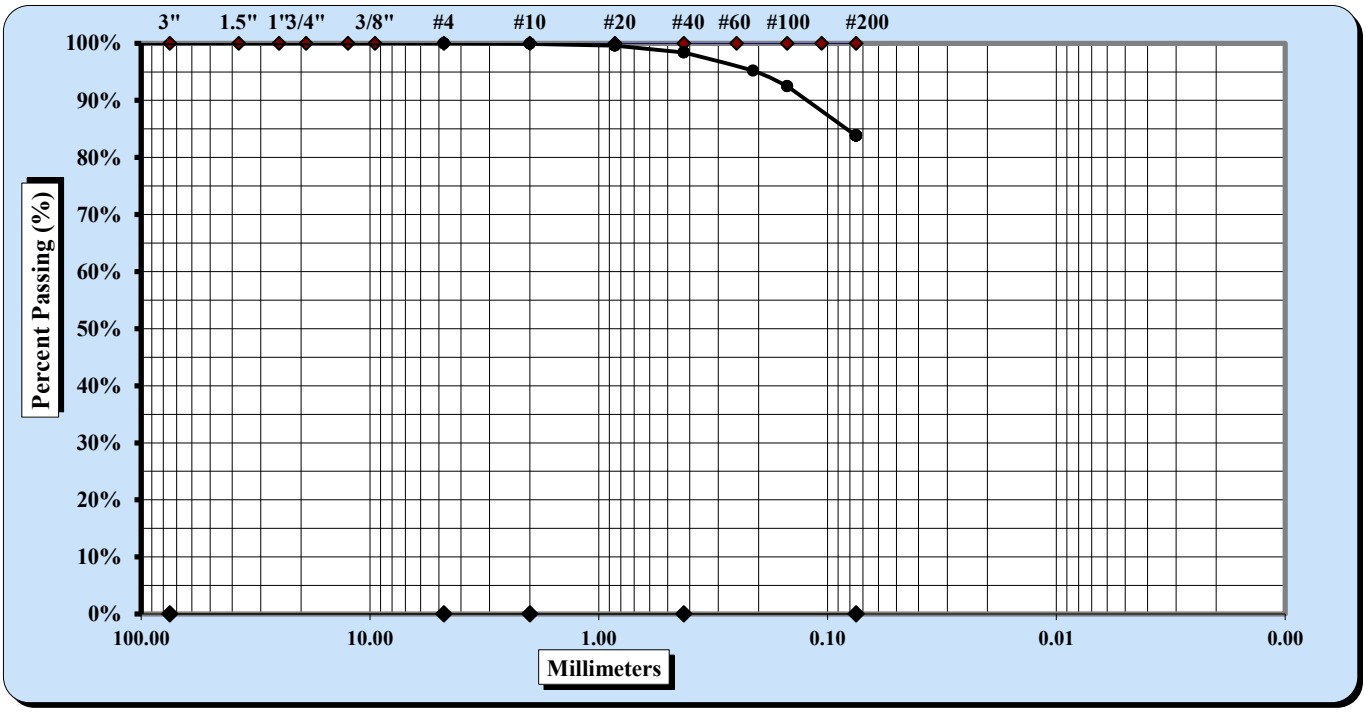
INDEX TEST RESULTS

Project Name	Philo Plant Legacy CCR Impoundments
Project Number	25170079
Approved by	Date
Paula J Manning	1/9/2026

Report Date 1/13/2026

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**11/4/2025**
		Sample Date	**9/11/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS202511061	Sample Type	SS
Location ID	B-01	Sample Top Depth	33
Sample Reference	S-08	Sample Base Depth	34.5
Description	Visual: LEAN CLAY (CL), little fine to coarse sand	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**0.85 mm**	Coarse Sand	0.1	Fine Sand	14.6
Gravel	0.0	Medium Sand	1.5	Silt & Clay	83.8
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Description of Sand & Gravel Particles: Rounded ☒ Angular ☐

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Dispersion Method: Stirrer

References / Comments / Deviations:

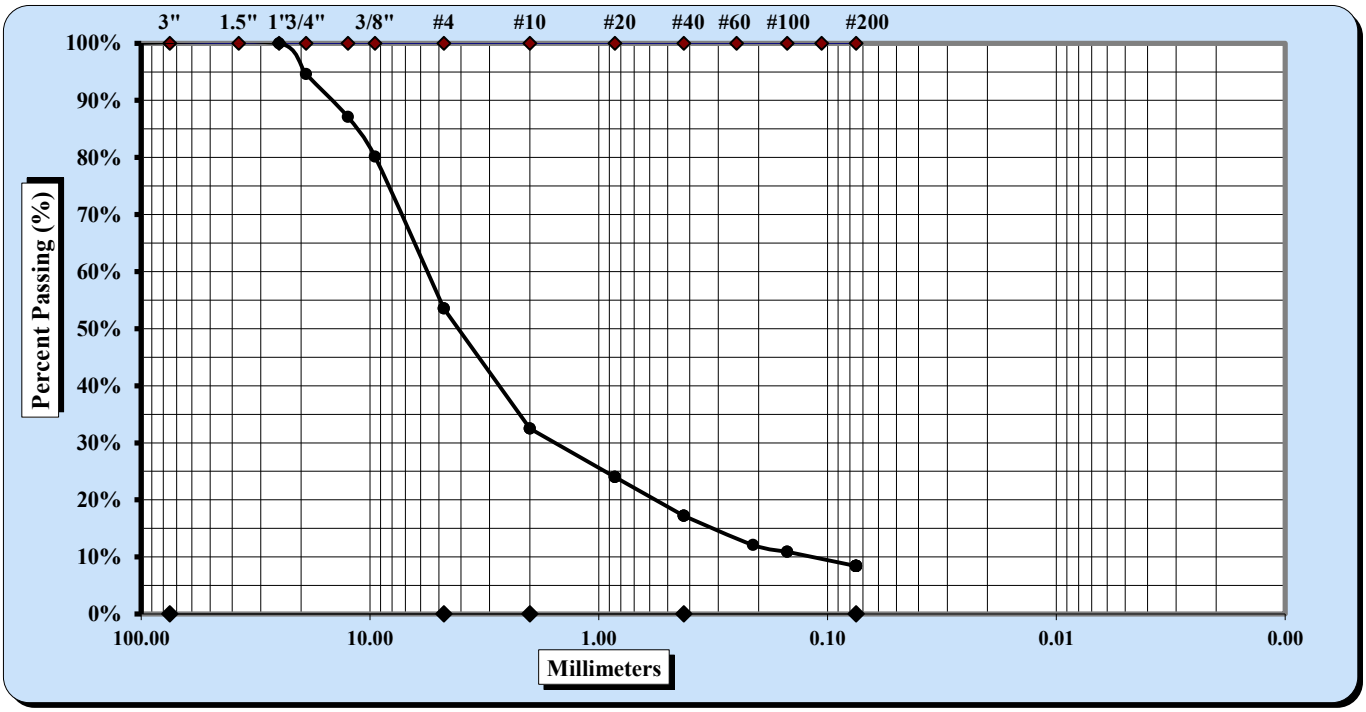
EGoodyear — *Tested by* — *Columbus*

pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**10/28/2025**
		Sample Date	**9/11/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS202511063	Sample Type	SS
Location ID	B-01	Sample Top Depth	41
Sample Reference	S-11	Sample Base Depth	42
Description	Visual: POORLY-GRADED GRAVEL WITH SILT AND SAND (GP-GM)	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**25 mm**	Coarse Sand	21.0	Fine Sand	8.8
Gravel	46.5	Medium Sand	15.3	Silt & Clay	8.4
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Cc = 3.68 **Cu = 48.14**

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

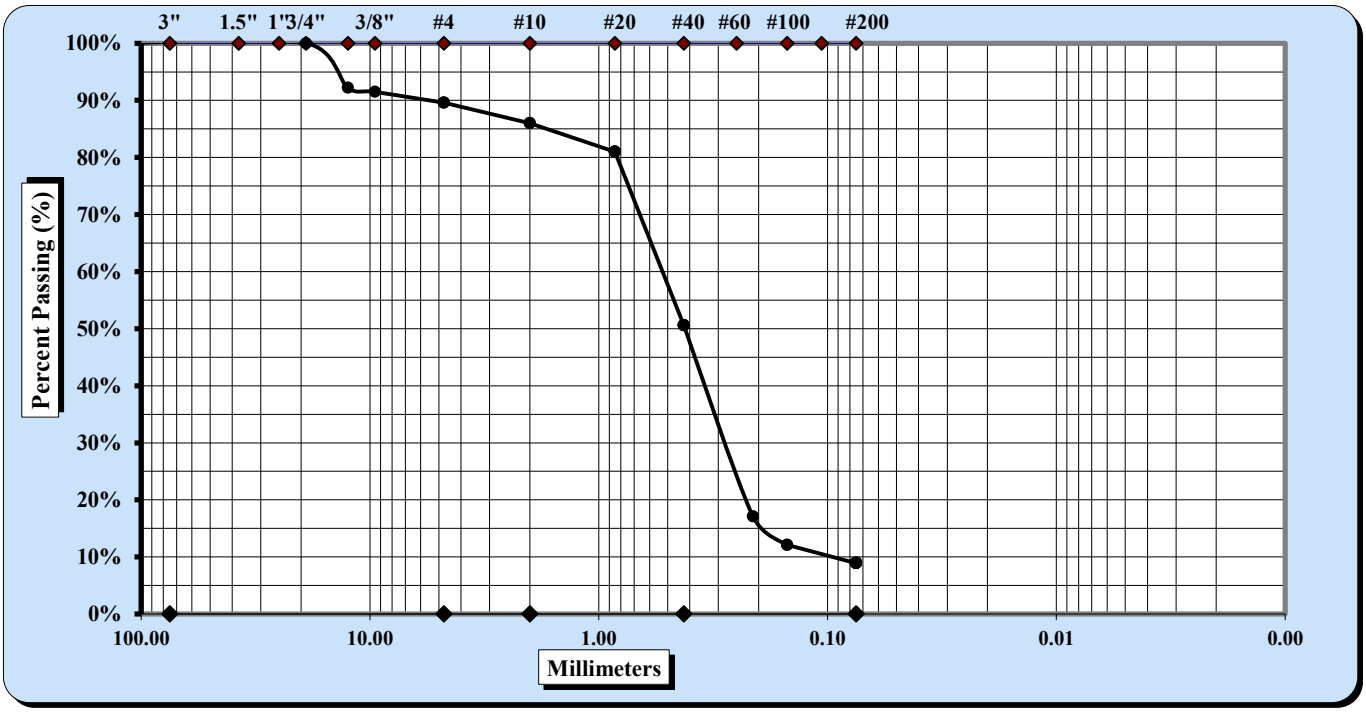
EGoodyear — *Tested by* — *Columbus*

pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**10/28/2025**
		Sample Date	**9/11/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS202511065	Sample Type	SS
Location ID	B-01	Sample Top Depth	48.5
Sample Reference	S-14	Sample Base Depth	49.3
Description	Visual: POORLY-GRADED SAND WITH SILT (SP-SM), trace fine gravel	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**19 mm**	Coarse Sand	3.6	Fine Sand	41.7
Gravel	10.4	Medium Sand	35.4	Silt & Clay	8.9
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Cc = 1.53 **Cu = 5.53**

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

EGoodyear — *Tested by* — *Columbus*

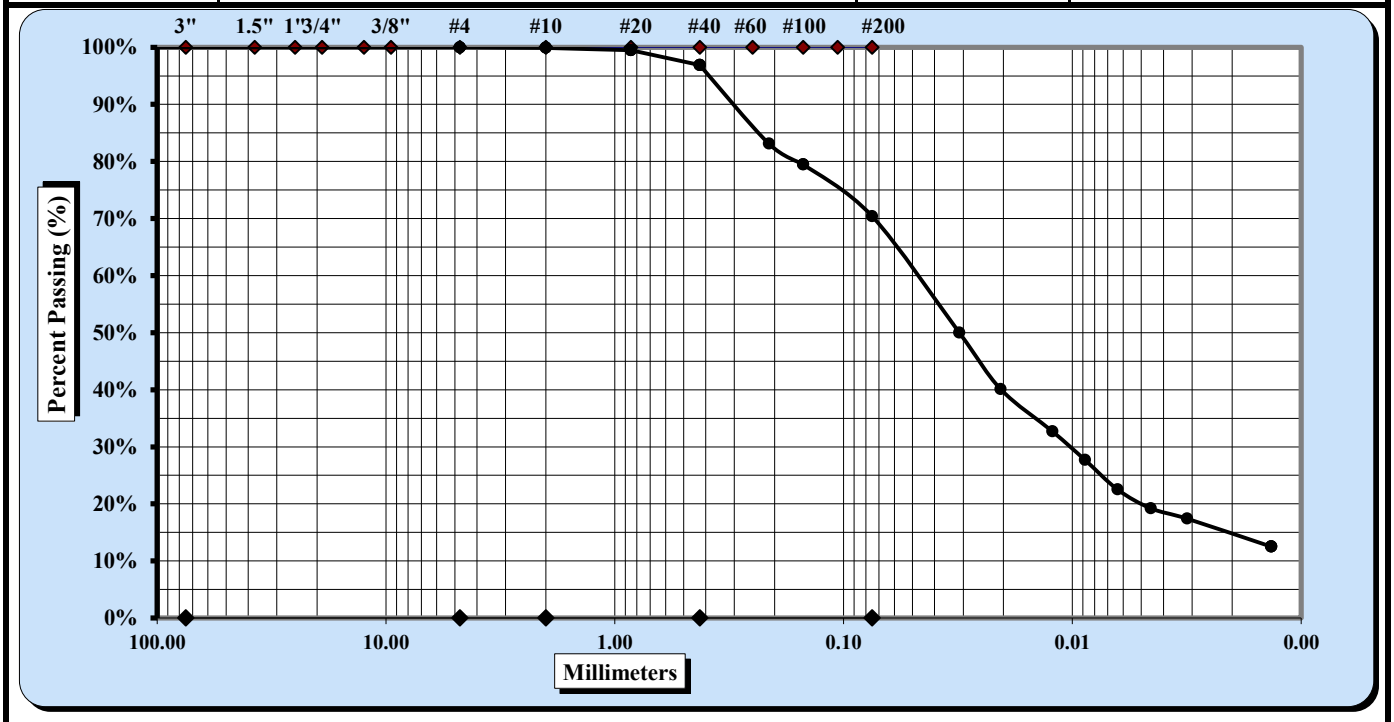
pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils

Report Date	1/13/2026
Test Date	1/7/2026
Sample Date	9/15/2025

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110615	Sample Type	UD
Location ID	B-02	Sample Top Depth	26.9
Sample Reference	S-06 I	Sample Base Depth	27.4
Description	LEAN CLAY WITH SAND (CL)	Method	ASTM D422
Classification:	LEAN CLAY WITH SAND (CL)		



ASTM PARTICLE SIZE DEFINITIONS

Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**0.85 mm**	Coarse Sand	0.1	Fine Sand	26.5
Gravel	0.0	Medium Sand	3.0	Silt & Clay	70.4
Liquid Limit	29	Plastic Limit	18	Plastic Index	11

Description of Sand & Gravel Particles: Rounded ☒ Angular ☐

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Dispersion Method: Stirrer Dispersion Period: 1 min Dispersing Agent: Sodium Hexametaphosphate Solution

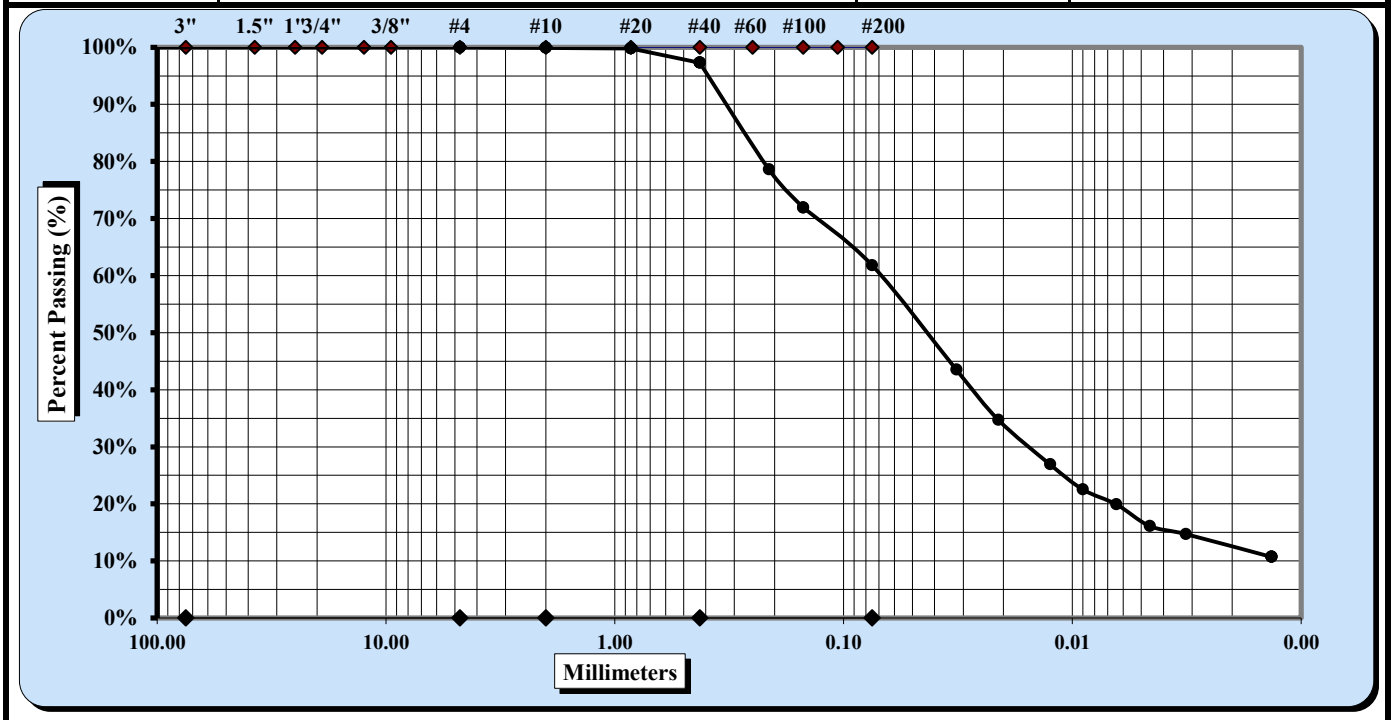
References / Comments / Deviations:

EGoodyear	pmanning	Paula J. Manning
Tested by	*Approved by*	*Signature*
Columbus	*6190 Enterprise Court, Dublin, OH 43016-7297*	

ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils

Report Date	1/13/2026
Test Date	1/6/2026
Sample Date	9/15/2025

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS202601080	Sample Type	UD
Location ID	B-02	Sample Top Depth	27.4
Sample Reference	S-06 II	Sample Base Depth	28
Description	SANDY SILTY CLAY (CL-ML)	Method	ASTM D422
Classification:	SANDY SILTY CLAY (CL-ML)		



ASTM PARTICLE SIZE DEFINITIONS

Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**0.85 mm**	Coarse Sand	0.1	Fine Sand	35.5
Gravel	0.0	Medium Sand	2.6	Silt & Clay	61.8
Liquid Limit	24	Plastic Limit	17	Plastic Index	7

Description of Sand & Gravel Particles: Rounded ☒ Angular ☐

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Dispersion Method: Stirrer Dispersion Period: 1 min Dispersing Agent: Sodium Hexametaphosphate Solution

References / Comments / Deviations:

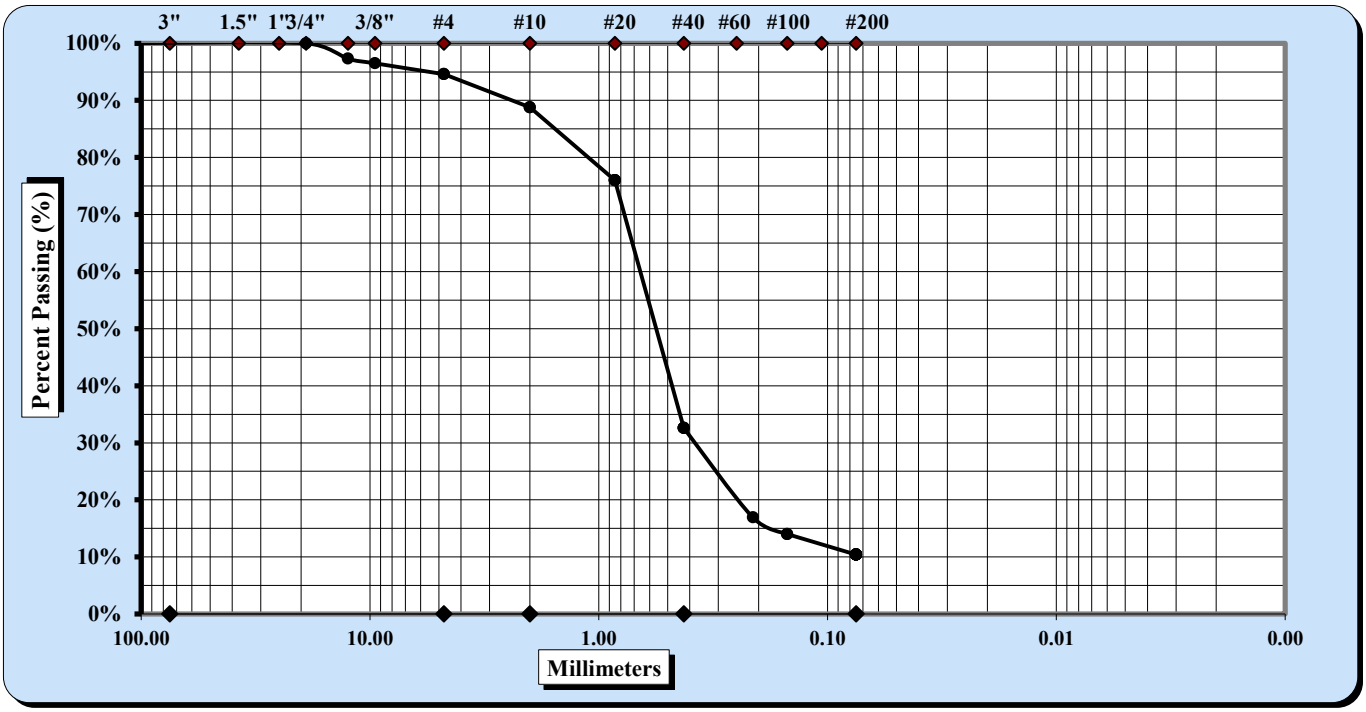
EGoodyear — *Tested by* — *Columbus*

pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**10/28/2025**
		Sample Date	**9/15/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110614	Sample Type	SS
Location ID	B-02	Sample Top Depth	58.5
Sample Reference	S-16	Sample Base Depth	59.7
Description	Visual: POORLY-GRADED SAND WITH SILT (SP-SM), trace fine gravel	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**19 mm**	Coarse Sand	5.8	Fine Sand	22.2
Gravel	5.4	Medium Sand	56.2	Silt & Clay	10.4
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

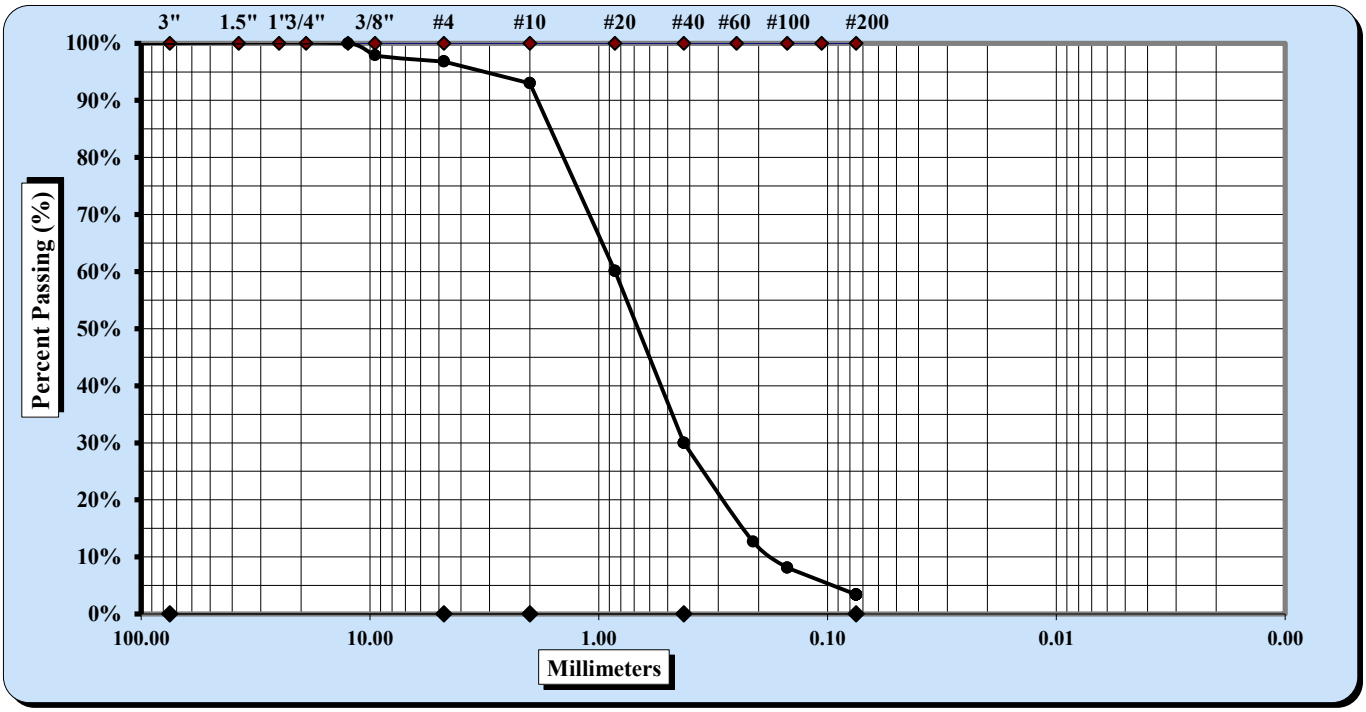
Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

EGoodyear	pmanning	Paula J. Manning
Tested by	*Approved by*	*Signature*
Columbus	*6190 Enterprise Court, Dublin, OH 43016-7297*	

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**11/7/2025**
		Sample Date	**9/15/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110616	Sample Type	SS
Location ID	B-03	Sample Top Depth	8.5
Sample Reference	S-02	Sample Base Depth	9.5
Description	Visual: POORLY-GRADED SAND (SP), trace fine gravel	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**12.5 mm**	Coarse Sand	3.8	Fine Sand	26.6
Gravel	3.2	Medium Sand	63.0	Silt & Clay	3.4
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Cc = 1.23 **Cu = 4.90**

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

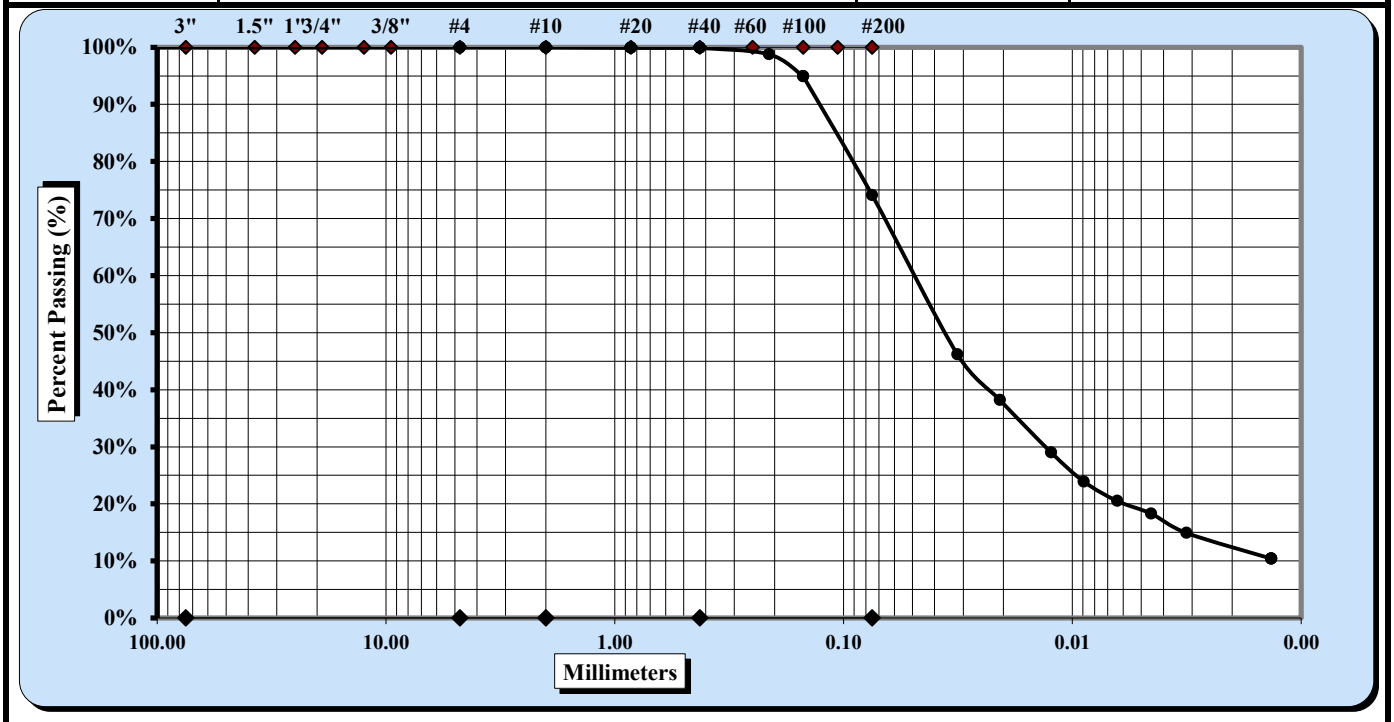
CJauregui — *Tested by* — *Columbus*

EGoodyear — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Erica Goodyear — *Signature*

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**10/30/2025**
		Sample Date	**9/15/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110621	Sample Type	SS
Location ID	B-03	Sample Top Depth	31
Sample Reference	S-09	Sample Base Depth	32.5
Description	SILT WITH SAND (ML)	Method	ASTM D422
Classification:	SILT WITH SAND (ML)		



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**0.85 mm**	Coarse Sand	0.0	Fine Sand	25.8
Gravel	0.0	Medium Sand	0.1	Silt & Clay	74.1
Liquid Limit	NP	Plastic Limit	NP	Plastic Index	NP

Description of Sand & Gravel Particles: Rounded ☒ Angular ☐

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Dispersion Method: Stirrer Dispersion Period: 1 min Dispersing Agent: Sodium Hexametaphosphate Solution

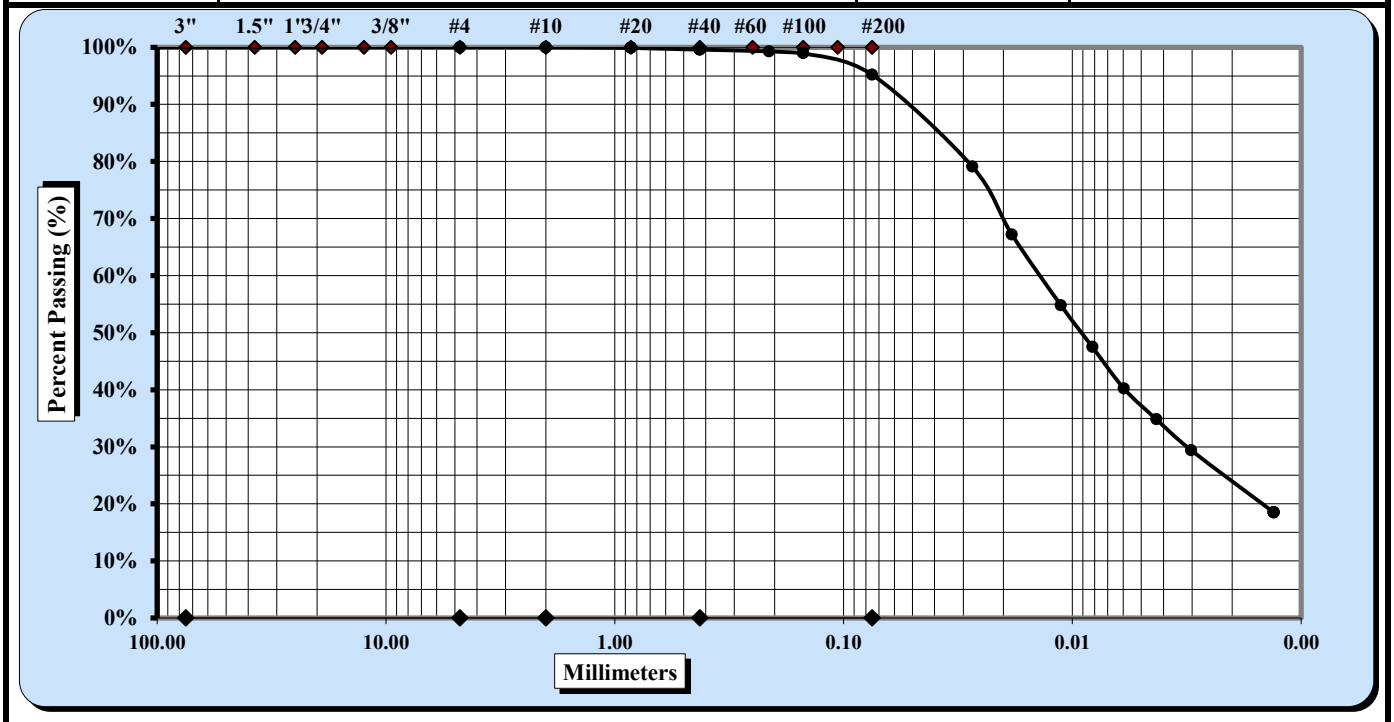
References / Comments / Deviations:

EGoodyear	pmanning	Paula J. Manning
Tested by	*Approved by*	*Signature*
Columbus	*6190 Enterprise Court, Dublin, OH 43016-7297*	

ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils

Report Date	12/5/2025
Test Date	10/30/2025
Sample Date	9/15/2025

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110624	Sample Type	SS
Location ID	B-03	Sample Top Depth	38.5
Sample Reference	S-12	Sample Base Depth	40
Description	LEAN CLAY (CL), trace fine to medium sand	Method	ASTM D422
Classification:	LEAN CLAY (CL)		



ASTM PARTICLE SIZE DEFINITIONS

Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**0.212 mm**	Coarse Sand	0.0	Fine Sand	4.4
Gravel	0.0	Medium Sand	0.4	Silt & Clay	95.2
Liquid Limit	39	Plastic Limit	24	Plastic Index	15

Description of Sand & Gravel Particles: Rounded ☒ Angular ☐

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Dispersion Method: Stirrer Dispersion Period: 1 min Dispersing Agent: Sodium Hexametaphosphate Solution

References / Comments / Deviations:

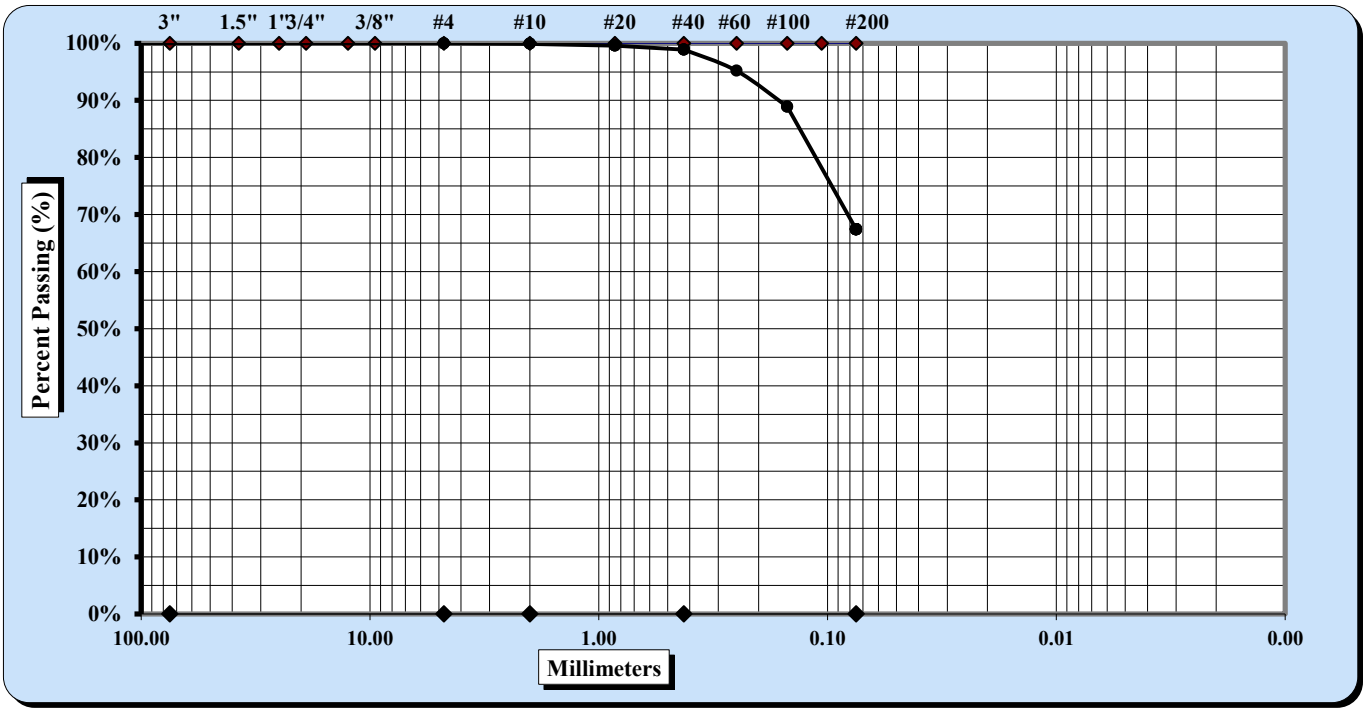
EGoodyear — *Tested by* — *Columbus*

pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**10/28/2025**
		Sample Date	**9/15/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110625	Sample Type	SS
Location ID	B-03	Sample Top Depth	41
Sample Reference	S-13	Sample Base Depth	42.5
Description	Visual: SANDY SILT (ML)	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**0.85 mm**	Coarse Sand	0.1	Fine Sand	31.5
Gravel	0.0	Medium Sand	1.0	Silt & Clay	67.4
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

EGoodyear — *Tested by* — *Columbus*

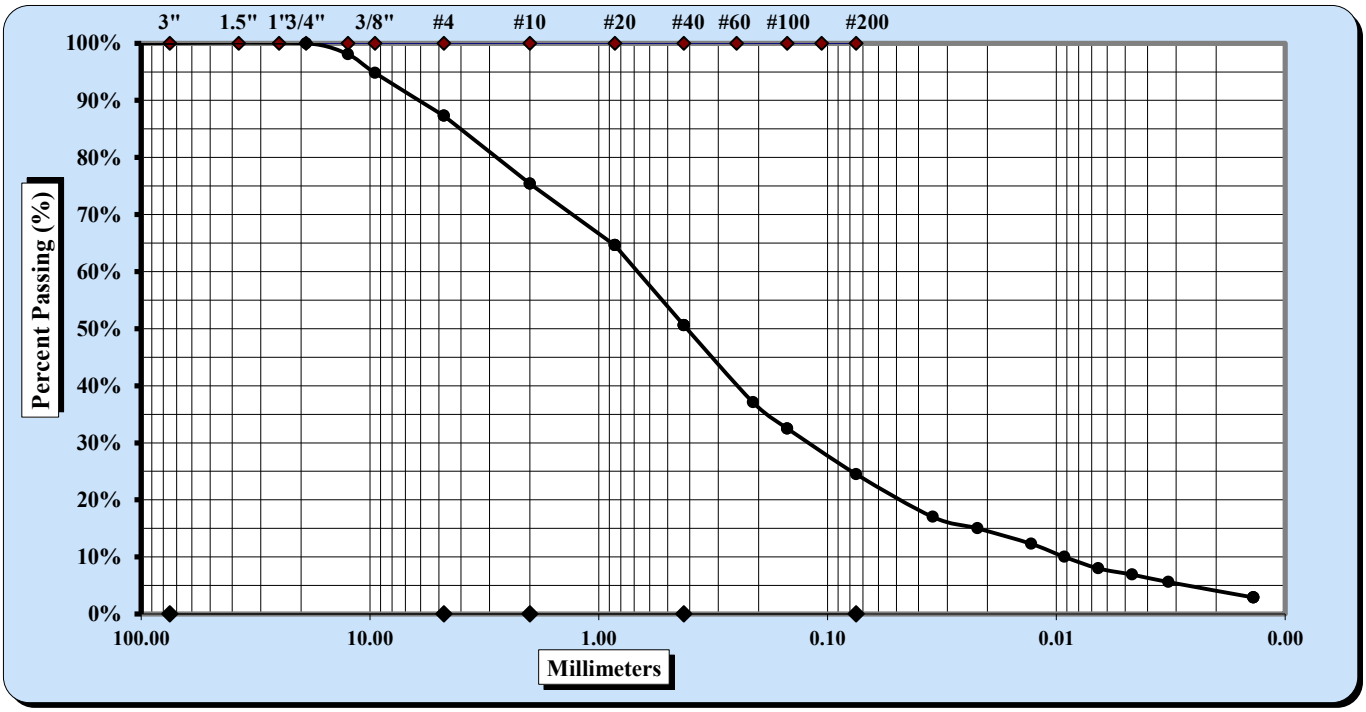
pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils

Report Date	12/5/2025
Test Date	10/30/2025
Sample Date	9/15/2025

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110626	Sample Type	SS
Location ID	B-03	Sample Top Depth	43.5
Sample Reference	S-14	Sample Base Depth	45
Description	Visual: SILTY SAND (SM), little fine gravel	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS

Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**19 mm**	Coarse Sand	11.9	Fine Sand	26.1
Gravel	12.7	Medium Sand	24.8	Silt & Clay	24.5
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Cc = 2.34 **Cu = 73.44**

Description of Sand & Gravel Particles: Rounded ☒ Angular ☐

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Dispersion Method: Stirrer Dispersion Period: 1 min Dispersing Agent: Sodium Hexametaphosphate Solution

References / Comments / Deviations:

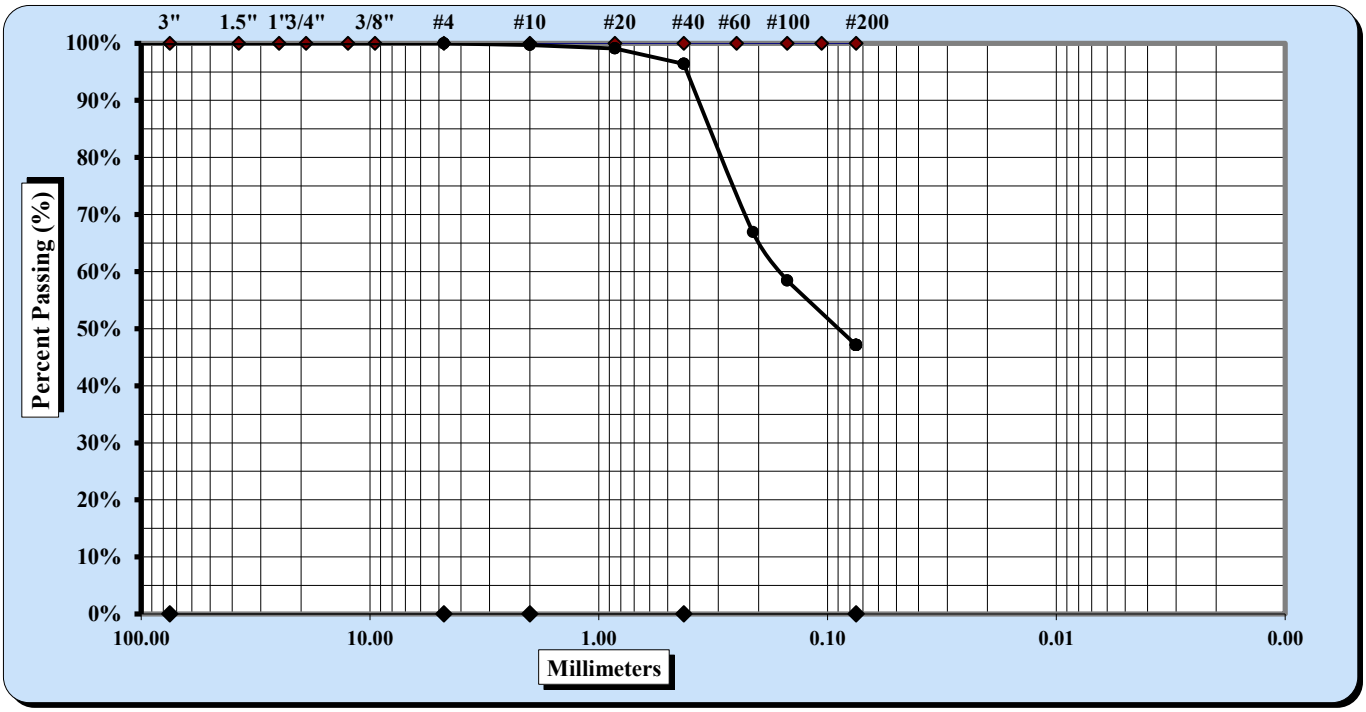
EGoodyear — *Tested by* — *Columbus*

pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**10/28/2025**
		Sample Date	**9/17/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110627	Sample Type	SS
Location ID	B-04	Sample Top Depth	23.5
Sample Reference	S-06	Sample Base Depth	25
Description	Visual: SILTY SAND (SM)	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**0.85 mm**	Coarse Sand	0.3	Fine Sand	49.3
Gravel	0.0	Medium Sand	3.3	Silt & Clay	47.1
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

EGoodyear — *Tested by* — *Columbus*

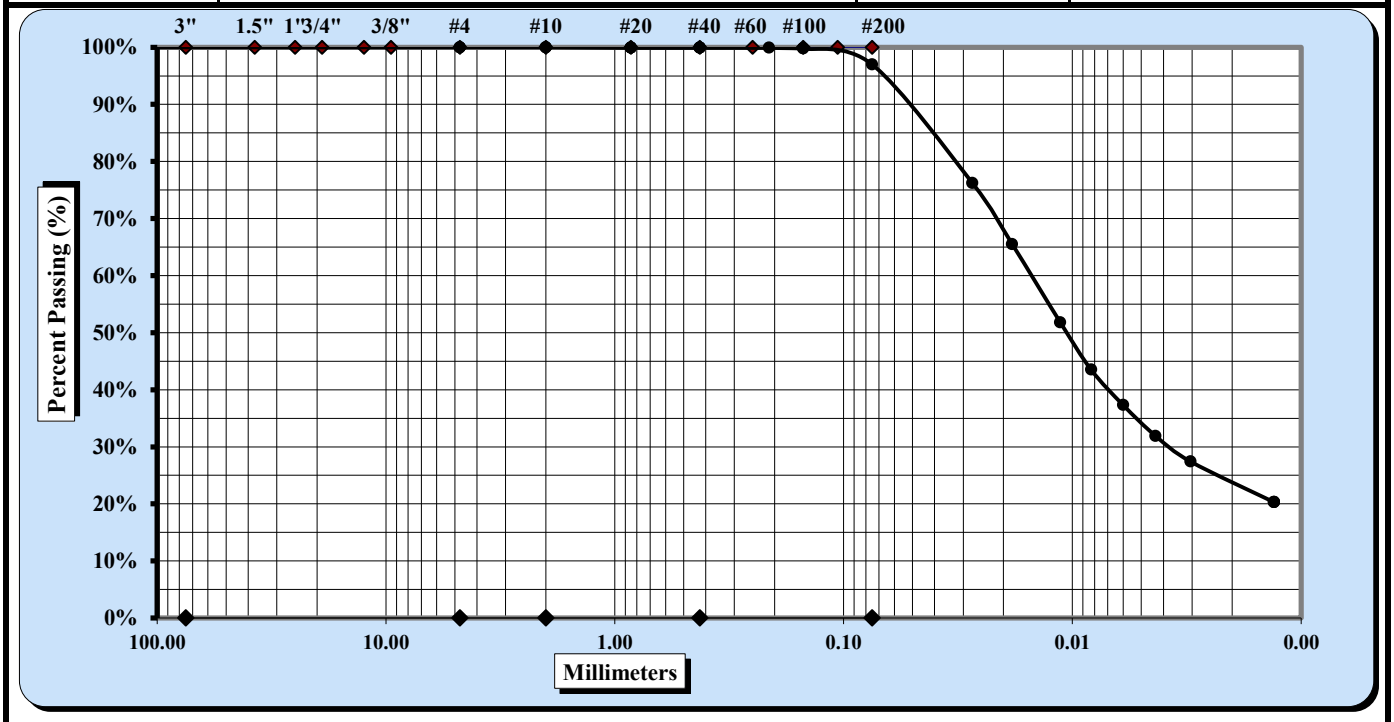
pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils

Report Date	1/13/2026
Test Date	1/7/2026
Sample Date	9/17/2025

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110633	Sample Type	UD
Location ID	B-04	Sample Top Depth	38.6
Sample Reference	S-12 I	Sample Base Depth	39.1
Description	LEAN CLAY (CL), trace fine to medium sand	Method	ASTM D422
Classification:	LEAN CLAY (CL)		



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**0.15 mm**	Coarse Sand	0.0	Fine Sand	2.9
Gravel	0.0	Medium Sand	0.1	Silt & Clay	97.0
Liquid Limit	38	Plastic Limit	22	Plastic Index	16

Description of Sand & Gravel Particles: Rounded ☒ Angular ☐

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

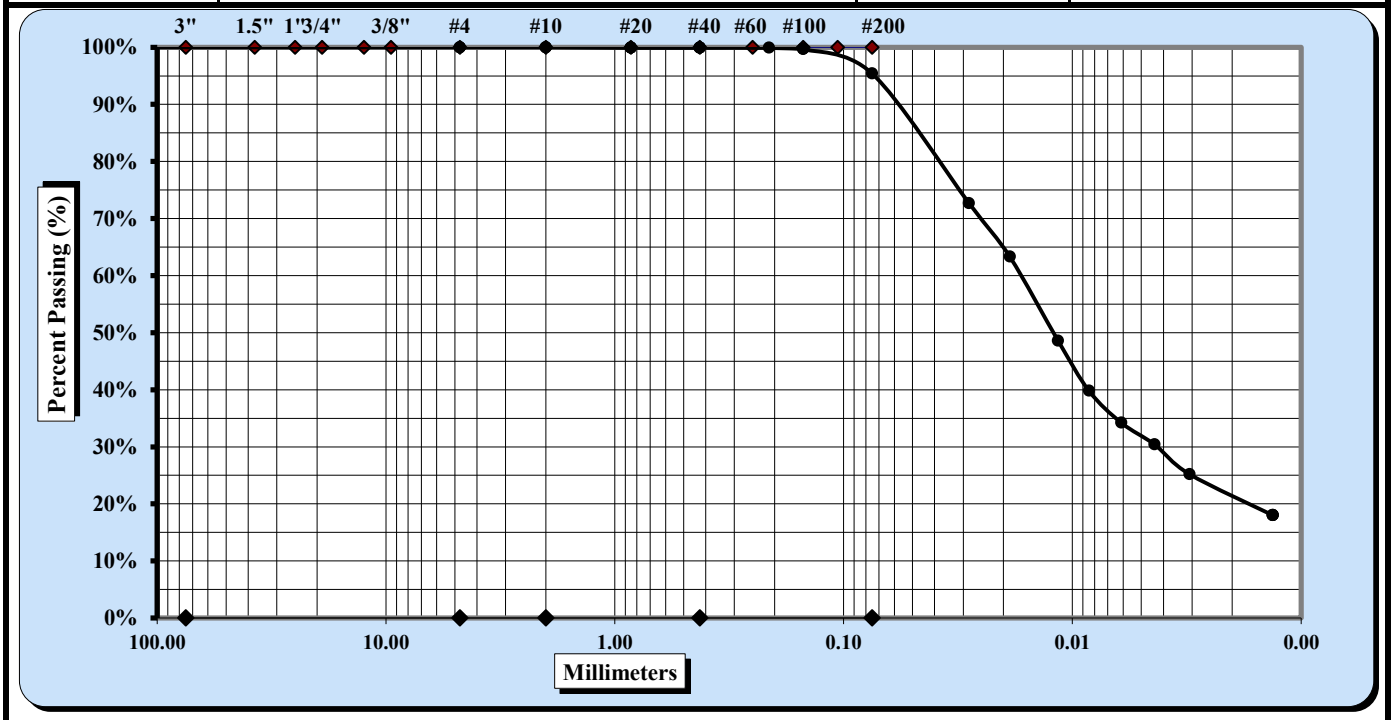
Dispersion Method: Stirrer Dispersion Period: 1 min Dispersing Agent: Sodium Hexametaphosphate Solution

References / Comments / Deviations:

EGoodyear	pmanning	Paula J. Manning
Tested by	*Approved by*	*Signature*
Columbus	*6190 Enterprise Court, Dublin, OH 43016-7297*	

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**1/13/2026**
		Test Date	**1/7/2026**
		Sample Date	**9/17/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS202601090	Sample Type	UD
Location ID	B-04	Sample Top Depth	39.1
Sample Reference	S-12 II	Sample Base Depth	39.5
Description	LEAN CLAY (CL), trace fine to medium sand	Method	ASTM D422
Classification:	LEAN CLAY (CL)		



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**0.15 mm**	Coarse Sand	0.0	Fine Sand	4.5
Gravel	0.0	Medium Sand	0.1	Silt & Clay	95.4
Liquid Limit	38	Plastic Limit	21	Plastic Index	17

Description of Sand & Gravel Particles: Rounded ☒ Angular ☐

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Dispersion Method: Stirrer Dispersion Period: 1 min Dispersing Agent: Sodium Hexametaphosphate Solution

References / Comments / Deviations:

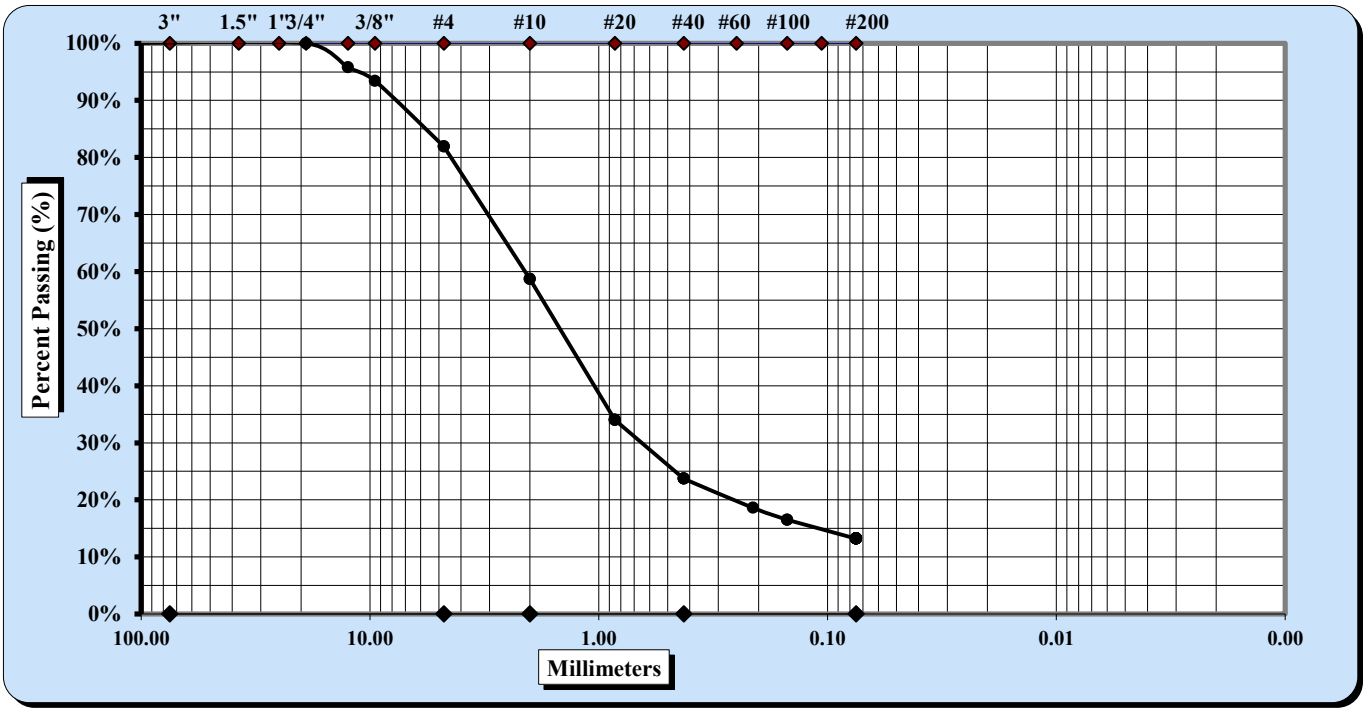
EGoodyear — *Tested by* — *Columbus*

pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**10/28/2025**
		Sample Date	**9/17/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110632	Sample Type	SS
Location ID	B-04	Sample Top Depth	48.5
Sample Reference	S-14	Sample Base Depth	50
Description	Visual: SILTY SAND WITH GRAVEL (SM)	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**19 mm**	Coarse Sand	23.2	Fine Sand	10.5
Gravel	18.1	Medium Sand	35.0	Silt & Clay	13.2
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

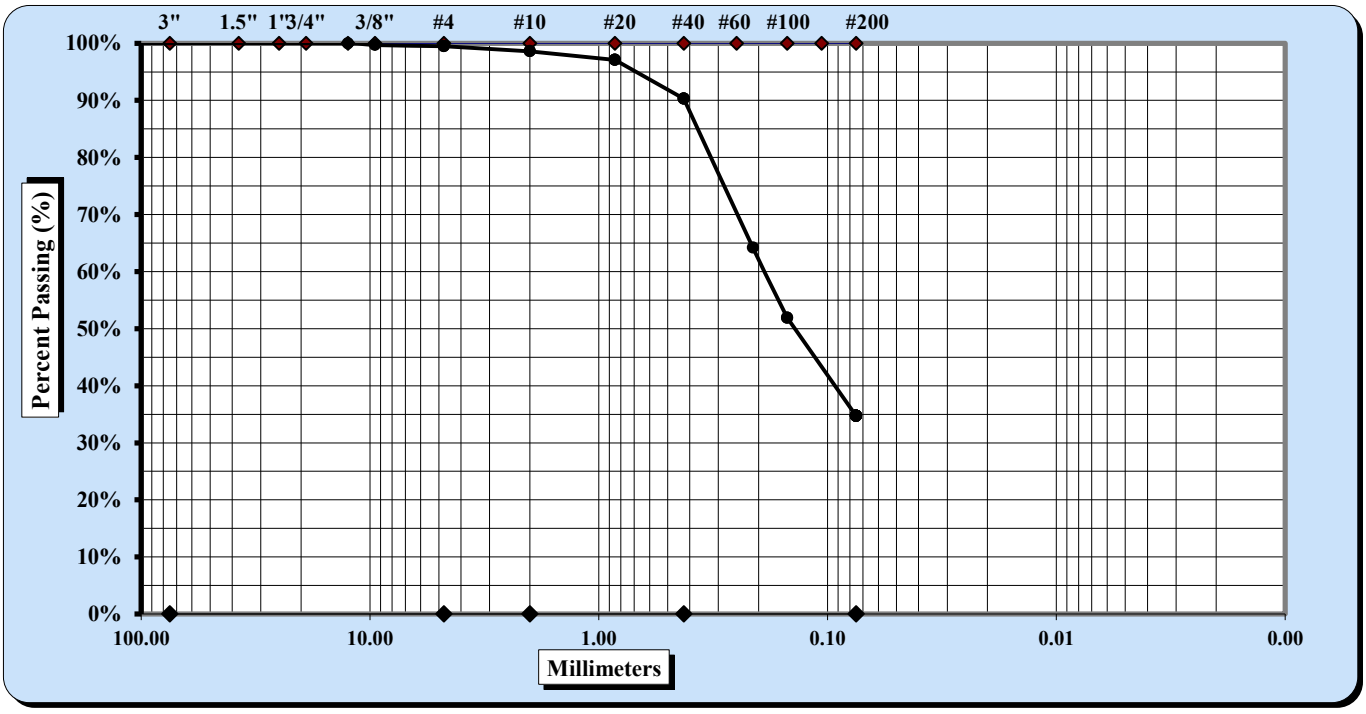
EGoodyear — *Tested by* — *Columbus*

pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**10/28/2025**
		Sample Date	**9/16/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110635	Sample Type	SS
Location ID	B-05	Sample Top Depth	18.5
Sample Reference	S-04	Sample Base Depth	19.5
Description	Visual: SILTY SAND (SM), trace fine gravel	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**4.75 mm**	Coarse Sand	0.9	Fine Sand	55.6
Gravel	0.5	Medium Sand	8.3	Silt & Clay	34.7
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

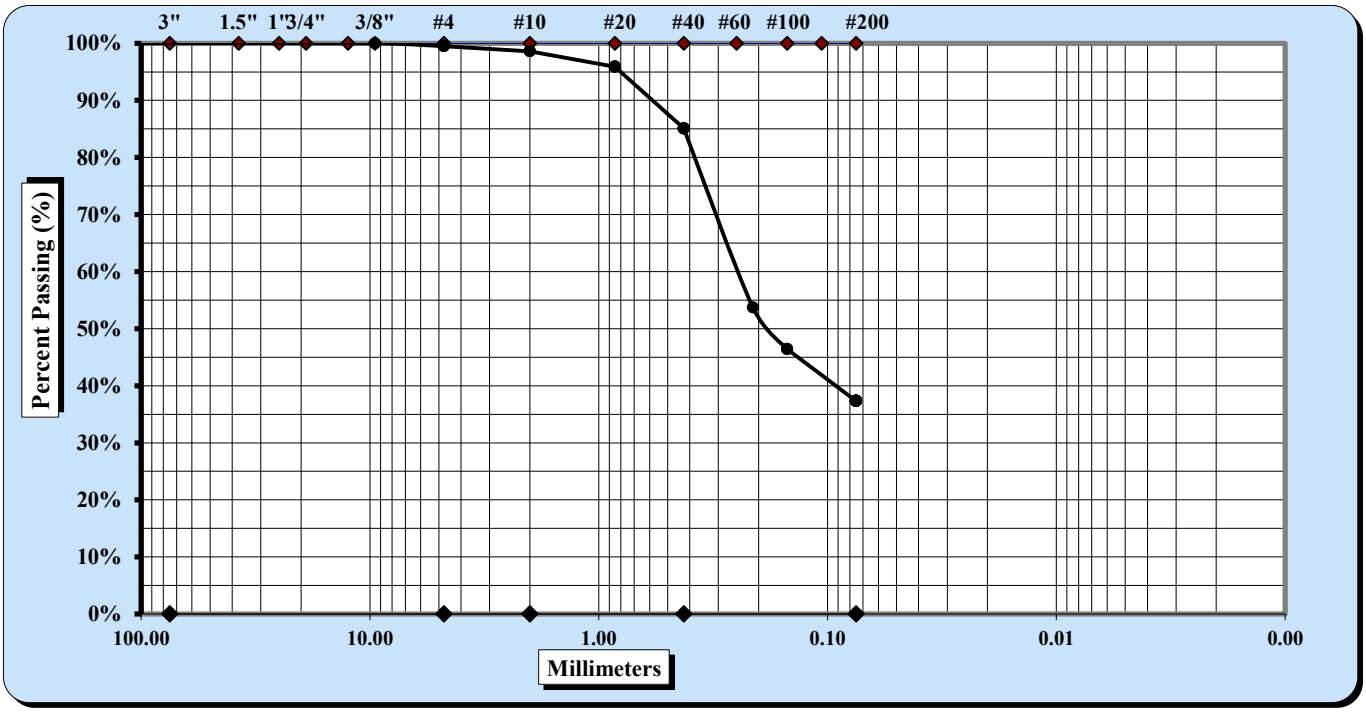
EGoodyear — *Tested by* — *Columbus*

pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**10/28/2025**
		Sample Date	**9/16/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110636	Sample Type	SS
Location ID	B-05	Sample Top Depth	31
Sample Reference	S-07	Sample Base Depth	32.5
Description	Visual: SILTY SAND (SM), trace fine gravel	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**4.75 mm**	Coarse Sand	0.9	Fine Sand	47.8
Gravel	0.5	Medium Sand	13.5	Silt & Clay	37.3
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

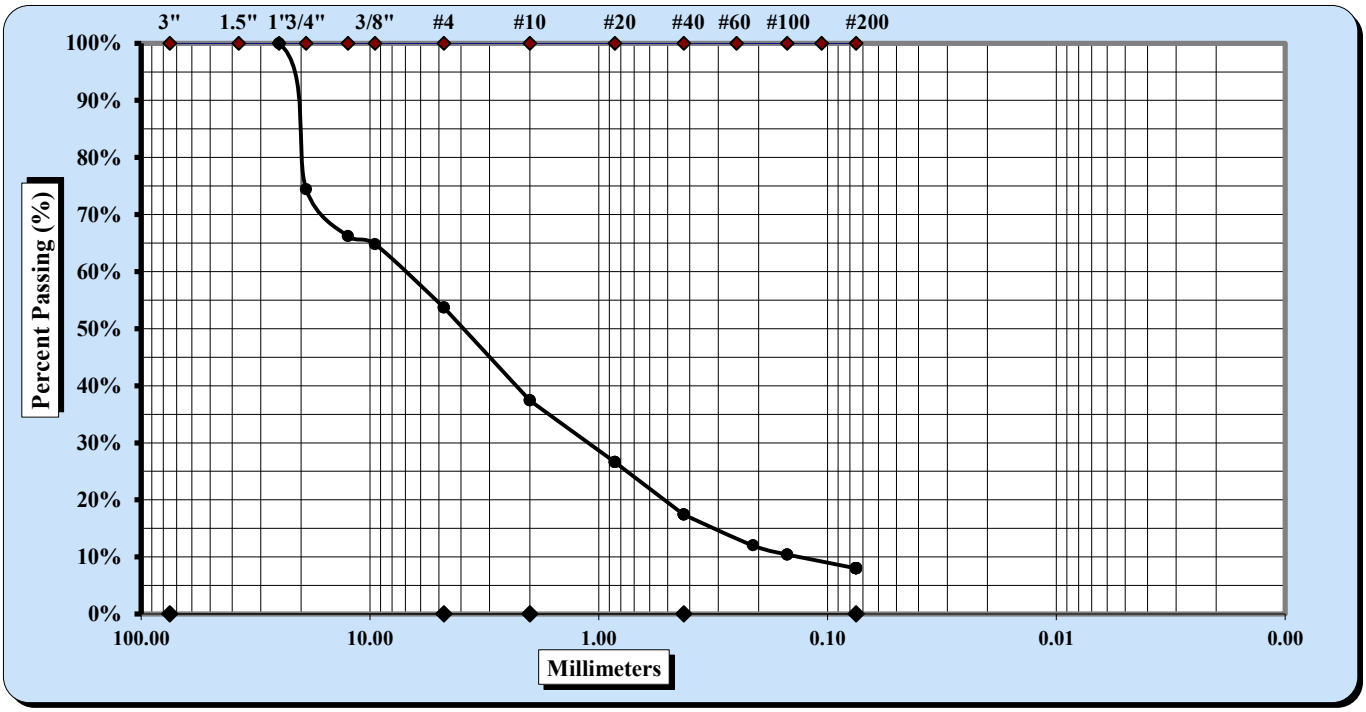
EGoodyear — *Tested by* — *Columbus*

pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils	Report Date	**12/5/2025**
		Test Date	**10/28/2025**
		Sample Date	**9/16/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110637	Sample Type	SS
Location ID	B-05	Sample Top Depth	43.5
Sample Reference	S-12	Sample Base Depth	44
Description	Visual: WELL-GRADED GRAVEL WITH SILT AND SAND (GW-GM)	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**25 mm**	Coarse Sand	16.3	Fine Sand	9.4
Gravel	46.3	Medium Sand	20.0	Silt & Clay	8.0
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Cc = 1.32 **Cu = 52.68**

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

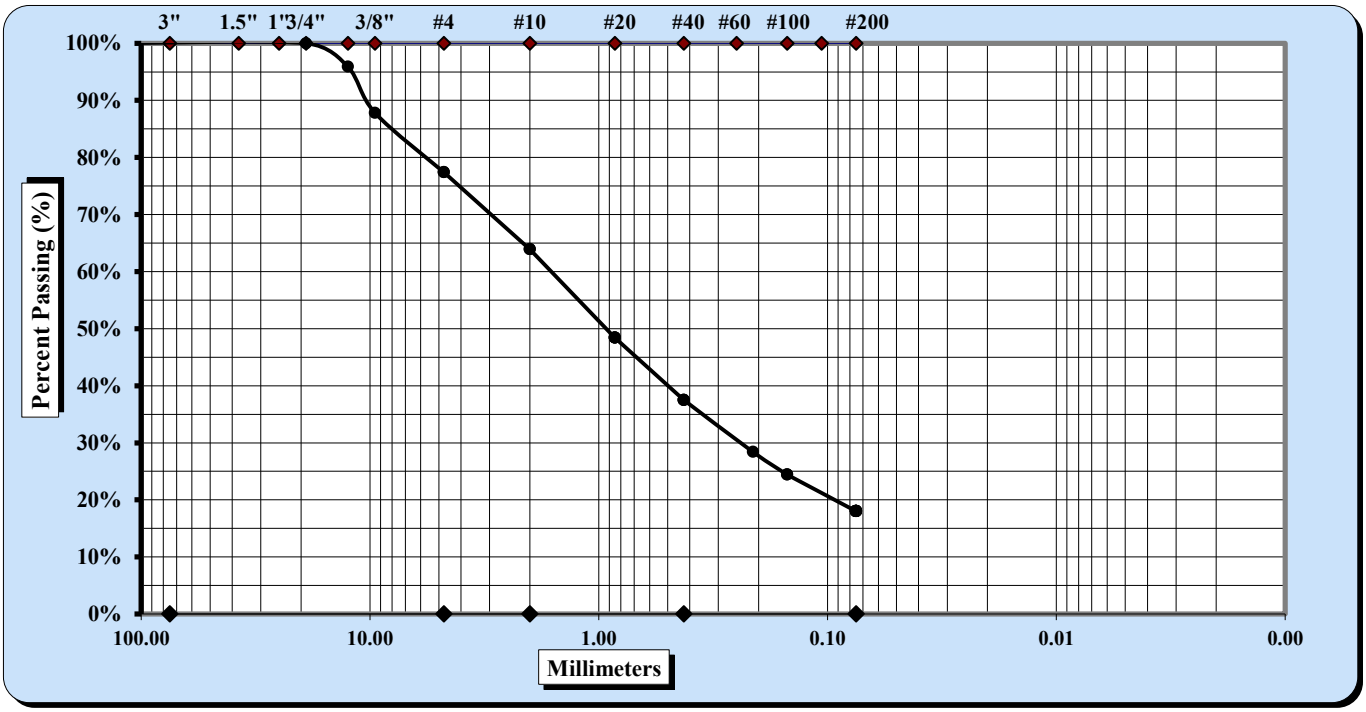
EGoodyear — *Tested by* — *Columbus*

pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**11/7/2025**
		Sample Date	**9/16/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110638	Sample Type	SS
Location ID	B-06	Sample Top Depth	13.5
Sample Reference	S-03	Sample Base Depth	14.5
Description	Visual: SILTY, CLAYEY SAND WITH GRAVEL (SC-SM)	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**19 mm**	Coarse Sand	13.5	Fine Sand	19.5
Gravel	22.6	Medium Sand	26.4	Silt & Clay	18.0
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

CJauregui
Tested by
Columbus

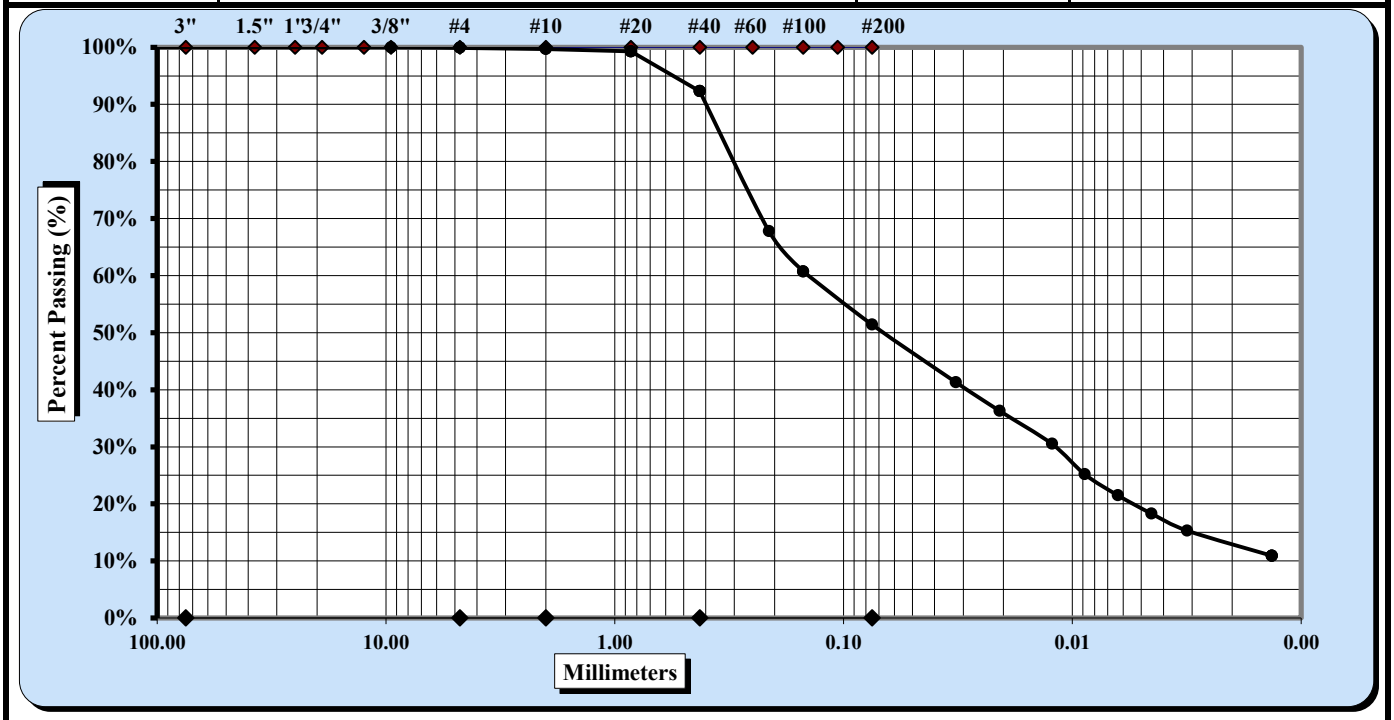
EGoodyear
Approved by
6190 Enterprise Court, Dublin, OH 43016-7297

Erica Goodyear
Signature

ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils

Report Date	12/5/2025
Test Date	11/5/2025
Sample Date	9/16/2025

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110640	Sample Type	SS
Location ID	B-06	Sample Top Depth	33.5
Sample Reference	S-07	Sample Base Depth	35
Description	SANDY LEAN CLAY (CL), trace fine gravel	Method	ASTM D422
Classification:	SANDY LEAN CLAY (CL)		



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**0.85 mm**	Coarse Sand	0.2	Fine Sand	40.9
Gravel	0.1	Medium Sand	7.4	Silt & Clay	51.4
Liquid Limit	28	Plastic Limit	18	Plastic Index	10

Description of Sand & Gravel Particles: Rounded ☒ Angular ☐

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Dispersion Method: Stirrer Dispersion Period: 1 min Dispersing Agent: Sodium Hexametaphosphate Solution

References / Comments / Deviations:

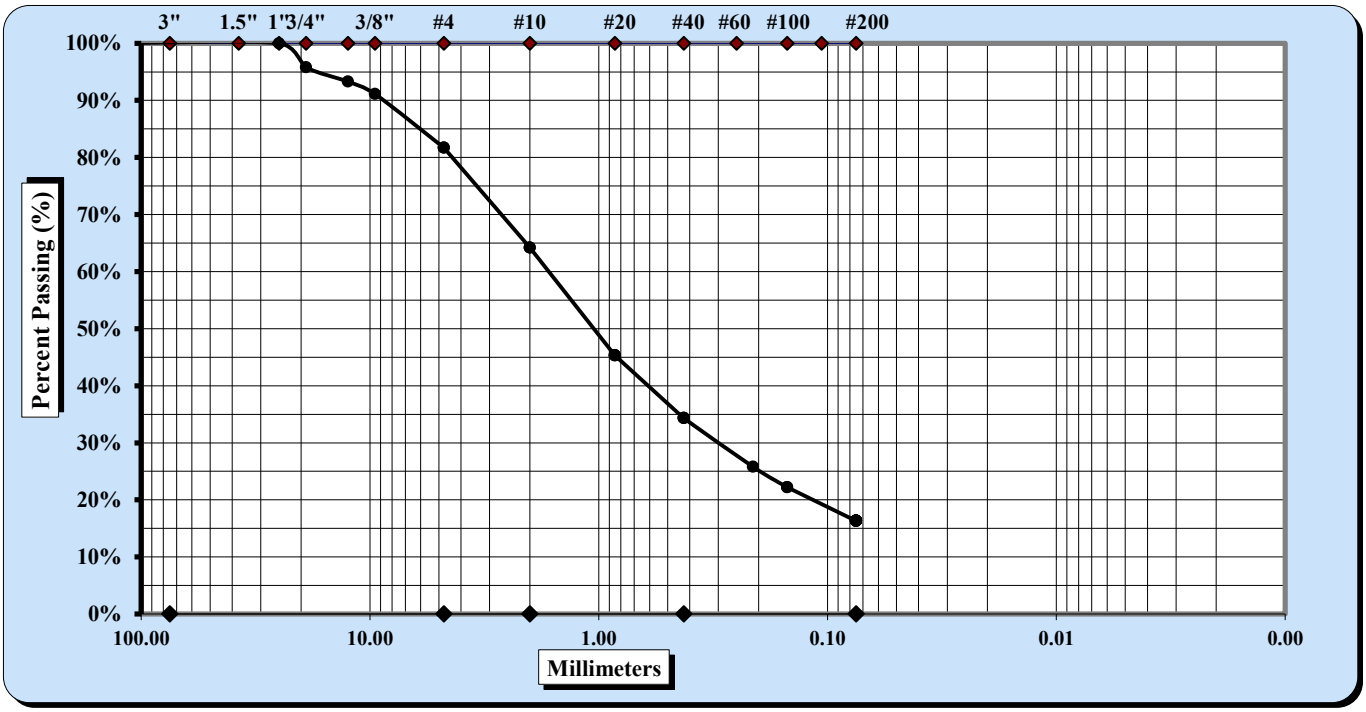
CJauregui — *Tested by* — *Columbus*

EGoodyear — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Erica Goodyear — *Signature*

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**10/28/2025**
		Sample Date	**9/23/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110643	Sample Type	SS
Location ID	B-07	Sample Top Depth	8.5
Sample Reference	S-02	Sample Base Depth	9.5
Description	Visual: SILTY SAND WITH GRAVEL (SM)	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**25 mm**	Coarse Sand	17.5	Fine Sand	18.0
Gravel	18.3	Medium Sand	29.9	Silt & Clay	16.3
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

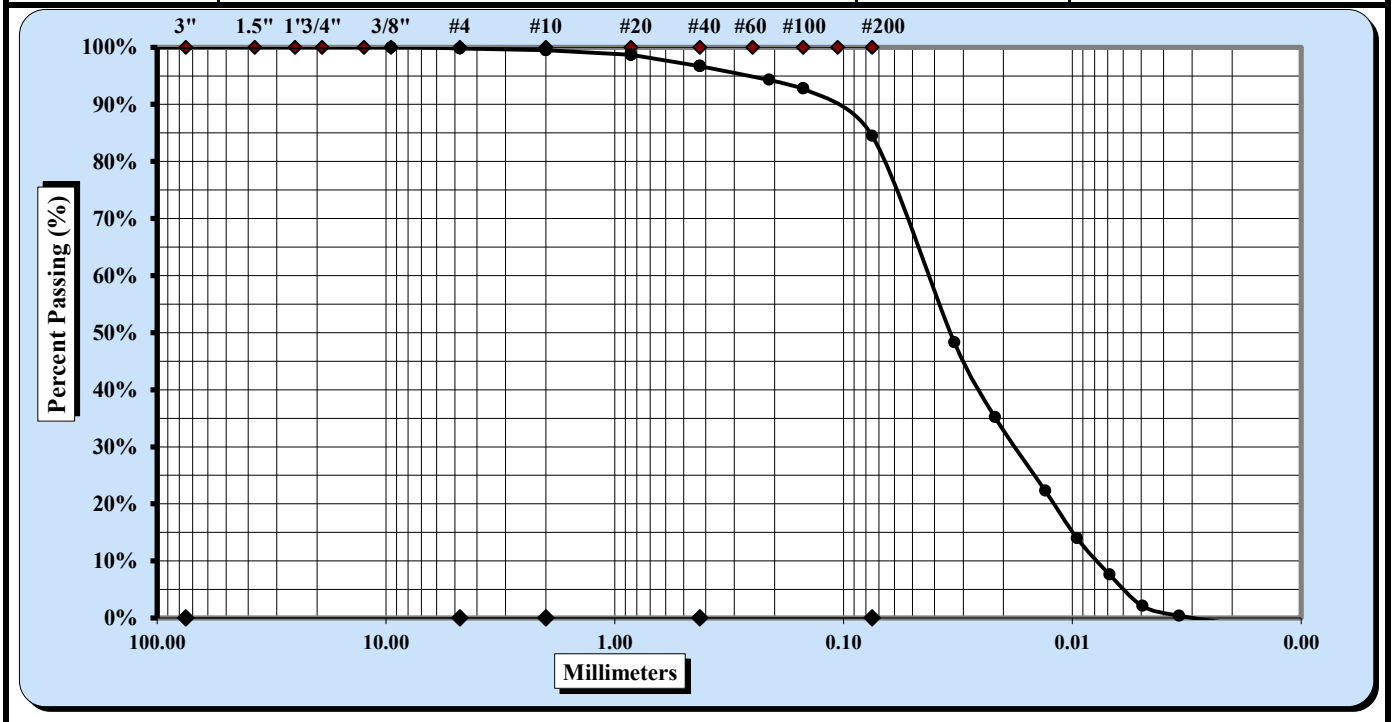
EGoodyear — *Tested by* — *Columbus*

pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**11/5/2025**
		Sample Date	**9/23/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110645	Sample Type	SS
Location ID	B-07	Sample Top Depth	28.5
Sample Reference	S-06	Sample Base Depth	30
Description	SILT WITH SAND (ML), trace fine gravel	Method	ASTM D422
Classification:	SILT WITH SAND (ML)		



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**2 mm**	Coarse Sand	0.3	Fine Sand	12.2
Gravel	0.2	Medium Sand	2.8	Silt & Clay	84.5
Liquid Limit	NP	Plastic Limit	NP	Plastic Index	NP

Cc = 0.95 Cu = 5.51

Description of Sand & Gravel Particles: Rounded ☒ Angular ☐

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

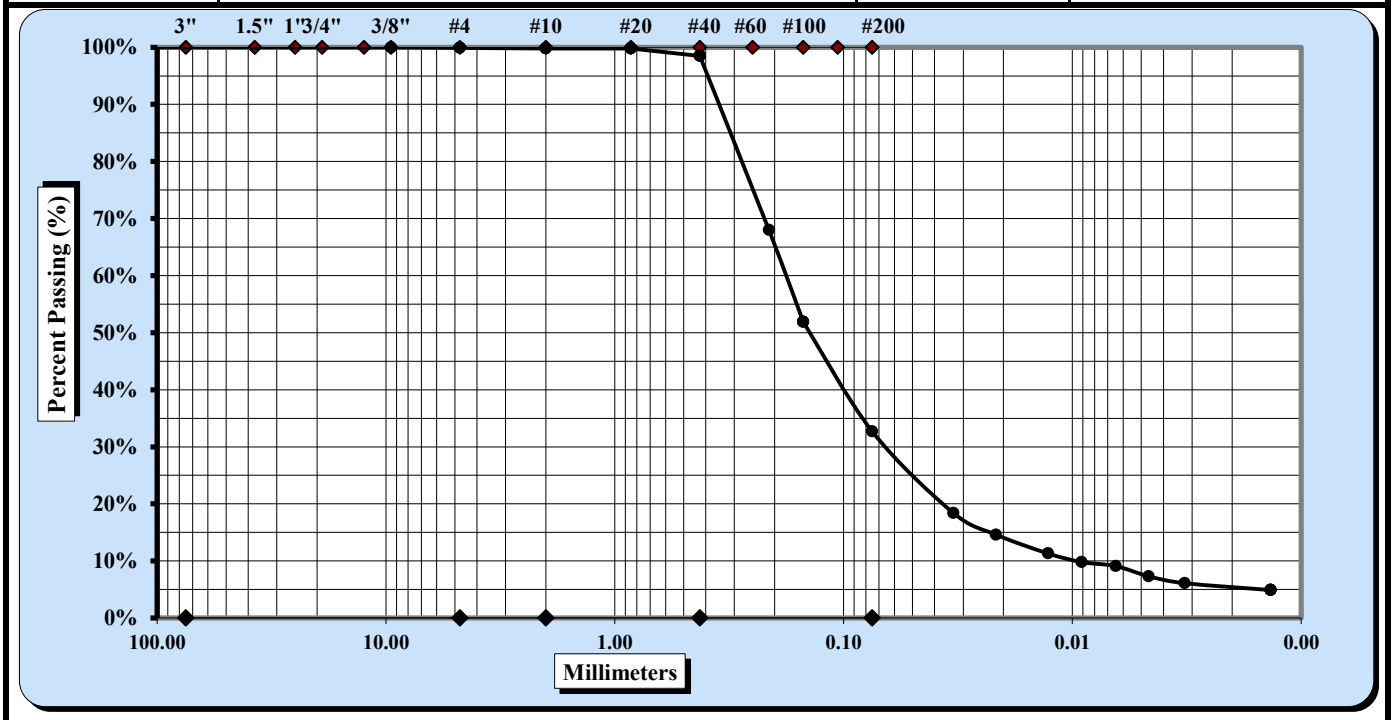
Dispersion Method: Stirrer Dispersion Period: 1 min Dispersing Agent: Sodium Hexametaphosphate Solution

References / Comments / Deviations:

CJauregui	EGoodyear	Erica Goodyear
Tested by	*Approved by*	*Signature*
Columbus	*6190 Enterprise Court, Dublin, OH 43016-7297*	

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**1/13/2026**
		Test Date	**12/1/2025**
		Sample Date	**9/23/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110650	Sample Type	UD
Location ID	B-07	Sample Top Depth	41
Sample Reference	S-09	Sample Base Depth	42.6
Description	SILTY SAND (SM), trace fine gravel	Method	ASTM D422
Classification:	SILTY SAND (SM)		



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**2 mm**	Coarse Sand	0.1	Fine Sand	65.8
Gravel	0.1	Medium Sand	1.3	Silt & Clay	32.7
Liquid Limit	NP	Plastic Limit	NP	Plastic Index	NP

Cc = 2.43 **Cu = 18.73**

Description of Sand & Gravel Particles: Rounded ☒ Angular ☐

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Dispersion Method: Stirrer Dispersion Period: 1 min Dispersing Agent: Sodium Hexametaphosphate Solution

References / Comments / Deviations:

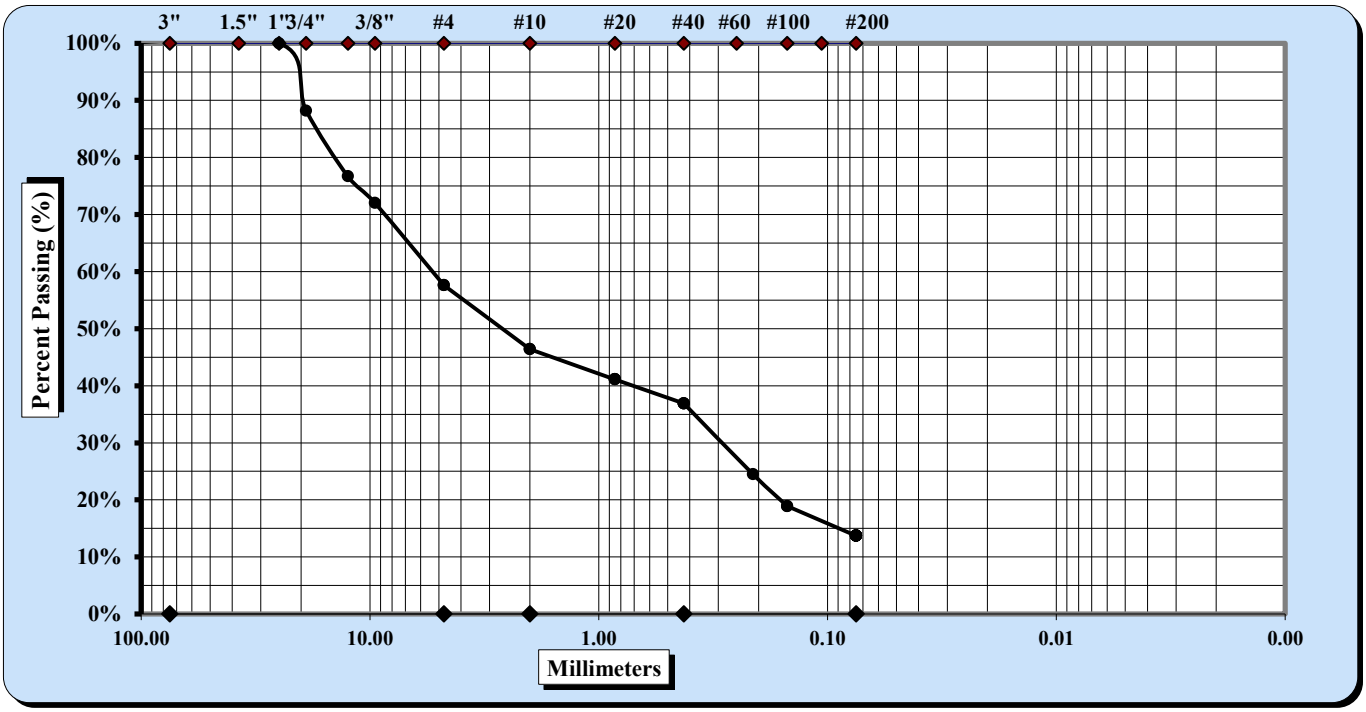
EGoodyear — *Tested by* — *Columbus*

pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils	Report Date	**12/5/2025**
		Test Date	**10/28/2025**
		Sample Date	**9/23/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110648	Sample Type	SS
Location ID	B-07	Sample Top Depth	43.5
Sample Reference	S-10	Sample Base Depth	44.5
Description	Visual: SILTY SAND WITH GRAVEL (SM)	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**25 mm**	Coarse Sand	11.2	Fine Sand	23.2
Gravel	42.4	Medium Sand	9.5	Silt & Clay	13.7
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

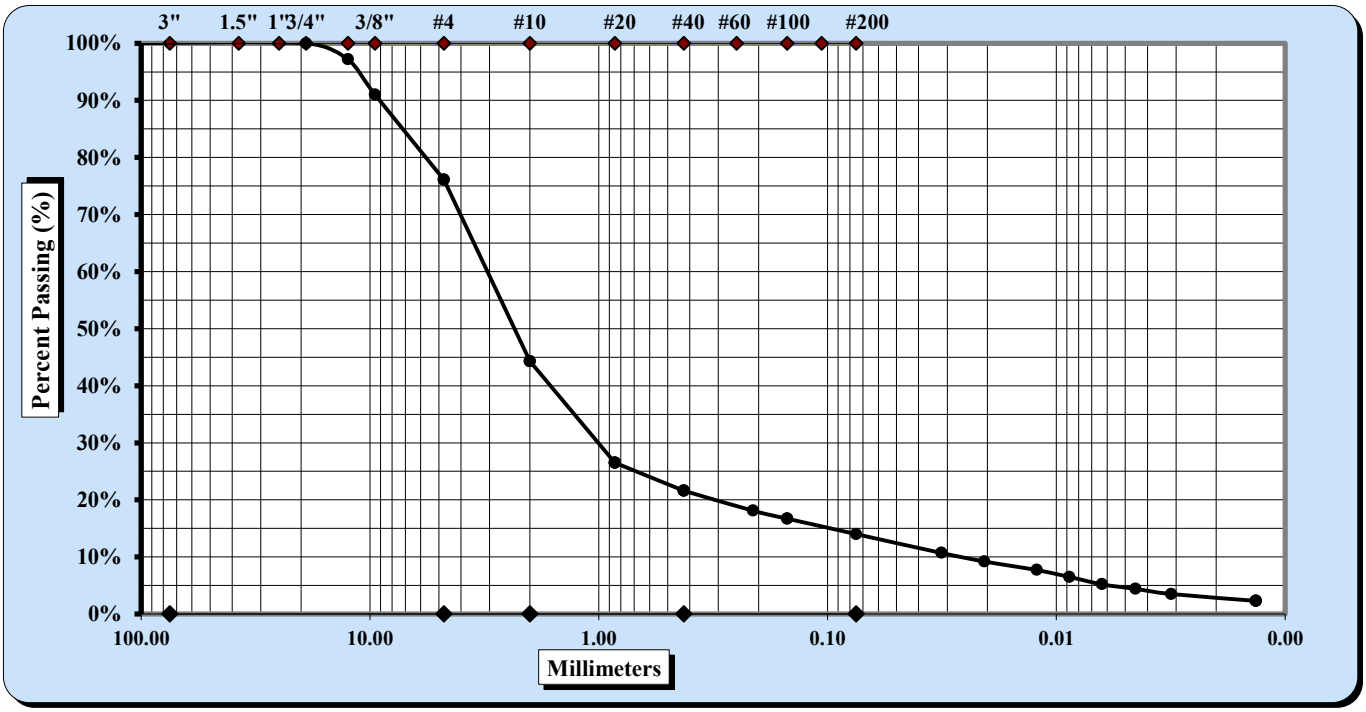
Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

EGoodyear	pmanning	Paula J. Manning
Tested by	*Approved by*	*Signature*
Columbus	*6190 Enterprise Court, Dublin, OH 43016-7297*	

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**11/3/2025**
		Sample Date	**9/23/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110649	Sample Type	SS
Location ID	B-07	Sample Top Depth	48.5
Sample Reference	S-12	Sample Base Depth	49.2
Description	Visual: SILTY SAND WITH GRAVEL (SM)	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**19 mm**	Coarse Sand	31.8	Fine Sand	7.6
Gravel	23.9	Medium Sand	22.7	Silt & Clay	14.0
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Cc = 12.69 Cu = 117.92

Description of Sand & Gravel Particles: Rounded ☒ Angular ☐

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Dispersion Method: Stirrer Dispersion Period: 1 min Dispersing Agent: Sodium Hexametaphosphate Solution

References / Comments / Deviations:

CJauregui — *Tested by* — *Columbus*

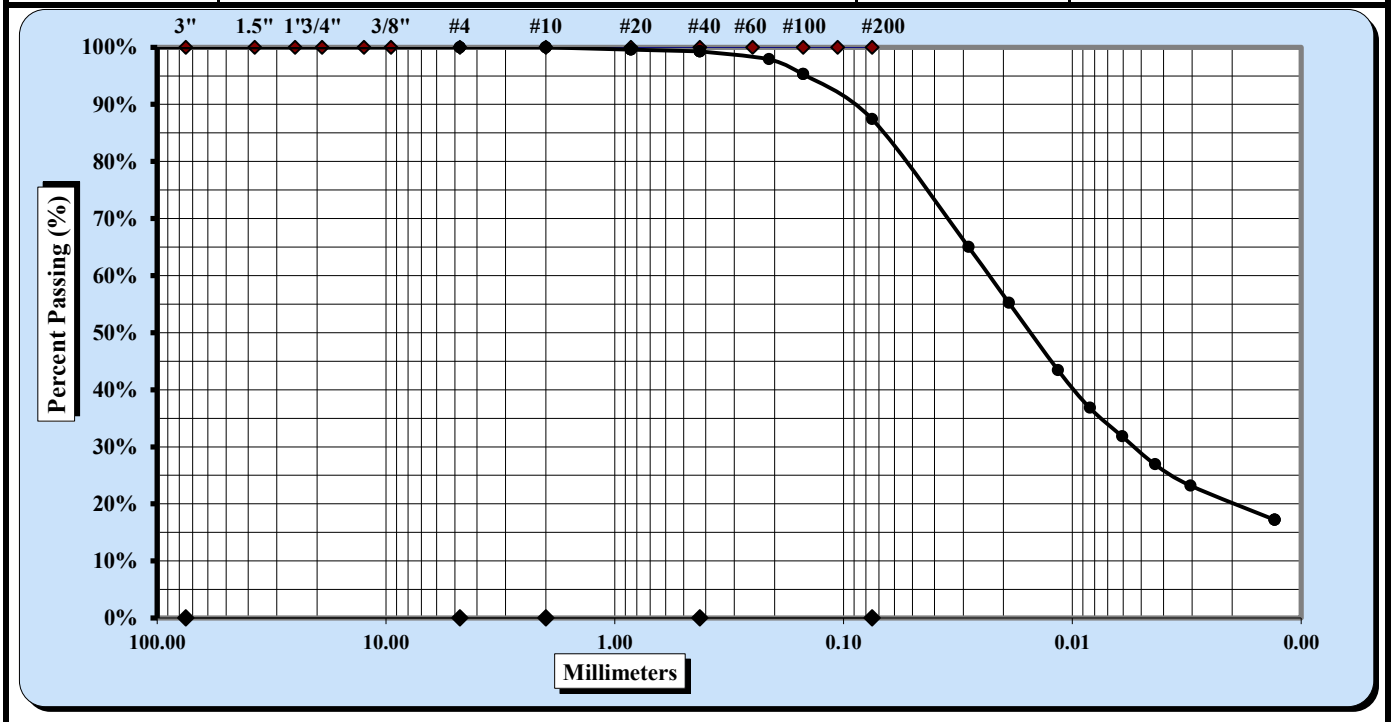
EGoodyear — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Erica Goodyear — *Signature*

ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils

Report Date	12/5/2025
Test Date	11/3/2025
Sample Date	9/23/2025

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110652	Sample Type	SS
Location ID	B-08	Sample Top Depth	23.5
Sample Reference	S-05	Sample Base Depth	25
Description	LEAN CLAY (CL), little fine to coarse sand	Method	ASTM D422
Classification:	LEAN CLAY (CL)		



ASTM PARTICLE SIZE DEFINITIONS

Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**0.425 mm**	Coarse Sand	0.0	Fine Sand	11.9
Gravel	0.0	Medium Sand	0.7	Silt & Clay	87.4
Liquid Limit	35	Plastic Limit	20	Plastic Index	15

Description of Sand & Gravel Particles: Rounded ☒ Angular ☐

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Dispersion Method: Stirrer Dispersion Period: 1 min Dispersing Agent: Sodium Hexametaphosphate Solution

References / Comments / Deviations:

CJauregui — *Tested by* — *Columbus*

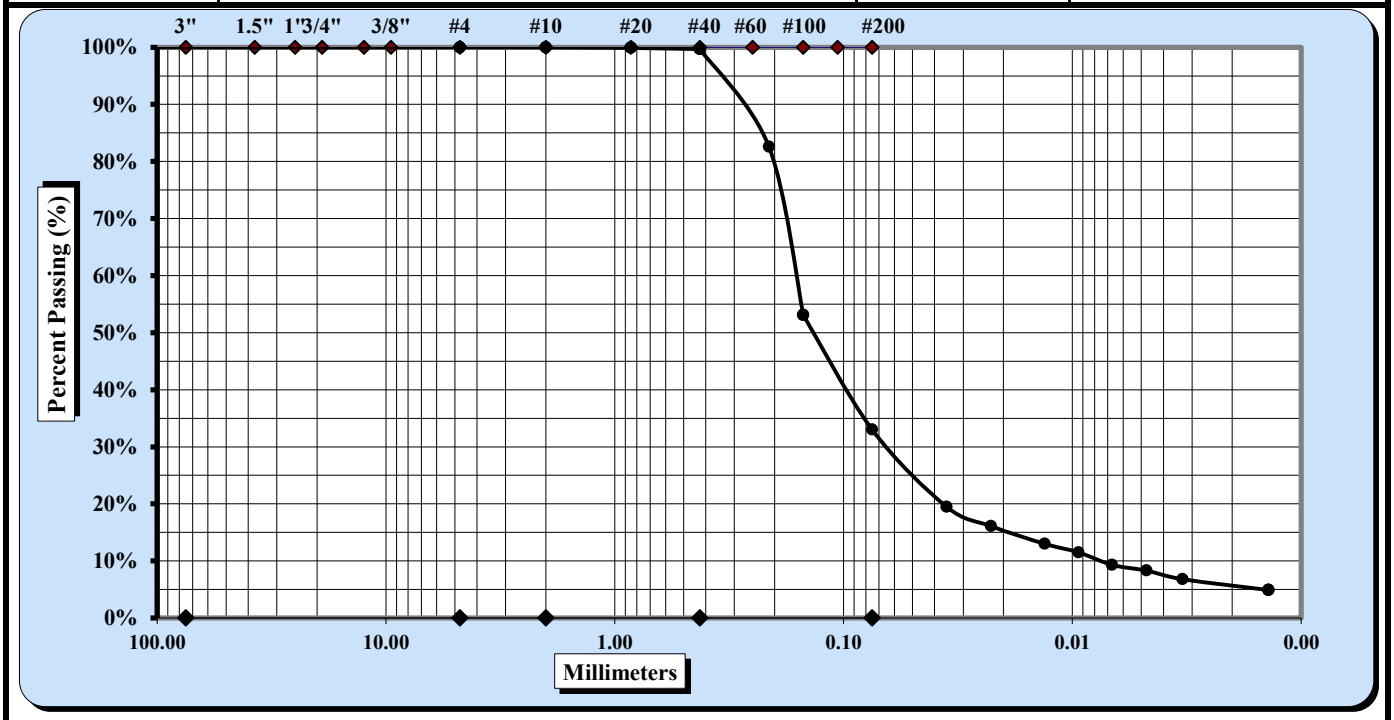
EGoodyear — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Erica Goodyear — *Signature*

ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils

Report Date	1/13/2026
Test Date	12/11/2025
Sample Date	9/23/2025

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110656	Sample Type	UD
Location ID	B-08	Sample Top Depth	26
Sample Reference	S-06	Sample Base Depth	27.2
Description	SILTY SAND (SM)	Method	ASTM D422
Classification:	SILTY SAND (SM)		



ASTM PARTICLE SIZE DEFINITIONS

Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**0.425 mm**	Coarse Sand	0.0	Fine Sand	66.7
Gravel	0.0	Medium Sand	0.3	Silt & Clay	33.0
Liquid Limit	NP	Plastic Limit	NP	Plastic Index	NP

Cc = 3.32 **Cu = 21.79**

Description of Sand & Gravel Particles: Rounded ☒ Angular ☐

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Dispersion Method: Stirrer Dispersion Period: 1 min Dispersing Agent: Sodium Hexametaphosphate Solution

References / Comments / Deviations:

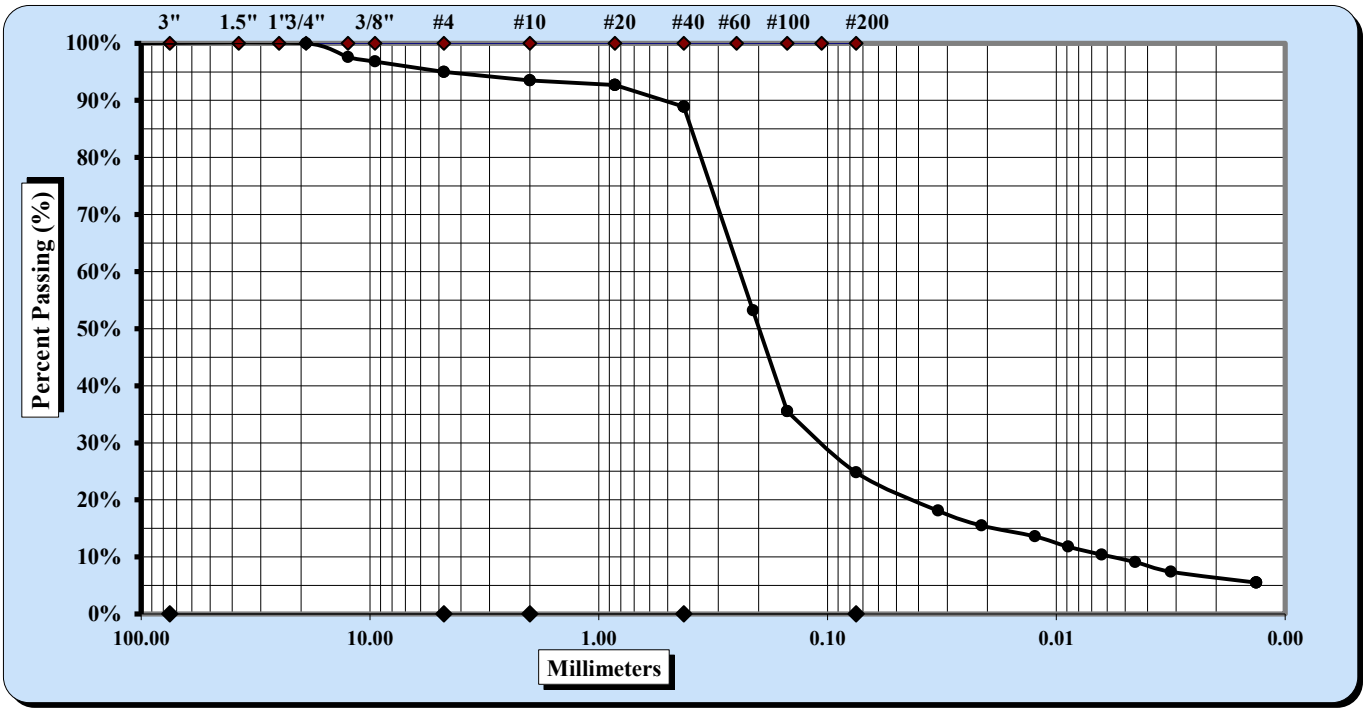
EGoodyear — *Tested by* — *Columbus*

pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**11/3/2025**
		Sample Date	**9/23/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110653	Sample Type	SS
Location ID	B-08	Sample Top Depth	28.5
Sample Reference	S-07	Sample Base Depth	30
Description	Visual: SILTY SAND (SM), trace fine gravel.	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**19 mm**	Coarse Sand	1.5	Fine Sand	64.1
Gravel	5.0	Medium Sand	4.6	Silt & Clay	24.8
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Cc = 7.97 Cu = 42.33

Description of Sand & Gravel Particles: Rounded ☒ Angular ☐

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Dispersion Method: Stirrer Dispersion Period: 1 min Dispersing Agent: Sodium Hexametaphosphate Solution

References / Comments / Deviations:

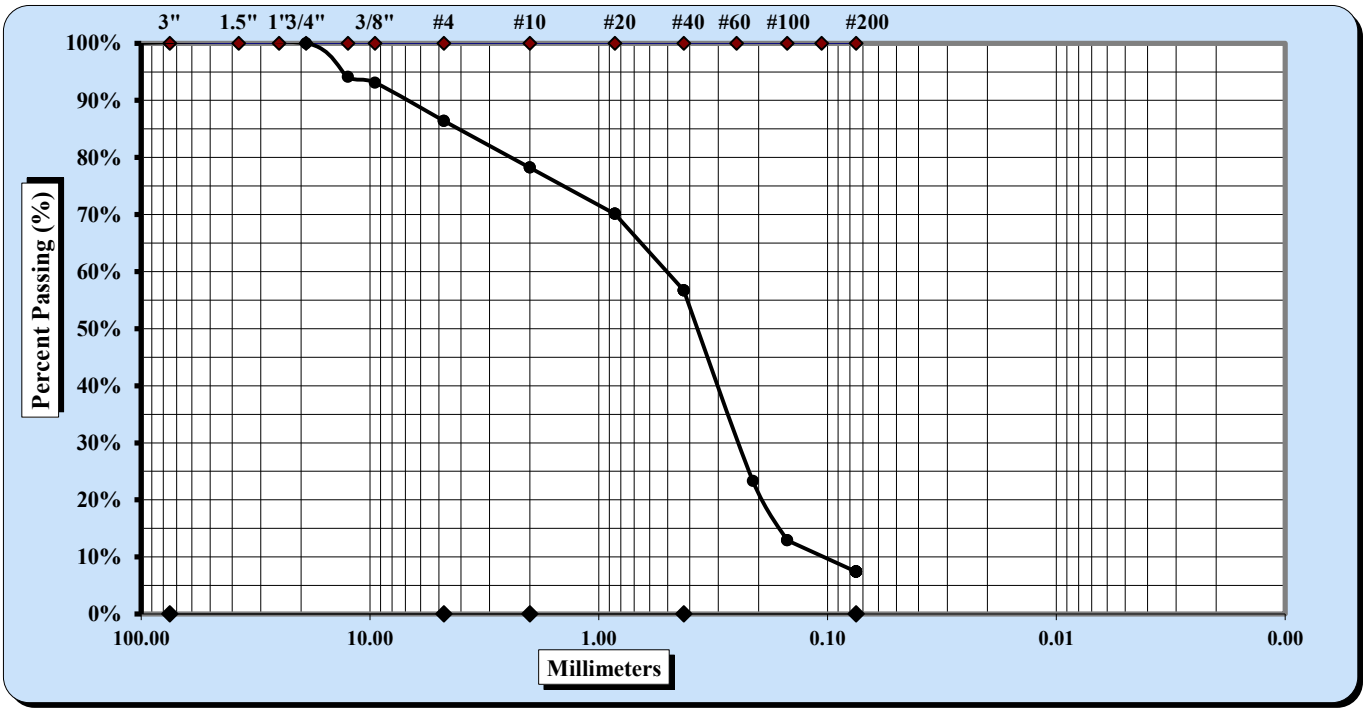
CJauregui — *Tested by* — *Columbus*

EGoodyear — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Erica Goodyear — *Signature*

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**10/29/2025**
		Sample Date	**9/23/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110654	Sample Type	SS
Location ID	B-08	Sample Top Depth	31
Sample Reference	S-08	Sample Base Depth	32.5
Description	Visual: POORLY-GRADED SAND WITH SILT (SP-SM), little fine gravel	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS

Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**19 mm**	Coarse Sand	8.2	Fine Sand	49.3
Gravel	13.6	Medium Sand	21.5	Silt & Clay	7.4
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Cc = 1.13 **Cu = 4.84**

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

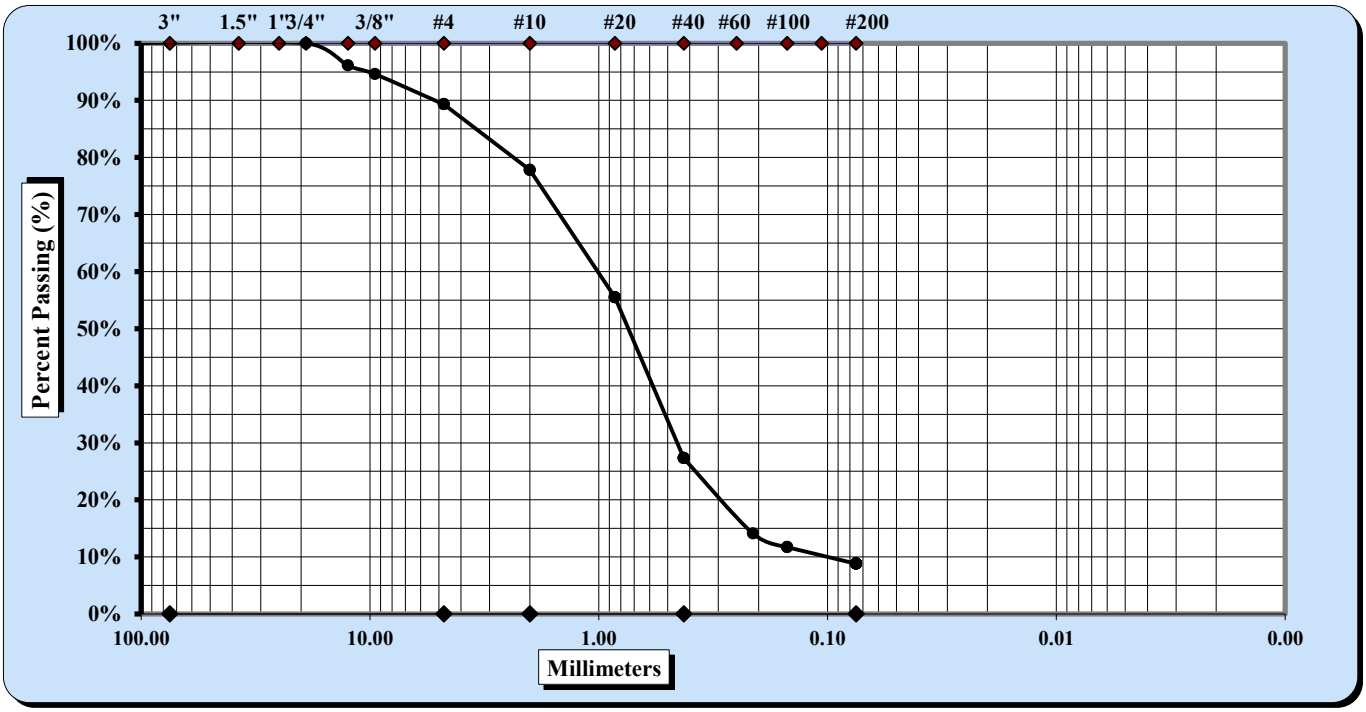
EGoodyear — *Tested by* — *Columbus*

pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**10/29/2025**
		Sample Date	**9/23/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110655	Sample Type	SS
Location ID	B-08	Sample Top Depth	43.5
Sample Reference	S-13	Sample Base Depth	45
Description	Visual: WELL-GRADED SAND WITH SILT (SW-SM), little fine gravel	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**19 mm**	Coarse Sand	11.5	Fine Sand	18.5
Gravel	10.7	Medium Sand	50.5	Silt & Clay	8.8
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Cc = 2.04 **Cu = 10.11**

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

EGoodyear — *Tested by* — *Columbus*

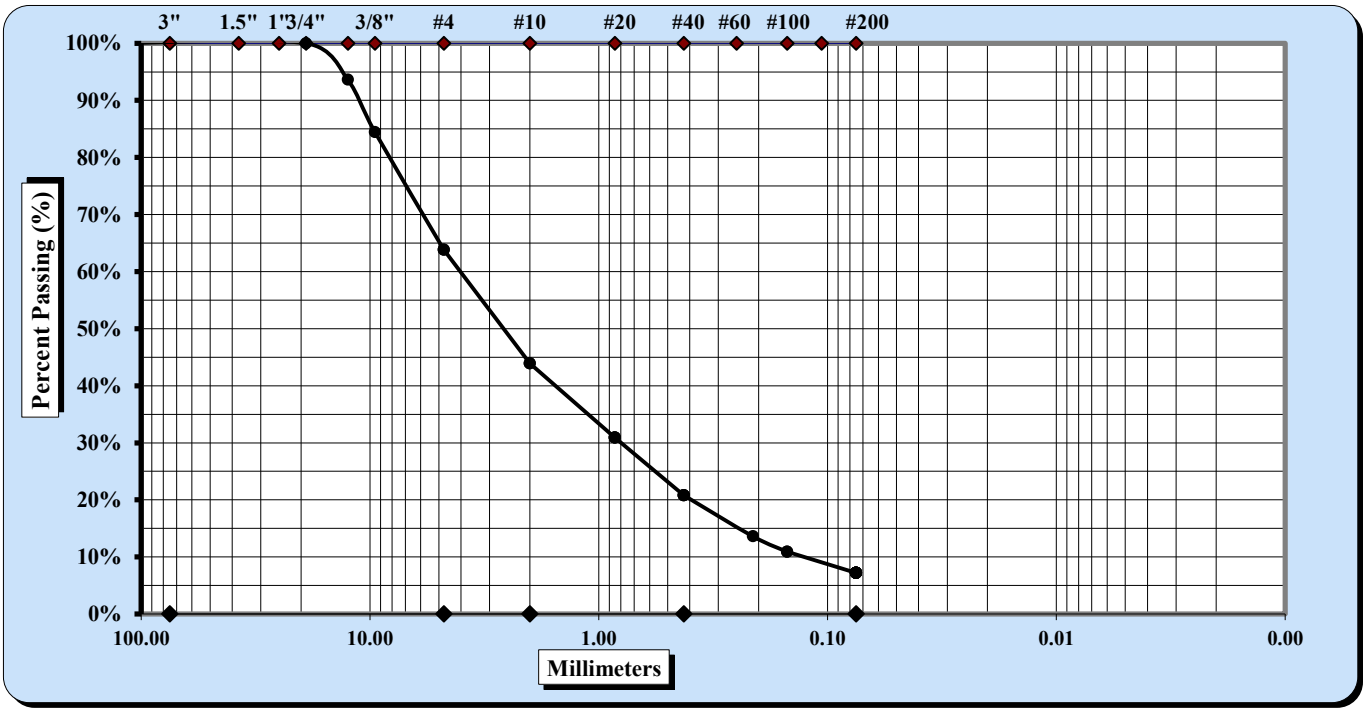
pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils

Report Date	12/5/2025
Test Date	11/7/2025
Sample Date	9/24/2025

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110657	Sample Type	SS
Location ID	B-09	Sample Top Depth	13.5
Sample Reference	S-03	Sample Base Depth	15
Description	Visual: WELL-GRADED SAND WITH SILT AND GRAVEL (SP-SM)	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS

Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**19 mm**	Coarse Sand	19.9	Fine Sand	13.6
Gravel	36.2	Medium Sand	23.1	Silt & Clay	7.2
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Cc = 1.25 **Cu = 31.78**

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

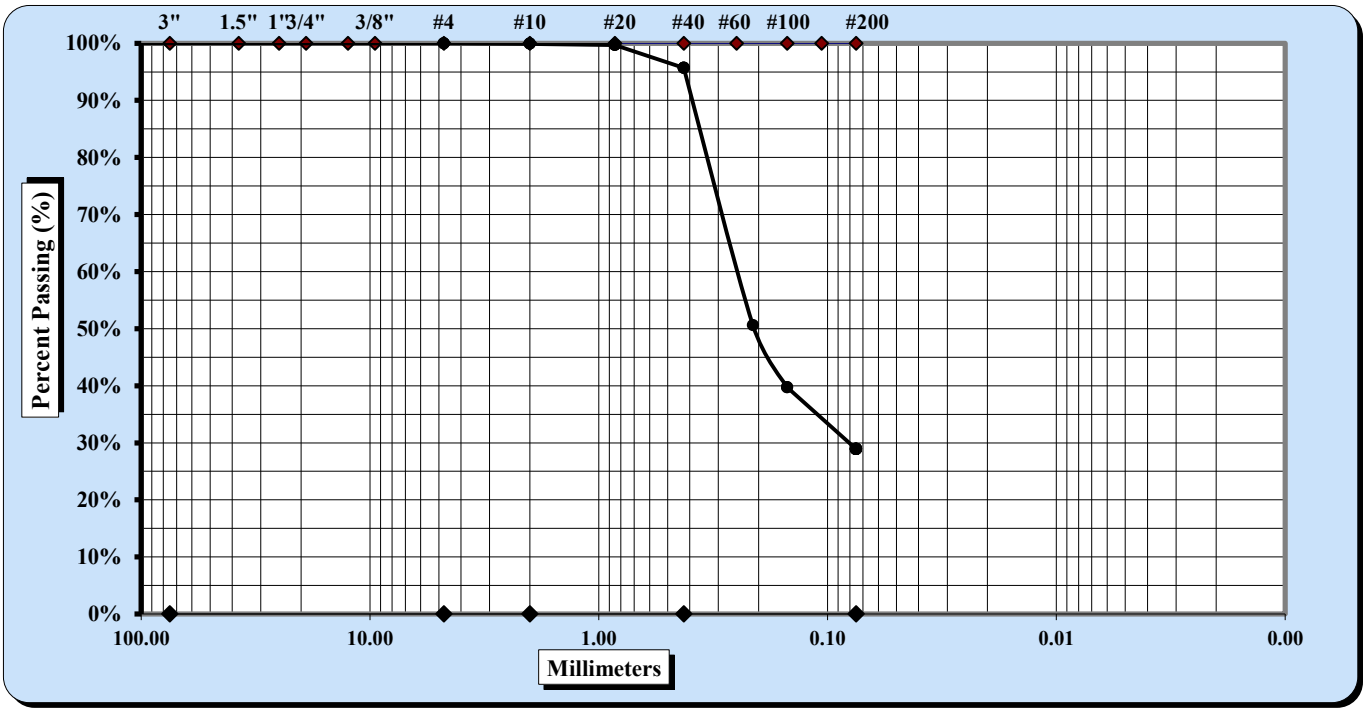
CJauregui
Tested by
Columbus

EGoodyear
Approved by
6190 Enterprise Court, Dublin, OH 43016-7297

Erica Goodyear
Signature

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	12/5/2025
		Test Date	11/7/2025
		Sample Date	9/24/2025

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110658	Sample Type	SS
Location ID	B-09	Sample Top Depth	18.5
Sample Reference	S-04	Sample Base Depth	19.5
Description	Visual: SILTY SAND (SM)	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**0.85 mm**	Coarse Sand	0.1	Fine Sand	66.8
Gravel	0.0	Medium Sand	4.2	Silt & Clay	28.9
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

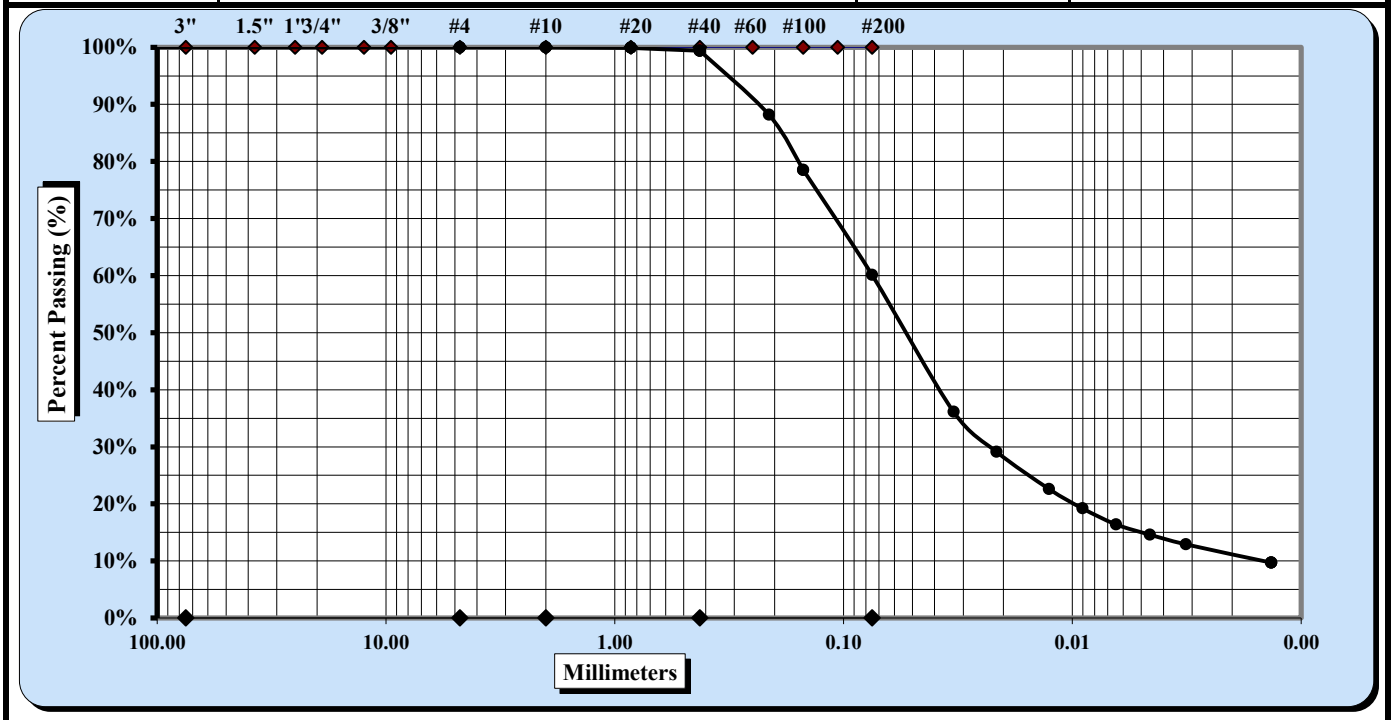
References / Comments / Deviations:

CJauregui	EGoodyear	Erica Goodyear
Tested by	*Approved by*	*Signature*
Columbus	*6190 Enterprise Court, Dublin, OH 43016-7297*	

ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils

Report Date	12/5/2025
Test Date	10/30/2025
Sample Date	9/24/2025

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110659	Sample Type	SS
Location ID	B-09	Sample Top Depth	23.5
Sample Reference	S-05	Sample Base Depth	25
Description	SANDY SILT (ML)	Method	ASTM D422
Classification:	SANDY SILT (ML)		



ASTM PARTICLE SIZE DEFINITIONS

Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**0.425 mm**	Coarse Sand	0.0	Fine Sand	39.3
Gravel	0.0	Medium Sand	0.6	Silt & Clay	60.1
Liquid Limit	NP	Plastic Limit	NP	Plastic Index	NP

Cc = 4.68 **Cu = 51.04**

Description of Sand & Gravel Particles: Rounded ☒ Angular ☐

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Dispersion Method: Stirrer Dispersion Period: 1 min Dispersing Agent: Sodium Hexametaphosphate Solution

References / Comments / Deviations:

EGoodyear — *Tested by* — *Columbus*

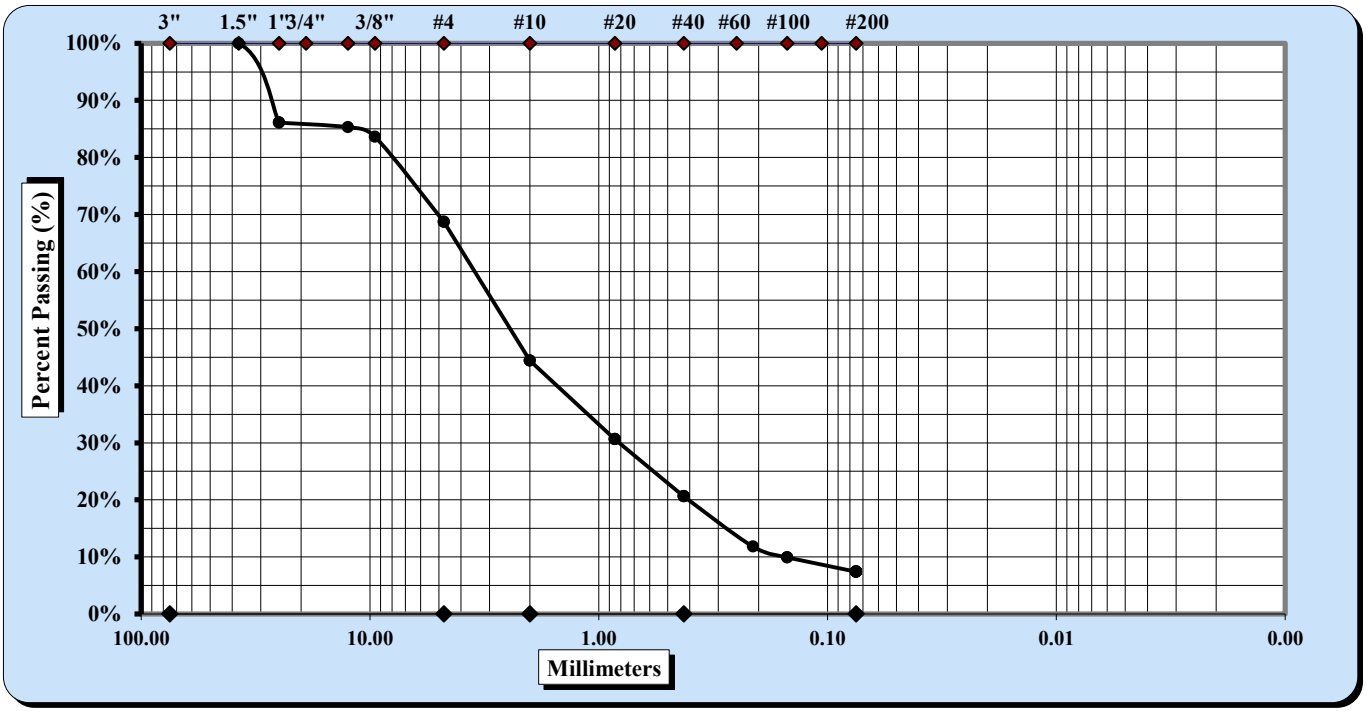
pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils

Report Date	12/5/2025
Test Date	11/7/2025
Sample Date	9/24/2025

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110661	Sample Type	SS
Location ID	B-09	Sample Top Depth	43.5
Sample Reference	S-13	Sample Base Depth	44
Description	Visual: WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM)	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS

Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**37.5 mm**	Coarse Sand	24.3	Fine Sand	13.2
Gravel	31.3	Medium Sand	23.8	Silt & Clay	7.4
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Cc = 1.25 **Cu = 22.81**

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

CJauregui — *Tested by* — *Columbus*

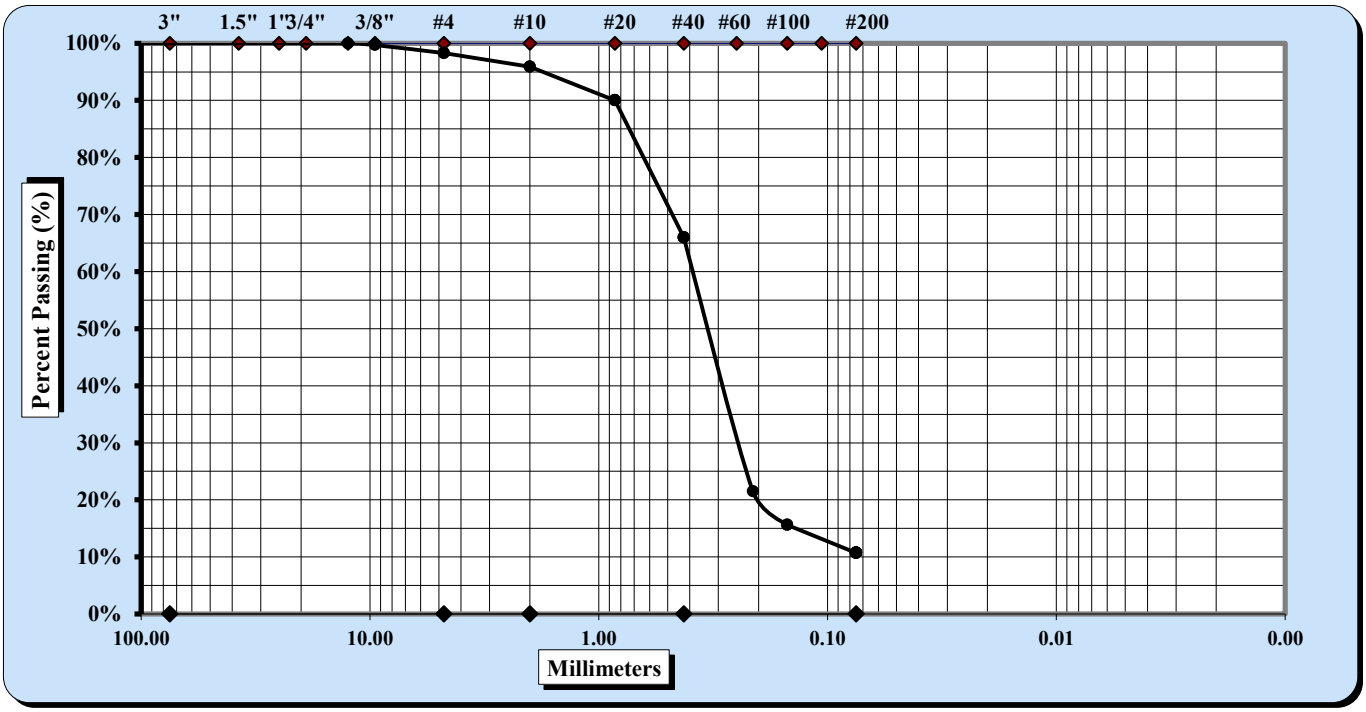
EGoodyear — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Erica Goodyear — *Signature*

ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils

Report Date	12/5/2025
Test Date	11/7/2025
Sample Date	9/29/2025

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110665	Sample Type	SS
Location ID	B-10	Sample Top Depth	33.5
Sample Reference	S-09	Sample Base Depth	35
Description	Visual: WELL-GRADED SAND WITH SILT (SW-SM), trace fine gravel	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS

Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**9.5 mm**	Coarse Sand	2.4	Fine Sand	55.3
Gravel	1.7	Medium Sand	29.9	Silt & Clay	10.7
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

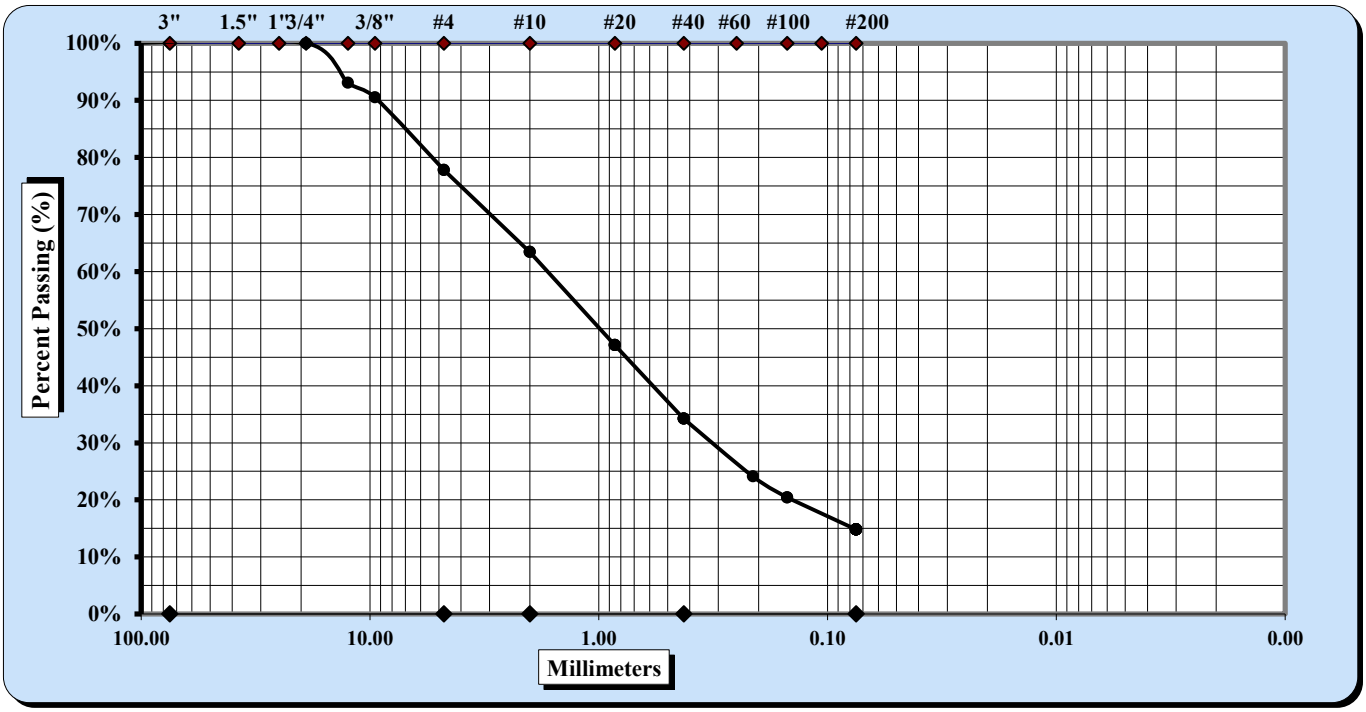
CJauregui
Tested by
Columbus

EGoodyear
Approved by
6190 Enterprise Court, Dublin, OH 43016-7297

Erica Goodyear
Signature

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**11/7/2025**
		Sample Date	**9/30/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110666	Sample Type	SS
Location ID	B-11	Sample Top Depth	13.5
Sample Reference	S-03	Sample Base Depth	15
Description	Visual: SILTY SAND WITH GRAVEL (SM)	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**19 mm**	Coarse Sand	14.4	Fine Sand	19.4
Gravel	22.2	Medium Sand	29.2	Silt & Clay	14.8
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

CJauregui — *Tested by* — *Columbus*

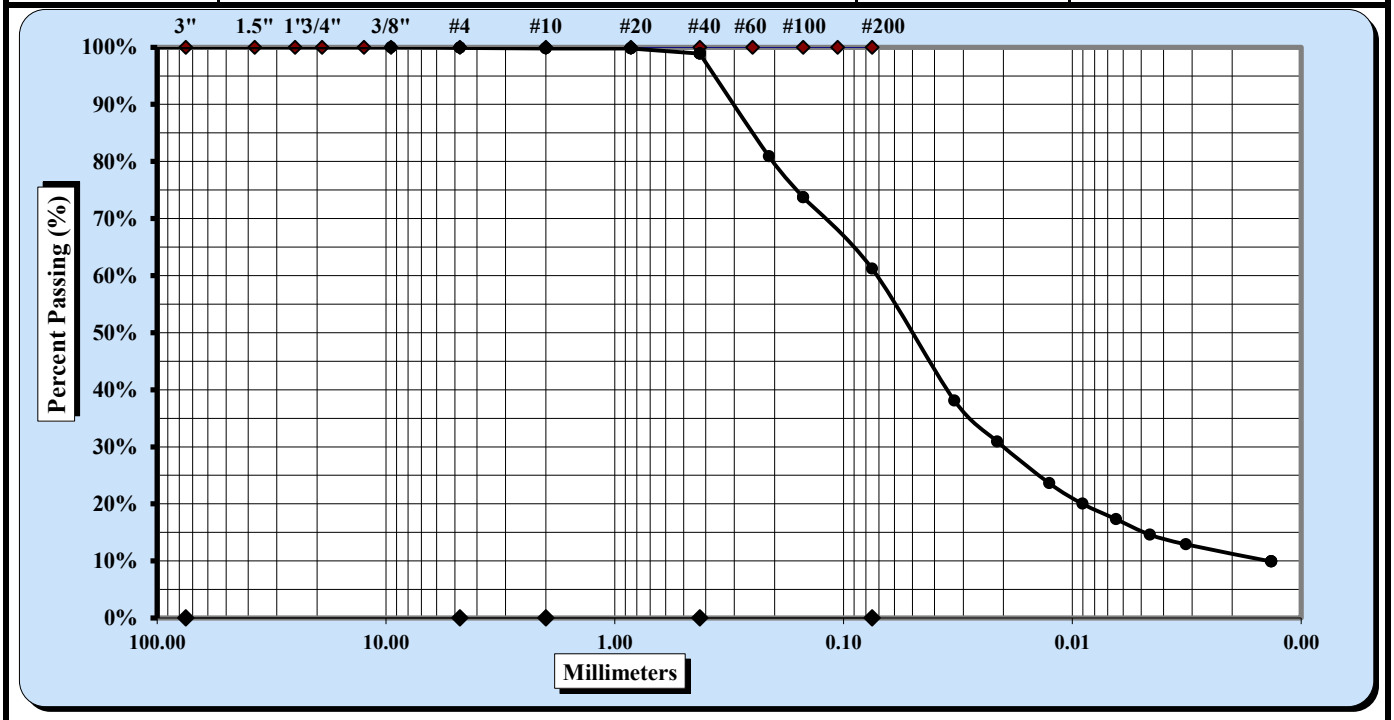
EGoodyear — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Erica Goodyear — *Signature*

ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils

Report Date	12/5/2025
Test Date	10/30/2025
Sample Date	9/30/2025

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110668	Sample Type	SS
Location ID	B-11	Sample Top Depth	33.5
Sample Reference	S-08	Sample Base Depth	35
Description	SANDY SILT (ML), trace fine gravel	Method	ASTM D422
Classification:	SANDY SILT (ML)		



ASTM PARTICLE SIZE DEFINITIONS

Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**2 mm**	Coarse Sand	0.1	Fine Sand	37.7
Gravel	0.1	Medium Sand	0.9	Silt & Clay	61.2
Liquid Limit	NP	Plastic Limit	NP	Plastic Index	NP

Cc = 3.98 **Cu = 51.64**

Description of Sand & Gravel Particles: Rounded ☒ Angular ☐

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Dispersion Method: Stirrer Dispersion Period: 1 min Dispersing Agent: Sodium Hexametaphosphate Solution

References / Comments / Deviations:

EGoodyear — *Tested by* — *Columbus*

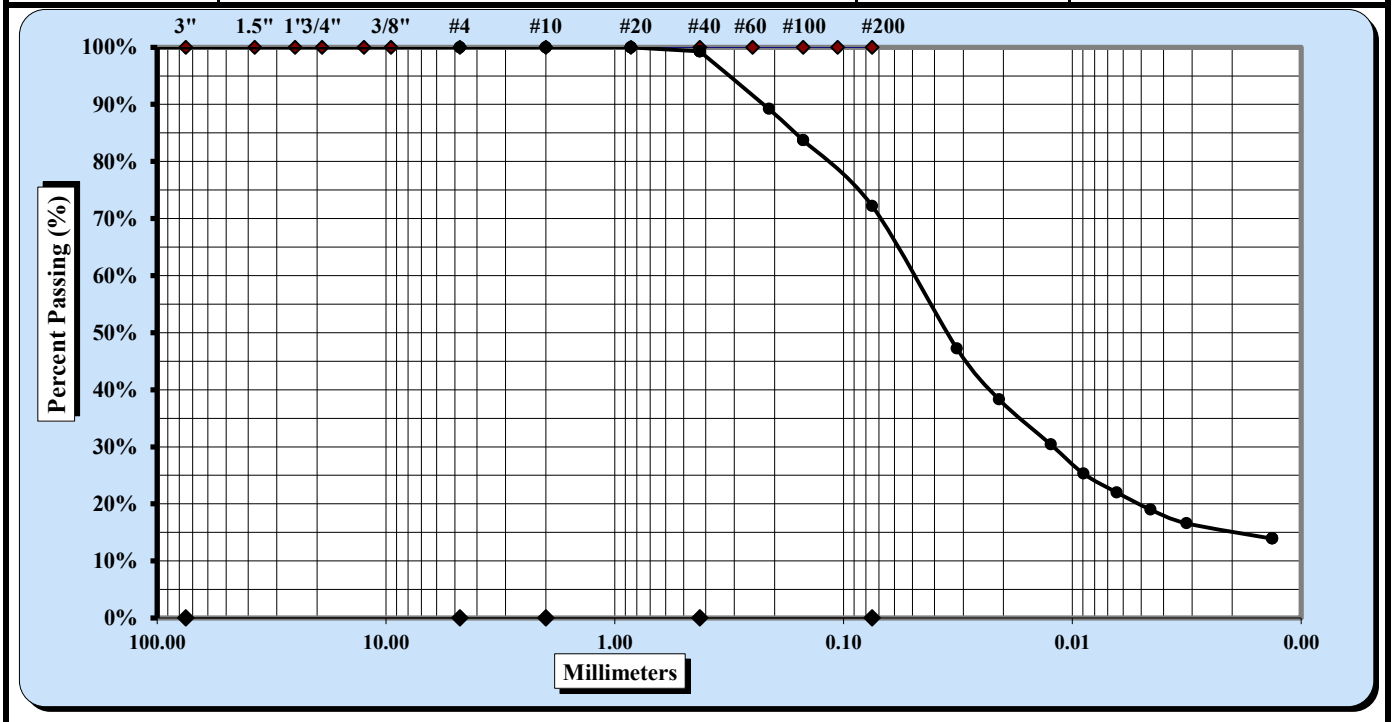
pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils

Report Date	1/13/2026
Test Date	1/8/2026
Sample Date	9/30/2025

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110670	Sample Type	UD
Location ID	B-11	Sample Top Depth	35
Sample Reference	S-09	Sample Base Depth	37
Description	LEAN CLAY WITH SAND (CL)	Method	ASTM D422
Classification:	LEAN CLAY WITH SAND (CL)		



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**0.425 mm**	Coarse Sand	0.0	Fine Sand	27.1
Gravel	0.0	Medium Sand	0.7	Silt & Clay	72.2
Liquid Limit	29	Plastic Limit	19	Plastic Index	10

Description of Sand & Gravel Particles: Rounded ☒ Angular ☐

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Dispersion Method: Stirrer Dispersion Period: 1 min Dispersing Agent: Sodium Hexametaphosphate Solution

References / Comments / Deviations:

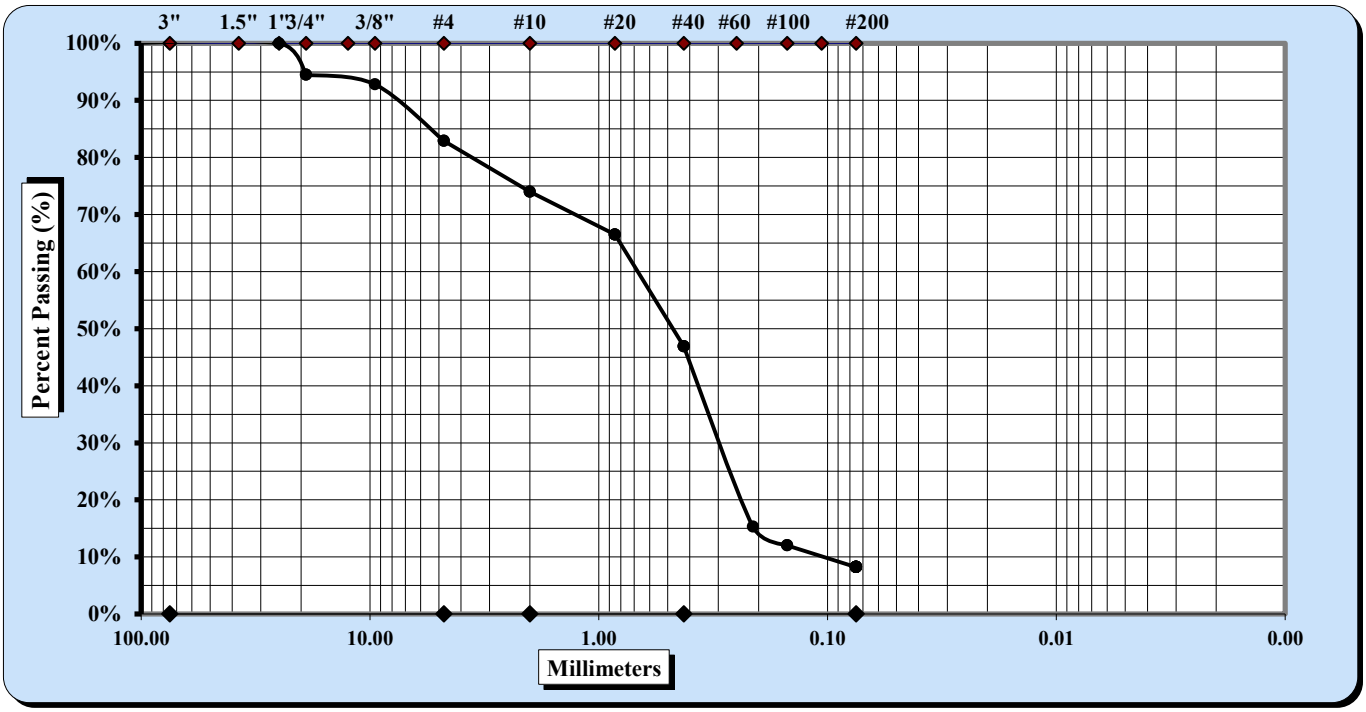
EGoodyear — *Tested by* — *Columbus*

pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**10/29/2025**
		Sample Date	**9/30/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110669	Sample Type	SS
Location ID	B-11	Sample Top Depth	46
Sample Reference	S-13	Sample Base Depth	47.2
Description	Visual: WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM)	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**25 mm**	Coarse Sand	8.9	Fine Sand	38.7
Gravel	17.1	Medium Sand	27.1	Silt & Clay	8.2
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Cc = 1.22 **Cu = 6.49**

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

EGoodyear — *Tested by* — *Columbus*

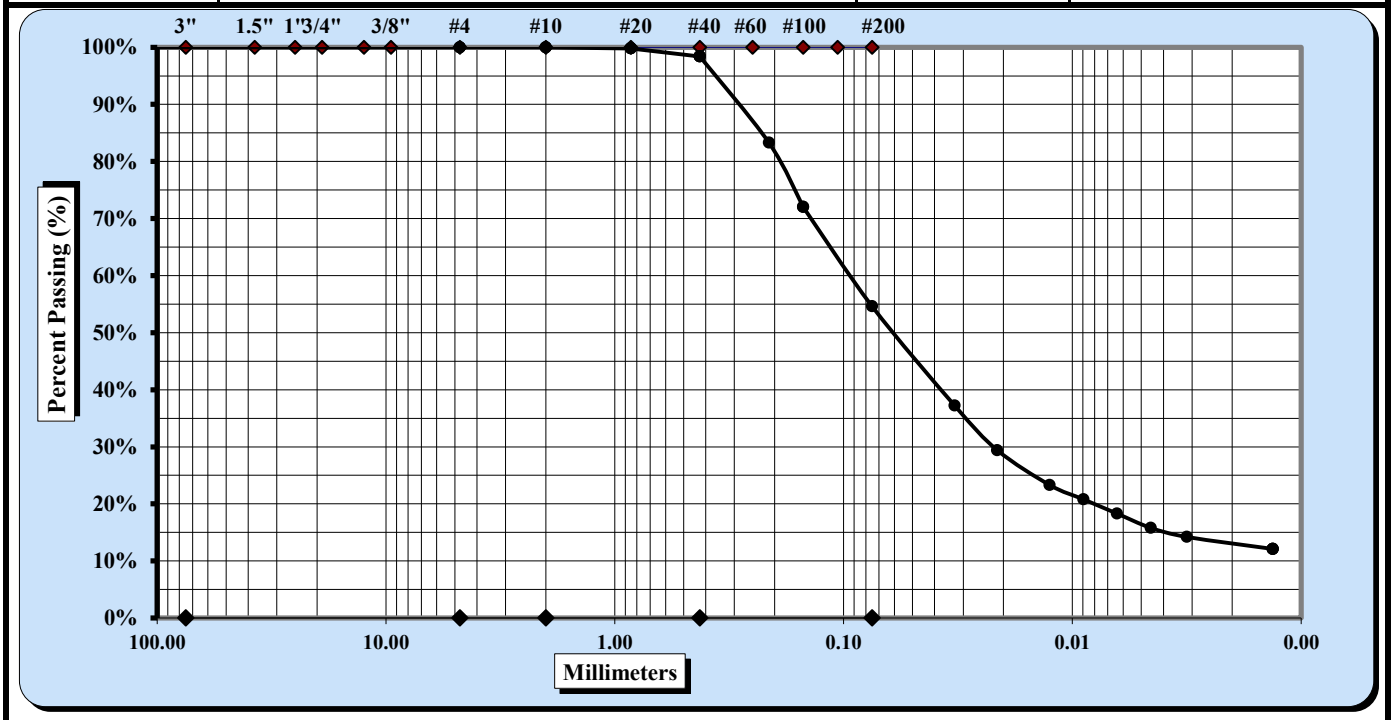
pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils

Report Date	12/5/2025
Test Date	11/3/2025
Sample Date	10/1/2025

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110671	Sample Type	SS
Location ID	B-12	Sample Top Depth	23.5
Sample Reference	S-05	Sample Base Depth	25
Description	SANDY SILT (ML)	Method	ASTM D422
Classification:	SANDY SILT (ML)		



ASTM PARTICLE SIZE DEFINITIONS

Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**0.85 mm**	Coarse Sand	0.0	Fine Sand	43.8
Gravel	0.0	Medium Sand	1.6	Silt & Clay	54.6
Liquid Limit	NP	Plastic Limit	NP	Plastic Index	NP

Description of Sand & Gravel Particles: Rounded ☒ Angular ☐

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

Dispersion Method: Stirrer Dispersion Period: 1 min Dispersing Agent: Sodium Hexametaphosphate Solution

References / Comments / Deviations:

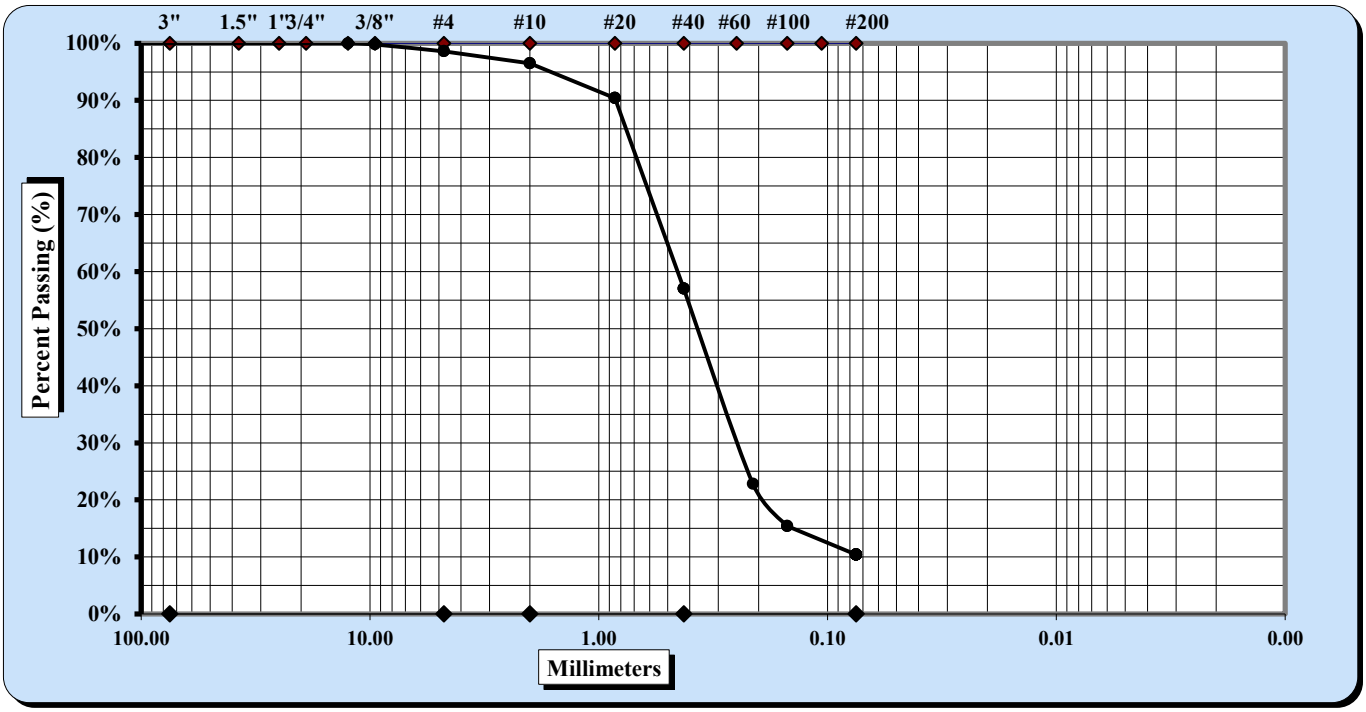
CJauregui — *Tested by* — *Columbus*

EGoodyear — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Erica Goodyear — *Signature*

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	**12/5/2025**
		Test Date	**11/6/2025**
		Sample Date	**10/1/2025**

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110673	Sample Type	SS
Location ID	B-12	Sample Top Depth	48.5
Sample Reference	S-14	Sample Base Depth	50
Description	Visual: WELL-GRADED SAND WITH SILT (SW-SM), trace fine gravel	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**9.5 mm**	Coarse Sand	2.1	Fine Sand	46.6
Gravel	1.4	Medium Sand	39.5	Silt & Clay	10.4
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

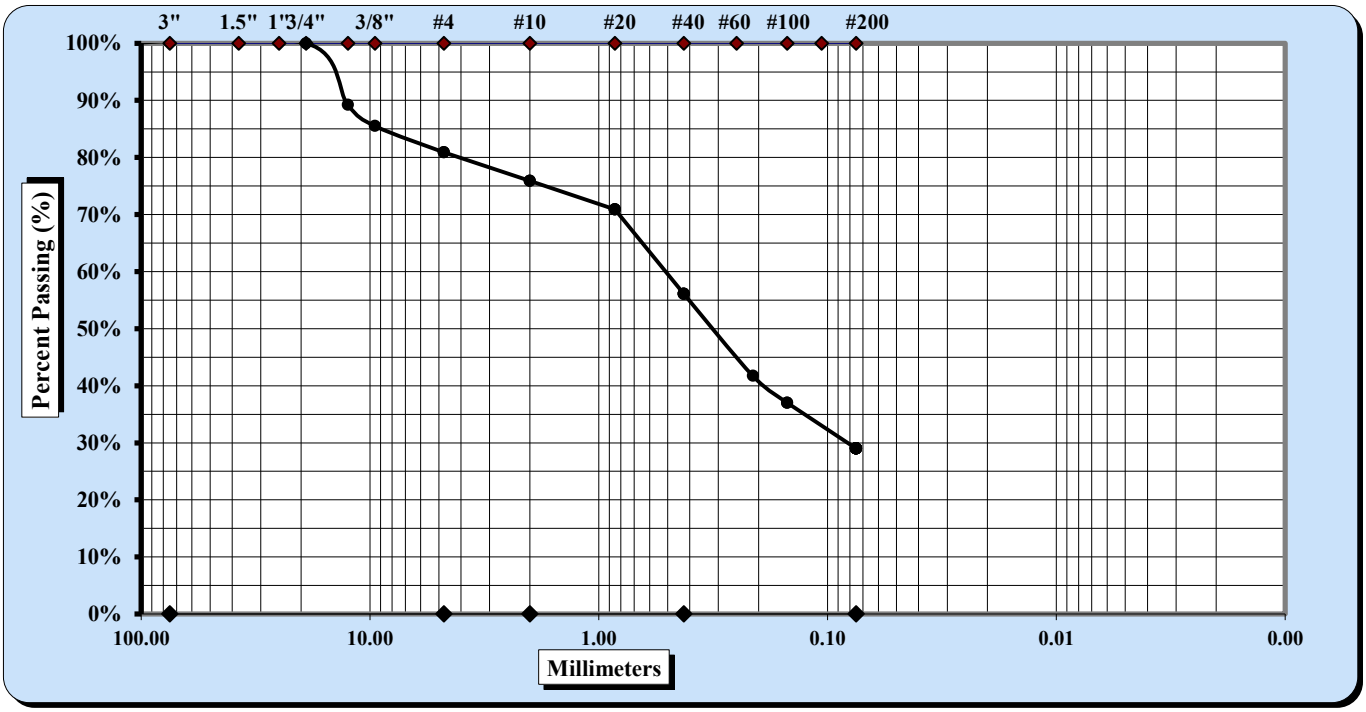
EGoodyear — *Tested by* — *Columbus*

pmanning — *Approved by* — *6190 Enterprise Court, Dublin, OH 43016-7297*

Paula J. Manning — *Signature*

	ASTM D422: Standard Test Methods for Particle-Size Distribution (Gradation) of Soils		
		Report Date	12/5/2025
		Test Date	11/6/2025
		Sample Date	10/1/2025

Project Number	25170079		
Project Name	Philo Plant Legacy CCR Impoundments		
Client Name	American Electric Power		
Client Address	8500 Smiths Mill Road, New Albany, Ohio 43054		
KeyLAB ID	CBUS2025110678	Sample Type	SS
Location ID	B-13	Sample Top Depth	28.5
Sample Reference	S-08	Sample Base Depth	30
Description	Visual: SILTY, CLAYEY SAND WITH GRAVEL (SC-SM)	Method	ASTM D422



ASTM PARTICLE SIZE DEFINITIONS			
Cobbles	< 300 mm (12") and > 75 mm (3")	Medium Sand	< 2.00 mm and > 0.425 mm (#40)
Gravel	< 75 mm and > 4.75 mm (#4)	Fine Sand	< 0.425 mm and > 0.075 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Silt & Clay	< 0.075

Maximum Particle Size	**19 mm**	Coarse Sand	5.0	Fine Sand	27.1
Gravel	19.1	Medium Sand	19.8	Silt & Clay	29.0
Liquid Limit	ND	Plastic Limit	ND	Plastic Index	ND

Description of Sand & Gravel Particles: Rounded ☐ Angular ☒

Hard & Durable ☒ Soft ☐ Weathered & Friable ☐

References / Comments / Deviations:

EGoodyear	pmanning	Paula J. Manning
Tested by	*Approved by*	*Signature*
Columbus	*6190 Enterprise Court, Dublin, OH 43016-7297*	

Form No: TR-D854-1B
Revision No. 3
Revision Date: 10/1/2024

SPECIFIC GRAVITY OF SOIL

Oven dried Specimens ASTM D 854 Method B

S&ME, Inc. - Columbus: 6190 Enterprise Court, Dublin, Ohio 43016

Project #:	25-17-0079	Report Date:	11/14/25
Project Name:	Philo Legacy CCR Impoundments Evaluation	Test Date(s):	10/29-11/14/25
Client Name:	American Electric Power (AEP)		
Client Address:	8500 Smiths Mill Road, New Albany, Ohio, 43054		

Boring No.	B-03	Sample No.	S-02	Sample Date:	
Location:		Sampled by:		Elevation:	8.5'-9.5'

Sample Description: Visual: POORLY GRADED SAND (SP), trace fine gravel (Bottom Ash)

Material Excluded: % Passing #4 Sieve: 97%

Balance ID.	*0.1 gram*	*ID#:*	*27984*	*Cal. Date:*	*10/22/25*	*Cal. Due:*	*10/22/26*
Pycnometer ID No.	*28070*	*Cal. Date:*	*4/11/25*	*Balance Verification*	Check Mass:	500.00	grams
Pycnometer Volume (V_p)	499.33	ml.			Mass Determination:	499.98	grams
Pycnometer Mass (PM)	181.32	grams		*If [PM-M_p] is greater than .06 grams,*			
Ave. Pycnometer Mass (M_p)	181.34	grams		*recalibrate the dry mass of the pycnometer.*			

Method B: Oven-dried Specimens

Table 1 ASTM D 854	Specimen Dry Mass (g.)	
Soil Type	*250-ml. beaker*	*500-ml. beaker*
Passing 3/8"	*165-200*	*165-300*
Passing No. 4	*75-125*	*75-200*
Passing No. 10	*50-75*	*50-125*
Passing No. 40	*40-60*	*40-100*
Passing No. 100	*30-50*	*30-75*

Soaking Time ASTM C127: 24 ± 4 hrs. ☐
Aggregate not initially dried ☐

Initial Dry Mass of Test Specimen - *not required.* 102.12 grams

$M_{psw;t}$ = *Mass of the Pycnometer, soil, and water* = 744.75 *grams*

Mass of Dry Soil (grams)		Tare #	JV
A	Tare Weight		97.65
C	Dry Wt. + Tare Wt.		199.77
M_s	Dry Weight	**C-A**	**102.12**

T_t =	Test Temperature T_t	20.0 °C
K =	Temperature Coefficient at T_t	**1.00000**
K =	Temperature Coefficient at 23°C	**0.99933**
$p_{w;t}$ =	Density of Water at T_t	**0.99821** g./ml.

$M_{pw;t}$ =	Mass of the Pycnometer and water at T_t	$M_{pw;t} = M_p + (V_p \times p_{w;t})$	**679.78** grams
G_t =	Specific Gravity of Soil Solids at the T_t	$G_t = M_s / (M_{pw;t} - (M_{psw;t}-M_s))$	**2.749**
G =	Specific Gravity of Soil Solids at the 20°C	$G = K \times G_t$	**2.749**

Soils containing plus #4 material tested per **ASTM C 127**

R =	*% of Soil retained on the #4 sieve*	**3.0%**
P =	*% of Soil passing the #4 sieve*	**97.0%**

G_{+4}	Apparent Specific Gravity of plus #4 material at the 23°C per ASTM C127	**2.702**
	Apparent Specific Gravity of plus #4 material corrected to 20°C	**2.700**

G_{total} *Total Sample Specific Gravity*

$$G_{total} = \frac{1}{\frac{R}{100 \times G_{+4}} + \frac{P}{100 \times G}} = 2.748$$

Notes / Deviations / References: ASTM D854: Specific Gravity of Soil Solids by Water Pycnometer

Erica Goodyear	T3	Daniel Tobey	12/11/2025
Technician Name	*Certification*	*Technical Responsibility*	Date

Form No: TR-D854-1B
Revision No. 3
Revision Date: 10/1/2024

SPECIFIC GRAVITY OF SOIL

Oven dried Specimens ASTM D 854 Method B

S&ME, Inc. - Columbus: 6190 Enterprise Court, Dublin, Ohio 43016

Project #:	25-17-0079	Report Date:	11/17/25
Project Name:	Philo Legacy CCR Impoundments Evaluation	Test Date(s):	11/14-11/17/25
Client Name:	American Electric Power (AEP)		
Client Address:	8500 Smiths Mill Road, New Albany, Ohio, 43054		
Boring No.	B-07	Sample No. S-06	Sample Date:
Location:	Sampled by:		Elevation: 28.5'-30.0'
Sample Description:	SILT WITH SAND (ML), trace fine gravel (Fly Ash)		
Material Excluded:			% Passing #4 Sieve: 98%

Balance ID.	*0.1 gram*	*ID#:*	*27984*	*Cal. Date:*	*10/22/25*	*Cal. Due:*	*10/22/26*
Pycnometer ID No.	*29775*	*Cal. Date:*	*4/2/25*	*Balance Verification*	Check Mass:	500.00	grams
Pycnometer Volume (V_p)	499.40	ml.			Mass Determination:	499.98	grams
Pycnometer Mass (PM)	198.10	grams		*If [PM-M_p] is greater than .06 grams,*			
Ave. Pycnometer Mass (M_p)	198.10	grams		*recalibrate the dry mass of the pycnometer.*			

Method B: Oven-dried Specimens

Table 1 ASTM D 854	Specimen Dry Mass (g.)	
Soil Type	*250-ml. beaker*	*500-ml. beaker*
Passing 3/8"	*165-200*	*165-300*
Passing No. 4	*75-125*	*75-200*
Passing No. 10	*50-75*	*50-125*
Passing No. 40	*40-60*	*40-100*
Passing No. 100	*30-50*	*30-75*

Soaking Time ASTM C127: 24 ± 4 hrs. ☐
Aggregate not initially dried ☐

Initial Dry Mass of Test Specimen - *not required.* 55.33 grams

$M_{psw;t}$ = *Mass of the Pycnometer, soil, and water* = 730.42 *grams*

	Mass of Dry Soil (grams)	Tare #	JV
A	Tare Weight		97.64
C	Dry Wt. + Tare Wt.		152.97
M_s	Dry Weight	**C-A**	**55.33**

T_t =	Test Temperature T_t		20.5 °C
K =	Temperature Coefficient at T_t		**0.99990**
K =	Temperature Coefficient at 23°C		**0.99933**
$p_{w;t}$ =	Density of Water at T_t		**0.99810** g./ml.
$M_{pw;t}$ =	Mass of the Pycnometer and water at T_t	$M_{pw;t} = M_p + (V_p \times p_{w;t})$	**696.55** grams
G_t =	Specific Gravity of Soil Solids at the T_t	$G_t = M_s / (M_{pw;t} - (M_{psw;t} - M_s))$	**2.578**
G =	Specific Gravity of Soil Solids at the 20°C	$G = K \times G_t$	**2.578**

Soils containing plus #4 material tested per ***ASTM C 127***

R = *% of Soil retained on the #4 sieve* **2.0%**
P = *% of Soil passing the #4 sieve* **98.0%**

G_{+4} Apparent Specific Gravity of plus #4 material at the 23°C per ASTM C127
Apparent Specific Gravity of plus #4 material corrected to 20°C

G_{total} *Total Sample Specific Gravity*

$$G_{total} = \frac{1}{\frac{R}{100 \times G_{+4}} + \frac{P}{100 \times G}} = \mathbf{2.578}$$

Notes / Deviations / References: ASTM D854: Specific Gravity of Soil Solids by Water Pycnometer

Erica Goodyear	T3	Daniel Tobey	12/11/2025
Technician Name	*Certification*	*Technical Responsibility*	Date

Form No: TR-D854-1B
Revision No. 3
Revision Date: 10/1/2024

SPECIFIC GRAVITY OF SOIL

Oven dried Specimens ASTM D 854 Method B

S&ME, Inc. - Columbus: 6190 Enterprise Court, Dublin, Ohio 43016

Project #:	25-17-0079	Report Date:	11/7/25
Project Name:	Philo Legacy CCR Impoundments Evaluation	Test Date(s):	10/29-11/7/25
Client Name:	American Electric Power (AEP)		
Client Address:	8500 Smiths Mill Road, New Albany, Ohio, 43054		
Boring No.	B-07	Sample No. S-07	Sample Date:
Location:	Sampled by:		Elevation: 33.5'-35.0'
Sample Description:	Visual: SANDY SILT (ML) (Fly Ash)		
Material Excluded:			% Passing #4 Sieve:

Balance ID.	*0.1 gram*	*ID#:*	*27984*	*Cal. Date:*	*10/22/25*	*Cal. Due:*	*10/22/26*
Pycnometer ID No.	*28070*	*Cal. Date:*	*4/11/25*	*Balance Verification*	Check Mass:	500.00	grams
Pycnometer Volume (V_p)	499.33	ml.			Mass Determination:	499.98	grams
Pycnometer Mass (PM)	181.32	grams		*If [PM-M_p] is greater than .06 grams,*			
Ave. Pycnometer Mass (M_p)	181.34	grams		*recalibrate the dry mass of the pycnometer.*			

Method B: Oven-dried Specimens

Table 1 ASTM D 854	Specimen Dry Mass (g.)	
Soil Type	*250-ml. beaker*	*500-ml. beaker*
Passing 3/8"	*165-200*	*165-300*
Passing No. 4	*75-125*	*75-200*
Passing No. 10	*50-75*	*50-125*
Passing No. 40	*40-60*	*40-100*
Passing No. 100	*30-50*	*30-75*

Soaking Time ASTM C127: 24 ± 4 hrs. ☐
Aggregate not initially dried ☐

Initial Dry Mass of Test Specimen - *not required.* 50.10 grams

$M_{psw;t}$ = *Mass of the Pycnometer, soil, and water* = 710.25 *grams*

	Mass of Dry Soil (grams)	Tare #	JV
A	Tare Weight		97.65
C	Dry Wt. + Tare Wt.		147.75
M_s	Dry Weight	**C-A**	**50.10**

T_t =	Test Temperature T_t		20.8 °C
K =	Temperature Coefficient at T_t		**0.99983**
K =	Temperature Coefficient at 23°C		**0.99933**
$p_{w;t}$ =	Density of Water at T_t		**0.99804** g./ml.

$M_{pw;t}$ =	Mass of the Pycnometer and water at T_t	$M_{pw;t} = M_p + (V_p \times p_{w;t})$	**679.69** grams
G_t =	Specific Gravity of Soil Solids at the T_t	$G_t = M_s / (M_{pw;t} - (M_{psw;t} - M_s))$	**2.564**
G =	Specific Gravity of Soil Solids at the 20°C	$G = K \times G_t$	**2.564**

Soils containing plus #4 material tested per ***ASTM C 127***

R = *% of Soil retained on the #4 sieve* **100.0%**
P = *% of Soil passing the #4 sieve* **0.0%**

G_{+4} Apparent Specific Gravity of plus #4 material at the 23°C per ASTM C127
Apparent Specific Gravity of plus #4 material corrected to 20°C

G_{total} *Total Sample Specific Gravity*

$$G_{total} = \frac{1}{\frac{R}{100 \times G_{+4}} + \frac{P}{100 \times G}} = 2.564$$

Notes / Deviations / References: ASTM D854: Specific Gravity of Soil Solids by Water Pycnometer

Erica Goodyear	T3	Daniel Tobey	12/11/2025
Technician Name	*Certification*	*Technical Responsibility*	Date

Form No: TR-D854-1B
Revision No. 3
Revision Date: 10/1/2024

SPECIFIC GRAVITY OF SOIL

Oven dried Specimens ASTM D 854 Method B

S&ME, Inc. - Columbus: 6190 Enterprise Court, Dublin, Ohio 43016

Project #:	25-17-0079	Report Date:	11/10/25
Project Name:	Philo Legacy CCR Impoundments Evaluation	Test Date(s):	10/29-11/10/25
Client Name:	American Electric Power (AEP)		
Client Address:	8500 Smiths Mill Road, New Albany, Ohio, 43054		

Boring No.	B-09	Sample No.	S-03	Sample Date:	
Location:		Sampled by:		Elevation:	13.5'-15.0'

Sample Description: Visual: WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM) (Bottom Ash)

Material Excluded: % Passing #4 Sieve: 64%

Balance ID.	*0.1 gram*	*ID#:*	*27984*	*Cal. Date:*	*10/22/25*	*Cal. Due:*	*10/22/26*
Pycnometer ID No.	*29775*	*Cal. Date:*	*4/2/25*	*Balance Verification*	Check Mass:	500.00	grams
Pycnometer Volume (V_p)	499.40	ml.			Mass Determination:	499.98	grams
Pycnometer Mass (PM)	198.10	grams		*If [PM-M_p] is greater than .06 grams,*			
Ave. Pycnometer Mass (M_p)	198.10	grams		*recalibrate the dry mass of the pycnometer.*			

Method B: Oven-dried Specimens

Table 1 ASTM D 854	Specimen Dry Mass (g.)	
Soil Type	*250-ml. beaker*	*500-ml. beaker*
Passing 3/8"	*165-200*	*165-300*
Passing No. 4	*75-125*	*75-200*
Passing No. 10	*50-75*	*50-125*
Passing No. 40	*40-60*	*40-100*
Passing No. 100	*30-50*	*30-75*

Soaking Time ASTM C127: 24 ± 4 hrs. ☐
Aggregate not initially dried ☐

Initial Dry Mass of Test Specimen - *not required.* 97.89 grams

$M_{psw;t}$ = *Mass of the Pycnometer, soil, and water* = 757.37 *grams*

	Mass of Dry Soil (grams)	Tare #	JV
A	Tare Weight		97.65
C	Dry Wt. + Tare Wt.		195.54
M_s	Dry Weight	**C-A**	**97.89**

T_t =	Test Temperature T_t		20.2 °C
K =	Temperature Coefficient at T_t		**0.99996**
K =	Temperature Coefficient at 23°C		**0.99933**
$p_{w;t}$ =	Density of Water at T_t		**0.99816** g./ml.

$M_{pw;t}$ =	Mass of the Pycnometer and water at T_t	$M_{pw;t} = M_p + (V_p \times p_{w;t})$	**696.58** grams
G_t =	Specific Gravity of Soil Solids at the T_t	$G_t = M_s / (M_{pw;t} - (M_{psw;t}-M_s))$	**2.639**
G =	Specific Gravity of Soil Solids at the 20°C	$G = K \times G_t$	**2.639**

Soils containing plus #4 material tested per **ASTM C 127**

R =	*% of Soil retained on the #4 sieve*	**36.0%**
P =	*% of Soil passing the #4 sieve*	**64.0%**

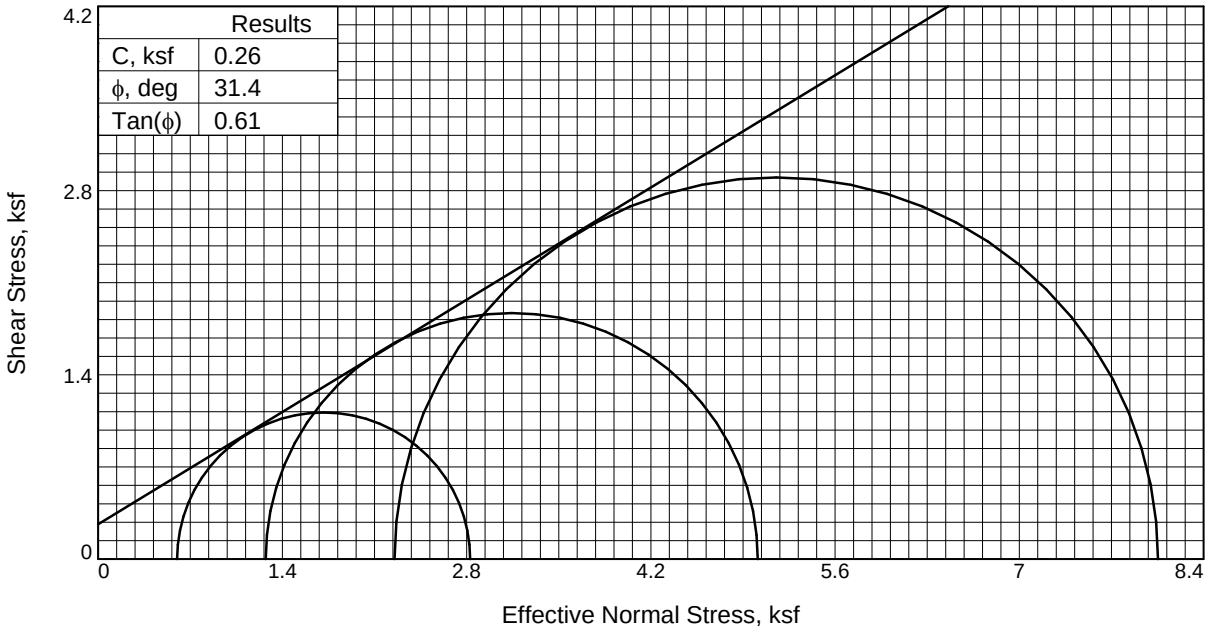
G_{+4} Apparent Specific Gravity of plus #4 material at the 23°C per ASTM C127: **2.702**
Apparent Specific Gravity of plus #4 material corrected to 20°C: **2.700**

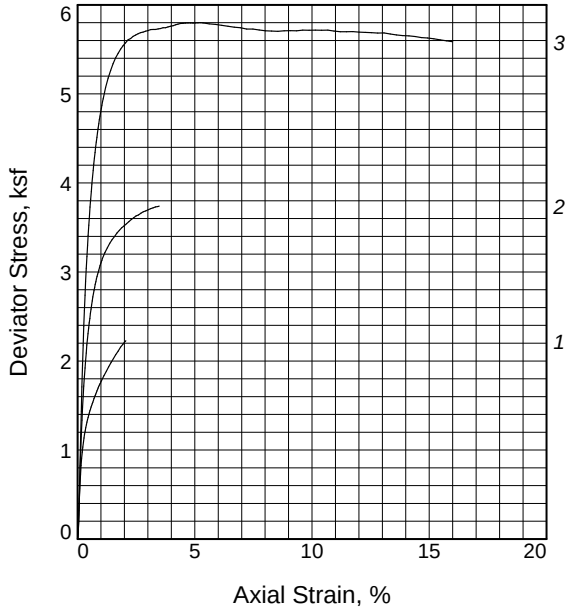
G_{total} *Total Sample Specific Gravity*

$$G_{total} = \frac{1}{\frac{R}{100 \times G_{+4}} + \frac{P}{100 \times G}} = 2.661$$

Notes / Deviations / References: ASTM D854: Specific Gravity of Soil Solids by Water Pycnometer

Erica Goodyear	T3	Daniel Tobey	12/11/2025
Technician Name	*Certification*	*Technical Responsibility*	Date





Sample No.		1	2	3
Initial	Water Content, %	22.0	22.0	22.0
	Dry Density, pcf	100.7	100.7	100.7
	Saturation, %	88.3	88.3	88.3
	Void Ratio	0.6731	0.6731	0.6731
	Diameter, in.	2.810	2.810	2.810
	Height, in.	6.011	6.011	6.011
At Test	Water Content, %	24.2	23.9	23.7
	Dry Density, pcf	101.9	102.4	102.7
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.6539	0.6455	0.6411
	Diameter, in.	2.799	2.824	2.872
	Height, in.	5.988	5.855	5.646
Strain rate, %/min.		0.02	0.02	0.02
Back Pressure, psi		50.00	50.00	50.00
Cell Pressure, psi		59.94	69.77	89.38
Fail. Stress, ksf		2.23	3.74	5.80
Excess Pore Pr., ksf		0.83	1.57	3.42
Ult. Stress, ksf		2.23	3.74	5.80
Excess Pore Pr., ksf		0.83	1.57	3.42
$\bar{\sigma}_1$ Failure, ksf		2.83	5.01	8.05
$\bar{\sigma}_3$ Failure, ksf		0.60	1.27	2.25

Type of Test:
CU with Pore Pressures

Sample Type: Intact

Description: Lean Clay With Sand (CL)

LL= 29 **PI=** 11

Assumed Specific Gravity= 2.7

Remarks: ASTM D4767 Multi Stage
Effective strength defined by effective stress ratio.
Undrained strength defined by max axial stress.

Figure 1

Client: American Electric Power

Project: AEP Philo

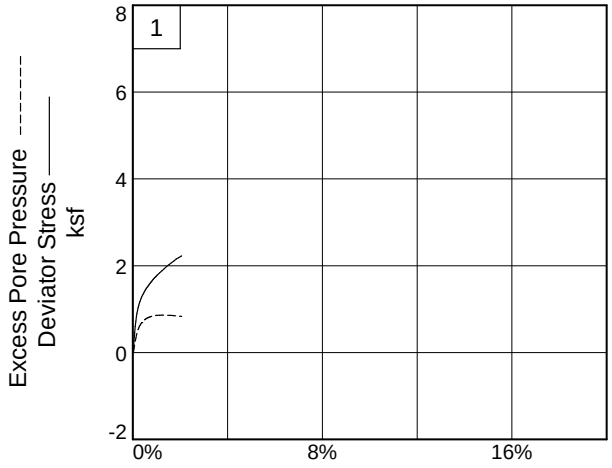
Location: B-02

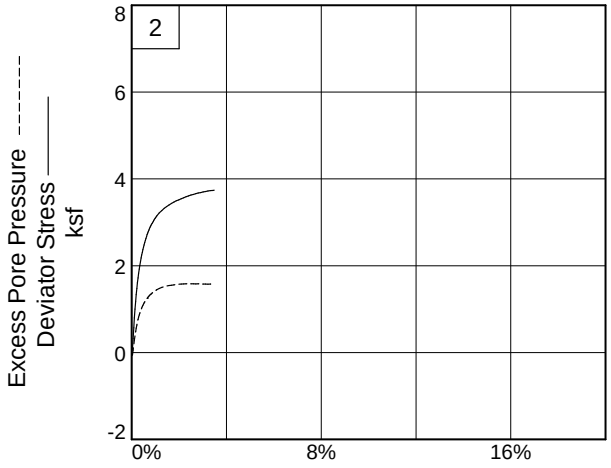
Sample Number: S-06 I **Depth:** 26.0'-28.0'

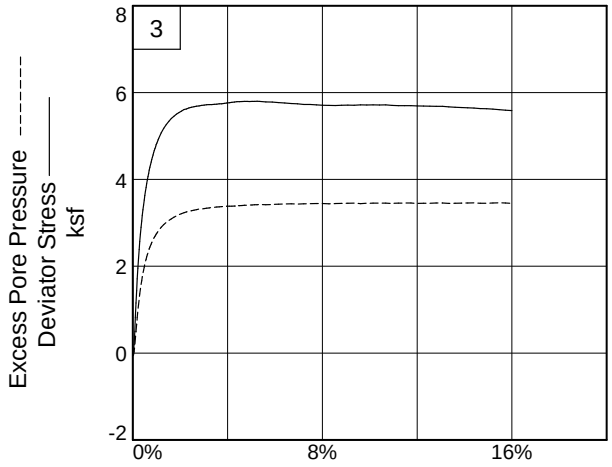
Proj. No.: 25-17-0079 **Date Sampled:** 9/16/2025

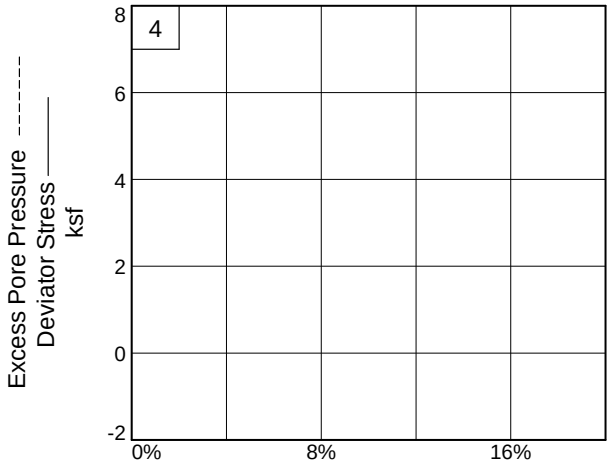
TRIAXIAL SHEAR TEST REPORT
S&ME, Inc.
Dublin, Ohio

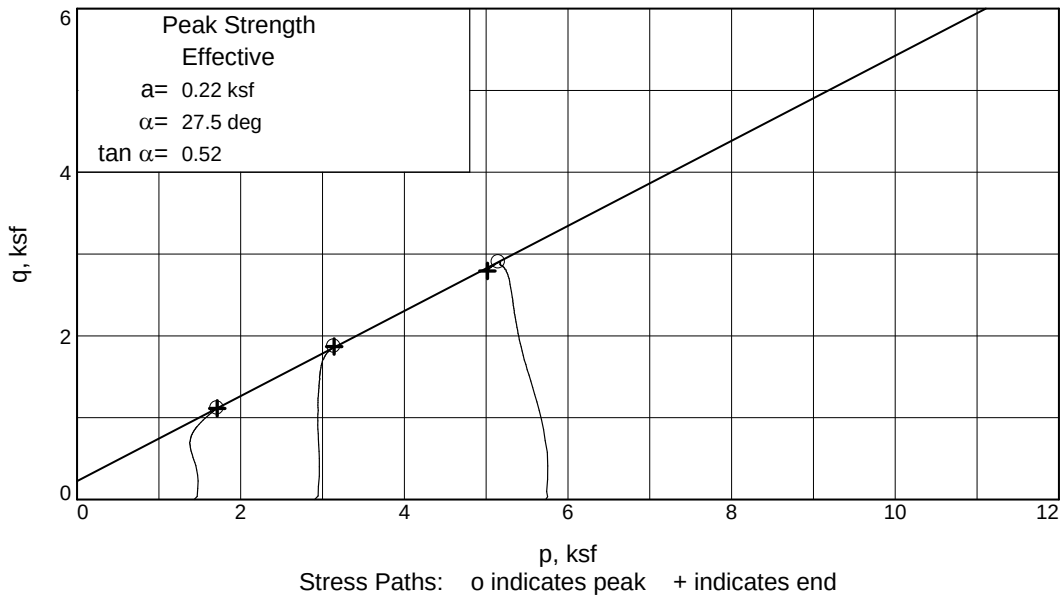
Tested By: CJ / DJT







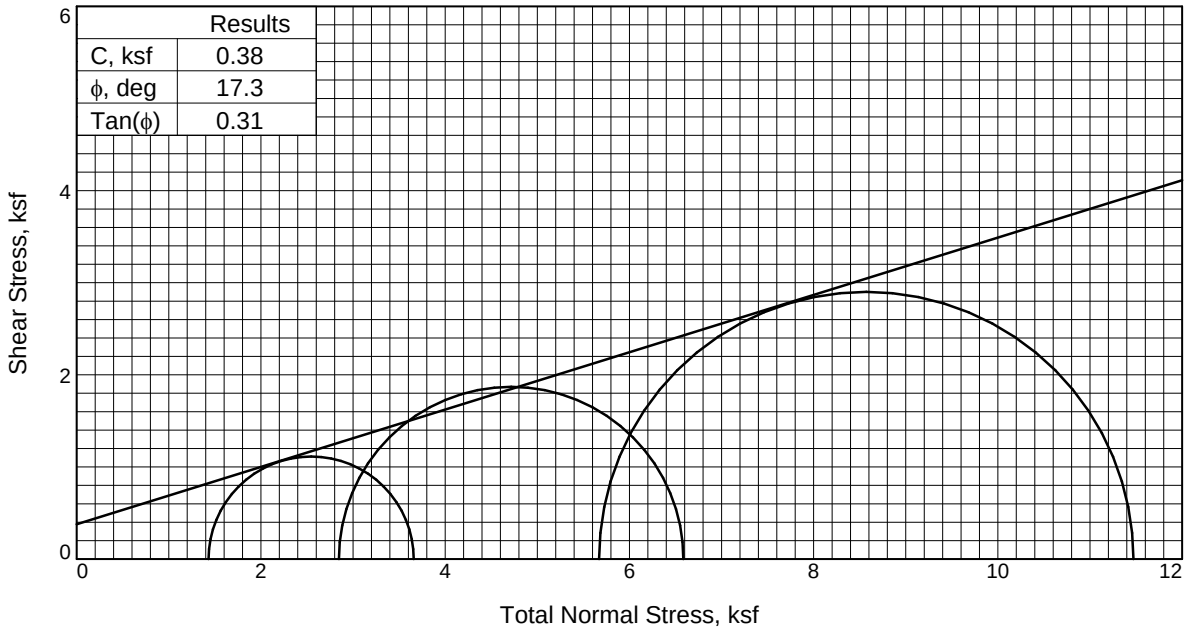


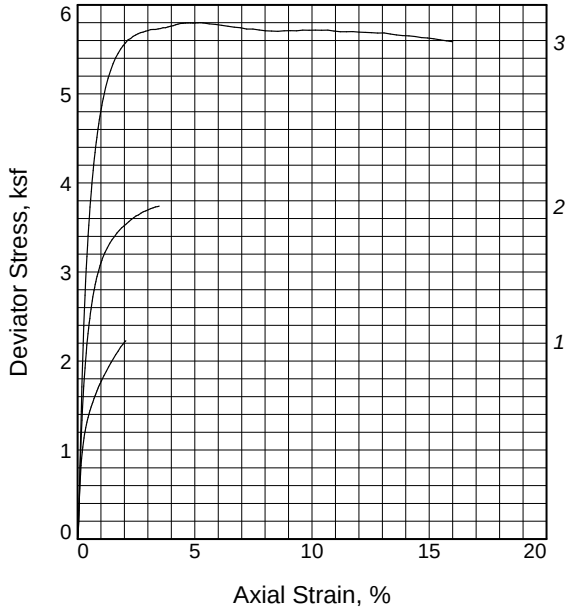


Client: American Electric Power
Project: AEP Philo
Location: B-02 **Depth:** 26.0'-28.0' **Sample Number:** S-06 I
Project No.: 25-17-0079 **Figure** 2

S&ME, Inc.

Tested By: CJ / DJT





Sample No.		1	2	3
Initial	Water Content, %	22.0	22.0	22.0
	Dry Density, pcf	100.7	100.7	100.7
	Saturation, %	88.3	88.3	88.3
	Void Ratio	0.6731	0.6731	0.6731
	Diameter, in.	2.810	2.810	2.810
	Height, in.	6.011	6.011	6.011
At Test	Water Content, %	24.2	23.9	23.7
	Dry Density, pcf	101.9	102.4	102.7
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.6539	0.6455	0.6411
	Diameter, in.	2.799	2.824	2.872
	Height, in.	5.988	5.855	5.646
Strain rate, %/min.		0.02	0.02	0.02
Back Pressure, psi		50.00	50.00	50.00
Cell Pressure, psi		59.94	69.77	89.38
Fail. Stress, ksf		2.23	3.74	5.80
Excess Pore Pr., ksf		0.83	1.57	3.42
Ult. Stress, ksf		2.23	3.74	5.80
Excess Pore Pr., ksf		0.83	1.57	3.42
$\bar{\sigma}_1$ Failure, ksf		2.83	5.01	8.05
$\bar{\sigma}_3$ Failure, ksf		0.60	1.27	2.25

Type of Test:
CU with Pore Pressures

Sample Type: Intact

Description: Lean Clay With Sand (CL)

LL= 29 **PI=** 11

Assumed Specific Gravity= 2.7

Remarks: ASTM D4767 Multi Stage
Effective strength defined by effective stress ratio.
Undrained strength defined by max axial stress.

Figure 1

Client: American Electric Power

Project: AEP Philo

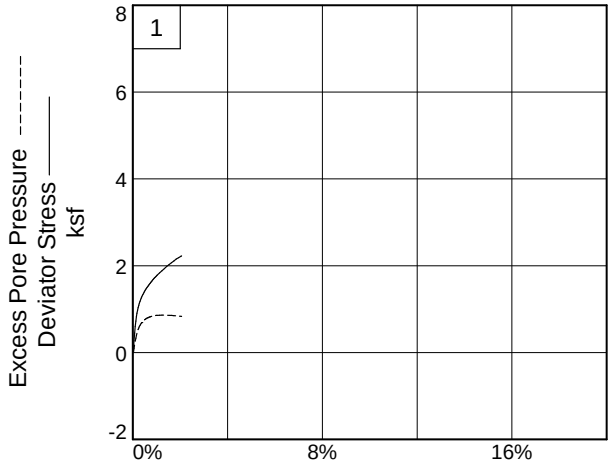
Location: B-02

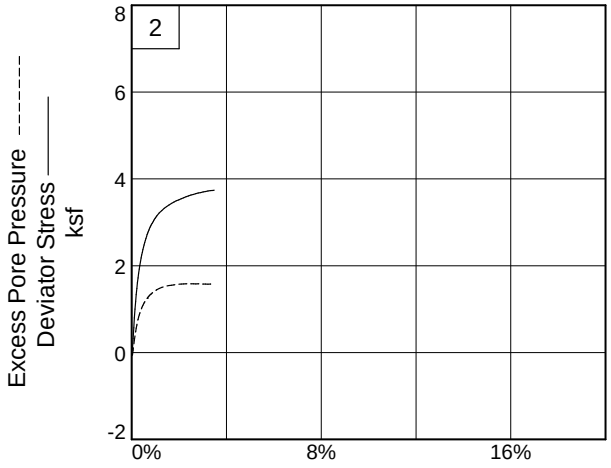
Sample Number: S-06 I **Depth:** 26.0'-28.0'

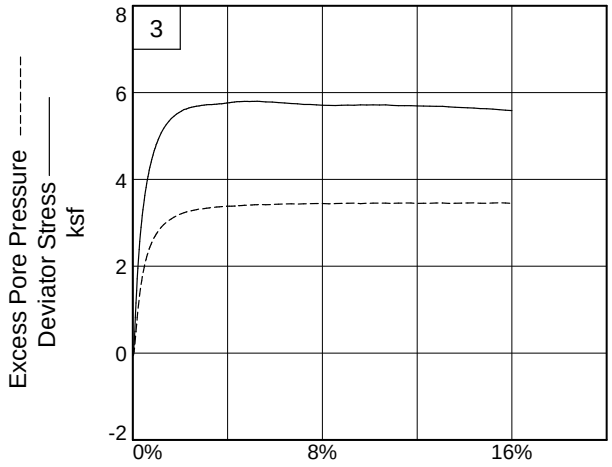
Proj. No.: 25-17-0079 **Date Sampled:** 9/16/2025

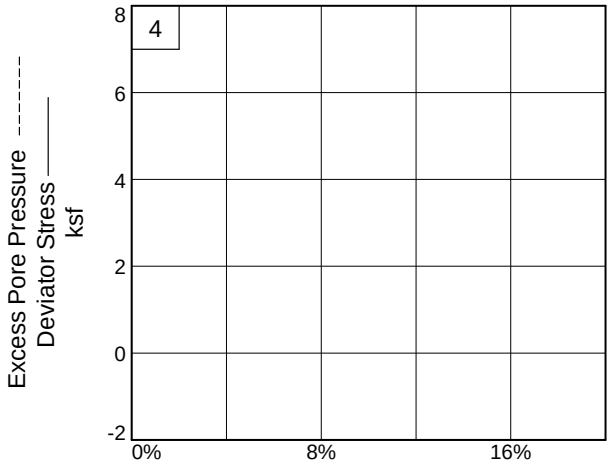
TRIAXIAL SHEAR TEST REPORT
S&ME, Inc.
Dublin, Ohio

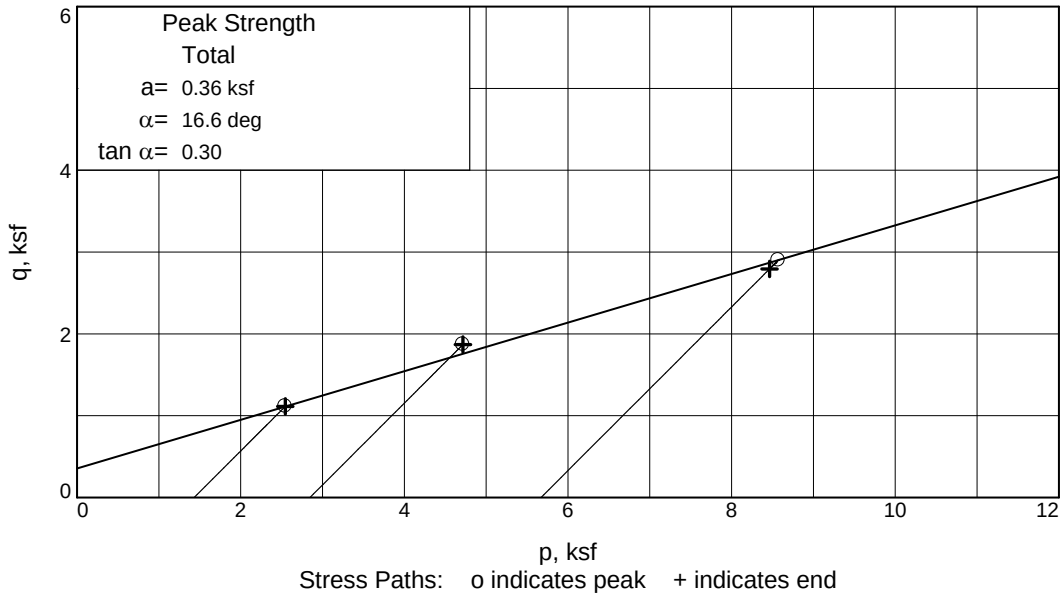
Tested By: CJ / DJT







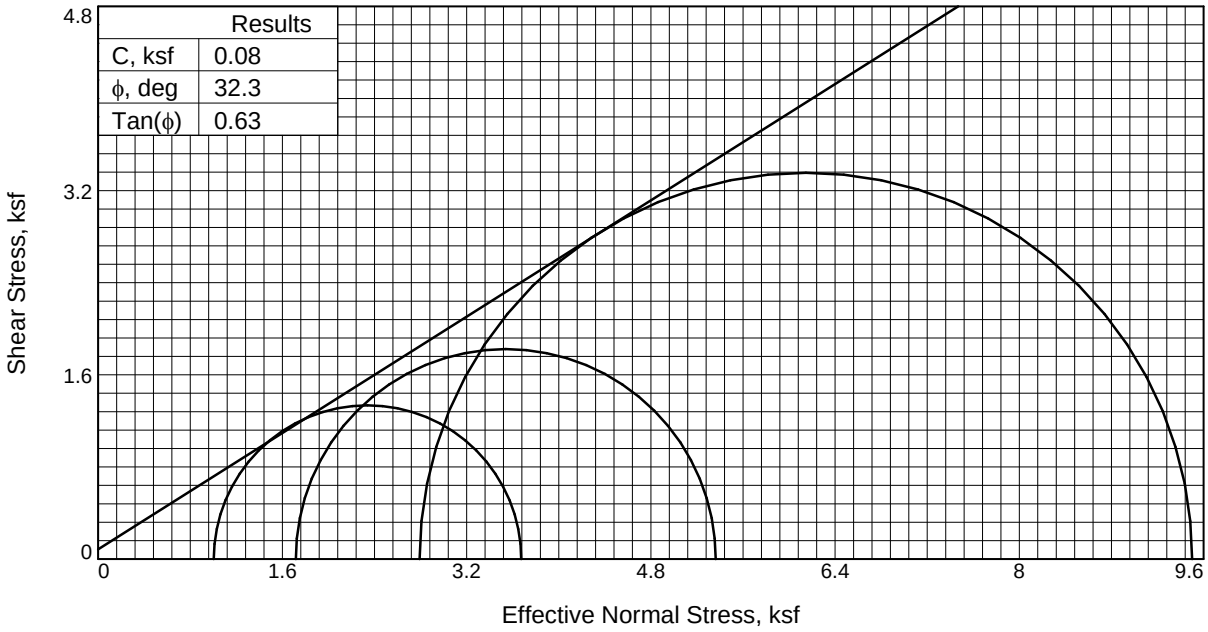


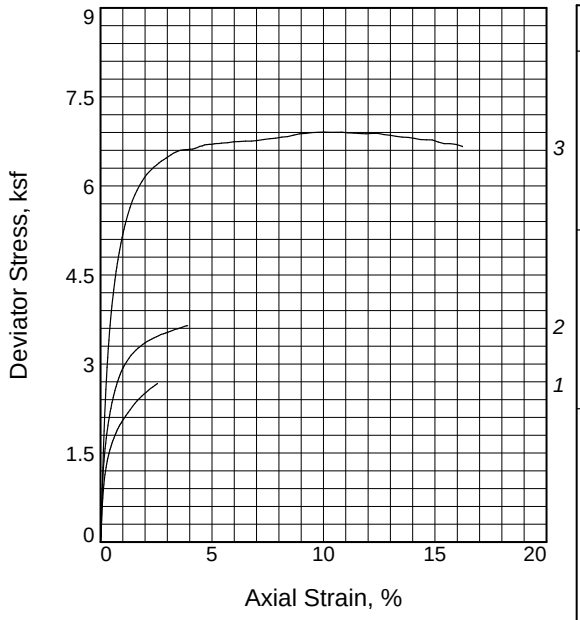


Client: American Electric Power
Project: AEP Philo
Location: B-02 **Depth:** 26.0'-28.0' **Sample Number:** S-06 I
Project No.: 25-17-0079 **Figure** 2

S&ME, Inc.

Tested By: CJ / DJT





Sample No.		1	2	3
Initial	Water Content, %	29.2	29.2	29.2
	Dry Density, pcf	93.2	93.2	93.2
	Saturation, %	97.7	97.7	97.7
	Void Ratio	0.8080	0.8080	0.8080
	Diameter, in.	2.856	2.856	2.856
	Height, in.	6.023	6.023	6.023
At Test	Water Content, %	28.2	28.1	27.7
	Dry Density, pcf	95.6	95.8	96.5
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.7624	0.7587	0.7474
	Diameter, in.	2.832	2.867	2.918
	Height, in.	5.972	5.815	5.576
Strain rate, %/min.		0.02	0.02	0.02
Back Pressure, psi		50.00	50.00	50.00
Cell Pressure, psi		65.05	79.04	99.75
Fail. Stress, ksf		2.67	3.65	6.71
Excess Pore Pr., ksf		1.16	2.47	4.37
Ult. Stress, ksf		2.67	3.65	6.91
Excess Pore Pr., ksf		1.16	2.47	4.33
$\bar{\sigma}_1$ Failure, ksf		3.67	5.36	9.50
$\bar{\sigma}_3$ Failure, ksf		1.00	1.72	2.79

Type of Test:
CU with Pore Pressures

Sample Type: Intact

Description: Lean Clay (CL)

LL= 38 **PI=** 16

Assumed Specific Gravity= 2.7

Remarks: ASTM D4767 Multi Stage
Effective strength defined by effective stress ratio.
Undrained strength defined by max axial stress.

Figure 1

Client: American Electric Power

Project: AEP Philo

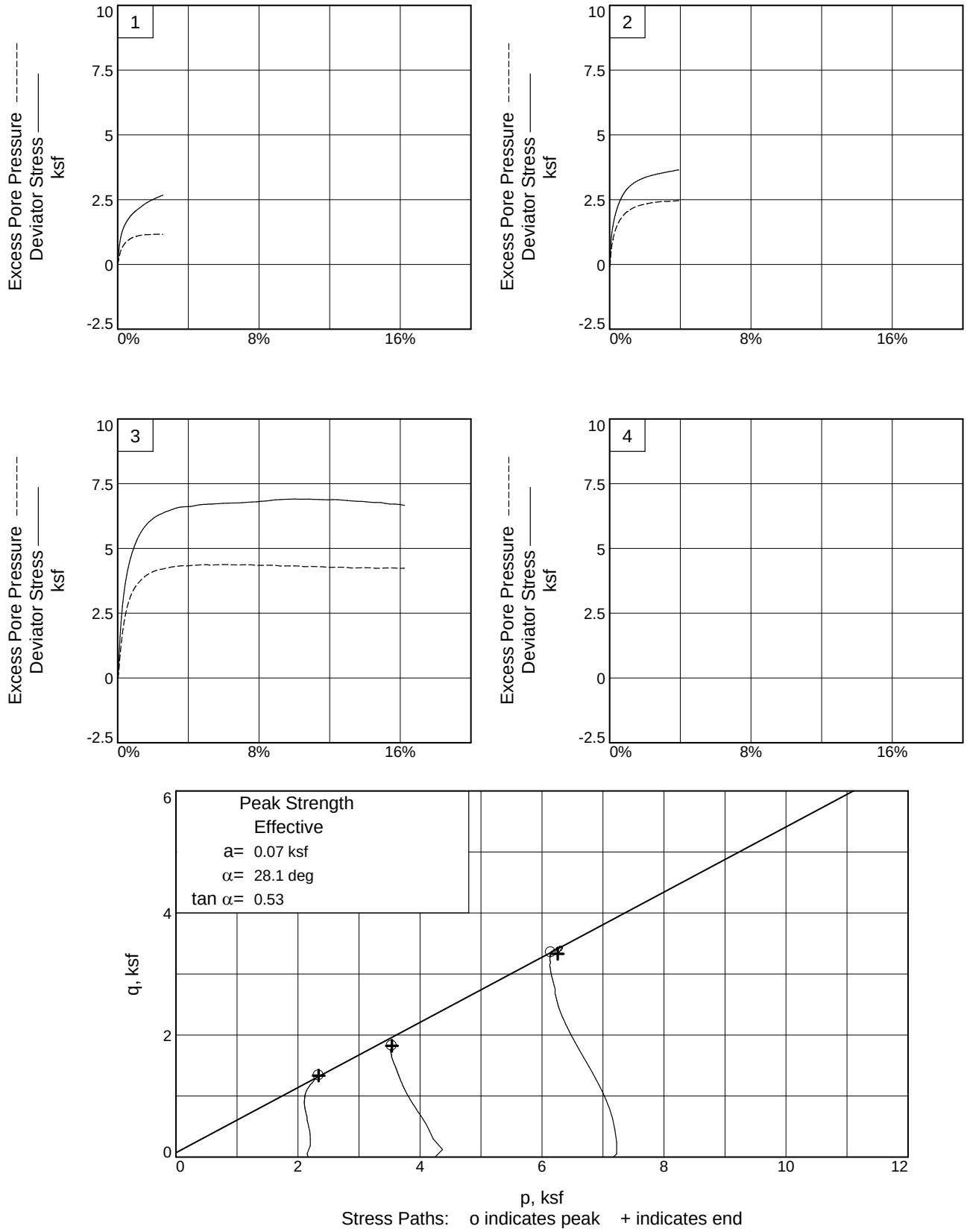
Location: B-04

Sample Number: S-12 I **Depth:** 38.5'-39.5'

Proj. No.: 25-17-0079 **Date Sampled:** 9/18/2025

TRIAXIAL SHEAR TEST REPORT
S&ME, Inc.
Dublin, Ohio

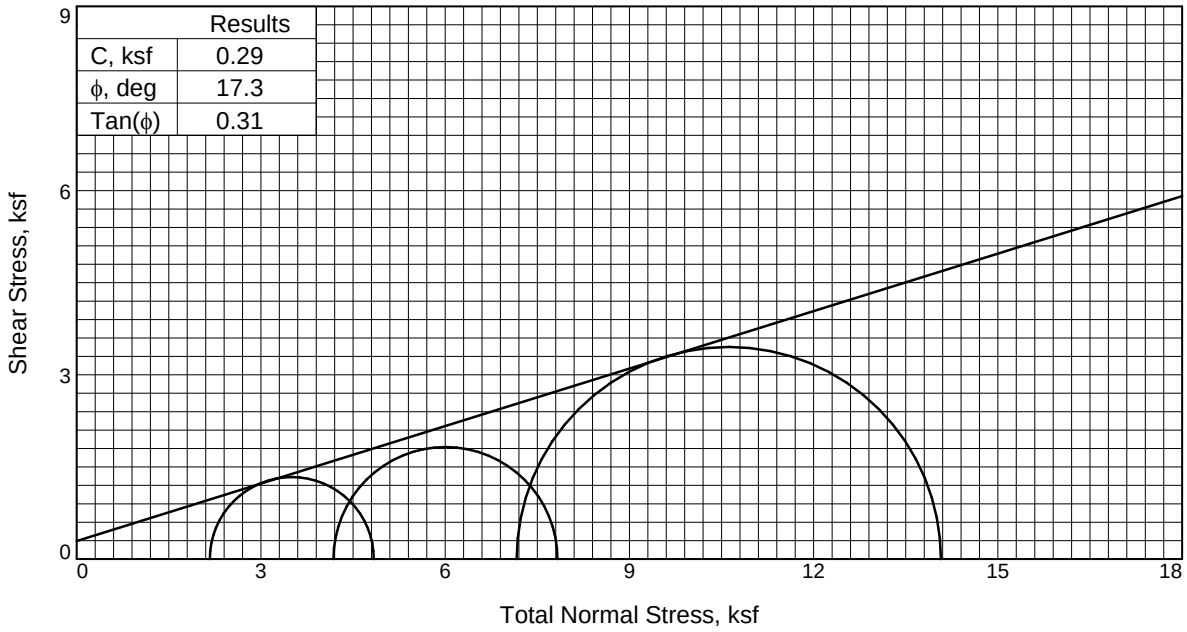
Tested By: CJ / DJT

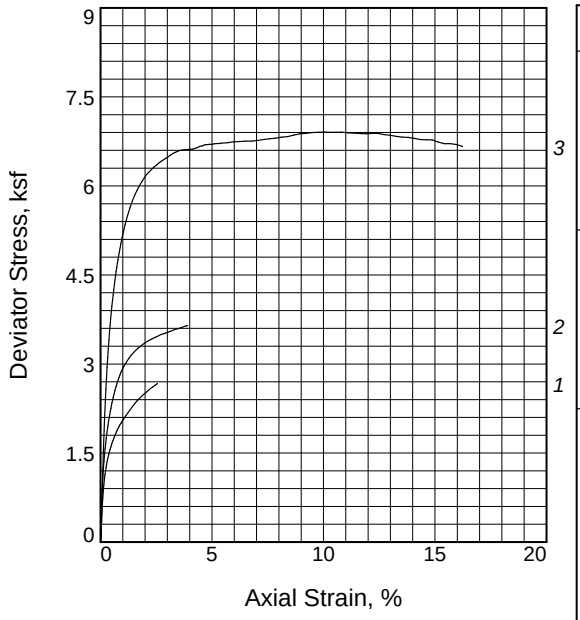


Client: American Electric Power
Project: AEP Philo
Location: B-04 **Depth:** 38.5'-39.5' **Sample Number:** S-12 I
Project No.: 25-17-0079 **Figure** 2

S&ME, Inc.

Tested By: CJ / DJT





Sample No.		1	2	3
Initial	Water Content, %	29.2	29.2	29.2
	Dry Density, pcf	93.2	93.2	93.2
	Saturation, %	97.7	97.7	97.7
	Void Ratio	0.8080	0.8080	0.8080
	Diameter, in.	2.856	2.856	2.856
	Height, in.	6.023	6.023	6.023
At Test	Water Content, %	28.2	28.1	27.7
	Dry Density, pcf	95.6	95.8	96.5
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.7624	0.7587	0.7474
	Diameter, in.	2.832	2.867	2.918
	Height, in.	5.972	5.815	5.576
Strain rate, %/min.		0.02	0.02	0.02
Back Pressure, psi		50.00	50.00	50.00
Cell Pressure, psi		65.05	79.04	99.75
Fail. Stress, ksf		2.67	3.65	6.91
Excess Pore Pr., ksf		1.16	2.47	4.33
Ult. Stress, ksf		2.67	3.65	6.71
Excess Pore Pr., ksf		1.16	2.47	4.37
$\bar{\sigma}_1$ Failure, ksf		3.67	5.36	9.74
$\bar{\sigma}_3$ Failure, ksf		1.00	1.72	2.84

Type of Test:
CU with Pore Pressures

Sample Type: Intact

Description: Lean Clay (CL)

LL= 38 **PI=** 16

Assumed Specific Gravity= 2.7

Remarks: ASTM D4767 Multi Stage
Effective strength defined by effective stress ratio.
Undrained strength defined by max axial stress.

Figure 1

Client: American Electric Power

Project: AEP Philo

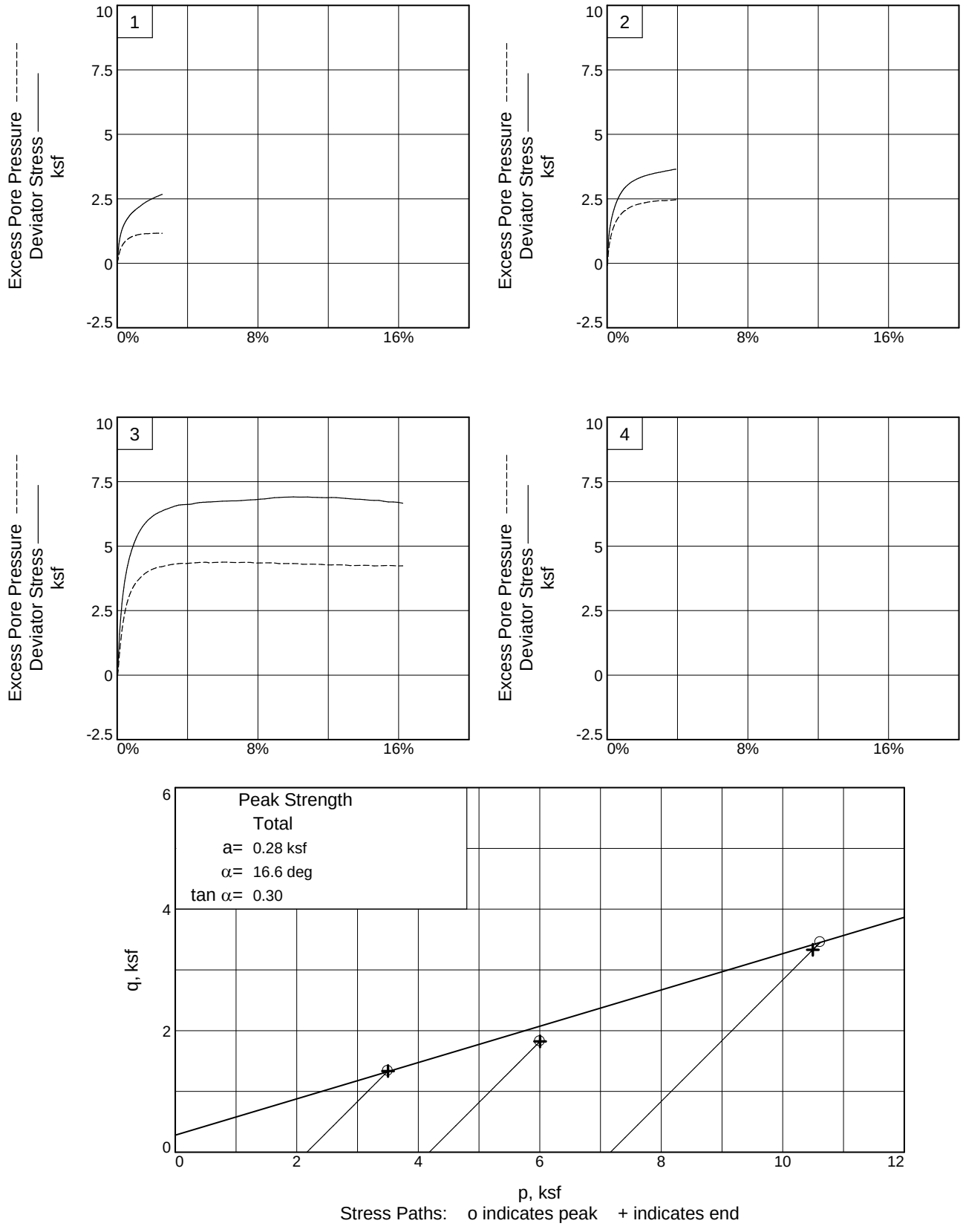
Location: B-04

Sample Number: S-12 I **Depth:** 38.5'-39.5'

Proj. No.: 25-17-0079 **Date Sampled:** 9/18/2025

TRIAXIAL SHEAR TEST REPORT
S&ME, Inc.
Dublin, Ohio

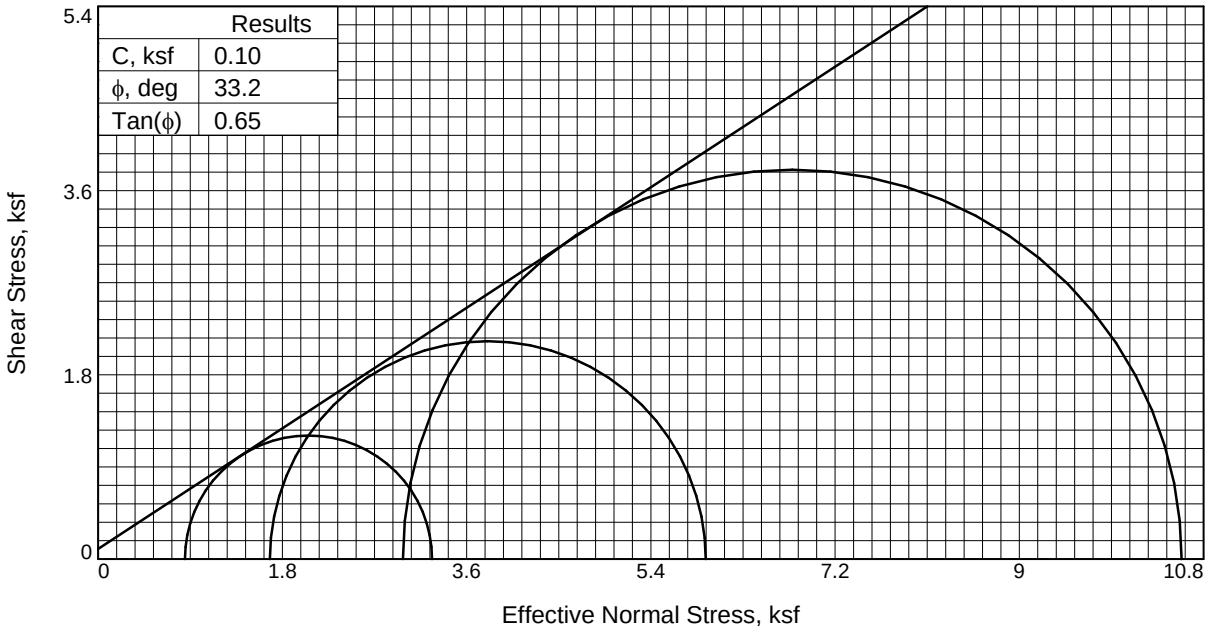
Tested By: CJ / DJT

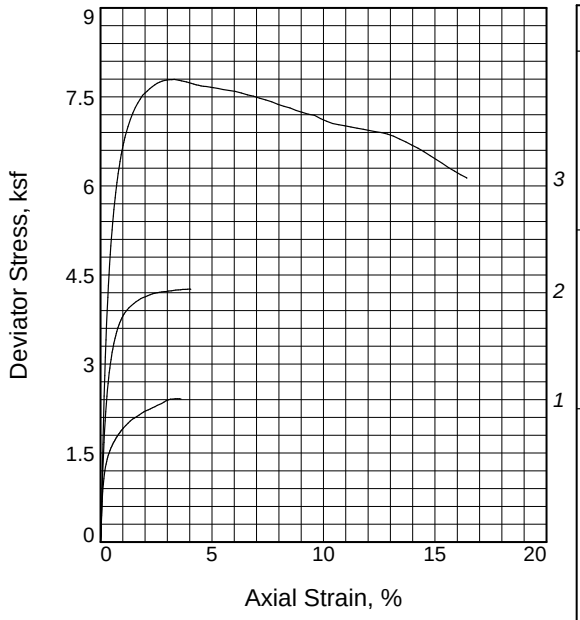


Client: American Electric Power
Project: AEP Philo
Location: B-04 **Depth:** 38.5'-39.5' **Sample Number:** S-12 I
Project No.: 25-17-0079 **Figure** 2

S&ME, Inc.

Tested By: CJ / DJT





Sample No.		1	2	3
Initial	Water Content, %	22.9	22.9	22.9
	Dry Density, pcf	103.4	103.4	103.4
	Saturation, %	98.0	98.0	98.0
	Void Ratio	0.6304	0.6304	0.6304
	Diameter, in.	2.844	2.844	2.844
	Height, in.	6.010	6.010	6.010
At Test	Water Content, %	22.2	21.8	21.5
	Dry Density, pcf	105.4	106.0	106.7
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.5987	0.5896	0.5801
	Diameter, in.	2.825	2.872	2.927
	Height, in.	5.971	5.744	5.501
Strain rate, %/min.		0.03	0.03	0.03
Back Pressure, psi		40.00	40.00	40.00
Cell Pressure, psi		55.06	69.43	99.69
Fail. Stress, ksf		2.4	4.3	7.6
Excess Pore Pr., ksf		1.3	2.6	5.6
Ult. Stress, ksf		2.4	4.3	7.8
Excess Pore Pr., ksf		1.3	2.6	5.4
$\bar{\sigma}_1$ Failure, ksf		3.3	5.9	10.6
$\bar{\sigma}_3$ Failure, ksf		0.8	1.7	3.0

Type of Test:
CU with Pore Pressures

Sample Type: Intact

Description: Lean Clay With Sand (CL)

LL= 29 **PI=** 10

Assumed Specific Gravity= 2.7

Remarks: ASTM D4767 Multi Stage
Effective strength defined by effective stress ratio.
Undrained strength defined by max axial stress.

Figure 1

Client: American Electric Power

Project: AEP Philo

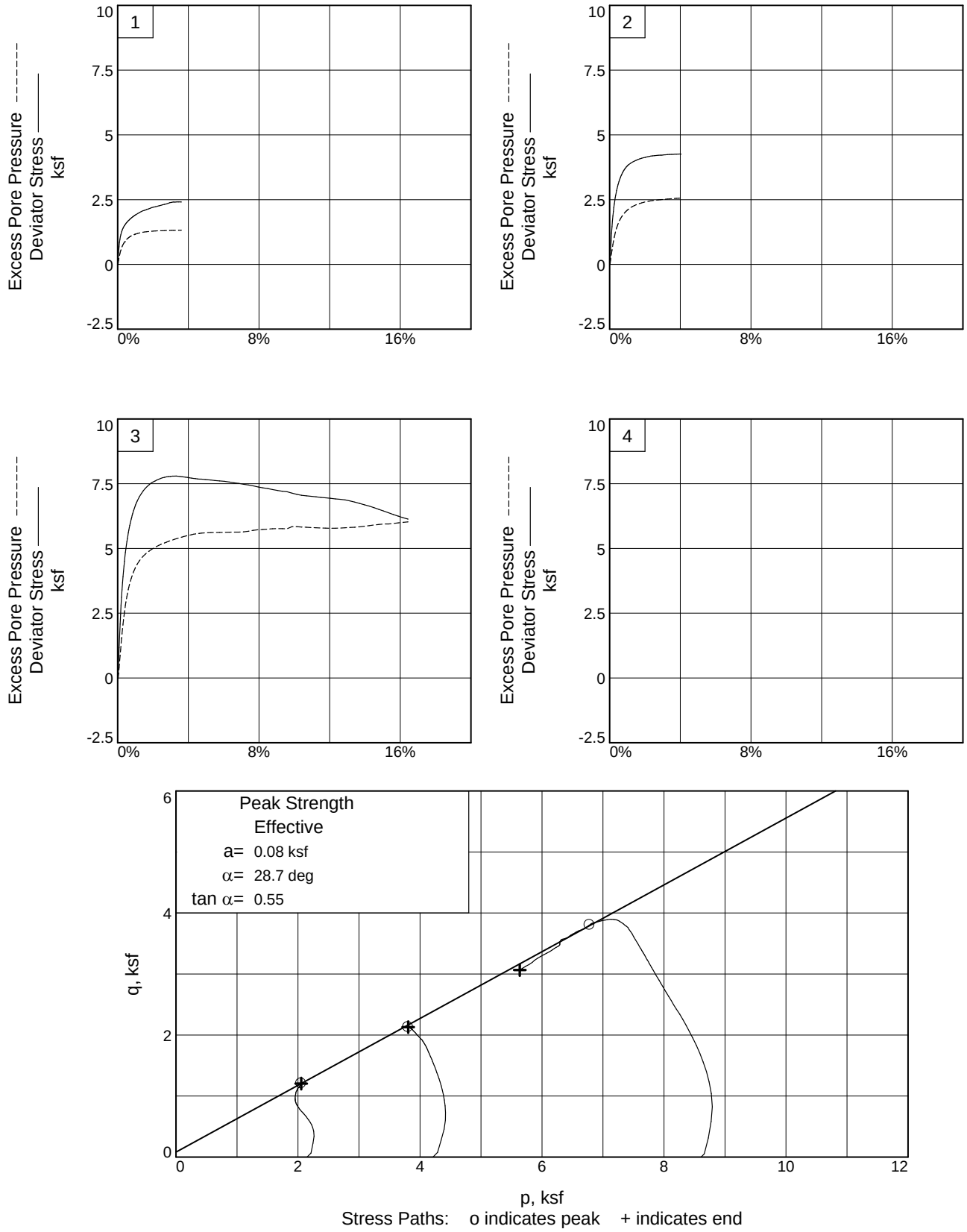
Location: B-11

Sample Number: S-09 II **Depth:** 35.0'-37.0'

Proj. No.: 25-17-0079 **Date Sampled:** 9/30/2025

TRIAXIAL SHEAR TEST REPORT
S&ME, Inc.
Dublin, Ohio

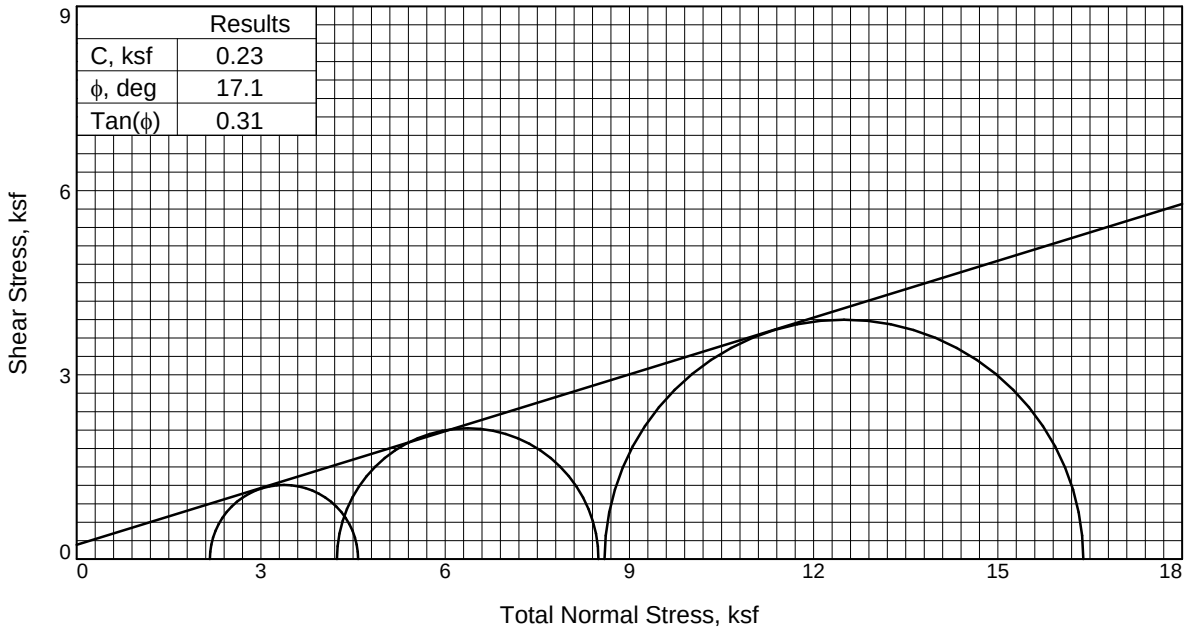
Tested By: CJ / DJT

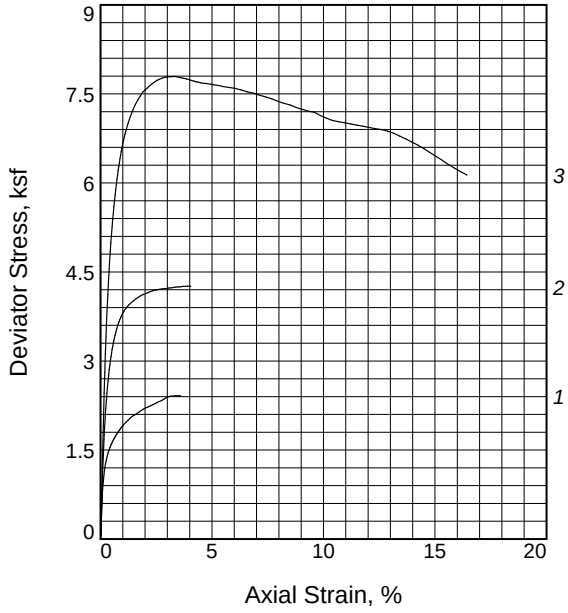


Client: American Electric Power
Project: AEP Philo
Location: B-11 **Depth:** 35.0'-37.0' **Sample Number:** S-09 II
Project No.: 25-17-0079 **Figure** 2

S&ME, Inc.

Tested By: CJ / DJT





Sample No.		1	2	3
Initial	Water Content, %	22.9	22.9	22.9
	Dry Density, pcf	103.4	103.4	103.4
	Saturation, %	98.0	98.0	98.0
	Void Ratio	0.6304	0.6304	0.6304
	Diameter, in.	2.844	2.844	2.844
	Height, in.	6.010	6.010	6.010
At Test	Water Content, %	22.2	21.8	21.5
	Dry Density, pcf	105.4	106.0	106.7
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.5987	0.5896	0.5801
	Diameter, in.	2.825	2.872	2.927
	Height, in.	5.971	5.744	5.501
Strain rate, %/min.		0.03	0.03	0.03
Back Pressure, psi		40.00	40.00	40.00
Cell Pressure, psi		55.06	69.43	99.69
Fail. Stress, ksf		2.4	4.3	7.8
Excess Pore Pr., ksf		1.3	2.6	5.4
Ult. Stress, ksf		2.4	4.3	7.6
Excess Pore Pr., ksf		1.3	2.6	5.6
$\bar{\sigma}_1$ Failure, ksf		3.3	5.9	11.0
$\bar{\sigma}_3$ Failure, ksf		0.8	1.7	3.2

Type of Test:
CU with Pore Pressures

Sample Type: Intact

Description: Lean Clay With Sand (CL)

LL= 29 **PI=** 10

Assumed Specific Gravity= 2.7

Remarks: ASTM D4767 Multi Stage
Effective strength defined by effective stress ratio.
Undrained strength defined by max axial stress.

Figure 1

Client: American Electric Power

Project: AEP Philo

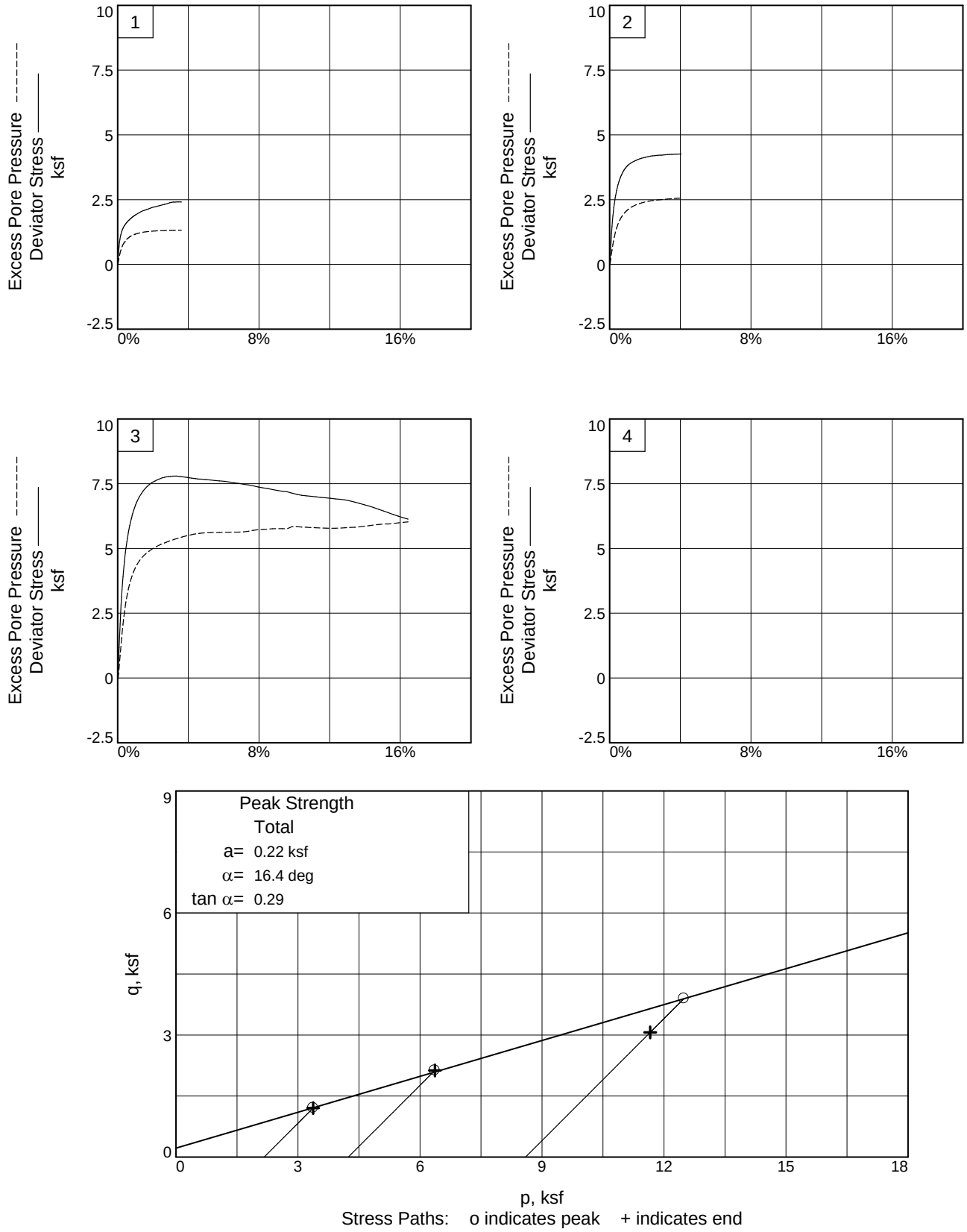
Location: B-11

Sample Number: S-09 II **Depth:** 35.0'-37.0'

Proj. No.: 25-17-0079 **Date Sampled:** 9/30/2025

TRIAXIAL SHEAR TEST REPORT
S&ME, Inc.
Dublin, Ohio

Tested By: CJ / DJT



Client: American Electric Power
Project: AEP Philo
Location: B-11 **Depth:** 35.0'-37.0' **Sample Number:** S-09 II
Project No.: 25-17-0079 **Figure** 2

S&ME, Inc.

Tested By: CJ / DJT

Form No. WS-D5084-1
Revision No. : 0
Revision Date: 03/11/15

ASTM D5084 Flex Wall Perm Method C

Test Data

S&ME, Inc. Columbus Branch, 6190 Enterprise Ct., Dublin, Ohio 43016

Project No:	25-17-0079	Report Date:	1/12/2026
Project Name:	Philo Legacy CCR Impoundments Evaluation	Test Date:	12/29/2025
Client Name:	American Electric Power (AEP)	Sample Date:	9/15/2025
Client Address:	8500 Smiths Mill Road, New Albany, Ohio, 43054	Log No:	17-76-25
Sample ID:	B-02, S-6, Section II, 26.0'-28.0'	Sample Type:	Intact
Description:	SANDY SILTY CLAY (CL-ML)		

Sample Info:	Assumed SG:	2.70	Percentage Passing 200:	61.8	Maximum Particle Size:	**2 mm**
	Liquid Limit:	24	Plastic Limit:	17	Plastic Index:	7

				Final Specimen Conditions			
Length (cm):	**10.17**	Wet Density (PCF):	**123.8**	Length (cm):	**10.17**	Wet Density (PCF):	**125.7**
Diameter (cm):	**7.23**	Dry Density (PCF):	**100.8**	Diameter (cm):	**7.14**	Dry Density (PCF):	**103.4**
Area (cm^2)	**41.11**	Percent Saturation:	**91.6%**	Area (cm^2)	**40.06**	Percent Saturation:	**92.6%**
Volume (cm^3)	**417.95**			Volume (cm^3)	**407.32**	B-Parameter:	**0.95**
Wet weight (grams)	**828.7**	Void Ratio:	**0.672**	Wet weight (grams)	**820.5**	Void Ratio:	**0.630**
Dry Weight (grams)	**674.8**	Porosity:	**0.402**	Dry Weight (grams)	**674.8**	Porosity:	**0.386**
Percent Moisture:	**22.8%**			Percent Moisture:	**21.6%**		
Test Parameters:	Effective Consolidation Stress (psi):		**20.0**	Permeant Liquid Used:		Deaired Water	
Burette Area (cm^2):	**0.874**	Cell Pressure (psi):	**80.0**	Influent Pressure (psi):	**42.0**	Effluent Pressure (psi):	**40.0**

Time (24-hr)			**Temperature (°C)**				**Measurements**						**Initial Gradient**	**Final Gradient**	**K-Value (cm/sec)**	
Start	**End**	**Time (sec)**	**Initial**	**Final**	**Avg.**	**Factor**	**$h_{out}1$**	**$h_{in}1$**	**$h_{out}2$**	**$h_{in}2$**	**h1**	**h2**			**Uncorrected K-Value**	**Corrected K-Value**
14:14:00	14:47:00	1980	18.2	18.2	18.2	1.0460	49.30	1.80	43.60	7.40	194.8	181.9	19.15	17.89	3.83E-06	4.01E-06
14:47:00	15:11:30	1470	18.2	18.2	18.2	1.0460	43.60	7.40	39.50	11.50	181.9	172.5	17.89	16.97	3.98E-06	4.17E-06
15:11:30	15:29:00	1050	18.2	18.0	18.1	1.0486	39.50	11.50	36.90	14.10	172.5	166.6	16.97	16.38	3.69E-06	3.87E-06
15:29:00	15:45:22	982	18.0	18.0	18.0	1.0513	36.90	14.10	34.50	16.60	166.6	161.0	16.38	15.83	3.85E-06	4.05E-06
Notes:												***Averages:***	***17.60***	***16.77***	***3.84E-06***	***4.0E-06***

Technician: PJM
Technical Responsibility: EG

Erica Goodyear
signature

Position: T3

Form No. WS-D5084-1
Revision No. : 0
Revision Date: 03/11/15

ASTM D5084 Flex Wall Perm Method C

Test Data

S&ME, Inc. Columbus Branch, 6190 Enterprise Ct., Dublin, Ohio 43016

Project No:	25-17-0079	Report Date:	1/12/2026
Project Name:	Philo Legacy CCR Impoundments Evaluation	Test Date:	12/29/2025
Client Name:	American Electric Power (AEP)	Sample Date:	9/17/2025
Client Address:	8500 Smiths Mill Road, New Albany, Ohio, 43054	Log No:	17-76-25
Sample ID:	B-04, S-12, Section II, 38.5'-39.5'	Sample Type:	Intact
Description:	LEAN CLAY (CL), trace fine to medium sand		

Sample Info:	Assumed SG:	2.70	Percentage Passing 200:	95.4	Maximum Particle Size:	**0.85 mm**
	Liquid Limit:	38	Plastic Limit:	21	Plastic Index:	17

				Final Specimen Conditions			
Length (cm):	**10.17**	Wet Density (PCF):	**120.7**	Length (cm):	**10.09**	Wet Density (PCF):	**122.7**
Diameter (cm):	**7.19**	Dry Density (PCF):	**93.0**	Diameter (cm):	**7.10**	Dry Density (PCF):	**96.2**
Area (cm^2)	**40.62**	Percent Saturation:	**99.0%**	Area (cm^2)	**39.63**	Percent Saturation:	**99.0%**
Volume (cm^3)	**413.25**			Volume (cm^3)	**399.87**	B-Parameter:	**0.98**
Wet weight (grams)	**799.2**	Void Ratio:	**0.811**	Wet weight (grams)	**786.0**	Void Ratio:	**0.753**
Dry Weight (grams)	**616.0**	Porosity:	**0.448**	Dry Weight (grams)	**616.0**	Porosity:	**0.429**
Percent Moisture:	**29.7%**			Percent Moisture:	**27.6%**		
Test Parameters:	Effective Consolidation Stress (psi):		**35.0**	Permeant Liquid Used:		Deaired Water	
Burette Area (cm^2):	**0.874**	Cell Pressure (psi):	**85.0**	Influent Pressure (psi):	**52.0**	Effluent Pressure (psi):	**50.0**

Time (24-hr)			**Temperature (^oC)**				**Measurements**						**Initial Gradient**	**Final Gradient**	**K-Value (cm/sec)**	
Start	**End**	**Time (sec)**	**Initial**	**Final**	**Avg.**	**Factor**	**$h_{out}1$**	**$h_{in}1$**	**$h_{out}2$**	**$h_{in}2$**	**h1**	**h2**			**Uncorrected K-Value**	**Corrected K-Value**
15:13:00	17:15:15	7335	18.2	18.2	18.2	1.0460	48.90	1.00	48.50	1.40	195.2	194.3	19.35	19.26	7.10E-08	7.43E-08
17:15:15	10:11:15	60960	18.2	18.0	18.1	1.0486	48.50	1.40	45.60	4.60	194.3	187.3	19.26	18.57	6.65E-08	6.98E-08
10:11:15	16:09:16	21481	18.0	18.0	18.0	1.0513	45.60	4.60	44.60	5.40	187.3	185.3	18.57	18.36	5.70E-08	6.00E-08
16:09:16	17:14:30	3914	18.0	18.0	18.0	1.0513	44.60	5.40	44.40	5.60	185.3	184.8	18.36	18.32	7.00E-08	7.36E-08
Notes:											**Averages:**		***18.88***	***18.63***	***6.62E-08***	***6.9E-08***

Technician: PJM
Technical Responsibility: EG

Erica Hoodyear
signature

Position: T3

Form No. WS-D5084-1
Revision No. : 0
Revision Date: 03/11/15

ASTM D5084 Flex Wall Perm Method C

Test Data

S&ME, Inc. Columbus Branch, 6190 Enterprise Ct., Dublin, Ohio 43016

Project No:	25-17-0079	Report Date:	1/12/2026
Project Name:	Philo Legacy CCR Impoundments Evaluation	Test Date:	11/25/2025
Client Name:	American Electric Power (AEP)	Sample Date:	9/23/2025
Client Address:	8500 Smiths Mill Road, New Albany, Ohio, 43054	Log No:	17-76-25
Sample ID:	B-08, S-06, Section II, 26.0'-27.2'	Sample Type:	Intact
Description:	SILTY SAND (SM)		

Sample Info:	Assumed SG:	2.70	Percentage Passing 200:	33	Maximum Particle Size:	**0.85 mm**
	Liquid Limit:	NP	Plastic Limit:	NP	Plastic Index:	NP

				Final Specimen Conditions			
Length (cm):	**12.51**	Wet Density (PCF):	**112.7**	Length (cm):	**12.36**	Wet Density (PCF):	**129.2**
Diameter (cm):	**7.17**	Dry Density (PCF):	**93.0**	Diameter (cm):	**6.85**	Dry Density (PCF):	**103.0**
Area (cm^2)	**40.34**	Percent Saturation:	**70.4%**	Area (cm^2)	**36.88**	Percent Saturation:	**100.0%**
Volume (cm^3)	**504.84**			Volume (cm^3)	**455.94**	B-Parameter:	**0.95**
Wet weight (grams)	**911.8**	Void Ratio:	**0.811**	Wet weight (grams)	**944.0**	Void Ratio:	**0.636**
Dry Weight (grams)	**752.6**	Porosity:	**0.448**	Dry Weight (grams)	**752.6**	Porosity:	**0.389**
Percent Moisture:	**21.2%**			Percent Moisture:	**25.4%**		
Test Parameters:	Effective Consolidation Stress (psi):		**20.0**	Permeant Liquid Used:		Deaired Water	
Burette Area (cm^2):	**0.874**	Cell Pressure (psi):	**70.0**	Influent Pressure (psi):	**52.0**	Effluent Pressure (psi):	**50.0**

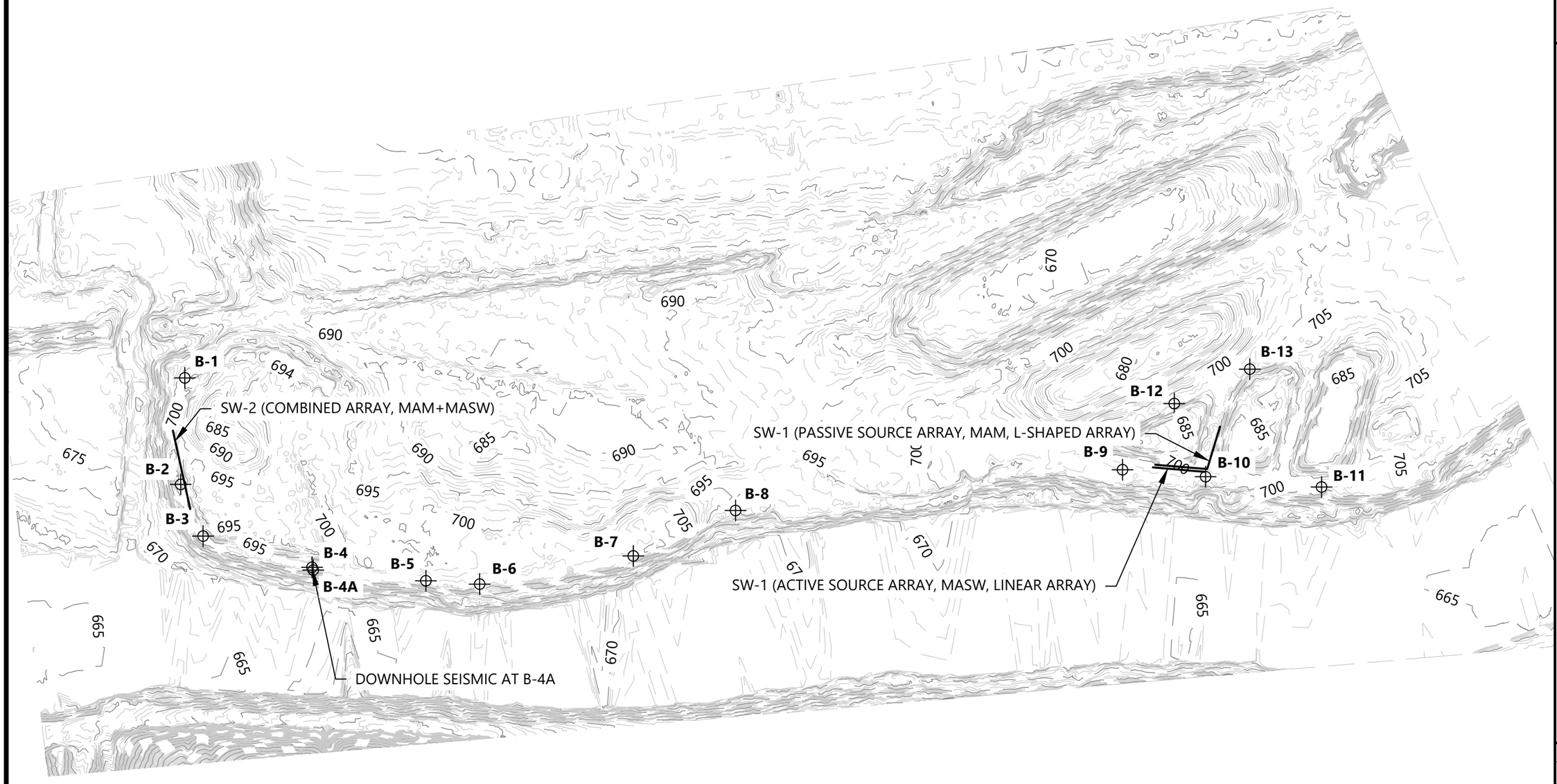
Time (24-hr)			Temperature (^oC)				Measurements						Initial Gradient	Final Gradient	K-Value (cm/sec)	
Start	**End**	**Time (sec)**	**Initial**	**Final**	**Avg.**	**Factor**	**$h_{out}1$**	**$h_{in}1$**	**$h_{out}2$**	**$h_{in}2$**	**h1**	**h2**			**Uncorrected K-Value**	**Corrected K-Value**
9:40:50	9:55:50	900	19.4	19.5	19.5	1.0138	47.90	32.90	43.00	37.60	157.7	146.8	12.76	11.87	1.17E-05	1.19E-05
9:55:50	10:06:50	660	19.5	19.5	19.5	1.0126	43.00	37.60	39.90	40.80	146.8	139.6	11.87	11.29	1.11E-05	1.13E-05
10:06:50	10:19:50	780	19.5	19.5	19.5	1.0126	39.90	40.80	36.50	44.00	139.6	132.1	11.29	10.68	1.04E-05	1.05E-05
10:19:50	10:34:50	900	19.5	19.5	19.5	1.0126	36.50	44.00	33.10	47.50	132.1	124.2	10.68	10.05	9.99E-06	1.01E-05
Notes:												***Averages:***	***11.65***	***10.97***	***1.08E-05***	***1.1E-05***

Technician: PJM
Technical Responsibility: EG

Erica Goodyear
signature

Position: T3

Appendix IV – Geophysical Test Results



LEGEND:

- DENOTES APPROXIMATE LOCATION PLAN
- MAJOR CONTOUR
- MINOR CONTOUR

TOPOGRAPHIC SURVEY OBTAINED FROM OHIO STATEWIDE IMAGERY PROGRAM (OSIP) LIDAR DATA MANAGED BY THE OHIO GEOGRAPHICALLY REFERENCED INFORMATION PROGRAM (OGRIP). LIDAR SOURCE: OSIP I (2007) MUSKINGUM COUNTY LIDAR DATASET, OHIO STATE PLANE SOUTH, NAD 83 (2011) / NAVD 88.

N

0 300 600

GRAPHIC SCALE (FEET)

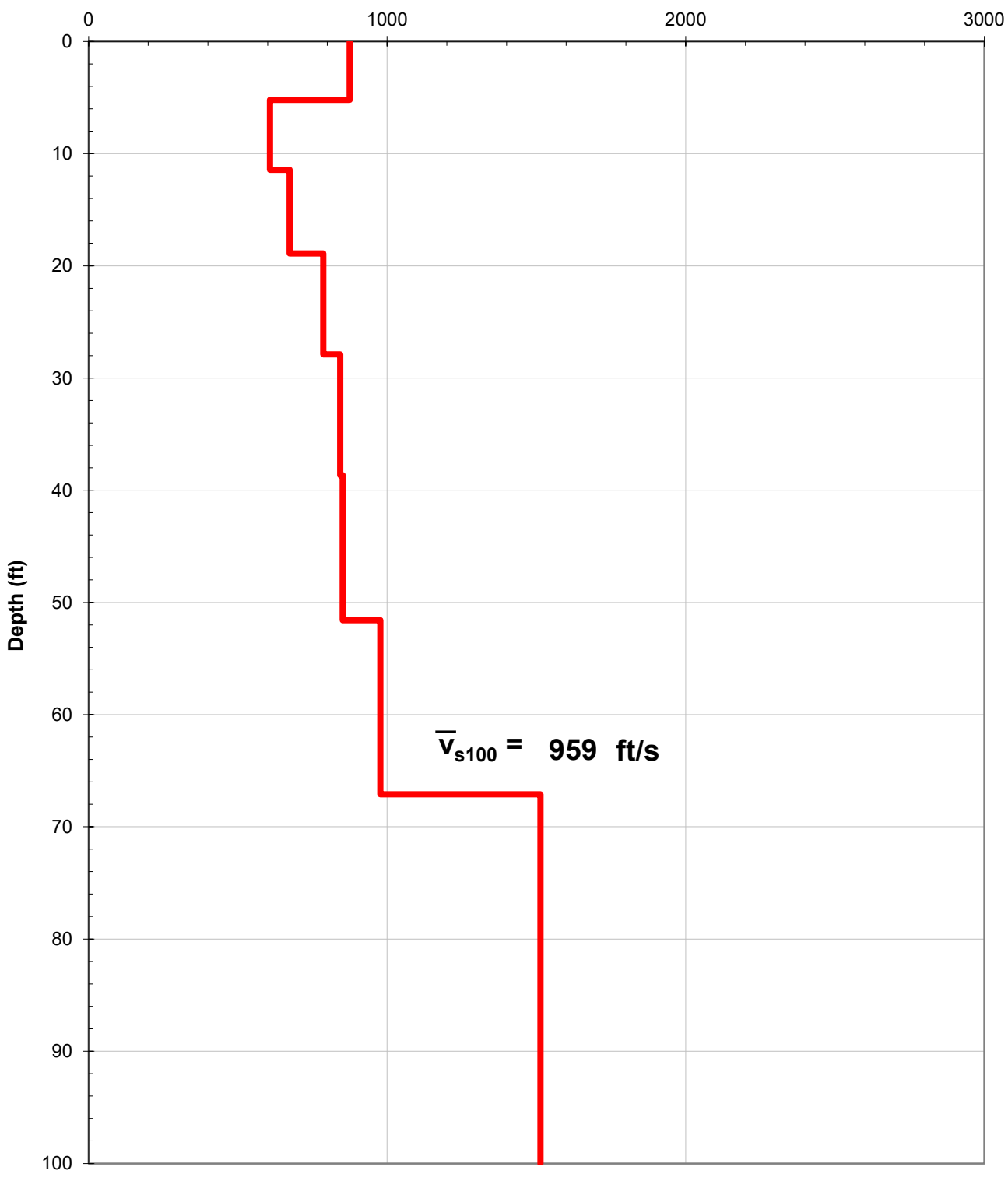
S&ME, Inc.

SEISMIC TEST LOCATION PLAN (PLAN OF BORINGS OVERLAY)

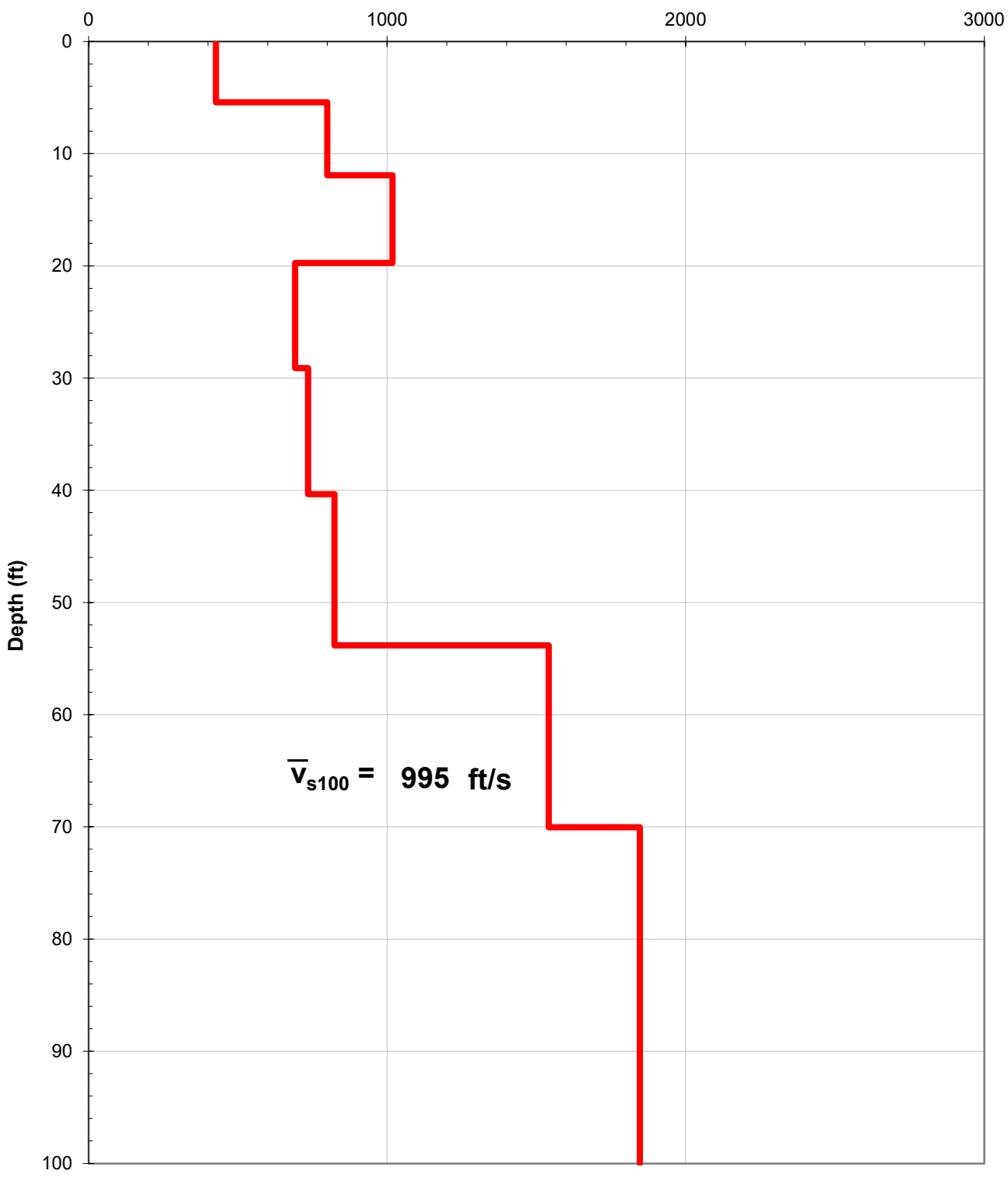
AEP PHILO LEGACY CCR
AEP PHILO STATION
PHILO, OHIO

SCALE:	1" = 300'
DATE:	22-JAN-2026
PROJECT NUMBER	25170079
FIGURE NO.	1

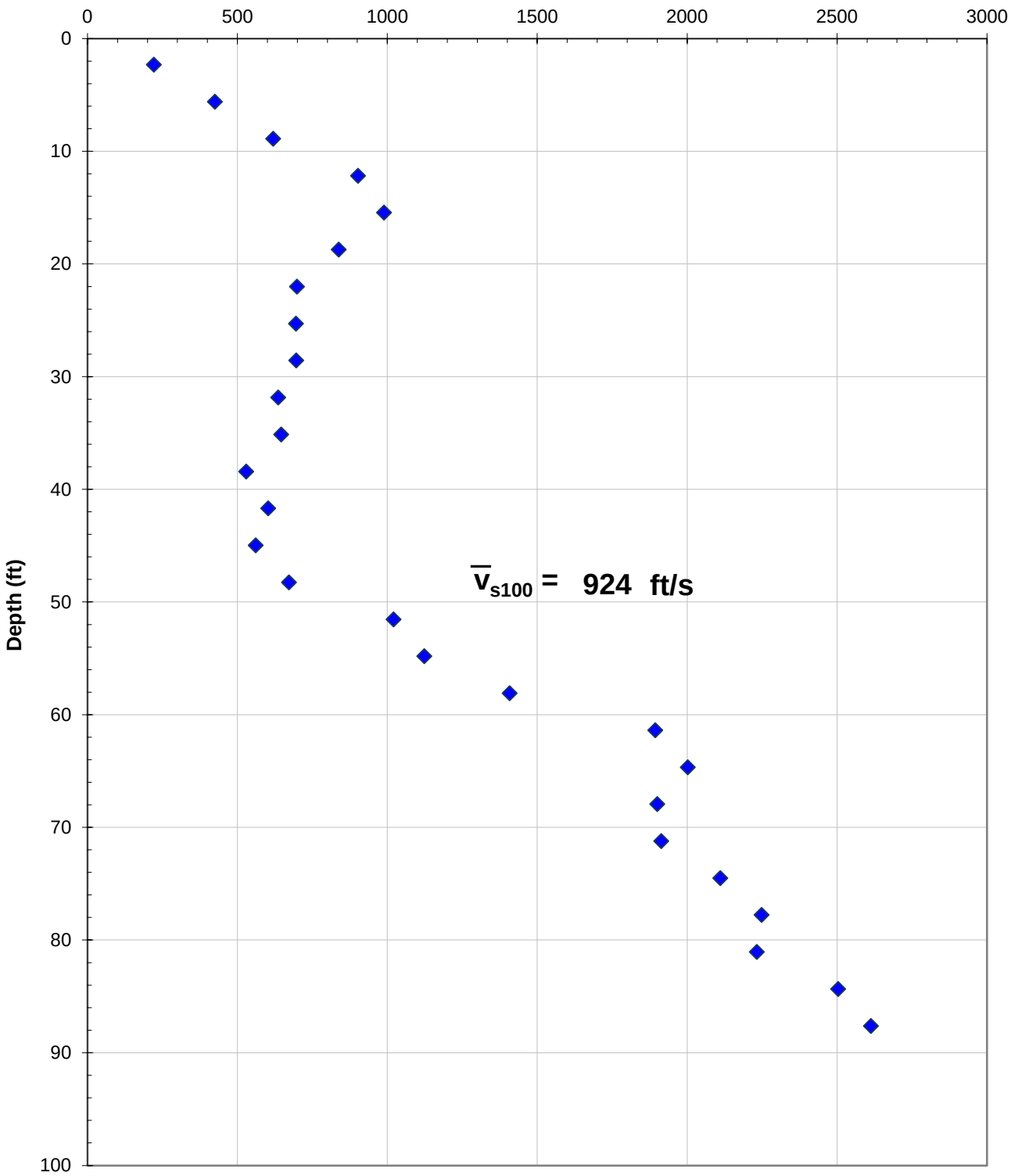
Shear Wave Velocity Profile SW-1
Philo Plant Legacy CCR Impoundments
Philo, Muskingum County, Ohio
S&ME Project: 25170079



Shear Wave Velocity Profile SW-2
Philo Plant Legacy CCR Impoundments
Philo, Muskingum County, Ohio
S&ME Project: 25170079

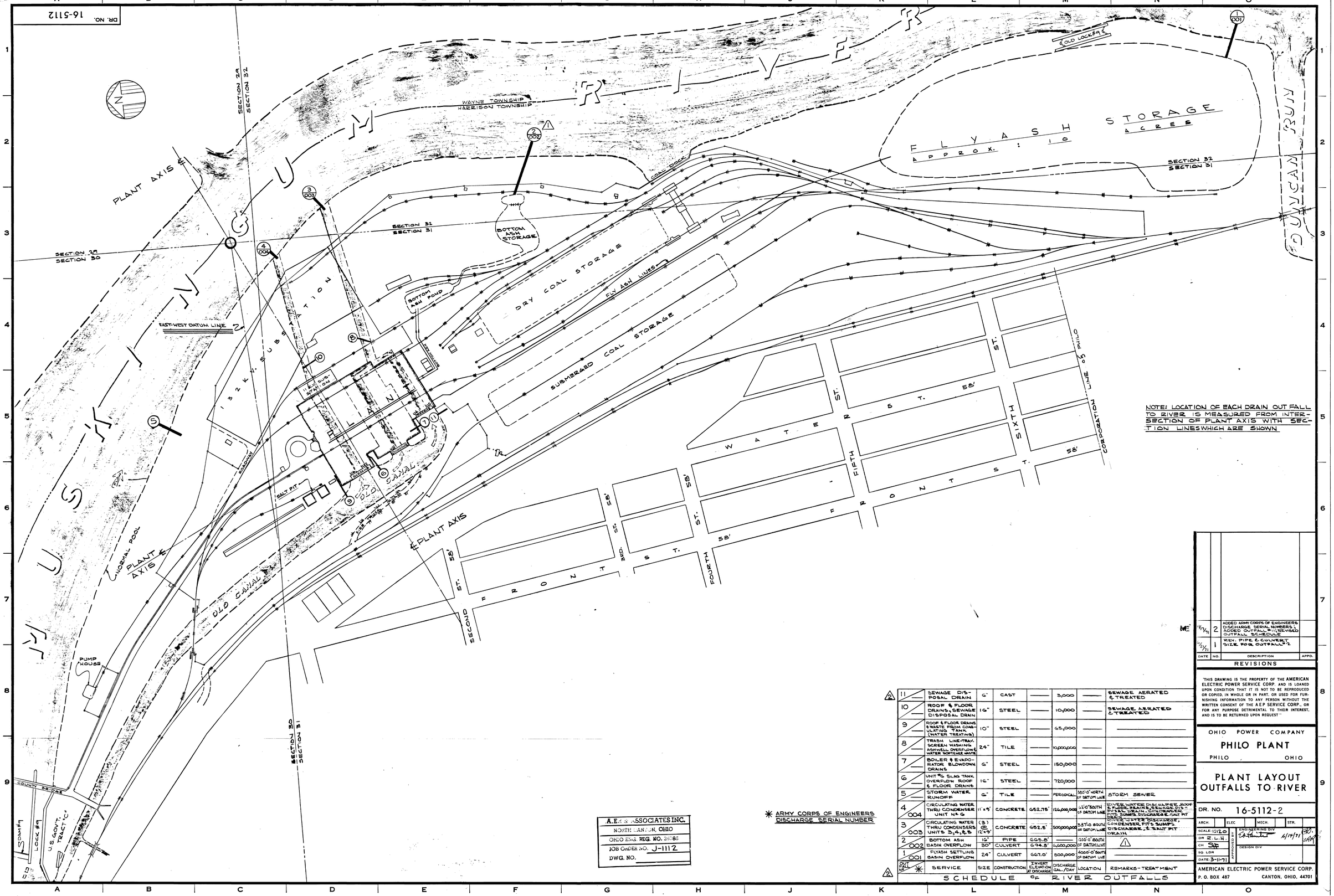


Shear Wave Velocity Profile B-04A
Philo Legacy CCR Impoundments
Philo, Ohio
S&ME Project 25170079



ATTACHMENT C
Design Drawings

DR. NO. 16-5112



NOTE: LOCATION OF EACH DRAIN OUT FALL TO RIVER IS MEASURED FROM INTERSECTION OF PLANT AXIS WITH SECTION LINES WHICH ARE SHOWN

OUT FALL NO.	✳ SERVICE	SIZE	CONSTRUCTION	INVERT ELEVATION AT DISCHARGE	DISCHARGE GAL./DAY	LOCATION	REMARKS - TREATMENT
11	SEWAGE DISPOSAL DRAIN	6"	CAST	——	3,000	——	SEWAGE AERATED & TREATED
10	ROOF & FLOOR DRAINS, SEWAGE DISPOSAL DRAIN	16"	STEEL	——	10,000	——	SEWAGE AERATED & TREATED
9	ROOF & FLOOR DRAINS & WASTE FROM CONCULATING TANK (WATER TREATING)	10"	STEEL	——	65,000	——	——
8	TRASH LINE-TRAV. SCREEN WASHING ASHWELL OVERFLOW & WATER SOFTENER WASTE	24"	TILE	——	10,000,000	——	——
7	BOILER & EVAPORATOR BLOWDOWN DRAINS	6"	STEEL	——	150,000	——	——
6	UNIT #6 SLAG TANK OVERFLOW ROOF & FLOOR DRAINS	16"	STEEL	——	720,000	——	——
5	STORM WATER RUNOFF	6"	TILE	——	PERIODICAL	385'-0" NORTH OF DATUM LINE	STORM SEWER
4 004	CIRCULATING WATER THRU CONDENSER UNIT NO 6	11'-9"	CONCRETE	652.75'	120,000,000	12'-0" SOUTH OF DATUM LINE	CULVER, WATER DISCHARGE, ROOF & FLOOR DRAINS, SEWAGE DISPOSAL DRAIN, CONDENSER, COOLING TOWER BLOWDOWN
3 003	CIRCULATING WATER THRU CONDENSER UNITS 3, 4, & 5	(3) 10' 6" 12'-9"	CONCRETE	652.5'	500,000,000	3.37'-0 SOUTH OF DATUM LINE	CULVER, WATER DISCHARGE, CONDENSER, PITS SUMPS DISCHARGE, & SALT PIT DRAIN
2 002	BOTTOM ASH BASIN OVERFLOW	16" 50"	PIPE CULVERT	695.8' 694.8'	6,600,000	1200'-0" SOUTH OF DATUM LINE	⚠
1 001	FLYASH SETTLING BASIN OVERFLOW	24"	CULVERT	667.0'	800,000	4000'-0" SOUTH OF DATUM LINE	——

SCHEDULE OF RIVER OUTFALLS

✳ ARMY CORPS OF ENGINEERS DISCHARGE SERIAL NUMBER

A.E.P. ASSOCIATES INC.
NORTH CANTON, OHIO
OHIO ENG. REG. NO. 25582
JOB ORDER NO. J-1112
DWG. NO. ——

DATE	NO.	DESCRIPTION	APPD.
11/17/71	2	ADDED ARMY CORPS OF ENGINEERS DISCHARGE SERIAL NUMBERS; ADDED OUTFALL #11; REVISED OUTFALL SCHEDULE	
6/15/71	1	REV. PIPE & CULVERT SIZE FOR OUTFALL #2	

REVISIONS

OHIO POWER COMPANY

PHILO PLANT

PHILO OHIO

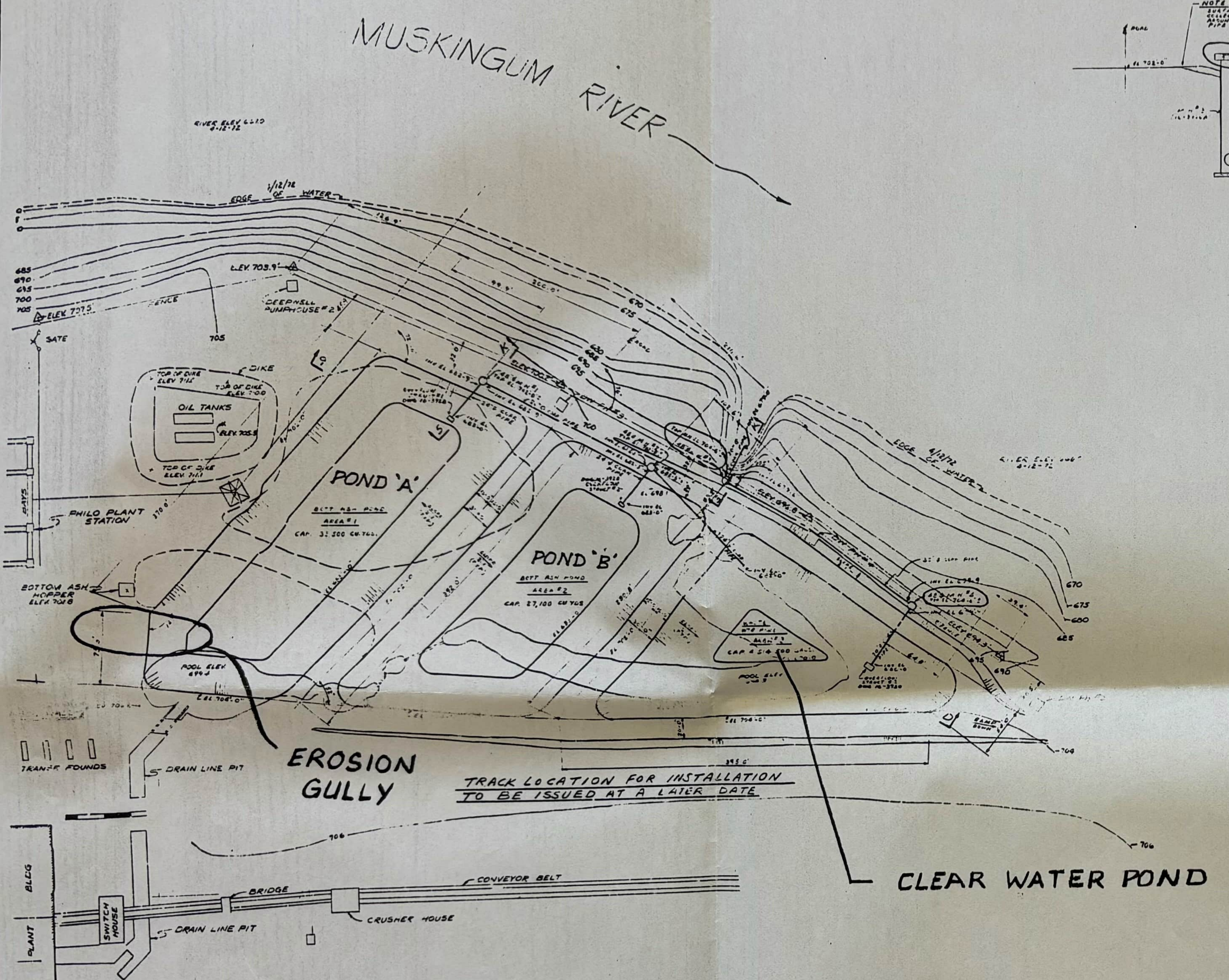
PLANT LAYOUT OUTFALLS TO RIVER

DR. NO. 16-5112-2

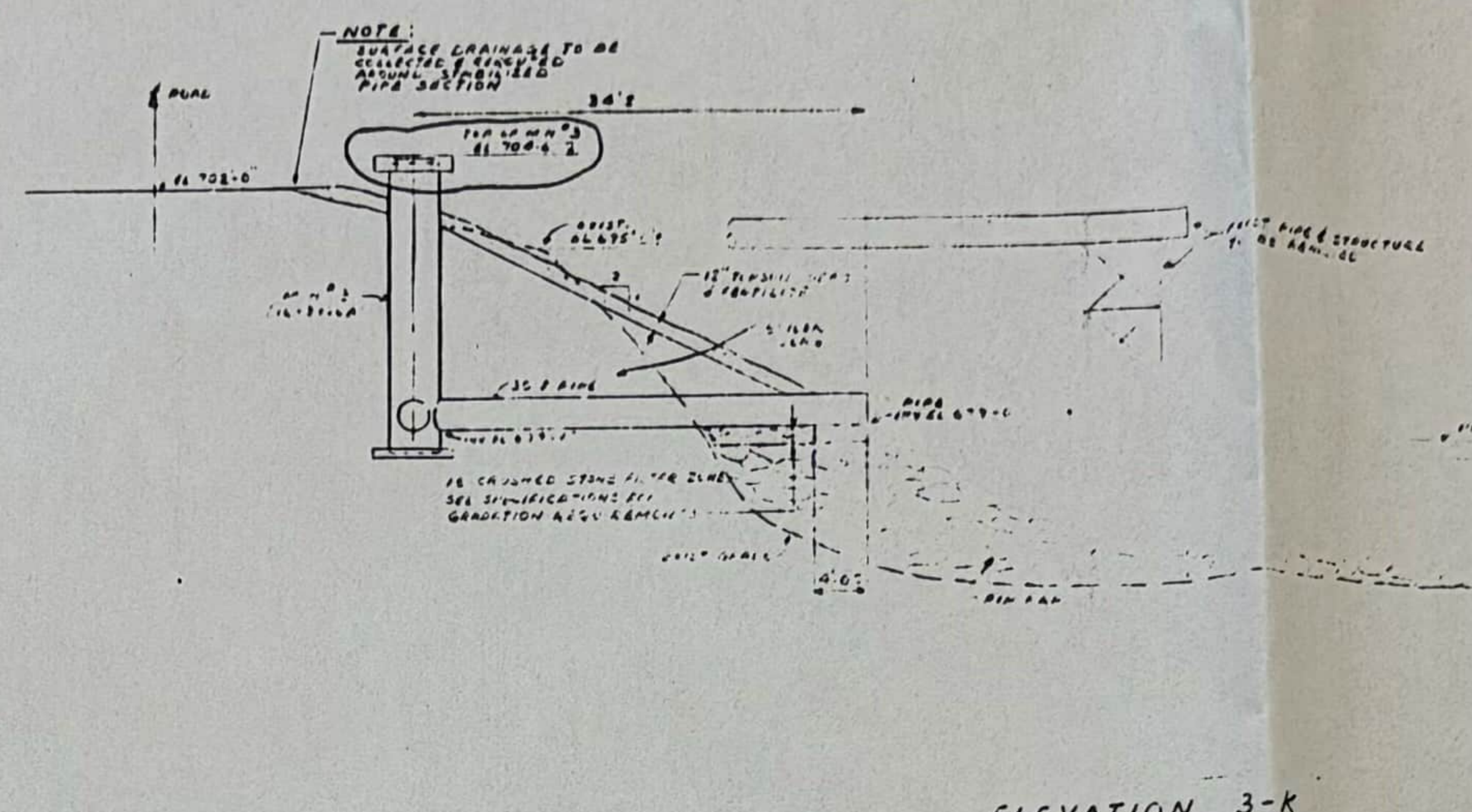
ARCH.	ELEC.	MECH.	STR.
SCALE: 1:120			
DR. R.L.H.	ENGINEERING DIV.		
CH.	DESIGN DIV.		
SQ. LDR.			
DATE: 3-11-71			

AMERICAN ELECTRIC POWER SERVICE CORP.
P. O. BOX 487 CANTON, OHIO, 44701

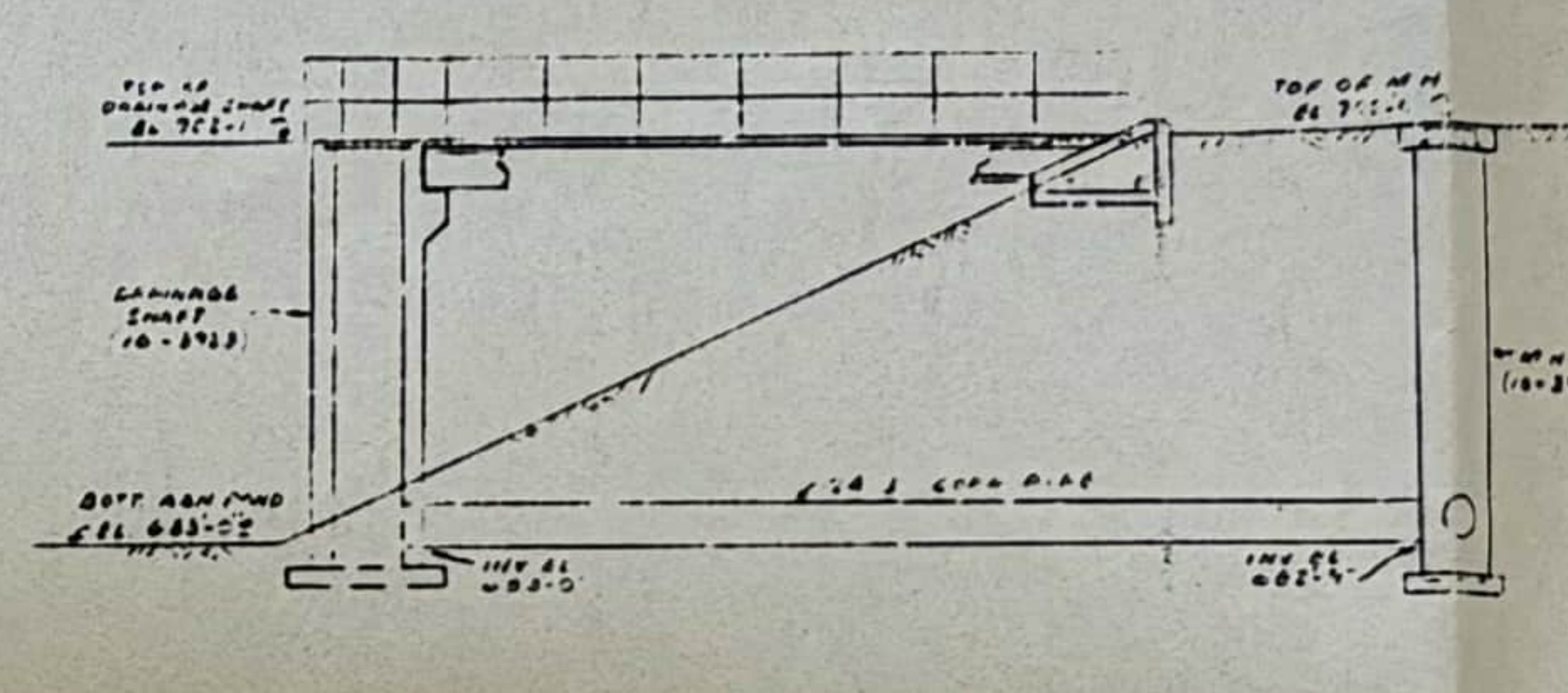
DR. NO. 16-3926



PLAN
1" = 50'



ELEVATION 3-K
1" = 10'



SECTION 5-K
1" = 10'

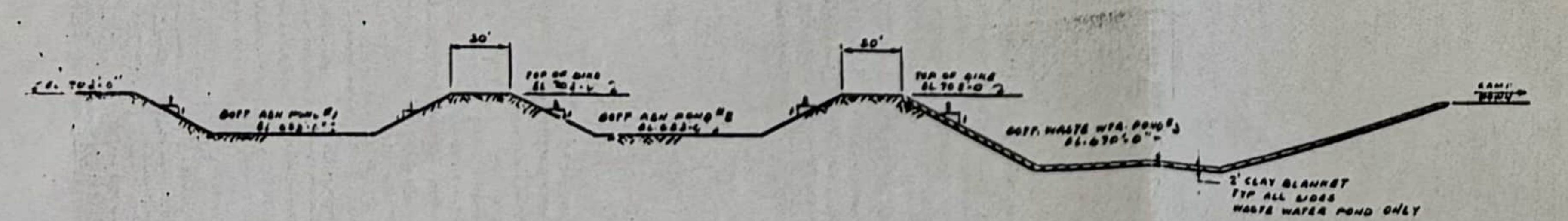
DATA

TOP OF DIKES EL. 703'-0"

BOTTOM OF PONDS
BOTT. ASH POND #1 : 683'-0"
BOTT. ASH POND #2 : 683'-0"
RECL. WTR. POND #3 : 670'-0"

QUANTITY

POND AREA #1 : 33,500 CU. YDS.
POND AREA #2 : 27,100 CU. YDS.
POND AREA #3 : 4,514,500 GALS



SECTION 9-D
1" = 50'

GENERAL NOTES

BOTTOM ASH & WASTE WATER POND EXCAVATIONS

AFTER POND EXCAVATION HAS BEEN COMPLETED, OWNER'S ENGINEER IS TO INSPECT THE NATURAL MATERIAL FOR PERMEABILITY. IF IN THE OPINION THE NATURAL MATERIAL PROVES TO BE EXCESSIVELY PERVIOUS, THE CONTRACTOR SHALL BE INSTRUCTED TO PLACE AN IMPERVIOUS CLAY BLANKET OVER ENTIRE ASH RETENTION BASINS.
PAYMENT FOR THIS WORK SHALL BE MADE BY THE OWNER TO CONTRACTOR AT THE UNIT PRICE FOR CLAY FILL QUOTED IN CONTRACT.

DATE	NO.	DESCRIPTION	APPD.
[illegible]	2	REVISED TOP ELEVATION OF M.H.'S & M.H. #4	
[illegible]	1	REVISED DIKE & POND ELEVS.	

REVISIONS

OHIO POWER COMPANY
PHILO PLANT
PHILO, OHIO

BOTTOM ASH STORAGE AREA
DIKES

DR. NO. 16-3926-2

ARCH. | ELEC. | MECH. | STR.

SCALE: AS NOTED
DR. J.M.
CH.
ENGINEERING DIV.
DESIGN DIV.

AMERICAN ELECTRIC POWER SERVICE CORP.
2 BROADWAY NEW YORK