Geotechnical Engineering Report

South Eads Park
Arlington, Virginia

Prepared for

Clark | Azar & Associates, Inc.
May 2, 2022

DMY
ENGINEERING CONSULTANTS INC.

Chantilly, VA
Williamsburg, VA
Washington, DC
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May 2, 2022

Mr. Jason Azar
Vice President
Clark | Azar & Associates, Inc.
20440 Century Boulevard, Suite 220
Germanton, MD 20874

Reference: Geotechnical Engineering Report
South Eads Park
Arlington, Virginia
DMY Project No. 01.05718.01

Dear Mr. Azar:

DMY Engineering Consultants Inc. (DMY) is pleased to submit this Geotechnical Engineering Report for the above-referenced project. This report presents a review of the information provided to us, a discussion of the site and subsurface conditions encountered, and our geotechnical recommendations.

We appreciate the opportunity to be of service to you on this project and would be happy to discuss our findings with you. We look forward to serving as your geotechnical engineer on the remainder of this project and on future projects.

Respectfully,

DMY ENGINEERING CONSULTANTS INC.

Will Kelsey
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Date: 2022.05.02 14:05:46 -04'00'

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1.0 PROJECT OVERVIEW

1.1. PROJECT INFORMATION AND SITE CONDITIONS

The project site is located along South Eads Street in Arlington, Virginia. The site is bounded by Army Navy Drive to the north, apartment buildings to the east, 12th Street South, to the south, and South Eads Street to the west. Based on topographic plans provided by Clark | Azar & Associates (herein referred as "Client"), the site is generally flat with elevations ranging from EL. 35 feet to EL. 38 feet.

The project consists of the design and construction of a new park with architectural features. The planned features and structures are listed below:

- A new mico-bioretention facility with an invert elevation of EL 31.7 ft.
- Permeable pavers and concrete pavement will be constructed throughout the park. The invert elevation for the permeable pavers will be at approximately 1.75 to 3.5 feet below proposed grades. We understand that the pavement will be primarily used by pedestrians and will only be utilized by maintenance vehicles about twice a month and bucket trucks less than twice a month.
- New boulder retaining walls with maximum exposed heights ranging from 1.0 to 2.25 feet will be constructed near the northern end of the park and near the entrance to the southern portion of the park. The boulders retaining wall will consist of 2 to 3 stacked boulders.
- A new 6-foot wide boardwalk will be constructed along South Eads Street and through the micro-bioretention facility in the northern portion of the site. The boardwalk will be supported by helical piers or sonotubes. The boardwalk will support pedestrian loads only. Based on the information provided by the structural engineer, the maximum anticipated load on each helical pier or sonotube will be 5.3 kips.
- New architectural pylon lights that are planned throughout the site. The lights will be 15 feet tall and are planned to be surface mounted to a thickened slab.
- New misting elements and traffic bollards.
- New streetlights along South Eads Street.

The description of the proposed project given above is based on the information provided to us by you and information gathered during our site reconnaissance. If any of the assumptions or project information is incorrect, DMY should be informed so that we may revise our geotechnical recommendations, if necessary.

1.2. SCOPE OF SERVICES

The purposes of this study were to obtain the subsurface soil and groundwater information for the existing buildings. Our scope of services included the following:

- Drilling nineteen (19) SPT borings and one (1) hand auger boring within the South Eads Park project limits. Two (2) borings were performed in the vicinity of the proposed boardwalk along

South Eads Street. Two (2) borings were performed in the vicinity of the proposed micro-bioretention facility. Five (5) borings were performed in the vicinity of the proposed boulder walls. The remainder of the borings were performed in the vicinity of various architectural features throughout the site.

- Drilling four (4) auger probes for infiltration testing purpose.
- Performing four (4) in-situ infiltration tests in accordance with Virginia Department of Environmental Quality (DEQ) and Arlington County Stormwater Manual requirements.
- Performing laboratory tests on select soil samples.
- Evaluating field and laboratory data.
- Performing engineering calculations and analyses.
- Preparing this geotechnical engineering report.

2.0 FIELD EXPLORATION AND LABORATORY TESTING

2.1. FIELD EXPLORATION

The field exploration consisted of:

- Drilling nineteen (19) Standard Penetration Test (SPT) borings (B-1 through B-14, and B-16 through B-20) to depths ranging from 5 to 25 feet below current site grades.
- Drilling one (1) hand auger boring (B-15) to a depth of 4.5 feet. The hand auger boring was performed at a location which was inaccessible to our drill rig.
- Drilling four (4) auger probes (INF-1 through INF-4) to depths of 5.0 feet for infiltration testing. The infiltration test was conducted in general accordance with the requirements of the Arlington County Stormwater Manual and the Virginia DEQ Stormwater Design Specification No. 8, Infiltration Practices.

The boring locations were selected by the Client and located in the field by DMY personnel using visual reference to existing site features. As-drilled boring elevations were estimated to the nearest half foot based on the topographic plan provided to us by the client. Some borings were offset from the original locations due to reasons such as access, utility conflict, etc. The approximate locations of the as-drilled borings are shown on the Boring Location Plan included in Appendix A.

The SPT borings were drilled by a truck-mounted CME-45 or CME-55 drill rig using the hollow stem auger method. Groundwater levels were measured at each SPT boring location at the time of drilling and upon completion of drilling. The groundwater level was also measured 72 hours after completion of drilling in Borings B-1, B-5, B-10, and B-13. DMY performed a hand auger boring with Dynamic Cone Penetrometer (DCP) test at Boring B-15. This boring location was not accessible to our SPT drill rig; therefore, a hand auger with DCP testing was performed. The field exploration procedures are included in Appendix B.

Following field operations, the soil samples were transported to our laboratory for further analysis and testing. The samples will be stored in our laboratory for a period of 2 weeks from the submittal date of this report. After this period, the samples will be discarded unless we are instructed otherwise.

2.2. LABORATORY TESTING

Representative soil samples were selected and tested in the laboratory to verify field classifications and to determine pertinent engineering properties. The laboratory testing procedures and results are included in Appendix C of this report. The laboratory testing program included the following:

- 8 Natural moisture Content (ASTM D 2216)
- 8 Grain size analysis (ASTM D 6913)
- 8 Atterberg Limits (ASTM D 4318)
- 8 USDA Textural Analysis (ASTM D 7928)
- 1 California Bearing Ratio (VTM-8)
- 1 Standard Proctor (VTM-1)

3.0 SITE GEOLOGY AND SUBSURFACE CONDITIONS

3.1. SITE GEOLOGY AND SOIL SURVEY

According to the Geologic Map of Virginia (1993) published by the Virginia Department of Mines, Minerals, and Energy (DMME), the site is located in the Shirley Formation. The Shirley Formation consists of light to dark gray, bluish gray, and brown sand, gravel, silt, clay and peat. The soil was deposited in riverine terraces, baymouth barriers, and bay-floor plains. The fluvial-estuarine facies comprise a lower pebble to boulder sand overlain by fine to coarse sand interbedded with peat and clayey silt rich in organic material, including tree stumps, leaves, and seeds of cypress, oak, and hickory which grades up to medium-to-thick-bedded clayey and sandy silt and silty clay.

The Arlington County Soil Survey (2019) shows the site within the Urban Land – Udorthents mapping unit. The Urban Land mapping unit consists of material that has been disturbed during urbanization. Urban Land is highly heterogenous.

3.2. SUBSURFACE CONDITIONS

The subsurface conditions encountered at the locations explored are shown in the boring logs in Appendix B. The records represent our interpretation of the subsurface conditions in accordance with generally accepted geotechnical engineering practice. The lines designating the interfaces between various strata on the boring logs are approximate, as the actual transitions between soil strata are often gradual. In the absence of foreign substances, it is difficult to distinguish between natural soils and clean soil fills. Although individual test borings are representative of the subsurface conditions at the precise boring locations on the dates shown, they are not necessarily indicative of the subsurface conditions at other locations or at other times.

Surficial Materials

Approximately 2 to 4 inches of topsoil was encountered within Borings B-01 through B-10 and B-16 through B-20. Topsoil encountered is typically a dark colored soil material containing roots, fibrous matter,

and/or other organic components, and is generally unsuitable for engineering purposes. No laboratory testing was performed for landscaping use purpose ; therefore, the term topsoil is not intended to indicate suitability for landscaping and/or other purposes.

Borings B-11 through B-15 were performed within the construction site in the southern portion of the project. No topsoil was encountered within Borings B-11 through B-15. Approximately 2.4 to 3.6 inches of concrete was encountered at ground surface within Borings B-12 and B-14.

Stratum F, Existing Fill

The existing fill materials were encountered beneath the surficial materials in all borings extending to approximate depths ranging from 2 to 14.2 feet below the existing grades. The existing fill materials identified or classified as LEAN CLAY (CL), CLAYEY GRAVEL (GC), SILTY GRAVEL (GM), SILT (ML), CLAYEY SAND (SC), and SILTY SAND (SM). SPT N-values ranging from 2 blows per foot (bpf) to 20 blows over 0 inches and DCP blow values ranging from 8 to more than 30 blows per 1.75-inch increment were recorded in the fill materials, indicating a firm to very hard consistency for fine-grained soils and a very loose to medium dense relative density for coarse-grained soils in this stratum. No compaction records were available for the existing fill materials and, consequently, the fill encountered is considered uncontrolled.

Stratum C, Coastal Plain Deposits

Coastal Plain Deposits are defined as coast deposits of clay, silt, sand, and/or gravel ranging in age from Quaternary to Cretaceous. Coastal Plain soils were encountered underlying the existing fill in all borings except Borings B-7, B-8, B-11, and B-15. The soils in this strata are loose, unconsolidated soil or sediment which has been eroded and reshaped by water in some form. The soils of this stratum were identified or classified as SILTY SAND (SM), CLAYEY SAND (SC), LEAN CLAY (CL), SILTY GRAVEL (GM), POORLY-GRADED GRAVEL (GP), SILT (ML), and POORLY-GRADED SAND (SP). The SPT N-values recorded in these soils ranged from 3 bpf to 50 blows over 5 inches of split spoon penetration, indicating a firm to very stiff consistency for fine-grained soils and a very loose to very dense relative density for coarse-grained soils in this stratum.

Groundwater

Groundwater was encountered at the depths of 7.7 feet and 13 feet during the drilling in Borings B-01 and B-13, respectively. Groundwater was not encountered within the other borings during drilling or upon completion of drilling. The borings except Borings B-01, B-05, B-10, and B-13 were backfilled immediately upon completion of drilling for public safety reasons. Temporary PVC standpipes were installed within Borings B-01, B-05, B-10, and B-13 prior to backfill.

Groundwater readings were taken at Borings B-01, B-05, B-10, and B-13 at 72 hours after completion of drilling. Groundwater was not encountered 72 hours after completion of drilling within these borings. It should be noted that due to backfilling of the borings upon completion, groundwater may not have had time to enter the borings or reach its hydrostatic level. Groundwater may still be present at the locations and/or depths not indicated from the borings since stabilized groundwater readings were not obtained due to public safety concerns. Groundwater levels fluctuate with seasonal and climatic variations and may be different at other times and locations than those stated in this report.

3.3. INFILTRATION TESTING

Four (4) infiltration tests were performed at infiltration test locations INF-1 through INF-4 to determine the general infiltration capabilities of the soils at the site. Constant head borehole infiltration test was conducted in the infiltration test borings using the Aardvark automated permeameter device in accordance with Virginia DEQ and the Arlington County Stormwater Manual requirements. The Aardvark Permeameter estimates soil hydraulic conductivity using the amount of supplied water measured at equal time intervals. This is equivalent to the amount of water that was infiltrated by soil. Soil-water infiltration rate is the amount of percolated water over time which is equivalent to the reservoir flow rate. The measurement ends when the reservoir flow rate does not change over several consecutive readings and a steady state flow is observed. Due to the sensitivity of the equipment, some minor fluctuations require that the steady state be manually interpreted. Soil hydraulic conductivity (K_{sat}) is then calculated using the steady flow rate using the Earth Manual method and is also corrected for temperature.

Table 3-1 below summarizes the saturated hydraulic conductivity (K_{sat}), infiltration test depth, and USDA soil classification at each infiltration test location and its adjacent SPT boring. The infiltration test results are included in Appendix D.

The saturated hydraulic conductivity (K_{sat}), testing depths, and USDA soil classification. The Virginia DEQ requires that requires that the Seasonal High Water Table be at least 2 feet below the invert elevation. Groundwater was encountered within boring B-01 at a depth of 7.7 feet and within Boring B-13 at 13.0 ft.

The Virginia DEQ Stormwater Design Specification No. 8 states that infiltration practices should not be situated above fills soils. Fill soils were encountered throughout the site at depths ranging from 2.0 to 14.2 feet below existing grades. Refer to the boring logs in Appendix B of this report for depths and elevations of existing fill as encountered within the borings.

Table 3-1: Summary of Infiltration Test Results

Infiltration Test Location	Infiltration Test Depth (ft)	K_{sat} (in/hr)	Adjacent SPT Boring	USDA Soil Classification at Infiltration Test Depth
INF-01	5.0	0.19	B-01	Sandy Loam
INF-02	5.0	1.34	B-05	Loamy Sand
INF-03	5.0	0.55	B-10	Loamy Sand
INF-04	5.0	0.26	B-13	Sandy Loam

4.0 GEOTECHNICAL RECOMMENDATIONS

4.1. FOUNDATION DESIGN

Based on information provided by the structural engineer, the maximum anticipated load for the helical piers and sonotubes supporting the boardwalk structures will be 5.3 kips. Loading for the streetlights were not provided, however, we have assumed loading to be less than 1 kip. The size of the boulders for

the boulder walls was not provided; however, DMY has assumed that the boulders will be the “large” designation (L 5.5 ft, W 2-3 ft, H 1-2 ft) as shown on page L312 of the plans titled *New Park at S. Eads St and Army Navy Drive, 60% Construction Documents*, *Construction Details* sheet L312.

4.1.1 BOARDWALK

Helical Piers:
Helical piers consist of a steel shaft with a single helix that is screwed into the ground until competent bearing material is achieved. Additional steel pier sections (no helix) are added as the anchors are advanced into the ground surface. Helical piers are normally designed by a design-build contractor and the proposed plan is reviewed by the Geotechnical Engineer of Record. The capacity of the helical piers is determined through torque readings observed during installation. The torque required to achieve the required bearing pressure is determined prior to the installation so that the required depth can be evaluated during the installation. The final pier design is typically performed by a design-build contractor; however, a preliminary vertical capacity of up to 30 kips is typically feasible. It is our experience that these types of piers do not function well under eccentric loading and the designer will need to consider any lateral loading in the design. One critical advantage of the helical piers is the relatively small equipment criteria. Helical piers may be installed using hand operated equipment or skid steer. Depending on the final design and any lateral or uplift loading, the piers may also incorporate a concrete or grouting to increase the lateral and uplift capacities of the piers.

Very loose to loose materials were encountered during our field investigation at various depths. The piers should not bear on the soft or loose materials, or any debris. The piers should bear on the firm soils (such as medium dense Coastal Plain Deposits). In addition to the above requirements, helical piers should be installed a minimum of five (5) helix diameters below ground surface, where the helix diameter is that of the largest helix.

Helical piers should be installed in a smooth, continuous manner at a rate ranging from 5 to 20 revolutions per minute. Sufficient down pressure should be applied to advance the helical piers to the required depths. Extensions may be required to advance the helical piers to the required depths. The installation torque should be monitored throughout the installation process and should at no time exceed the torque rating of the helical pier shafts.

Written installation records should be maintained for each helical pier, and should include, but are not limited to, project name and/or location, date and time of installation, location and reference number of helical piers, descriptions of lead section and extensions installed, overall depth of installation as referenced from bottom of grade beam or footing, torque readings for the last three feet of installation if practical, and any other applicable information relating to the installation.

Sonotube Foundations:
The sonotube foundations should be considered shallow foundations if the embedment depth to diameter ratio is less than five (5) and should be considered deep foundations if the embedment depth to diameter ratio is greater than five (5). For design of sonotube as shallow foundations bearing on medium dense natural soils, we recommend that an allowable soil bearing pressure of 2,000 pounds per square foot (psf) be utilized to size the sonotube foundations.

The lateral capacity of a foundation is derived from the passive earth pressure at the foundation side and friction at the foundation base. For footings supported on natural soils consisting of SILTY SAND or CLAYEY SAND, the following parameters may be used to estimate the lateral capacities of sonotube foundations at this site:

- Soil Unit Weight 115 pcf
- Coefficient of Sliding Friction 0.34
- Passive Earth Pressure Coefficient (K_p) 2.37

A minimum safety factor of 1.5 is recommended in evaluating the lateral capacity of the shallow foundations. The uplift capacity of a shallow foundation is derived from its self-weight and the weight of the soil column directly above the footprint of the foundation. A minimum safety factor of 1.67 is recommended in evaluating the uplift capacity.

4.1.2 BOULDER RETAINING WALLS

Boulder retaining walls, also known as rockeries, are planned at various locations in the portion of the site north of 11th Street South and near the northern entrance to the park in the portion south of 11th Street South. Boulder retaining walls have relatively low tolerance for settlement due to the rocks not being structurally tied together. Unsuitable existing fill materials were throughout the site. In the portion of the site north of 11th Street South, existing fill was encountered at depths ranging from 2 to 6 feet. In the portion of the site south of 11th Street South, existing fill soils were encountered at deeper depths, extending to depths between 6 and 14.2 feet.

In the portion of the site north of 11th Street South, boulder retaining walls on firm natural soils or new controlled fills placed and compacted in accordance with Section 5.2 of this report may be designed for an allowable bearing capacity of 2,000 psf. The existing fill soils are not suitable for support of the boulder retaining walls. Where existing fill is encountered at the foundation subgrade, the footings should be lowered to undisturbed, natural residual soils. Alternatively, the existing fill materials may be undercut and replaced with compacted engineered fill.

In the portion of the site south of 11th Street South, the existing fill extended to depths which may make removal of the existing fill infeasible. DMY recommends that the boulder retaining wall on the southern portion of the site be supported by helical piles with pile cap. The helical piles should extend to natural soil.

4.1.3 STREETLIGHTS

For design of streetlight foundations on firm natural soils, we recommend that an allowable soil bearing pressure of 1,500 pounds per square foot (psf) be utilized to size the streetlight foundations. The lateral capacity of a foundation is derived from the passive earth pressure at the foundation side and friction at the foundation base. For footings supported on natural soils consisting of SILTY SAND or CLAYEY SAND, the following parameters may be used to estimate the lateral capacities of streetlight foundations at this site:

- Soil Unit Weight 115 pcf
- Coefficient of Sliding Friction 0.34
- Passive Earth Pressure Coefficient (K_p) 2.37

A minimum safety factor of 1.5 is recommended in evaluating the lateral capacity of the shallow foundations. The uplift capacity of a foundation is derived from its self-weight and the weight of the soil column directly above the footprint of the foundation. A minimum safety factor of 1.67 is recommended in evaluating the uplift capacity.

4.1.4 EXISTING FILL

Existing fill soils were encountered throughout the project site at depths ranging from 2.0 to 14.2 feet. The existing fill soils are not suitable for foundation support. Where encountered above the bottom of footing for shallow foundations or the bottom of the boulder retaining walls, the existing fill should be removed and replaced with properly placed and compacted controlled fill in conformance with Section 5.2 Controlled Fills. Alternatively, the foundation may be lowered to the undisturbed, natural soil. Helical pier foundations should extend beneath the existing fill soils and should terminate in medium dense Coastal Plain Deposits.

Unsuitable existing fill extended to the following depths in the vicinity of the proposed structures:

- 4.0 to 6.0 feet within the borings in the vicinity of the proposed boardwalk;
- 4.0 to 6.0 feet within the borings in the vicinity of South Eads Street where streetlights are planned;
- 2.0 to 6.0 feet north of 11th Street South in the vicinity of the proposed boulder retaining walls;
- 2.0 to 6.0 feet north of 11th Street South in the vicinity of the proposed boulder retaining walls;
- 6.0 to 14.2 feet south of 11th Street South in the vicinity of the proposed boulder retaining walls.

4.1.5 GENERAL FOUNDATION RECOMMENDATIONS

During construction, the bearing capacity at the final footing excavation should be documented in the field by an authorized representative of the Geotechnical Engineer of Record to check that the in situ bearing capacity at the bottom of each footing excavation is adequate for the design loads. Where existing fill is encountered at the foundation subgrade, the footings should be lowered to undisturbed, natural Coastal Plain soils. Alternatively, the existing fill materials may be undercut and replaced with compacted engineered fill.

In order to prevent disproportionately small footing sizes, we recommend that sonotubes, streetlights, and shallow foundations have a minimum lateral dimension of 24 inches. The minimum dimensions recommended above help reduce the possibility of foundation bearing failure and excessive settlement due to local shear or "punching" action. All footings should be placed at a minimum depth of 30 inches below finished grade to provide adequate frost cover protection acceptable for this region. New footings should be a minimum distance of 10 feet from any existing footings. The base of footing should not be within the 1 ½ to 1 (Horizontal to Vertical) projected influence zone above any utility line.
During construction, the bearing capacity at the final footing excavation should be documented in the field by an authorized representative of the Geotechnical Engineer of Record to check that the in situ

bearing capacity at the bottom of the foundation (including the bottom of the boulder retaining wall excavation) is adequate for the design loads.

Settlement of a structure is a function of the compressibility of the natural soils, the design bearing pressure, structural loads, and the footing embedment depths. For the anticipated loads and bearing conditions, total settlement of less than one inch and differential settlement of less than ½ inches over a 30-foot span are expected.

4.2. PAVEMENT DESIGN

No traffic data was available at the time of this report. We have assumed a design AADT of 400 or less. The lab testing results show CBR of 10.6 and we used a California Bearing Ratio (CBR) value of 7 (2/3 of the tested CBR value) for the design of the pavement within the park. This design CBR value assumes that the pavement subgrade will consist of onsite soils and will be prepared in accordance with the Site and Subgrade Preparation and Compacted Fills sections of this report.

For concrete pavements, assuming only light vehicle traffic (automobiles) and periodic bucket trucks are permitted to travel, DMY recommends the minimum pavement section presented in Table 4-1 below. The pavement design was performed in accordance with the *Guidelines for 1993 AASHTO Pavement Design*, which was published by VDOT and revised in July 2011. DMY understands that the actual concrete thickness will be 8 inches as shown on the plans titled *New Park at S. Eads St and Army Navy Drive, Construction Details, L312.* Our concrete pavement recommendations assume that the concrete will be non-doweled and jointed plain concrete.

Table 4-1: Light Duty Concrete Pavement Section

Minimum Slab Thickness (in)	Minimum Aggregate Thickness (in)	Maximum Transverse Joint Spacing (ft)	Minimum 28-day Concrete Flexural Strength (psi)	Minimum CBR
5	6	8	650	7

Permeable paver construction should be in conformance with the Arlington County Construction Standards and Specifications Manual, Section 02780 (2020).

It should be noted that the light-duty pavement is designed for supporting light vehicular traffic (automobiles) and periodic bucket trucks only. Any appreciable amount of truck traffic, either during construction or during service life, will likely cause excessive distress in the pavement. This could eventually result in the premature failure of the pavement structure.

4.3. HIGHLY PLASTIC SOILS

Highly plastic soils were not encountered in the borings. However, highly plastic soils are common in this geology and can exhibit significant shrinkage and/or swelling due to changes in moisture content and should not be used as structural fill if encountered during construction.

If highly plastic soils are encountered at or below the foundation bearing level or bottom of helical pier cap, the highly plastic soil should be undercut a depth of 4 feet below the proposed finished grade at footing or pile cap locations. The foundation may either step down to meet this requirement, or the highly plastic soils can be undercut and replaced with properly compacted engineered fill to the original bearing elevation. Undercutting backfilling with gravel or free draining material is not recommended as this would create a reservoir condition which could saturate the plastic soils.

If highly plastic soils are encountered within 2 feet below the pavement elevation, they should be undercut to a depth of two feet, or the thickness of the high plasticity soils, whichever is less. The undercut area should then be backfilled using engineered fill placed in accordance with the recommendations contained within Section 5.2 *Controlled Fills* of this report.

4.4. BOULDER RETAINING WALL

4.4.1. DESIGN PARAMETERS

The boulder retaining walls should be designed to withstand lateral earth pressures and surcharge loads. The boulder retaining walls will be supporting new fill. We recommend that the following parameters be used for the retaining wall design:

- Friction Angle for Soil Backfill 28°
- Unit Weight of Soil Backfill 120 pcf
- Coefficient of Sliding Friction 0.35*
- Equivalent Active Fluid Pressure 45 pcf
- Equivalent Passive Fluid Pressure 330 pcf*
- Equivalent At-rest Fluid Pressure 60 pcf

* In the design calculations, the resisting forces computed using the above recommended passive earth pressure coefficient, equivalent passive fluid pressure, and coefficient of sliding friction should be reduced using a safety factor of 1.5.

The above recommended soil parameters assume that the wall backfill consist of properly compacted onsite SILTY SAND (SM) or more granular soils. The recommended equivalent fluid pressures assume that constantly functioning drainage systems are installed between the walls and the soil backfill to prevent any accidental buildup of hydrostatic pressures. The wall design should also account for any surcharge loads.

Active earth pressure conditions apply to relatively flexible earth retention structures, such as freestanding walls, where some movement and rotation may occur to mobilize soil shear strength. This will likely be the case for the proposed site retaining walls.
All wall backfill should consist of SILTY SAND (SM) or more granular material and should be placed in accordance with the Compacted Fills section of this report. Heavy earthwork equipment should maintain

a minimum horizontal distance away from the walls of one foot per foot of vertical wall height. Lighter compaction equipment should be used close to the walls.

4.4.2. DRAINAGE

Proper drainage measures should be provided to minimize any hydrostatic pressure build-up (from ground water and/or seeping rain water) behind the walls. Adequate drainage can be accomplished if a blanket of select granular backfill, such as VDOT No. 57 aggregate, is used behind the walls. To prevent migration of fines into the select granular backfill, a layer of filter fabric should be installed around the select granular backfill where it comes in contact with the general wall backfills. The filter fabric should have an apparent open size (AOS) of no greater than 0.21 mm (#70 sieve). Geocomposite drainage panel may be used in lieu of the select granular backfill adjacent to the walls. Examples of the geocomposite drainage materials include Enkadrain®, MiraDRAIN®, and Geotec drains. The select granular backfill or geocomposite drainage panel should be extended from the bottom to approximately two feet below the final grade behind the walls. The remaining two feet should consist of a clayey material to reduce the amount of surface water infiltration into the drainage system. The ground surface adjacent to the below grade walls should be kept properly graded to prevent ponding of water adjacent to the walls.

We recommend that a perforated collector pipe be installed at the base of the walls to gravity drain any water from the drainage blanket behind the wall to daylight. The collector pipe should be surrounded by a minimum of six inches of drainage gravel wrapped in filter fabric. Alternatively, weep holes may be provided for the retaining walls every eight feet with outlet at a height of six inches above the ground surface in front of the wall.

5.0 CONSTRUCTION RECOMMENDATIONS

5.1. SITE PREPARATION

The construction should be conducted in accordance with Arlington County Construction Standards and Specifications Manual. Site preparation should consist of removing existing underground utilities, topsoil, and any other soft or unsuitable material from the proposed construction. The resulting excavations should be brought back to proposed elevations using structural fill placed as detailed herein. Utilities such as pipes (no longer in use) should be removed entirely or abandoned by filling the pipe with grout to prevent future migration of soils into the pipe.

Following the site preparation and any required excavation, the newly exposed subgrade should be evaluated by an authorized representative of the Geotechnical Engineer of Record. During this evaluation, we recommend that all subgrade areas, with the exception of the permeable paver subgrade, be proof-rolled using a fully loaded tandem axle dump truck (20-ton minimum) or similar rubber-tired vehicle. The proofrolling should be performed in such a pattern that the entire subgrade areas are loaded with at least one pass. Areas that are not accessible to proofrolling may be evaluated using other suitable methods such as a steel probe rod.

Construction of the permeable pavers should follow the Arlington County Construction Standards and Specifications manual. The permeable paver subgrade should not be proofrolled due to the potential of

proofrolling to densify the subgrade soils and impede infiltration. Therefore, the authorized representative of the Geotechnical Engineer of Record should perform at least one (1) DCP for every 100 square feet of permeable paver subgrade area to evaluate the subgrade strength. The Geotechnical Engineer of Record should be contacted if DCP values of less than 5 blows per 1.75-inch increment are measured. In accordance with the Arlington County Construction Standards and Specifications manual, the final 6 inches of final subgrade elevation for permeable pavers should be graded with low pressure equipment.

In locations where structures or rigid pavement are located any soft, loose, or unsuitable soils should be removed and replaced with suitable materials. Soil bridging lifts should not be used to span over soft subgrade soils within the footprint of structures. The Geotechnical Engineer of Record should be informed of any soft or unstable subgrade soils within the permeable paver area so that the area may be evaluated.

5.2. CONTROLLED FILLS

All fill material supporting buildings, pavements, slabs, or other structures should consist of engineered fill. Based on the subsurface conditions observed in our exploration, the onsite granular soils (i.e., GC, GM, SC, SM) and the existing granular fill soils (i.e., GM, GP, SM, SP, and SC) can be re-used as engineered fill. All controlled fills should have a Liquid Limit less than 40 and a Plasticity Index less than 15. Before field operations begin, a representative sample of each proposed engineered fill should be collected and tested to determine its Atterberg Limits, gradation, maximum dry density, optimum moisture content, and natural moisture content. The test results will be used to evaluate the suitability of each proposed controlled fill for quality control purposes during fill placement. All fill placed within the retained zone of the boulder retaining walls should consist of SM or more granular material.

Controlled fill materials should be placed in lifts not exceeding eight inches in loose thickness and moisture conditioned to within two percentage points of the optimum moisture content. The engineered fill should be compacted to a minimum of 95% of the maximum dry density obtained in accordance with VTM-1 or ASTM Specification D-698, Standard Proctor Method. With the exception of the permeable pavers, the top one foot of soil supporting pavements, sidewalks, or gutters should be compacted to a minimum of 100% of the maximum dry density in accordance with VTM-1 or ASTM Specification ASTM D-698, Standard Proctor Method.

Compaction of the permeable paver subgrade may impede infiltration. The compaction recommendations for permeable paver subgrades of Section 02780 of the Arlington County Construction Standards and Specifications manual should be followed.

All fill operations should be observed on a full-time basis by an authorized representative of the Geotechnical Engineer of Record to determine that compaction requirements are being met. All fill shall be periodically tested to confirm that compaction is being achieved. A sufficient number of tests shall be taken in each lift before the next lift is placed, on the order of at least three tests per lift. The elevation and location of the tests should be clearly identified and recorded at the time of fill placement.

5.3. EXCAVATION

All excavations should be sloped or stepped back in accordance with Occupational Safety and Health Administration (OSHA) regulations for excavations. Exposure to the environment may weaken the soils at the footing bearing level if the excavations remain open for too long a time. Therefore, concrete should be placed the same day that excavations are made. If the bearing soils are softened by surface water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall becomes imminent while the bearing soils are exposed, we recommend that a 3-inch thick "mud mat" of "lean" concrete be placed on the bearing soils before the placement of reinforcing steel.

The Geotechnical Engineer of Record should document the type and competency of the soils exposed with those documented in the nearby SPT borings. Any significant difference should be brought to the attention of the owner along with recommendations by the Geotechnical Engineer of Record.

5.4. CONSTRUCTION WATER CONTROL

It is not anticipated that the permanent groundwater table at the site will be encountered above the design subgrade levels for the proposed structures. However, excavations performed at this site may encounter perched groundwater conditions in some isolated areas or surface water flowing from the higher elevations of the site. We anticipate that some localized areas within the excavations may not be completely dry and may require the use of trenches and sump pits to facilitate the placement of foundations. Although a totally dry subgrade should not be anticipated, the surface of the subgrade should be sufficiently dewatered to provide an adequate surface on which to construct the footings and grade slabs.

The surface of the site should be properly graded to keep drainage of the surface water away from the proposed construction areas. The actual extent of the dewatering system will need to be determined at the time the excavation is performed.

5.5. MONITORING

We recommend that the owner commission the performance of a pre-construction survey on the adjacent structures. It has been our experience that such pre-construction surveys can usually help prevent frivolous claims as a result of pre-existing damages that were not apparent to nearby property owners until they began to observe their building following the construction of adjoining properties. We recommend that the owners or property managers be invited to accompany the engineering crews on the survey of the building, and to receive a copy of the survey. If there is any damage to the nearby buildings, this survey can be beneficial in helping develop an equitable resolution.

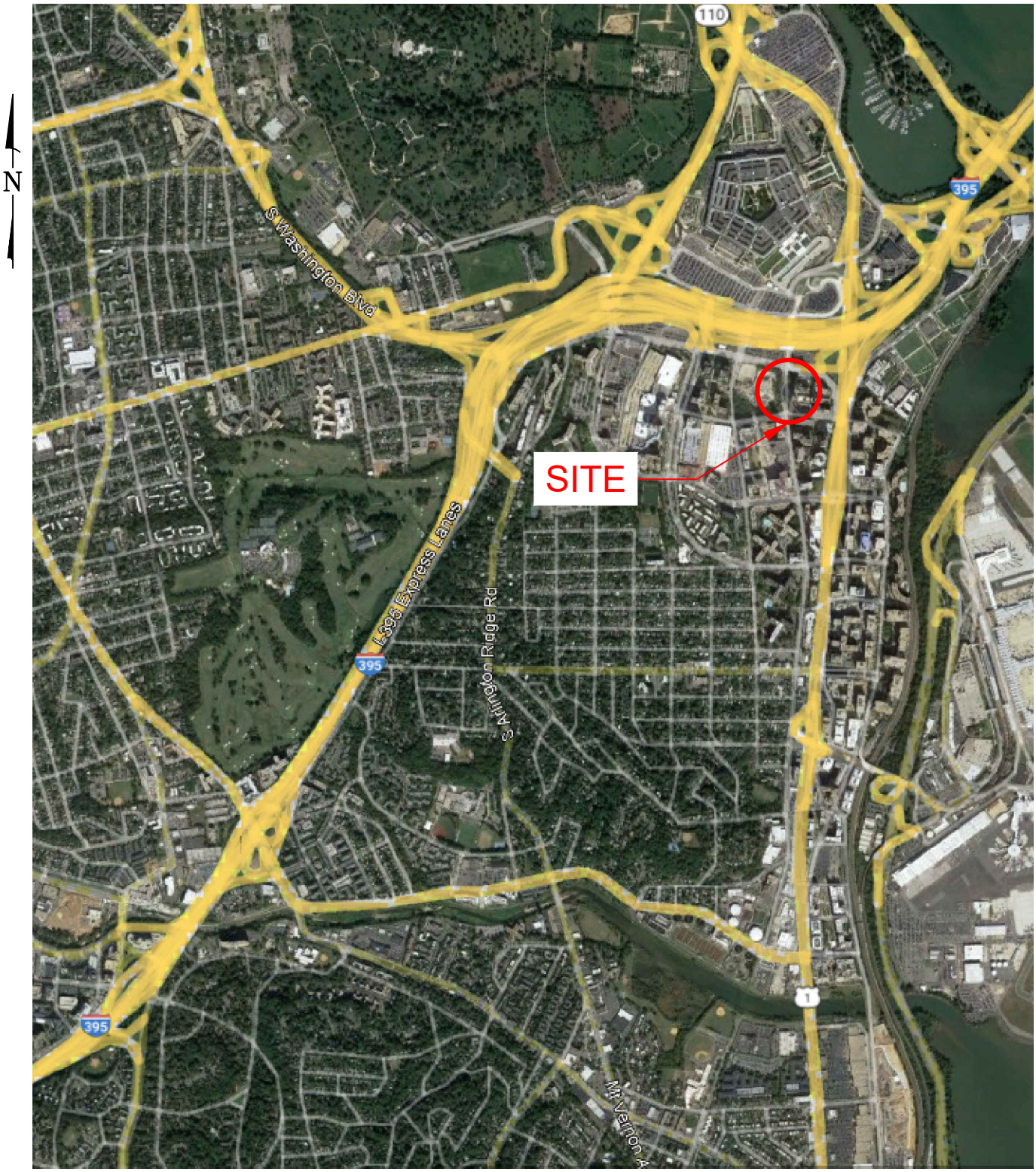
6.0 LIMITATIONS

The recommendations provided are based in part on project information provided to us and are only applied to the specific project and site discussed in this report. If the project information section in this report contains incorrect information or if additional information is available, DMY should be contacted to review our recommendations. We can then modify our recommendations for the proposed project.

Regardless of the thoroughness of a subsurface investigation, there is always a possibility that subsurface conditions may vary from those documented during a subsurface exploration at specific locations. In addition, the construction process itself may alter subsurface conditions. Therefore, experienced geotechnical personnel should be engaged to observe and document the construction procedures used and the conditions encountered. Unanticipated conditions and inadequate procedures should be reported to the design team along with timely recommendations. We recommend that DMY be retained to provide this service based upon our familiarity with the project, the subsurface conditions, and the intent of the recommendations.

We have prepared this report for use by the design professionals for design purposes in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made as to the professional advice included in this report.

APPENDIX A FIGURES



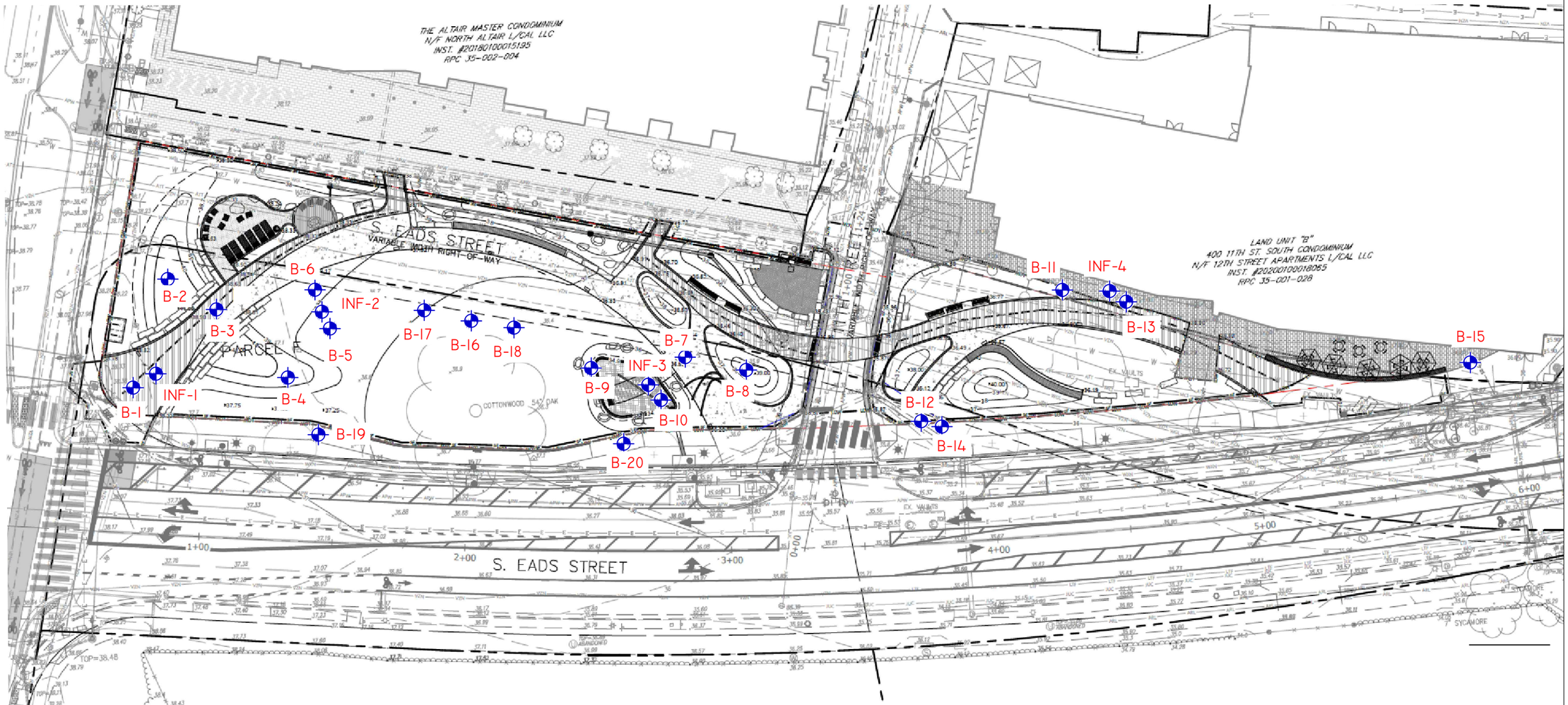
SITE LOCATION MAP

DMY ENGINEERING CONSULTANTS INC.
4170 LAFAYETTE CENTER, SUITE 500
CHANTILLY, VIRGINIA 20151
PHONE: (703) 665-0586
FAX: (301) 768-4169

SOUTH EADS PARK
ARLINGTON, VIRGINIA

DATE:	DRAFTED BY:	PROJECT NO.:
04/13/2022	WBK	01.05718.01
SCALE:	CHECKED BY:	FIGURE NO.:
1" = 2000'	XC	1

BASE FILE PREPARED BY CLARK | AZAR & ASSOCIATES, INC.



APPROXIMATE BORING LOCATION

N

BORING LOCATION PLAN

DMY ENGINEERING CONSULTANTS INC.
4170 LAFAYETTE CENTER, SUITE 500
CHANTILLY, VIRGINIA 20151
PHONE: (703) 665-0586
FAX: (301) 768-4169

SOUTH EADS PARK
ARLINGTON, VIRGINIA

DATE:	DRAFTED BY:	PROJECT NO.:
04/13/2022	WBK	01.05718.01
SCALE:	CHECKED BY:	FIGURE NO.:
1" = 40'	XC	2

APPENDIX B FIELD OPERATIONS

SUBSURFACE EXPLORATION PROCEDURES

Soil Borings – Hollow Stem Auger

In hollow stem auger drilling, the drill rig utilizes continuous flight, hollow stem (center opening ranges from 2-1/4 to 4-1/4 inches in size) augers to advance the boreholes. During drilling or formation cutting, the center of the hollow augers is filled with rods connected to a plug at the bottom bit. Once the desired drilling depth is reached, the center plug and rods can be pulled out, leaving the hollow augers in place to hold the borehole open for sampling and well installation. Sampling is performed through the center opening in the hollow stem augers by means of the split-barrel sampling procedure in accordance with ASTM D1586. Usually, drilling fluid is not used during the soil drilling using this procedure.

Standard Penetration Tests

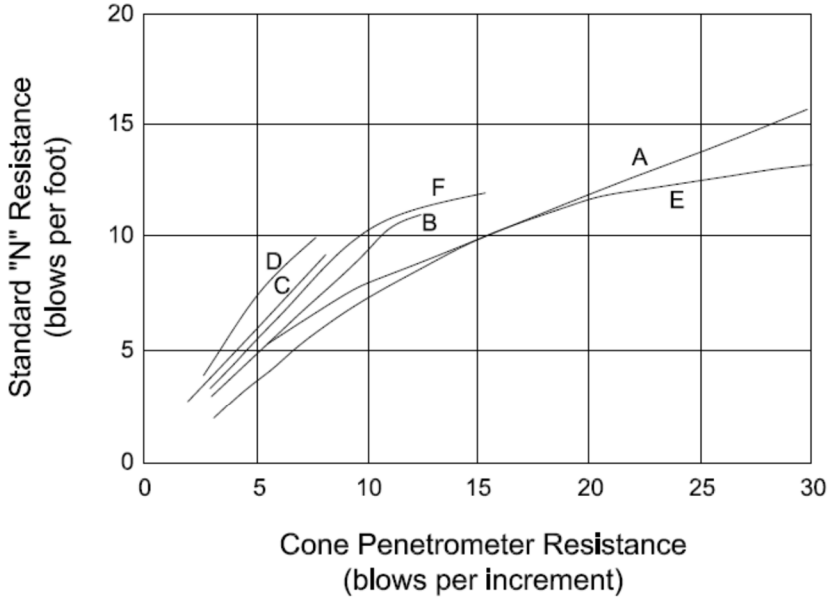
In this process, a 2 foot long, 2 inch outside-diameter split-barrel sampler attached to the end of a string of drilling rods is driven 18 inches into the ground by successive blows of a 140 pound hammer freely dropping 30 inches. The number of blows needed for each 6 inches of penetration is recorded. The blows required for the first 6 inches of penetration are allowed for seating the sampler into any loose cuttings, and the sum of the blows required for penetration of the second and third 6 inch increments constitutes the standard penetration resistance or N-value. After the test, the sampler is extracted from the ground and opened to allow visual examination and classification of the retained soil sample. The N-value can be used as a qualitative indication of the in-place relative density of cohesionless soils (sands). In a less reliable way, it also indicates the consistency of cohesive soils (clays/silts). This indication is qualitative, since many factors can significantly affect the N-value and prevent a direct correlation among drilling crews, drill rigs, drilling procedures, and hammer-rod-sampler assemblies. The N-value also has been empirically correlated with various soil properties including strength, compressibility and potential for difficult excavation.

Soil Borings – Hand Auger

The hand-auger borings consist of a 4-inch diameter hole drilled with a portable auger bucket. During the augering procedure, the auger bucket is advanced manually until full. Once full, the bucket is removed, emptied and reinserted to continue the augering excavation for soil profile development. During soil profile development, the auger cuttings are removed from the bucket and visually examined in the field for classification. The soil samples recovered were then classified in the laboratory on the basis of texture and plasticity in accordance with the Unified Soil Classification System (USCS).

Dynamic Cone Penetrometer Tests

The Dynamic Cone Penetrometer (DCP) uses a 15-pound steel mass falling 20 inches to strike an anvil to penetrate a 1.5-inch diameter 45 degree cone that has been seated at the bottom of a hand augered hole. The cone point is driven 1.75 inches using the ring weight which is allowed to free fall 20 inches. The number of blows required to achieve 1.75 inches of penetration are counted and correlated to SPT results through the following reference: George F. Sowers and Charles S. Hedges, Dynamic Cone for Shallow In-Situ Testing, ASTM Special Technical Publication #399 (as shown in the figure below).



Curve A - Virgin Piedmont soils
B - 95% Compacted soil
C- 90% Compacted soil
D - 85% Compacted soil
E - Coastal Plain soils
F - Piedmont alluvium

REFERENCE NOTES FOR BORING LOGS

I. Drilling and Sampling Symbols:

SS	-	Split Spoon Sampler	RB	-	Rock Bit Drilling
ST	-	Shelby Tube Sampler	BS	-	Bulk Sample of Cuttings
RC	-	Rock Core; NX, BX, AX	PA	-	Power Auger (no sample)
PM	-	Pressuremeter	HSA	-	Hollow Stem Auger
DC	-	Dutch Cone Penetrometer	WS	-	Wash Sample

Standard Penetration Test (SPT) resistance refers to the blows per foot (bpf) of a 140 lb hammer falling 30 inches on a 2 in. O.D. split-spoon sampler as specified in ASTM D-1586. The blow count is commonly referred to as the N-value.

II. Correlation of Penetration Resistances to Soil Properties:

Relative Density of Cohesionless Soils

SPT-N (bpf)	Relative Density
0 – 3	Very Loose
4 – 9	Loose
10 – 29	Medium Dense
30 – 50	Dense
>50	Very Dense

Consistency of Cohesive Soils

SPT-N (bpf)	Consistency
0 – 1	Very Soft
2 – 4	Soft
5 – 8	Firm
9 – 15	Stiff
16 – 30	Very Stiff
31 – 50	Hard
>50	Very Hard

Weathered Rock (WR) may be defined as SPT-N values exceeding 60 bpf depending on site specific conditions. Refer carefully to boring logs.

Rock Fragments, gravel, cobbles, boulders, or debris may produce N-values that are not representative of actual soil properties.

III. Unified Soil Classification Symbols:

GP – Poorly Graded Gravel
GW – Well Graded Gravel
GM – Silty Gravel
GC – Clayey Gravels
SP – Poorly Graded Sands
SW – Well Graded Sands
SM – Silty Sands
SC – Clayey Sands

ML – Low Plasticity Silts
MH – High Plasticity Silts
CL – Low Plasticity Clays
CH – High Plasticity Clays
OL – Low Plasticity Organics
OH – High Plasticity Organics
CL-ML – Dual Classification (Typical)

IV. Laboratory Testing and Water Level Symbols:

LL – Liquid Limit (%)
PI – Plastic Index (%)
W – Moisture Content (%)
DD – Dry Density (PCF)
NP – Non Plastic
-200 – Percent Passing No. 200 Sieve
PP – Pocket Penetrometer (TSF)


Water Level at Time of Drilling, or as Shown

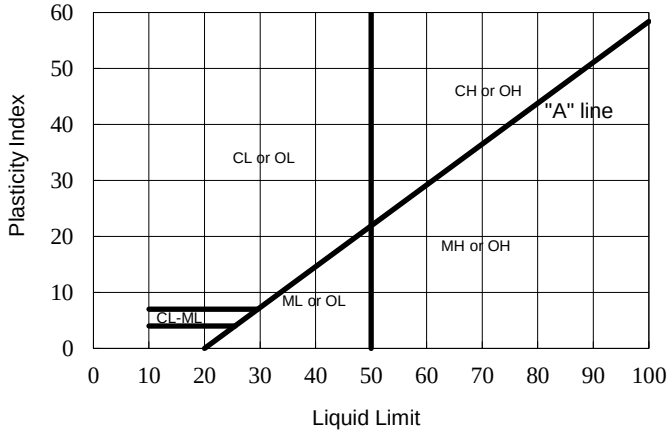

Water Level at End of Drilling, or as Shown


Water Level after 24 Hours, or as Shown

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487)

MAJOR DIVISIONS			GROUP SYMBOL	TYPICAL NAMES	LABORATORY CLASSIFICATION CRITERIA	
COARSE-GRAINED SOILS (Less than 50% passes No. 200 Sieve size)	GRAVELS (50% or less of coarse fraction ispasses No. 4 sieve)	CLEAN GRAVELS (Less than 5% passes No. 200 sieve)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_u = D_{60}/D_{10}$ greater than 4 $C_c = (D_{30})^2/(D_{10}xD_{60})$ between 1 and 3	
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW	
		GRAVELS WITH FINES (More than 12% passes No. 200 sieve)	GM	Silty gravels, gravel-sand mixtures	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits below "A" line or P.I. less than 7	
	SANDS (More than 50% of coarse fraction passes No. 4 sieve)	CLEAN SANDS (Less than 5% passes No. 200 sieve)	SW	Well-graded sands, gravelly sands, little or no fines	$C_u = D_{60}/D_{10}$ greater than 6 $C_c = (D_{30})^2/(D_{10}xD_{60})$ between 1 and 3	
			SP	Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW	
		SANDS WITH FINES (More than 12% passes No. 200 sieve)	SM	Silty sands, sand-silt mixtures	Atterberg limits above "A" line or P.I. less than 4	Limits plotting in CL-ML zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7	
FINE-GRAINED SOILS (50% or more passes No. 200 Sieve)	SILTS AND CLAYS (Liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity		
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays		
			OL	Organic silts and organic silty clays of low plasticity		
	SILTS AND CLAYS (Liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts		
			CH	Inorganic clays of high plasticity, fat clays		
			OH	Organic clays of medium to high plasticity, organic silts		
	HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils		

PLASTICITY CHART



DEGREE OF PLASTICITY OF COHESIVE SOILS

Degree of Plasticity	Plasticity Index
None to Slight	0-4
Slight	5-7
Medium	8-22
High to Very High	Over 22

PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

B-01

PAGE 1 OF 1

DATE(S) DRILLED:3/18/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: M. Santos LOGGER: W. Kelsey
SURFACE ELEVATION: 38.0

▽ GROUND WATER FIRST ENCOUNTERED AT: 7.7 ft

DRY AFTER 72 HRS

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT LL	PLASTICITY INDEX PI	MOISTURE CONTENT (%)
				0.0						0.0 / 38.0 TOPSOIL **Tops** -2 in			
		4 7 5 7			71			F3		0.2 / 37.8 Brown, fine to medium clayey sand FILL, contains asphalt, medium dense, moist **FL-SC**	32	14	17.4
	35	5 4 4 4		2.0	100			F3		2.0 / 36.0 Brown and black, fine to medium silty sand FILL, contains asphalt, loose, moist **FL-SM**			
5		3 2 2 4		4.0	92			C3		3.3 / 34.7 Brown, fine to medium SILTY SAND, loose to medium dense, moist **SM**			
		11 5 7 8		6.0	71								
	30									SAME, wet 8.0 / 30.0 Terminated			

REMARKS: Cave-in depth at 7.0 feet. Bulk sample collected from 1 to 5 feet.

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B-01

DMY ENGINEERING CONSULTANTS INC.
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PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

B-02

PAGE 1 OF 1

DATE(S) DRILLED:3/18/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: M. Santos LOGGER: W. Kelsey
SURFACE ELEVATION: 37.5

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
				0.0						0.0 / 37.5 TOPSOIL **Tops** -2 in			
		2 4 5 3			71			F2		0.2 / 37.3 Brown, sandy lean clay FILL, contains brick, stiff, moist **FL-CL**	25	8	16.1
	35			2.0						2.0 / 35.5 Gray, fine to medium silty sand FILL, contains brick, loose, moist **FL-SM**			
		5 4 5 8			71			F3					
				4.0						3.3 / 34.2 Orange, fine to medium SILTY SAND, loose to medium dense, moist **SM**			
5		3 4 7 8			50			C3					
										6.0 / 31.5 Terminated			

REMARKS: Cave-in depth at 4.0 feet.

PAGE 1 OF 1

B-02

SPT_LOG:P:\USERS\WKELSEY\ONEDRIVE - ZCC DMY\01.05718.01 ARLINGTON COUNTY SOUTH EADS PARK\B-DRILLING\01.05718.01.GPJ;01.05718.01.GPJ;4/22/22

DMY ENGINEERING CONSULTANTS INC.
4170 Lafayette Center Drive, Suite 500
Chantilly, Virginia, 20151
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PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

B-03

PAGE 1 OF 1

DATE(S) DRILLED:3/18/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: M. Santos LOGGER: W. Kelsey
SURFACE ELEVATION: 37.5

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
				0.0						0.0 / 37.5 TOPSOIL **Tops** -2 in			
		2 5 6 6			100			F3		0.2 / 37.3 Brown and black, fine to medium silty sand FILL, contains brick and Asphalt, loose to medium dense, moist **FL-SM**			
	35			2.0									
		3 4 5 7			63					2.5 / 35.0 Brown and gray, fine to medium SILTY SAND, loose, moist **SM**			
				4.0				C3					
5		2 6 3 5			50								
										6.0 / 31.5 Terminated			

REMARKS: Cave-in depth at 4.0 feet.

PAGE 1 OF 1

B-03

DMY ENGINEERING CONSULTANTS INC.
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PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

B-04

PAGE 1 OF 1

DATE(S) DRILLED:3/21/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 55 Truck
DRILLER: M. Santos LOGGER: M. Dong
SURFACE ELEVATION: 37.0

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
				0.0						0.0 / 37.0 TOPSOIL **Tops** -3 in			
		2 3 3 3			75			F3		0.3 / 36.8 Brown and black, fine silty sand FILL, trace gravel, contains asphalt, loose, moist **FL-SM**			
	35			2.0						SAME, trace gravel			
		4 3 4 6			100					3.0 / 34.0 Brown, fine SILTY SAND, loose, moist **SM**			
				4.0				C3					
5		3 5 4 5			75					6.0 / 31.0 Terminated			

REMARKS: Cave-in depth at 4.0 feet.

PAGE 1 OF 1

B-04

SPT_LOG:P:\USERS\WKELSEY\ONEDRIVE - ZCC DMY\01.05718.01 ARLINGTON COUNTY SOUTH EADS PARK\B-DRILLING\01.05718.01.GPJ:01.05718.01.GPJ:4/22/22

DMY ENGINEERING CONSULTANTS INC.
4170 Lafayette Center Drive, Suite 500
Chantilly, Virginia, 20151
tel: (703) 665-0586 fax: (301) 768-4169

PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

B-05

PAGE 1 OF 1

DATE(S) DRILLED:3/18/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: M. Santos LOGGER: W. Kelsey
SURFACE ELEVATION: 37.0

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

DRY AFTER 72 HRS

FIELD DATA											LAB DATA		
DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
				0.0						0.0 / 37.0 TOPSOIL **Tops** -2 in			
		4 8 8 5			100			F3		0.2 / 36.8 Brown and red, fine to medium silty sand FILL, contains trace roots, medium dense, moist **FL-SM**			
	35			2.0						2.0 / 35.0 Light gray, fine SILTY SAND, loose, moist **SM**			
		3 2 4 4			88								
				4.0									
5		2 3 5 7			63			C3					
				6.0									
	30	6 4 4 3			54								
										8.0 / 29.0 Terminated			

REMARKS: Temporary piezometer installed prior to backfill. Boring did not cave.

PAGE 1 OF 1

B-05

DMY ENGINEERING CONSULTANTS INC.
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Chantilly, Virginia, 20151
tel: (703) 665-0586 fax: (301) 768-4169

PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

B-06

PAGE 1 OF 1

DATE(S) DRILLED:3/21/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 55 Truck
DRILLER: M. Santos LOGGER: M. Dong
SURFACE ELEVATION: 37.0

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
		3 2 3 3		0.0	71			F2		0.0 / 37.0 TOPSOIL **Tops** -3 in 0.3 / 36.8 Brown and black, sandy silt with gravel FILL, contains asphalt and brick, firm, moist **FL-ML**			
35		2 2 2 3		2.0	83			F3		2.0 / 35.0 Brown, fine silty sand FILL, loose, moist **FL-SM**			
				4.0						4.0 / 33.0 Brown, fine SILTY SAND, loose, moist **SM**			
5		2 3 4 5			83			C3		6.0 / 31.0 Terminated			

REMARKS: Cave-in depth at 5 ft. Bulk sample collected from 1 to 5 feet.

PAGE 1 OF 1

B-06

DMY ENGINEERING CONSULTANTS INC.
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tel: (703) 665-0586 fax: (301) 768-4169

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PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

B-07

PAGE 1 OF 1

DATE(S) DRILLED:3/21/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 55 Truck
DRILLER: M. Santos LOGGER: M. Dong
SURFACE ELEVATION: 36.0

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA										LAB DATA		
DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)
										LL	PI	
	35	5 5 7 8		0.0	75			F3				
				2.0								
		12 6 5 3			100							
				4.0				F2				
5		3 3 3 3			50							
	30											

MATERIAL DESCRIPTION OF STRATA

0.0 / 36.0
TOPSOIL **Tops** -3 in

0.3 / 35.8
Brown and black, fine silty sand with gravel FILL, contains asphalt and brick, medium dense, moist **FL-SM**

2.0 / 34.0
Brown, sandy SILT, trace gravel, contains brick and asphalt, firm to stiff, moist **ML**

SAME, trace gravel

6.0 / 30.0 Terminated

REMARKS: Cave-in depth at 4 feet.

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DMY ENGINEERING CONSULTANTS INC.
4170 Lafayette Center Drive, Suite 500
Chantilly, Virginia, 20151
tel: (703) 665-0586 fax: (301) 768-4169

PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

B-08

PAGE 1 OF 1

DATE(S) DRILLED:3/21/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 55 Truck
DRILLER: M. Santos LOGGER: M. Dong
SURFACE ELEVATION: 36.0

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA											LAB DATA		
DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)
											LL	PI	
	35	4 5 7 9		0.0	83			F3		0.0 / 36.0 TOPSOIL **Tops** -3 in 0.3 / 35.8 Brown and black, fine silty sand with gravel FILL, contains asphalt and brick, medium dense, moist **FL-SM**			
		3 1 2 2		2.0	100					2.0 / 34.0 Brown, sandy silt FILL, trace gravel, contains little organic matter, soft, wet **FL-ML**			
5		1 2 2 2		4.0	75			F2					
	30									6.0 / 30.0 Terminated			

REMARKS: Cave-in depth at 4 feet. Bulk sample collected from 1 to 5 feet.

PAGE 1 OF 1

B-08

DMY ENGINEERING CONSULTANTS INC.
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tel: (703) 665-0586 fax: (301) 768-4169

PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

B-09

PAGE 1 OF 2

DATE(S) DRILLED:3/21/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: M. Santos LOGGER: M. Dong
SURFACE ELEVATION: 36.5

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
				0.0						0.0 / 36.5 TOPSOIL **Tops** -3 in			
		4 8 8 5			67			F3		0.3 / 36.3 Brown and black, fine silty sand with gravel FILL, contains asphalt and brick, medium dense, moist **FL-SM**			
	35			2.0						2.0 / 34.5 Brown, fine silty sand FILL, medium dense, moist, no gravel **FL-SM**			
		5 5 8 6			83			F3					
				4.0						4.0 / 32.5 Brown, fine CLAYEY SAND, trace gravel, medium dense, moist **SC**			
5		3 5 6 9			75			C3			28	12	16.5
				6.0						6.0 / 30.5 Light brown, medium SILTY SAND, trace gravel, contains quartz gravel, loose to medium dense, moist **SM**			
	30	5 6 7 6			71								
				8.0						SAME, fine, trace gravel, contains quartz gravel, no gravel			
		4 4 4 5			92								
10								C3					
	25												
				13.5						SAME, brown			
		3 3 3			100								
15													

REMARKS: Cave-in depth at 18.0 ft

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B-09

DMY ENGINEERING CONSULTANTS INC.
4170 Lafayette Center Drive, Suite 500
Chantilly, Virginia, 20151
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PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

B-09

PAGE 2 OF 2

DATE(S) DRILLED:3/21/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: M. Santos LOGGER: M. Dong
SURFACE ELEVATION: 36.5

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
	20							C3					
		16 50/5		18.5	100			C3		18.5 / 18.0 Brown, medium to coarse SILTY GRAVEL WITH SAND, contains quartz gravel, very dense, moist **GM** 19.5 / 17.0 Terminated			

REMARKS: Cave-in depth at 18.0 ft

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B-09

DMY ENGINEERING CONSULTANTS INC.
4170 Lafayette Center Drive, Suite 500
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tel: (703) 665-0586 fax: (301) 768-4169

PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

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PAGE 1 OF 2

DATE(S) DRILLED:3/18/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: M. Santos LOGGER: W. Kelsey
SURFACE ELEVATION: 36.5

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

DRY AFTER 72 HRS

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT LL	PLASTICITY INDEX PI	MOISTURE CONTENT (%)
				0.0						0.0 / 36.5 TOPSOIL **Tops** -3 in			
	35	3 3 6 7			88					0.3 / 36.3 Brown, fine silty sand with gravel FILL, loose to medium dense, moist **FL-SM**			
				2.0				F3		SAME, no gravel			
		10 9 5 7			100								
				4.0						4.0 / 32.5 Brown, fine CLAYEY SAND, trace gravel, medium dense, moist **SC**			
5		3 6 13 11			100			C3					
				6.0						6.0 / 30.5 Light brown, medium SILTY SAND, trace gravel, contains quartz, loose to very dense, moist **SM**			
	30	3 6 11 9			100								
				8.0						SAME, fine, no gravel			
		WOH WOH 5 6			42								
10								C3					
	25									SAME, brown			
				13.0									
		3 3 5 5			88								
15													

REMARKS: Cave-in depth at 18.0 ft. Temporary piezometer iinsalled prior to backfill. WOH - Weight of Hammer

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SPT_LOG:P:\USERS\WKELSEY\ONEDRIVE - ZCC DMY\01.05718.01 ARLINGTON COUNTY SOUTH EADS PARK\B-DRILLING\01.05718.01.GPJ:01.05718.01.GPJ:4/22/22

DMY ENGINEERING CONSULTANTS INC.
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PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

B-10

DATE(S) DRILLED:3/18/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: M. Santos LOGGER: W. Kelsey
SURFACE ELEVATION: 36.5

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

DRY AFTER 72 HRS

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
	20							C3					
		14 21 26 50/3		18.0	67			C3		18.5 / 18.0 Brown, medium to coarse SILTY GRAVEL WITH SAND, contains quartz, very dense, moist **GM**			
										19.8 / 16.8 Terminated			

REMARKS: Cave-in depth at 18.0 ft. Temporary piezometer iinsalled prior to backfill. WOH - Weight of Hammer

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PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

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PAGE 1 OF 1

DATE(S) DRILLED:3/26/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: H. Guzman LOGGER: W. Kelsey
SURFACE ELEVATION: 36.0

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA										LAB DATA		
DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)
										LL	PI	
	35	4 2 2 3		0.0	42			F3		28	8	17.3
		2 2 1 1		2.0	21							
				4.0								
5		1 2 20/0			50			F2				

MATERIAL DESCRIPTION OF STRATA

0.0 / 36.0
Brown, coarse clayey gravel with sand FILL, contains brick, very loose to loose, moist **FL-GC**

4.0 / 32.0
Brown and red, sandy lean clay FILL, contains brick, very hard, moist **FL-CL**

5.0 / 31.0 Terminated

REMARKS: Cave-in depth at 4.0 ft. Spoon refusal at 5.0 ft.

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SPT_LOG:P:\USERS\WKELSEY\ONEDRIVE - ZCC DMY\01.05718.01 ARLINGTON COUNTY SOUTH EADS PARK\B-DRILLING\01.05718.01.GPJ:01.05718.01.GPJ:4/22/22

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PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

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PAGE 1 OF 1

DATE(S) DRILLED:3/26/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: H. Guzman LOGGER: W. Kelsey
SURFACE ELEVATION: 36.0

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
	35	6 7 7 10		0.5	54			F2		0.0 / 36.0 CONCRETE **Conc** -2.4 in 0.2 / 35.8 Brown, sandy lean clay FILL, stiff, moist **FL-CL**	39	19	19.9
		4 4 5 5		2.5	71								
5		3 3 4 5		4.5	63			F2		4.5 / 31.5 Brown and black, sandy silt FILL, contains brick and asphalt, firm, moist **FL-ML**			
	30							C2		6.0 / 30.0 Brown, SILT, firm, moist **ML** 6.5 / 29.5 Terminated			

REMARKS: Cave-in depth at 4.0 ft

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SPT_LOG:P:\USERS\WKELSEY\ONEDRIVE - ZCC DMY\01.05718.01 ARLINGTON COUNTY SOUTH EADS PARK\B-DRILLING\01.05718.01.GPJ;01.05718.01.GPJ;4/22/22

DMY ENGINEERING CONSULTANTS INC.
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PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

B-13

PAGE 1 OF 2

DATE(S) DRILLED:3/26/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: H. Guzman LOGGER: W. Kelsey
SURFACE ELEVATION: 37.0

▽ GROUND WATER FIRST ENCOUNTERED AT: 13.0 ft

DRY AFTER 72 HRS

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT LL	PLASTICITY INDEX PI	MOISTURE CONTENT (%)
		2 1 2 3		0.0	38					0.0 / 37.0 Brown, sandy lean clay with gravel FILL, contains brick, soft, moist **FL-CL**			
	35			2.0				F2		SAME, contains construction debris and burned material			
		1 1 1 1			42								
				4.0						4.0 / 33.0 Brown, fine silty sand with gravel FILL, contains construction debris and brick, very loose, moist **FL-SM**			
5		1 1 2 2			67			F3					
				6.0						6.0 / 31.0 Brown, coarse silty gravel FILL, contains brick, loose, moist **FL-GM**			
	30	4 2 2 3			8			F3					
				8.0						8.0 / 29.0 Brown and black, sandy lean clay FILL, trace gravel, contains brick and debris, soft to firm, moist **FL-CL**			
		1 3 3 2			33								
10				10.0				F2					
		1 2 1 3			67								
	25												
				13.0						13.0 / 24.0 Brown, medium clayey sand FILL, contains brick, loose, moist **FL-SC**			
		2 3 2 3			83			F3					
15								C2		14.2 / 22.8 Brown, LEAN CLAY WITH SAND, firm to very stiff, moist **CL**			

REMARKS: Boring did not cave. Temporary piezometer installed prior to backfill.

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SPT_LOG:P:\USERS\WKELSEY\ONEDRIVE - ZCC DMY\01.05718.01 ARLINGTON COUNTY SOUTH EADS PARK\B-DRILLING\01.05718.01.GPJ;01.05718.01.GPJ;4/22/22

DMY ENGINEERING CONSULTANTS INC.
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PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

B-13

DATE(S) DRILLED:3/26/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: H. Guzman LOGGER: W. Kelsey
SURFACE ELEVATION: 37.0

▽ GROUND WATER FIRST ENCOUNTERED AT: 13.0 ft

DRY AFTER 72 HRS

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
20	20	8, 8, 9, 12		18.0	21			C2		SAME, auger chatter	27	10	20.3
20	15	4, 1, 2, 1		23.0	21			C3		23.0 / 14.0 Light brown, coarse POORLY-GRADED SAND WITH GRAVEL, very loose, moist **SP**			
25										25.0 / 12.0 Terminated			

REMARKS: Boring did not cave. Temporary piezometer installed prior to backfill.

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PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

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PAGE 1 OF 1

DATE(S) DRILLED:3/26/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: H. Guzman LOGGER: W. Kelsey
SURFACE ELEVATION: 36.0

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
				0.3						0.0 / 36.0 CONCRETE **Conc** -3.6 in			
	35	12 8 7 7			33					0.3 / 35.7 Brown, sandy lean clay FILL, contains brick and organic odor, stiff, moist **FL-CL**	35	14	14.5
		6 5 6 7		2.3	46			F2					
				4.3						4.3 / 31.7 Brown, lean clay FILL, contains trace organic matter, stiff, moist **FL-CL**			
5		4 4 5 6			58			F2					
	30			6.3						6.3 / 29.7 Tan, fine CLAYEY SAND, loose, moist **SC**			
		1 2 5 5			50								
				8.3				C3					
		6 4 4 6			58								
10										10.3 / 25.7 Terminated			

REMARKS: Cave-in depth at 4.0 ft. Bulk sample collected from 1.0 to 5.0 ft.

PAGE 1 OF 1

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DMY ENGINEERING CONSULTANTS INC.
4170 Lafayette Center Drive, Suite 500
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PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

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PAGE 1 OF 1

DATE(S) DRILLED:3/26/22
DRILLING METHOD(S): Hand Augers and DCP
DRILLING EQUIPMENT: Hand Augers and Sowers DCP
DRILLER: H. Guzman LOGGER: W. Kelsey
SURFACE ELEVATION: 37.0

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	DCP BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
				0.0	100					0.0 / 37.0 Brown, medium to coarse clayey sand with gravel FILL, contains brick, loose to medium dense, moist **FL-SC**			
		30+		0.5	342								
	35	30+		2.0	342			F3					
		19 18 15		4.0	114					SAME, contains brick and asphalt			
		10 8 9		4.5	114					4.5 / 32.5 Hand Auger Refusal			

REMARKS: Boring performed with hand augers and Sowers DCP due to limited access. DCP values are blows per 1.75-inch increment. Boring did not cave. Bulk sample collected from 1.0 to 5.0 ft.

PAGE 1 OF 1

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DMY ENGINEERING CONSULTANTS INC.
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PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

B-16

PAGE 1 OF 2

DATE(S) DRILLED:3/18/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: H. Guzman LOGGER: W. Kelsey
SURFACE ELEVATION: 36.5

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
				0.0						0.0 / 36.5 TOPSOIL **Tops** -2 in			
		5 7 6 2			83			F2		0.2 / 36.3 Dark brown, silt with sand FILL, contains trace roots and asphalt, stiff, moist **FL-ML**			
	35			2.0									
		7 7 8 7			100					2.5 / 34.0 Gray and brown, fine SILTY SAND, very loose to medium dense, moist **SM**			
				4.0									
5		5 8 8 9			63								
				6.0									
	30	5 6 7 5			71								
				8.0									
		4 4 6 8			75			C3					
10													
	25												
				13.0									
		3 2 1 2			100								
15													

REMARKS: Cave-in depth at 14.0 ft

PAGE 1 OF 2

B-16

DMY ENGINEERING CONSULTANTS INC.
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PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

B-16

PAGE 2 OF 2

DATE(S) DRILLED:3/18/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: H. Guzman LOGGER: W. Kelsey
SURFACE ELEVATION: 36.5

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA											LAB DATA		
DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)
											LL	PI	
	20							C3					
		33 35 50/6		18.0	83			C3		18.0 / 18.5 Brown, coarse POORLY-GRADED GRAVEL WITH SAND, contains quartz gravel, very dense, moist **GP**			
20										20.0 / 16.5 Terminated			

REMARKS: Cave-in depth at 14.0 ft

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DMY ENGINEERING CONSULTANTS INC.
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PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

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PAGE 1 OF 1

DATE(S) DRILLED:3/21/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 55 Truck
DRILLER: M. Santos LOGGER: M. Dong
SURFACE ELEVATION: 36.5

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
		4 5 5 4		0.0	50			F3		0.0 / 36.5 TOPSOIL **Tops** -3 in 0.3 / 36.3 Brown and black, fine to medium silty sand with gravel FILL, contains little wood, brick, and organic odor, medium dense, moist **FL-SM**			
	35	8 5 8 8		2.0	100			F3		2.0 / 34.5 Brown, fine to medium silty sand FILL, medium dense, moist **FL-SM**			
5		8 7 8 10		4.0	33			C3		4.0 / 32.5 Brown, fine SILTY SAND, medium dense, moist **SM**			
	30	6 3 5 6		6.0	92			C3		6.0 / 30.5 Brown and gray, fine CLAYEY SAND, contains seams of fat clay, loose, moist **SC**			
		3 2 3 4		8.0	92					8.0 / 28.5 Brown and gray, fine SILTY SAND, loose, moist **SM**			
10								C3					
	25												
		3 5 6		13.5	111			C3		13.5 / 23.0 Brown, fine CLAYEY SAND, trace gravel, medium dense, moist **SC**			
15										15.0 / 21.5 Terminated			

REMARKS: Cave-in depth at 14.0 ft

PAGE 1 OF 1

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DMY ENGINEERING CONSULTANTS INC.
4170 Lafayette Center Drive, Suite 500
Chantilly, Virginia, 20151
tel: (703) 665-0586 fax: (301) 768-4169

PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

B-18

PAGE 1 OF 1

DATE(S) DRILLED:3/18/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: H. Guzman LOGGER: W. Kelsey
SURFACE ELEVATION: 36.5

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)
										LL	PI	
0	35	4 8 5 2		0.0	75			F2				
				2.0								
		7 10 21 7			100							
				4.0								
5		8 8 8 9			100			C3				
	30			6.0								
		5 3 3 8			75							
				8.0								
		6 5 6 7			63							
10								C3				
	25			13.0								
		3 5 6 5			100			C3				
15												

0.0 / 36.5
TOPSOIL **Tops** -4 in

0.3 / 36.2
Dark brown, silt with sand FILL, contains brick, stiff, moist **FL-ML**

2.0 / 34.5
Brown, fine to medium SILTY SAND, loose to dense, moist **SM**

8.0 / 28.5
Gray and brown, fine to medium SILTY SAND WITH GRAVEL, medium dense, moist **SM**

13.0 / 23.5
Brown and red, fine SILTY SAND, medium dense, moist **SM**

15.0 / 21.5 Terminated

MATERIAL DESCRIPTION OF STRATA

REMARKS: Cave-in depth at 13.0 ft

PAGE 1 OF 1
B-18

DMY ENGINEERING CONSULTANTS INC.
4170 Lafayette Center Drive, Suite 500
Chantilly, Virginia, 20151
tel: (703) 665-0586 fax: (301) 768-4169

PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

B-19

PAGE 1 OF 2

DATE(S) DRILLED:3/21/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: M. Santos LOGGER: M. Dong
SURFACE ELEVATION: 37.0

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
				0.0						0.0 / 37.0 TOPSOIL **Tops** -3 in			
		2 2 5 3			92			F2		0.3 / 36.8 Brown, sandy lean clay FILL, trace gravel, firm, moist **FL-CL**			
	35			2.0						2.0 / 35.0 Brown, fine silty sand FILL, trace gravel, medium dense, moist **FL-SM**			
		5 7 10 9			67			F3					
				4.0						4.0 / 33.0 Brown, fine SILTY SAND, medium dense, moist **SM**			
5		3 5 7 9			83								
				6.0				C3					
	30	5 5 5 4			75								
				8.0						8.0 / 29.0 Brown, fine CLAYEY SAND, loose, moist **SC**			
		4 1 3 3			58								
10								C3					
	25												
				13.5						13.5 / 23.5 Brown, fine to medium SILTY SAND, trace gravel, contains quartz gravel, medium dense, moist **SM**			
		7 10 9			100			C3					
15													

REMARKS: Cave-in at 18.0 ft

PAGE 1 OF 2

B-19

SPT_LOG:P:\USERS\WKELSEY\ONEDRIVE - ZCC DMY\01.05718.01 ARLINGTON COUNTY SOUTH EADS PARK\B-DRILLING\01.05718.01.GPJ;01.05718.01.GPJ;4/22/22

DMY ENGINEERING CONSULTANTS INC.
4170 Lafayette Center Drive, Suite 500
Chantilly, Virginia, 20151
tel: (703) 665-0586 fax: (301) 768-4169

PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

B-19

DATE(S) DRILLED:3/21/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: M. Santos LOGGER: M. Dong
SURFACE ELEVATION: 37.0

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
20	20	3 4 8		18.5	100			C3		SAME, contains quartz gravel			
										20.0 / 17.0 Terminated			

REMARKS: Cave-in at 18.0 ft

DMY ENGINEERING CONSULTANTS INC.
4170 Lafayette Center Drive, Suite 500
Chantilly, Virginia, 20151
tel: (703) 665-0586 fax: (301) 768-4169

PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

B-20

PAGE 1 OF 2

DATE(S) DRILLED:3/21/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: M. Santos LOGGER: M. Dong
SURFACE ELEVATION: 36.5

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT LL	PLASTICITY INDEX PI	MOISTURE CONTENT (%)
				0.0						0.0 / 36.5 TOPSOIL **Tops** -3 in			
		3 3 2 4			83					0.3 / 36.3 Brown and black, fine to medium silty sand FILL, trace gravel, loose to medium dense, moist **FL-SM**			
	35			2.0									
		5 9 7 7			83			F3		SAME, fine, no gravel			
				4.0									
5		6 7 10 12			100								
				6.0						6.0 / 30.5 Brown, fine SILTY SAND, loose to medium dense, moist **SM**			
	30	9 9 11 10			100								
				8.0									
		5 5 5 6			100								
10								C3					
	25												
				13.5									
		4 3 3			100								
15													

REMARKS:

PAGE 1 OF 2

B-20

DMY ENGINEERING CONSULTANTS INC.
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tel: (703) 665-0586 fax: (301) 768-4169

PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

B-20

DATE(S) DRILLED:3/21/22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: M. Santos LOGGER: M. Dong
SURFACE ELEVATION: 36.5

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
	20							C3					
		23 26 26		18.5	89			C3		18.5 / 18.0 Brown, medium to coarse SILTY GRAVEL WITH SAND, contains quartz, very dense, moist **GM**			
20										20.0 / 16.5 Terminated			

REMARKS:

DMY ENGINEERING CONSULTANTS INC.
4170 Lafayette Center Drive, Suite 500
Chantilly, Virginia, 20151
tel: (703) 665-0586 fax: (301) 768-4169

PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

INF-01

PAGE 1 OF 1

DATE(S) DRILLED:3-18-22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: M. Santos LOGGER: W. Kelsey
SURFACE ELEVATION: 38.0

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA | **LAB DATA**

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	MATERIAL DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)
										0.0 / 38.0 Auger only to 5.0 ft. 5-inch infiltration pipe installed at 5.0 ft.			
	35												
5										5.0 / 33.0 Terminated			

REMARKS: 5-inch PVC pipe installed at 5.0 ft.

PAGE 1 OF 1
INF-01

SPT_LOG:P:\USERS\WKELSEY\ONEDRIVE - ZCC DMY\01.05718.01 ARLINGTON COUNTY SOUTH EADS PARK\B-DRILLING\01.05718.01.GPJ;01.05718.01.GPJ;4/22/22

DMY ENGINEERING CONSULTANTS INC.
4170 Lafayette Center Drive, Suite 500
Chantilly, Virginia, 20151
tel: (703) 665-0586 fax: (301) 768-4169

PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

INF-02

PAGE 1 OF 1

DATE(S) DRILLED:3-18-22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: M. Santos LOGGER: W. Kelsey
SURFACE ELEVATION: 37.0

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA										LAB DATA		
DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)
										LL	PI	

MATERIAL DESCRIPTION OF STRATA

0.0 / 37.0
Auger only to 5.0 ft. 5-inch infiltration pipe installed at 5.0 ft.

35

5

5.0 / 32.0 Terminated

REMARKS: 5-inch PVC pipe installed at 5.0 ft.

PAGE 1 OF 1

INF-02

SPT_LOG:P:\USERS\WKELSEY\ONEDRIVE - ZCC DMY\01.05718.01 ARLINGTON COUNTY SOUTH EADS PARK\B-DRILLING\01.05718.01.GPJ;01.05718.01.GPJ;4/22/22

DMY ENGINEERING CONSULTANTS INC.
4170 Lafayette Center Drive, Suite 500
Chantilly, Virginia, 20151
tel: (703) 665-0586 fax: (301) 768-4169

PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

INF-03

PAGE 1 OF 1

DATE(S) DRILLED:3-18-22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: M. Santos LOGGER: W. Kelsey
SURFACE ELEVATION: 36.5

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG
5	35								

LAB DATA

LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)
LL	PI	

MATERIAL DESCRIPTION OF STRATA

0.0 / 36.5
Auger only to 5.0 ft. 5-inch infiltration pipe installed at 5.0 ft.

5.0 / 31.5 Terminated

REMARKS: 5-inch PVC pipe installed at 5.0 ft.

PAGE 1 OF 1

INF-03

DMY ENGINEERING CONSULTANTS INC.
4170 Lafayette Center Drive, Suite 500
Chantilly, Virginia, 20151
tel: (703) 665-0586 fax: (301) 768-4169

PROJECT NAME: South Eads Park
PROJECT NO.: 01.05718.01
LOCATION: Arlington, Virginia
CLIENT: Clark Azar & Associates

INF-04

PAGE 1 OF 1

DATE(S) DRILLED:3-26-22
DRILLING METHOD(S): 3.25 in HSA
DRILLING EQUIPMENT: CME 45 Truck
DRILLER: H. Guzman LOGGER: W. Kelsey
SURFACE ELEVATION: 36.5

GROUND WATER WAS NOT ENCOUNTERED DURING DRILLING

NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA

DEPTH (FT)	ELEVATION (FT)	SPT BLOW COUNTS	SAMPLE LEGEND	SAMPLE INTERVAL	% RECOVERY	ROCK QUALITY DESIGNATION %	RMR	GEOLOGIC STRATA	GRAPHIC LOG
	35								
5									

LAB DATA

LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)
LL	PI	

MATERIAL DESCRIPTION OF STRATA

0.0 / 36.5
Auger only to 5.0 ft. 5-inch infiltration pipe installed at 5.0 ft.

5.0 / 31.5 Terminated

REMARKS: 5-inch PVC pipe installed at 5.0 ft.

PAGE 1 OF 1

INF-04

DMY ENGINEERING CONSULTANTS INC.
4170 Lafayette Center Drive, Suite 500
Chantilly, Virginia, 20151
tel: (703) 665-0586 fax: (301) 768-4169

APPENDIX C LAB TESTING

Arlington County South Eads Park

Project Number: 01.05718.01

Summary of Laboratory Testing

Jay Kay Testing, Inc.
(814) 404-9283
DC , MD, PA, VA
www.jaykaytesting.com

Location:
Sample Date:

Boring ID	Sample ID	Depth (ft)		WC %	OM %	Atterberg Limits			SG	% Fines	USCS
						LL %	PL %	PI %			
-	-	Top	Btm	D-2216	D-2974	D-4318	D-4318	D-4318	D-854	-	D-2487
B-1	S-1	0	2	17.4	-	32	18	14	-	-	-
B-1	S-3	4	6	-	-	-	-	-	-	-	-
B-2	S-1	0	2	16.1	-	25	17	8	-	-	-
B-5	S-3	4	6	-	-	-	-	-	-	-	-
B-9	S-3	4	6	16.5	-	28	16	12	-	-	-
B-10	S-3	4	6	-	-	-	-	-	-	-	-
B-11	S-2	2	4	17.3	-	28	20	8	-	-	-
B-12	S-2	2.5	4.5	19.9	-	39	20	19	-	-	-
B-13	S-3	4	6	-	-	-	-	-	-	-	-
B-13	S-8	18	20	20.3	-	27	17	10	-	-	-
B-14	Bulk	0.3	5.3	16.9	-	31	18	13	-	64.7	CL
B-14	S-1	0.3	2.3	14.5	-	35	21	14	-	-	-

Jay Kay Testing, Inc. is an AASHTO-Accredited laboratory

Arlington County South Eads Park

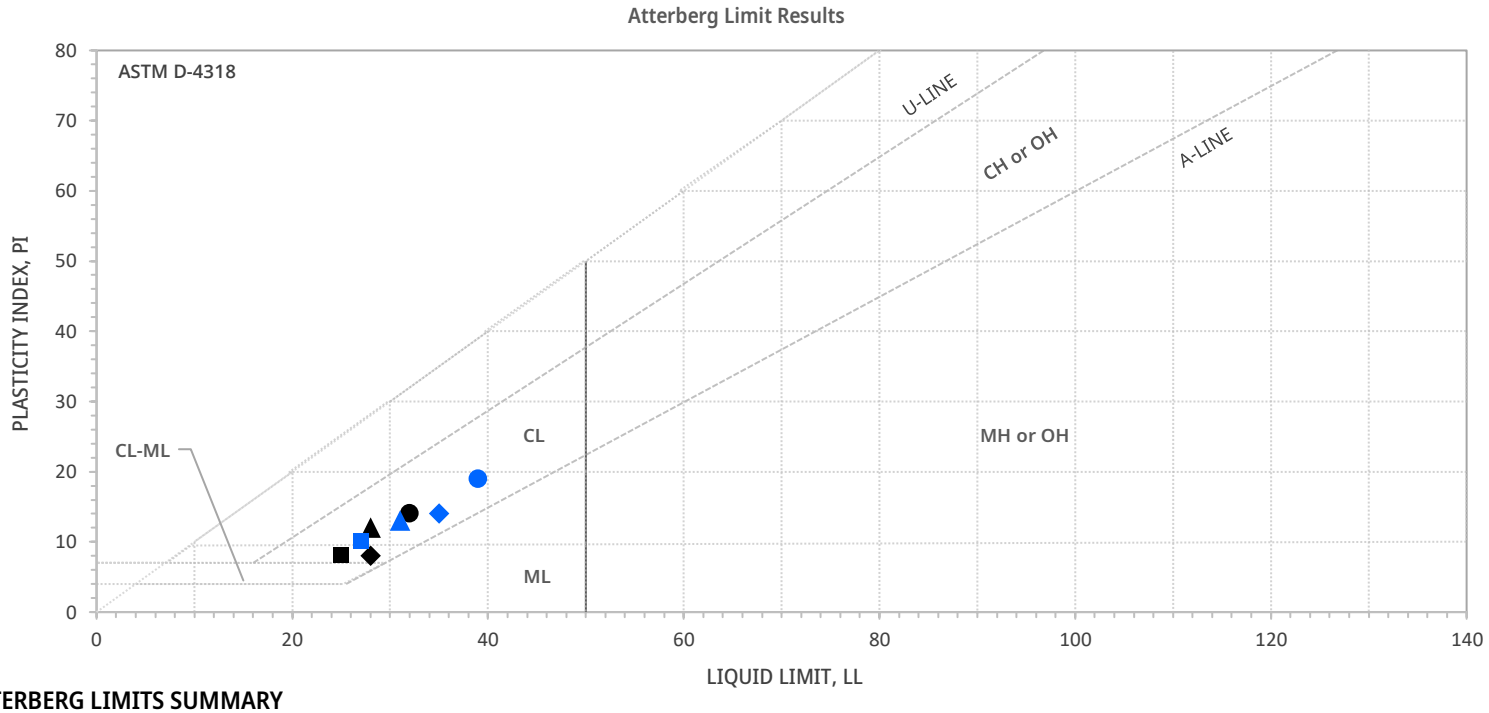
Summary of Atterberg Limit Testing

Jay Kay Testing, Inc.

Project Number: 01.05718.01

Location: -

Sample Date: -



ATTERBERG LIMITS SUMMARY

	Boring ID	Sample ID	Top	Btm	LL, %	PL, %	PI, %
●	B-1	S-1	0	2	32	18	14
■	B-2	S-1	0	2	25	17	8
▲	B-9	S-3	4	6	28	16	12
◆	B-11	S-2	2	4	28	20	8
●	B-12	S-2	2.5	4.5	39	20	19
■	B-13	S-8	18	20	27	17	10
▲	B-14	Bulk	0.3	5.3	31	18	13
◆	B-14	S-1	0.3	2.3	35	21	14

Arlington County South Eads Park

Project Number: 01.05718.01

Jay Kay Testing, Inc.

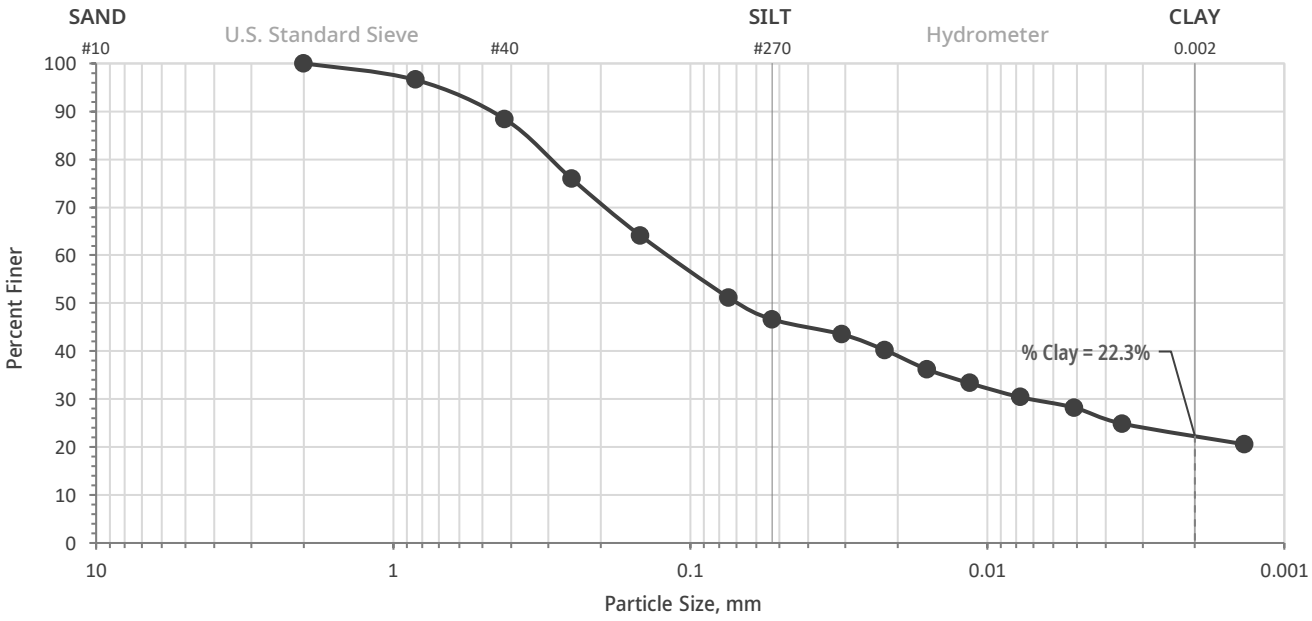
Boring ID	Sample ID	Top	Btm
B-1	S-1	0'	2'

Location: -

Sample Date: -

USDA Summation Curve

Test Method: ASTM D-6913 / ASTM D-7928

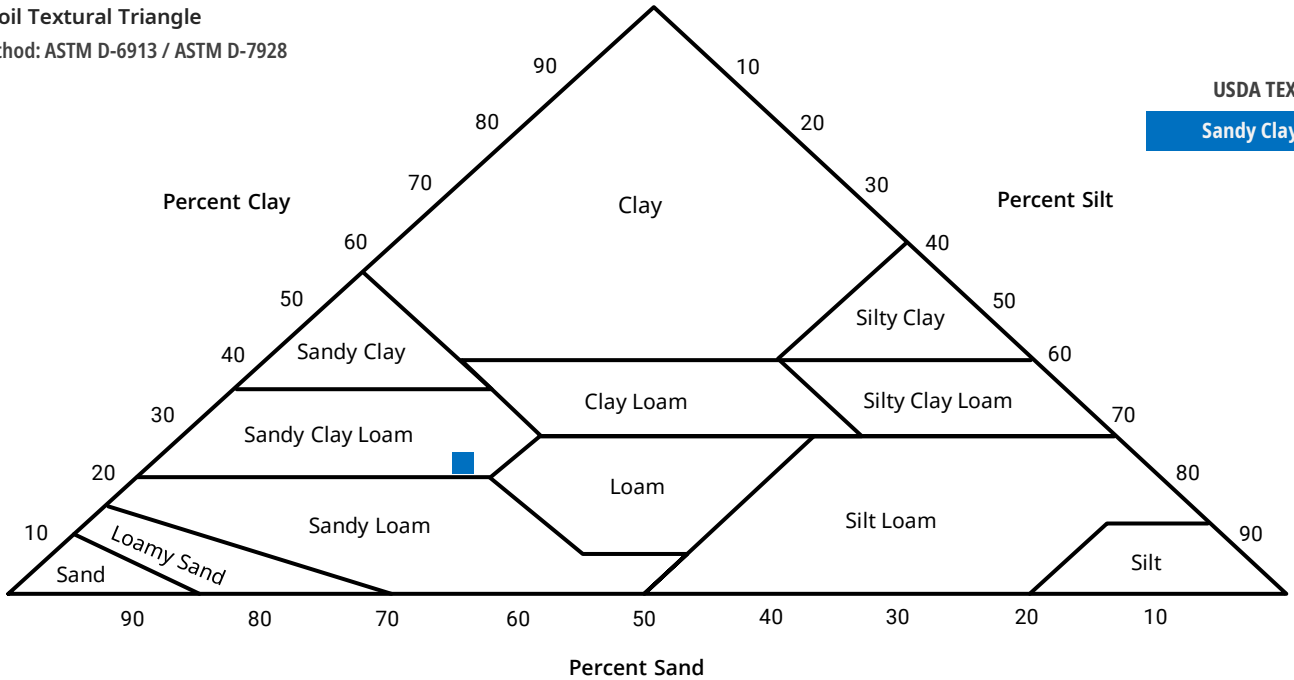


USDA Soil Textural Analysis

% SAND	% SILT	% CLAY
53.4	24.3	22.3

USDA Soil Textural Triangle

Test Method: ASTM D-6913 / ASTM D-7928



USDA TEXTURE

Sandy Clay Loam

WC	LL	PL	PI
17.4%	32%	18%	14%

Arlington County South Eads Park

Project Number: 01.05718.01

Jay Kay Testing, Inc.

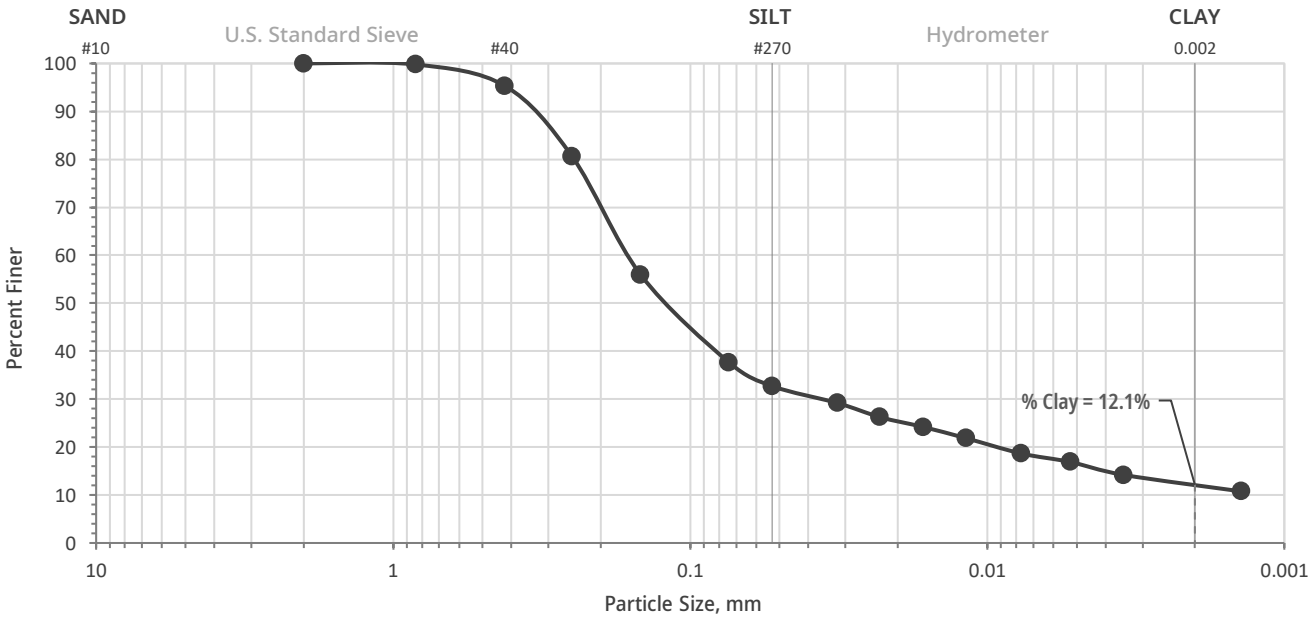
Boring ID	Sample ID	Top	Btm
B-1	S-3	4'	6'

Location: -

Sample Date: -

USDA Summation Curve

Test Method: ASTM D-6913 / ASTM D-7928

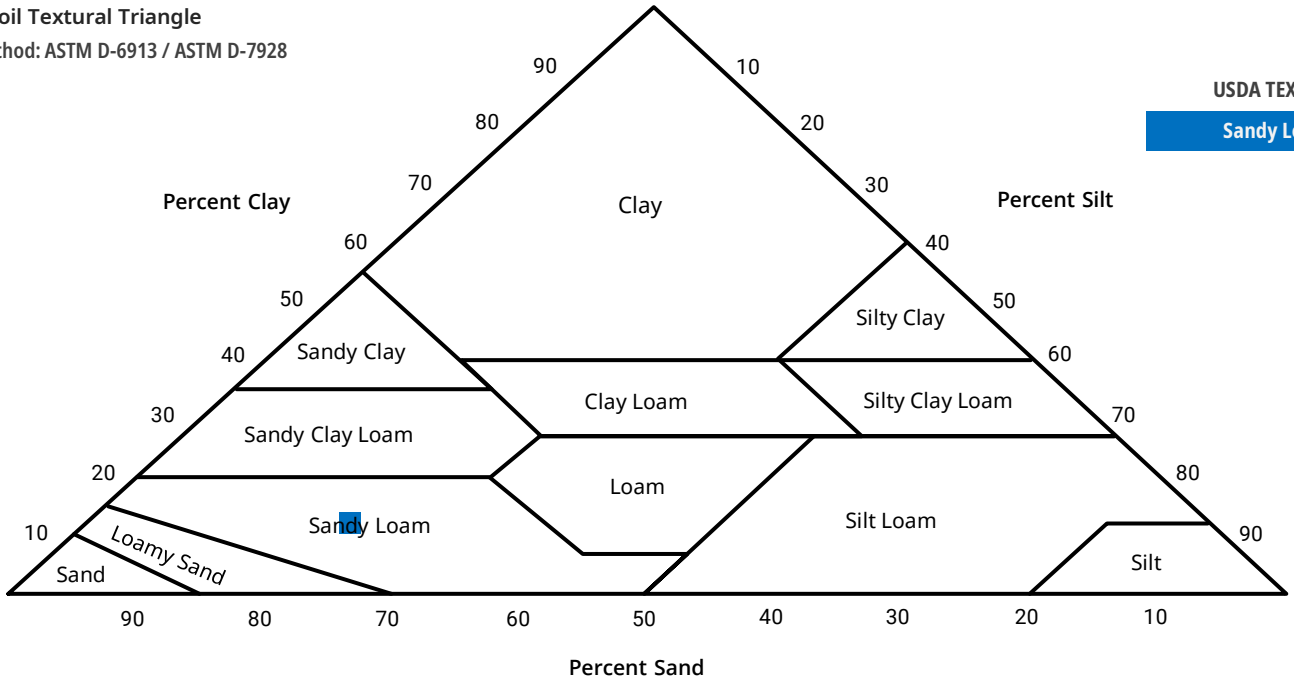


USDA Soil Textural Analysis

% SAND	% SILT	% CLAY
67.3	20.6	12.1

USDA Soil Textural Triangle

Test Method: ASTM D-6913 / ASTM D-7928



USDA TEXTURE

Sandy Loam

WC	LL	PL	PI
-	-	-	-

Arlington County South Eads Park

Project Number: 01.05718.01

Jay Kay Testing, Inc.

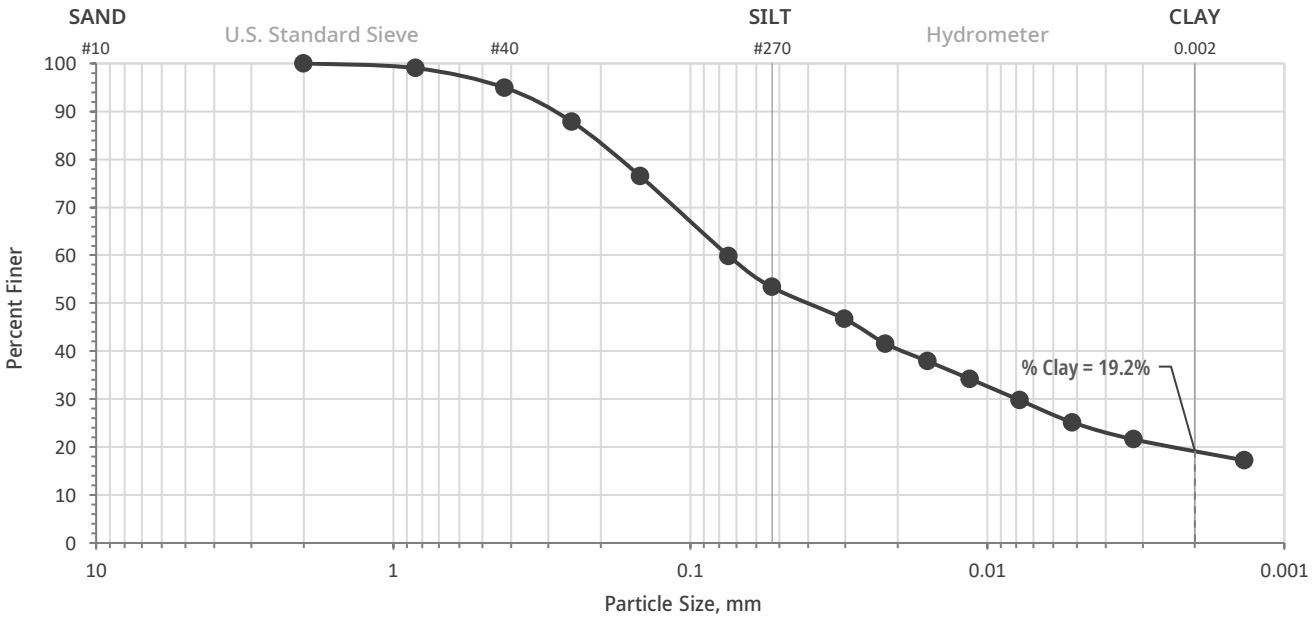
Boring ID	Sample ID	Top	Btm
B-2	S-1	0'	2'

Location: -

Sample Date: -

USDA Summation Curve

Test Method: ASTM D-6913 / ASTM D-7928

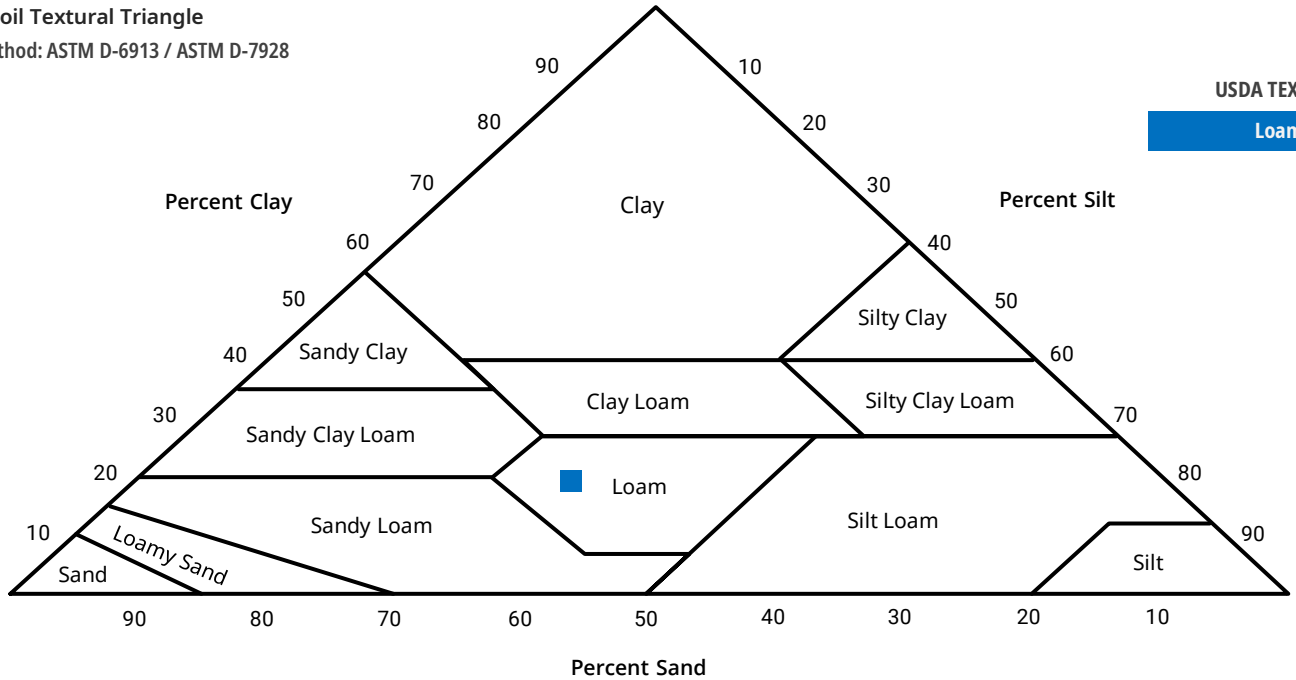


USDA Soil Textural Analysis

% SAND	% SILT	% CLAY
46.7	34.1	19.2

USDA Soil Textural Triangle

Test Method: ASTM D-6913 / ASTM D-7928



USDA TEXTURE

Loam

WC	LL	PL	PI
16.1%	25%	17%	8%

Arlington County South Eads Park

Project Number: 01.05718.01

Jay Kay Testing, Inc.

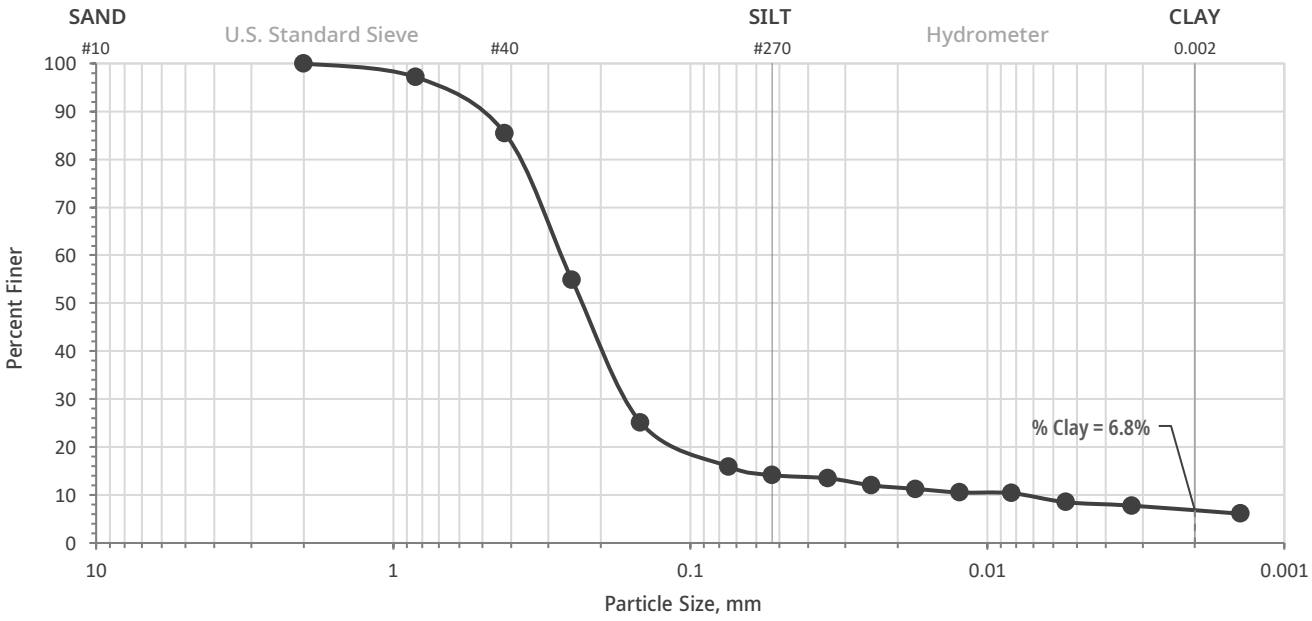
Boring ID	Sample ID	Top	Btm
B-5	S-3	4'	6'

Location: -

Sample Date: -

USDA Summation Curve

Test Method: ASTM D-6913 / ASTM D-7928

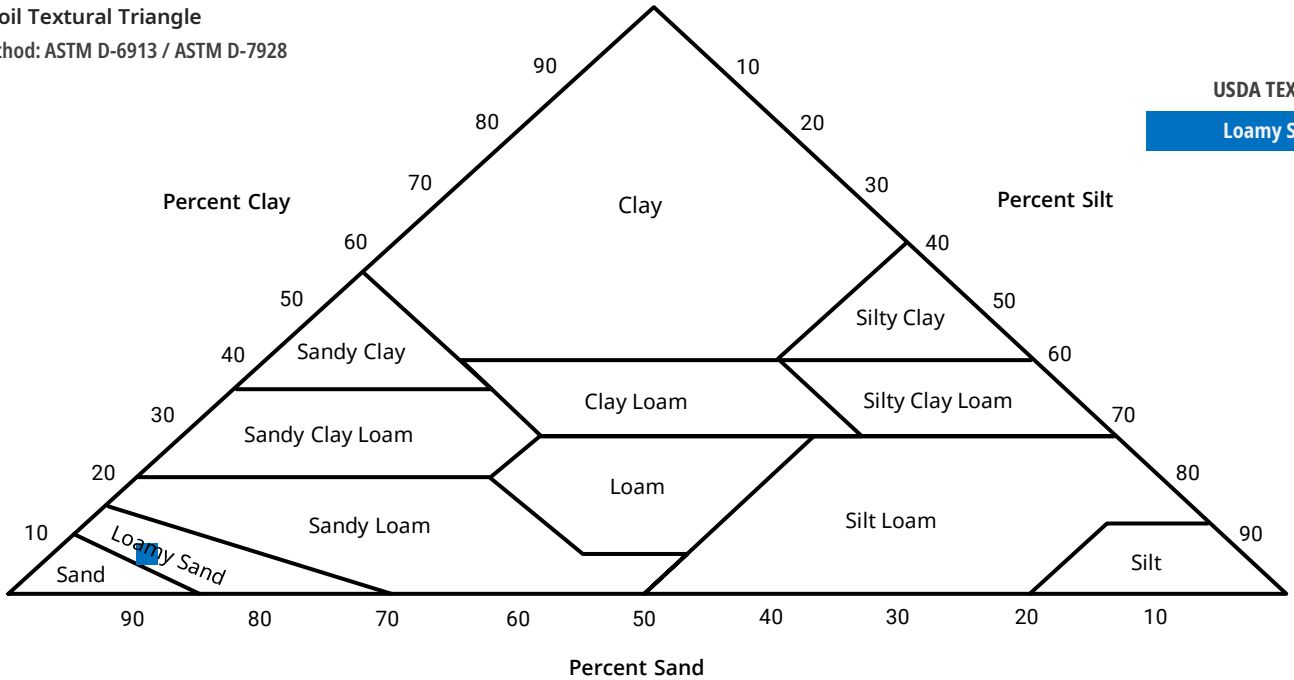


USDA Soil Textural Analysis

% SAND	% SILT	% CLAY
85.9	7.3	6.8

USDA Soil Textural Triangle

Test Method: ASTM D-6913 / ASTM D-7928



USDA TEXTURE

Loamy Sand

WC	LL	PL	PI
-	-	-	-

04/06/22 Tested by: ST/JT Reviewed by: WK Jay Kay Testing, Inc.

Arlington County South Eads Park

Project Number: 01.05718.01

Jay Kay Testing, Inc.

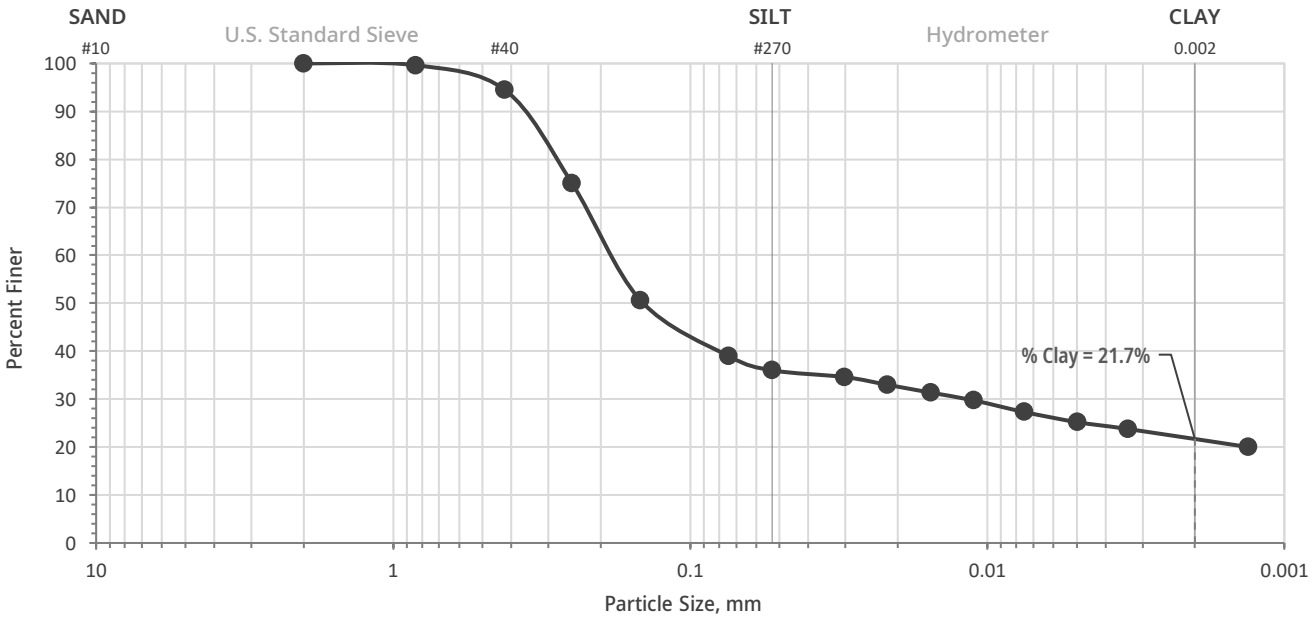
Boring ID	Sample ID	Top	Btm
B-9	S-3	4'	6'

Location: -

Sample Date: -

USDA Summation Curve

Test Method: ASTM D-6913 / ASTM D-7928

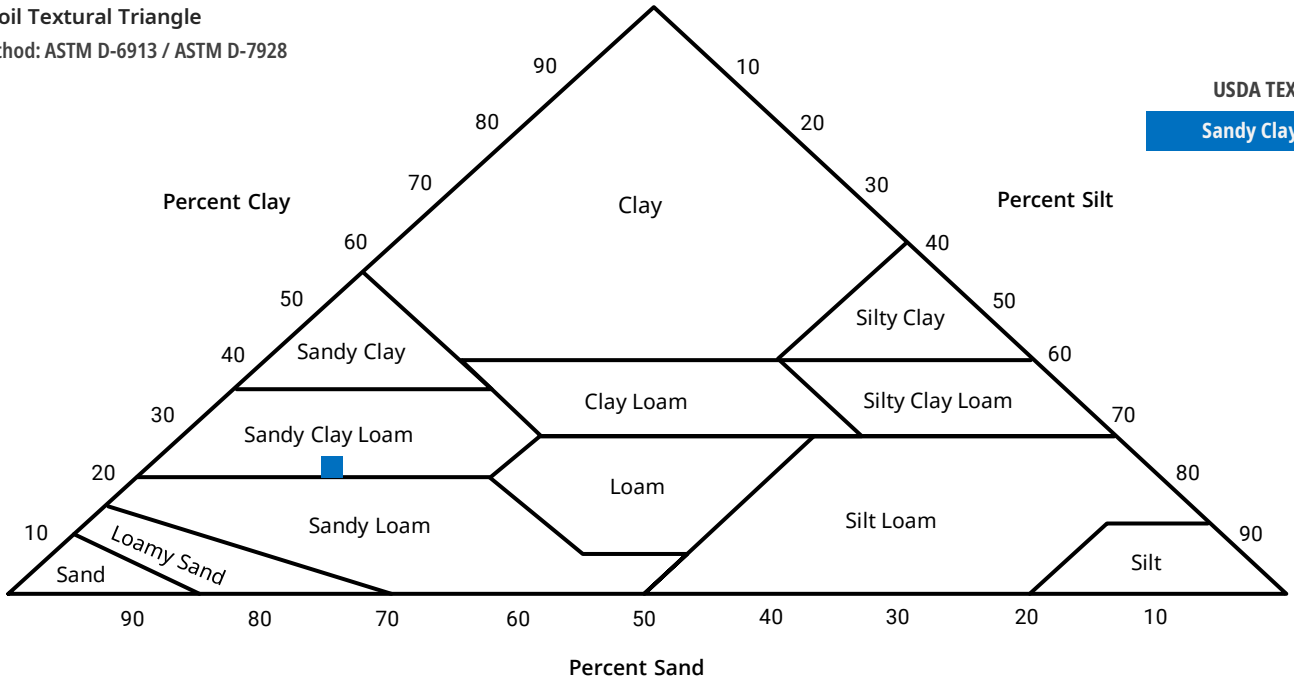


USDA Soil Textural Analysis

% SAND	% SILT	% CLAY
64.0	14.3	21.7

USDA Soil Textural Triangle

Test Method: ASTM D-6913 / ASTM D-7928



USDA TEXTURE

Sandy Clay Loam

WC	LL	PL	PI
16.5%	28%	16%	12%

Arlington County South Eads Park

Project Number: 01.05718.01

Jay Kay Testing, Inc.

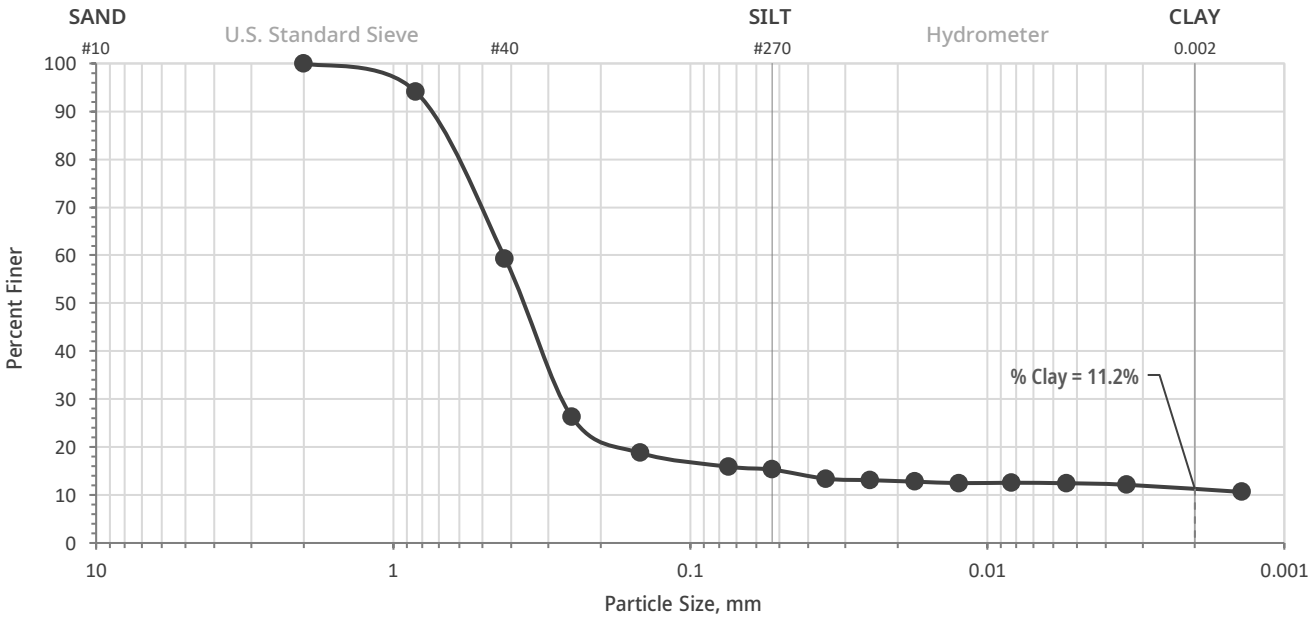
Boring ID	Sample ID	Top	Btm
B-10	S-3	4'	6'

Location: -

Sample Date: -

USDA Summation Curve

Test Method: ASTM D-6913 / ASTM D-7928



USDA Soil Textural Analysis

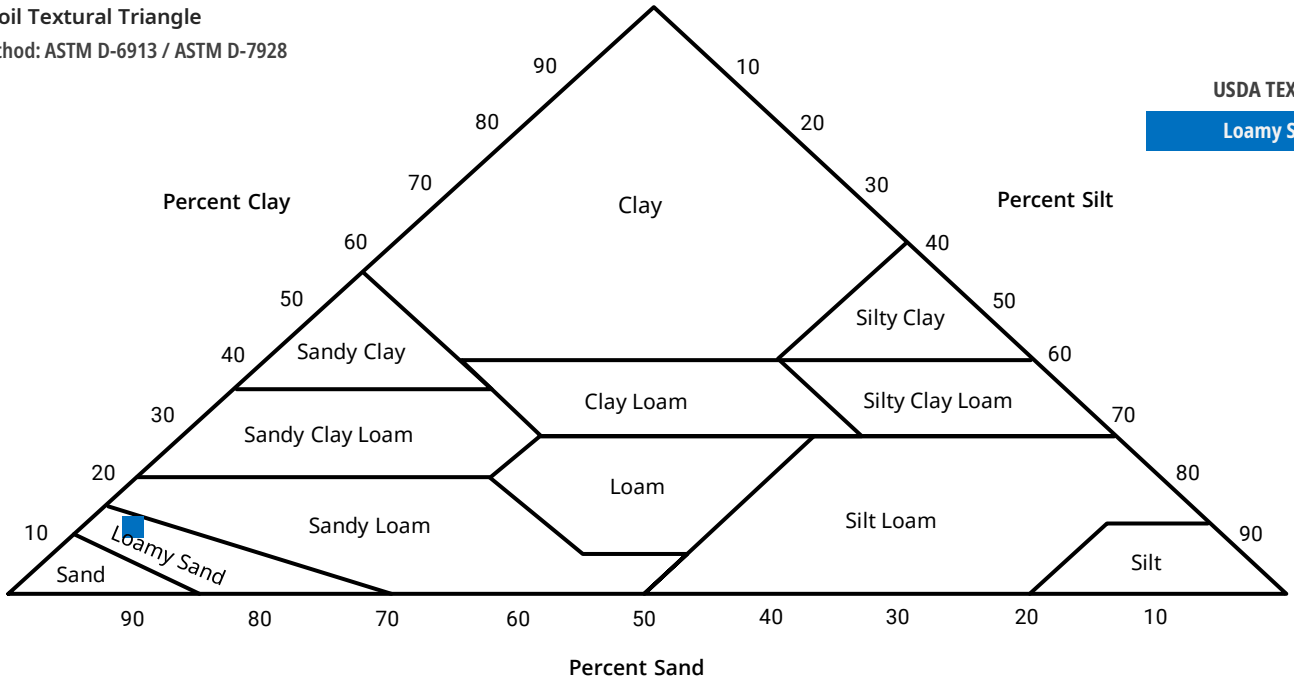
% SAND
84.7

% SILT
4.1

% CLAY
11.2

USDA Soil Textural Triangle

Test Method: ASTM D-6913 / ASTM D-7928



USDA TEXTURE

Loamy Sand

WC	LL	PL	PI
-	-	-	-

04/06/22 Tested by: ST/JT Reviewed by: WK Jay Kay Testing, Inc.

Arlington County South Eads Park

Project Number: 01.05718.01

Jay Kay Testing, Inc.

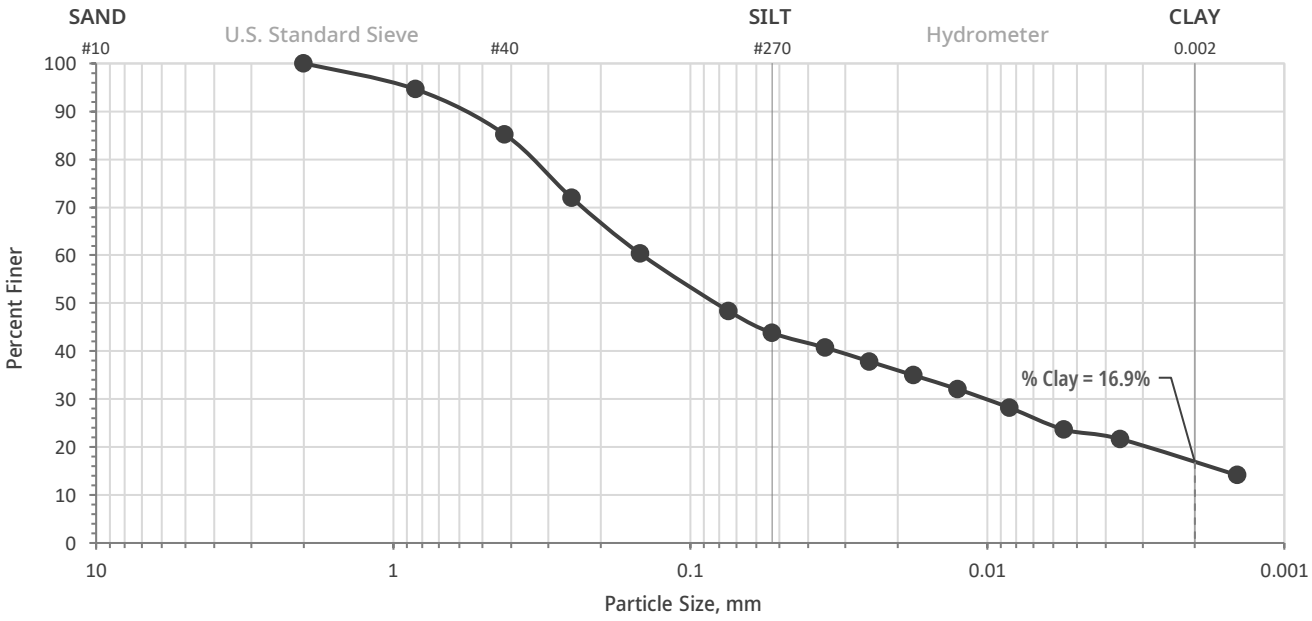
Boring ID	Sample ID	Top	Btm
B-11	S-2	2'	4'

Location: -

Sample Date: -

USDA Summation Curve

Test Method: ASTM D-6913 / ASTM D-7928

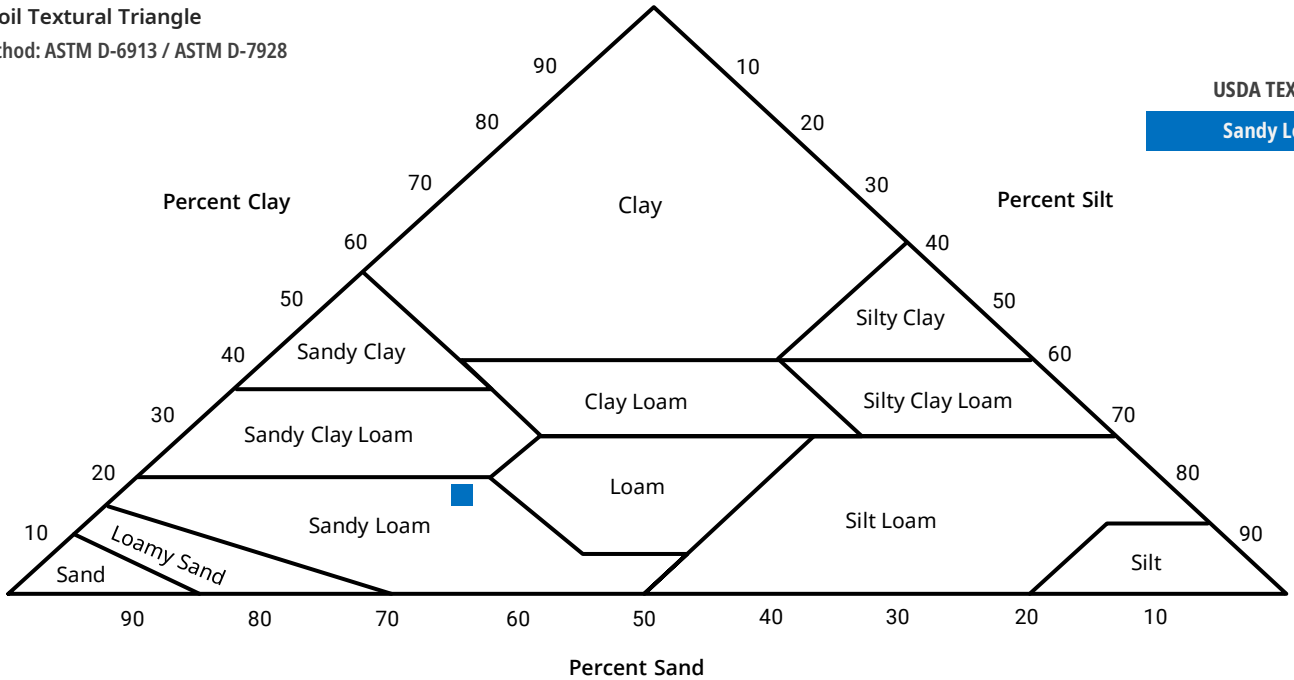


USDA Soil Textural Analysis

% SAND	% SILT	% CLAY
56.2	26.9	16.9

USDA Soil Textural Triangle

Test Method: ASTM D-6913 / ASTM D-7928



USDA TEXTURE

Sandy Loam

WC	LL	PL	PI
17.3%	28%	20%	8%

Arlington County South Eads Park

Project Number: 01.05718.01

Jay Kay Testing, Inc.

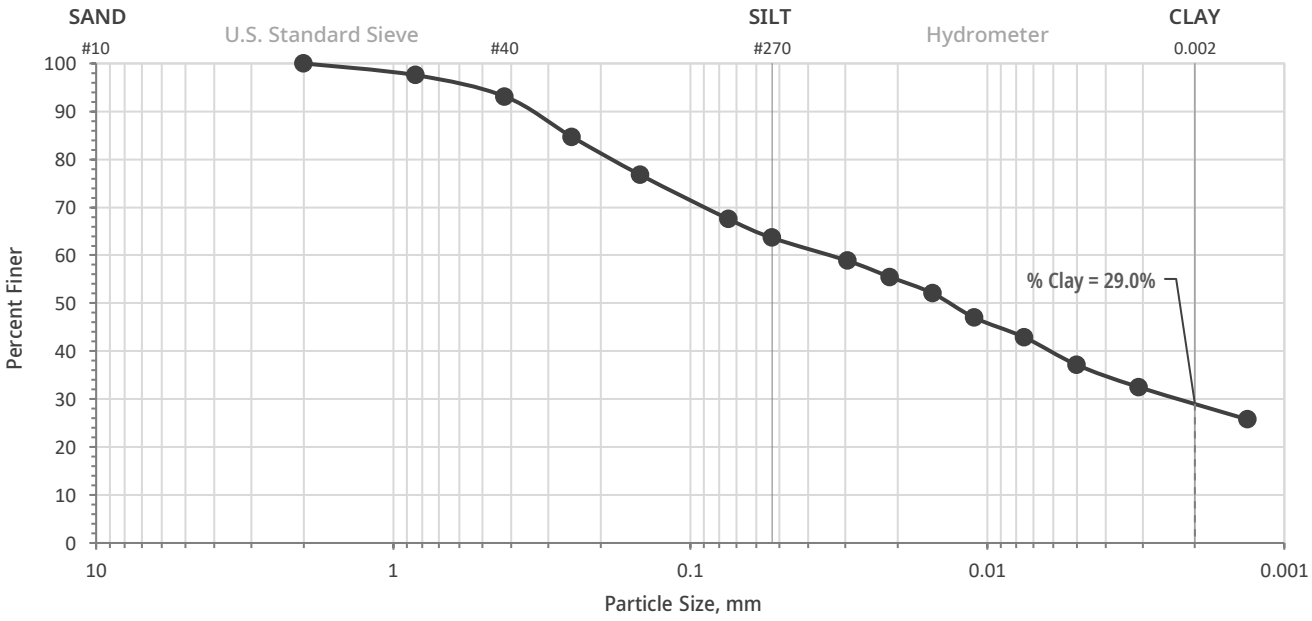
Boring ID	Sample ID	Top	Btm
B-12	S-2	2.5'	4.5'

Location: -

Sample Date: -

USDA Summation Curve

Test Method: ASTM D-6913 / ASTM D-7928

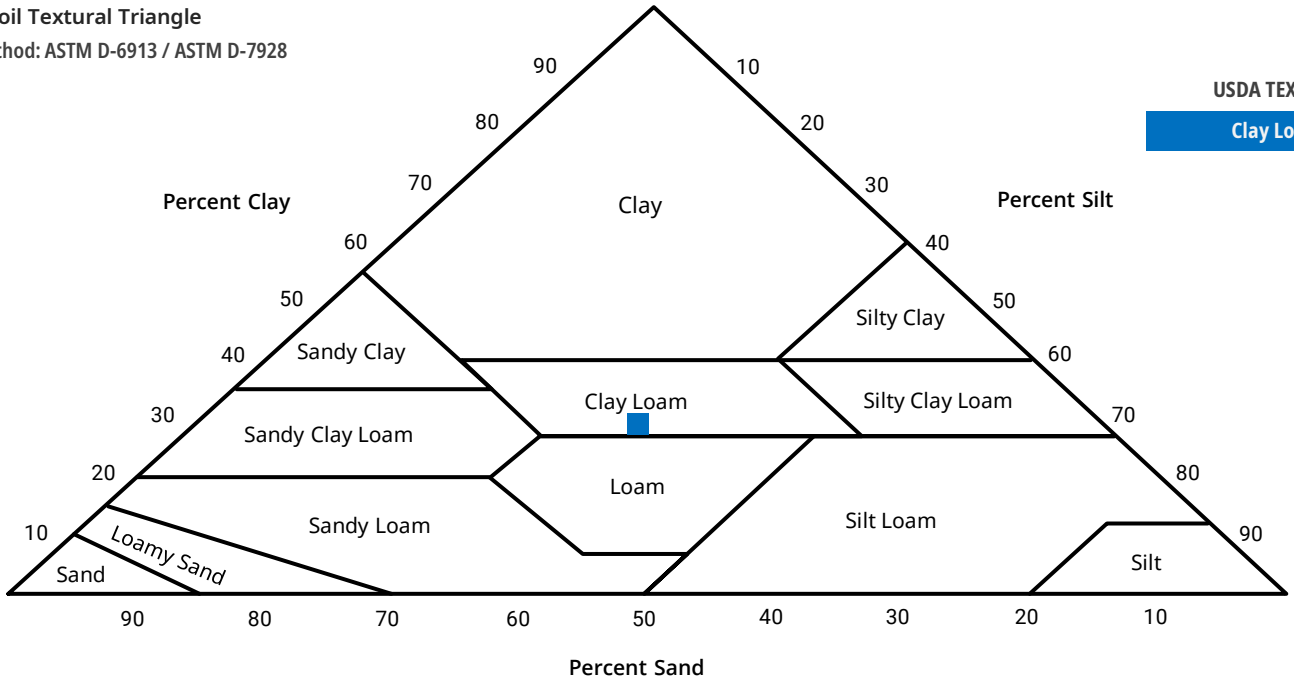


USDA Soil Textural Analysis

% SAND	% SILT	% CLAY
36.4	34.6	29.0

USDA Soil Textural Triangle

Test Method: ASTM D-6913 / ASTM D-7928



USDA TEXTURE

Clay Loam

WC	LL	PL	PI
19.9%	39%	20%	19%

04/06/22 Tested by: ST/JT Reviewed by: WK Jay Kay Testing, Inc.

Arlington County South Eads Park

Project Number: 01.05718.01

Jay Kay Testing, Inc.

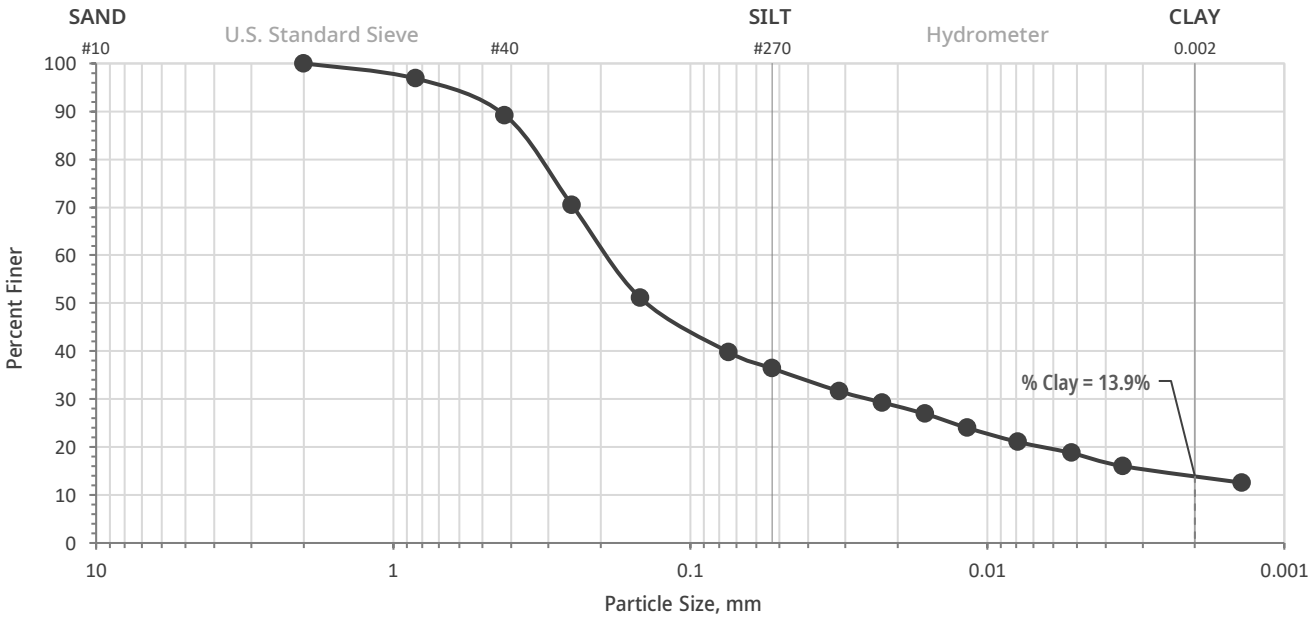
Boring ID	Sample ID	Top	Btm
B-13	S-3	4'	6'

Location: -

Sample Date: -

USDA Summation Curve

Test Method: ASTM D-6913 / ASTM D-7928

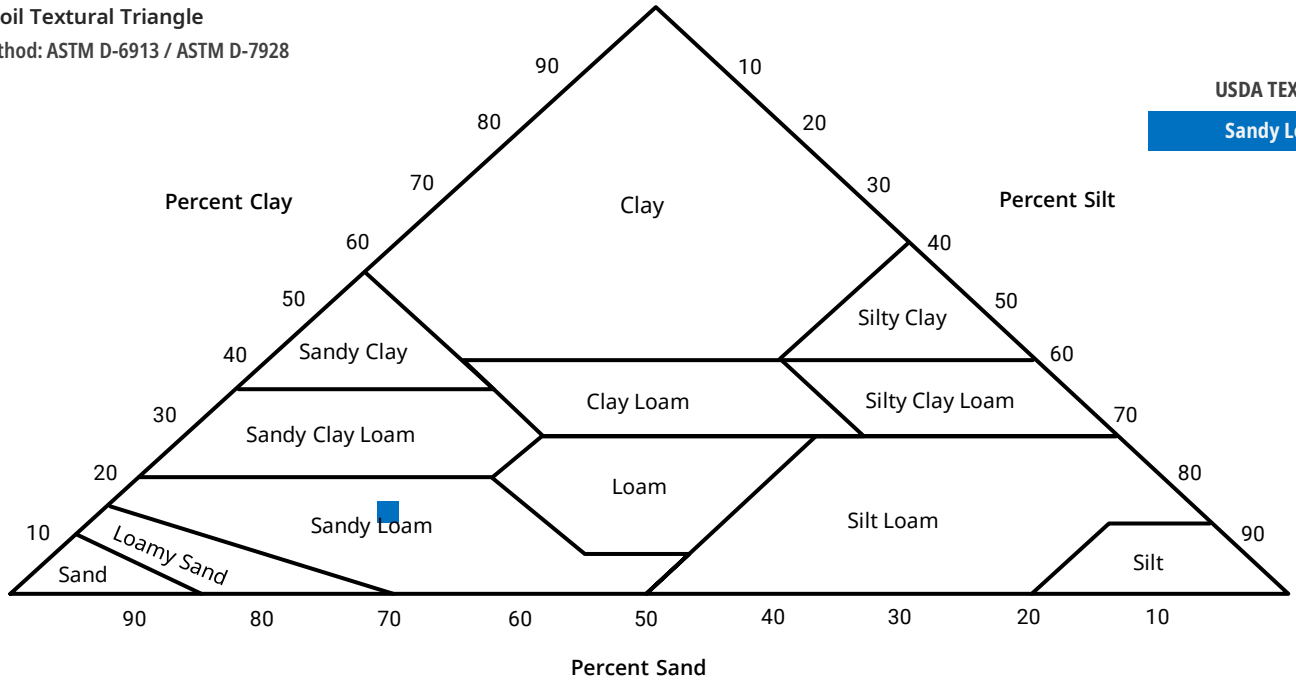


USDA Soil Textural Analysis

% SAND	% SILT	% CLAY
63.6	22.5	13.9

USDA Soil Textural Triangle

Test Method: ASTM D-6913 / ASTM D-7928



USDA TEXTURE

Sandy Loam

WC	LL	PL	PI
-	-	-	-

04/06/22 Tested by: ST/JT Reviewed by: WK Jay Kay Testing, Inc.

Arlington County South Eads Park

Project Number: 01.05718.01

Jay Kay Testing, Inc.

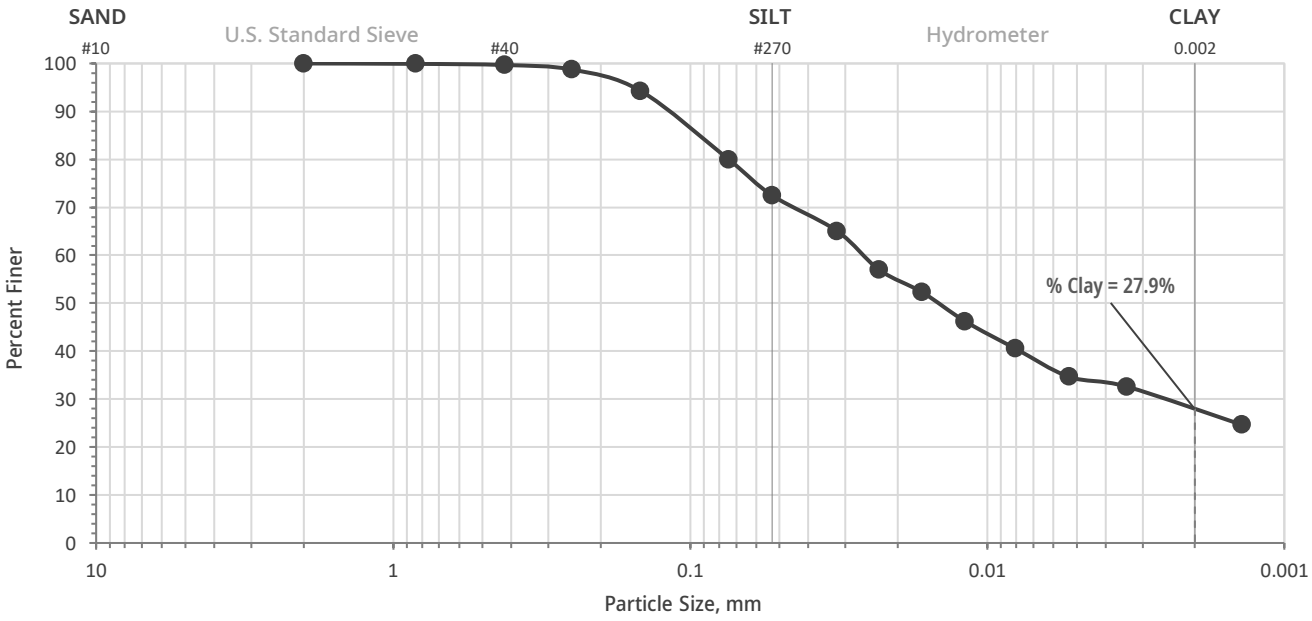
Boring ID	Sample ID	Top	Btm
B-13	S-8	18'	20'

Location: -

Sample Date: -

USDA Summation Curve

Test Method: ASTM D-6913 / ASTM D-7928

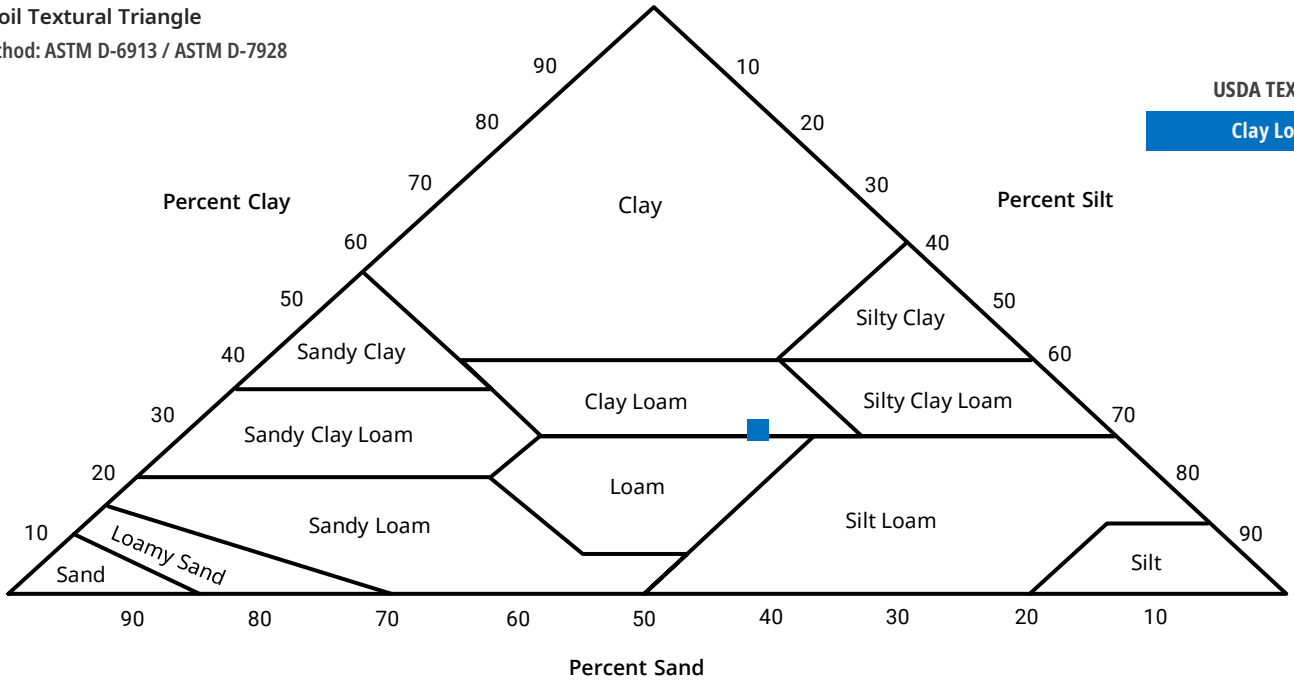


USDA Soil Textural Analysis

% SAND	% SILT	% CLAY
27.5	44.6	27.9

USDA Soil Textural Triangle

Test Method: ASTM D-6913 / ASTM D-7928



USDA TEXTURE

Clay Loam

WC	LL	PL	PI
20.3%	27%	17%	10%

04/06/22 Tested by: ST/JT Reviewed by: WK Jay Kay Testing, Inc.

Arlington County South Eads Park

Project Number: 01.05718.01

Jay Kay Testing, Inc.

Boring ID	Sample ID	Top	Btm
B-14	Bulk	0.3'	5.3'

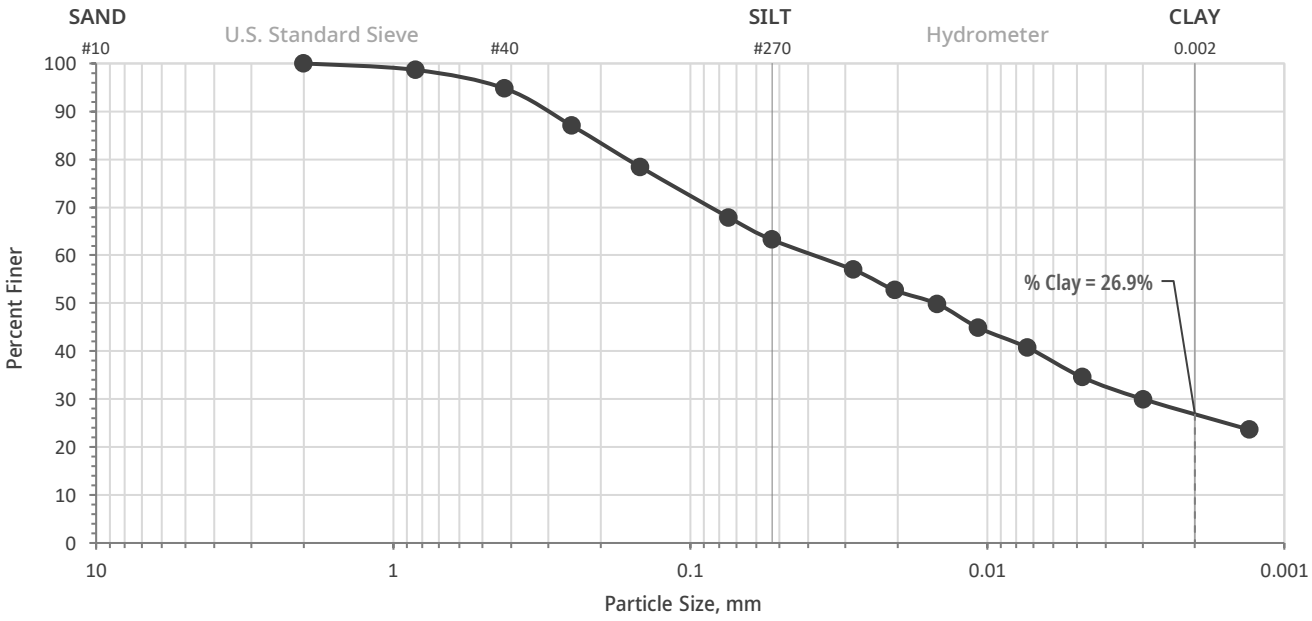
Location: -

Sample Date: -

USDA Summation Curve

Test Method: ASTM D-6913 / ASTM D-7928

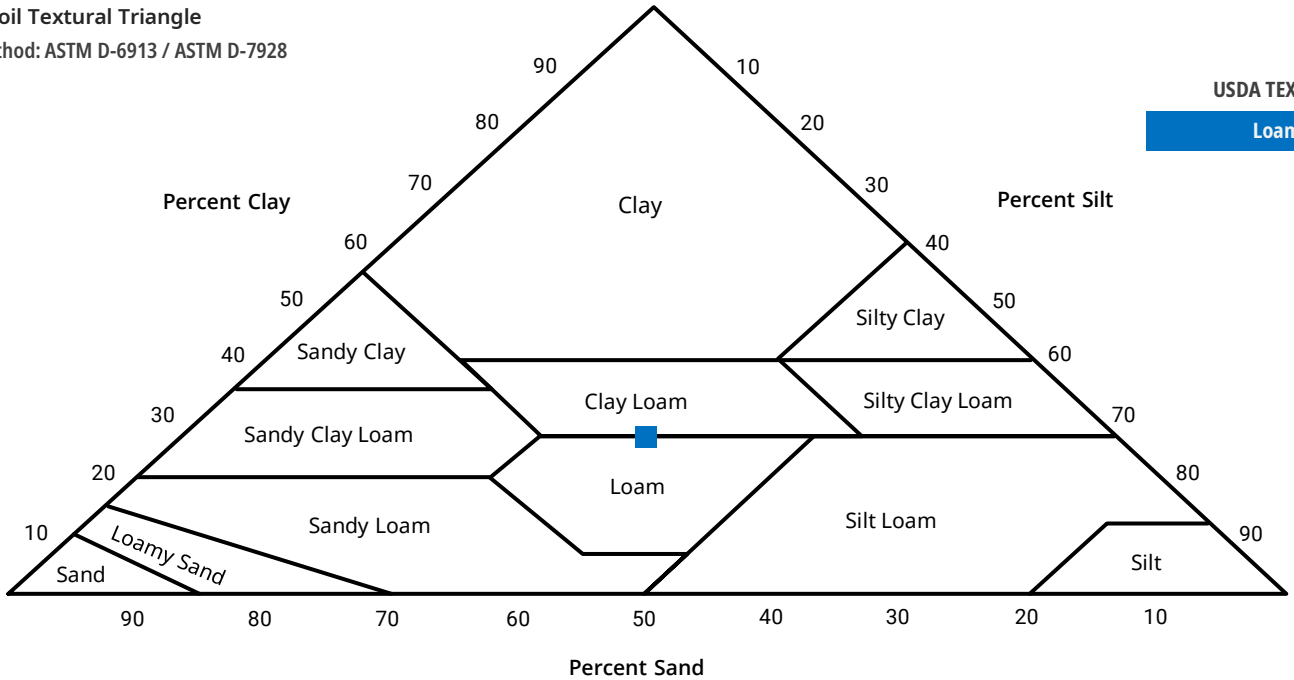
USDA Soil Textural Analysis



% SAND	% SILT	% CLAY
36.8	36.3	26.9

USDA Soil Textural Triangle

Test Method: ASTM D-6913 / ASTM D-7928



USDA TEXTURE

Loam

WC	LL	PL	PI
16.9%	31%	18%	13%

Arlington County South Eads Park

Project Number: 01.05718.01

Jay Kay Testing, Inc.

Boring ID	Sample ID	Top	Btm
B-14	S-1	0.3'	2.3'

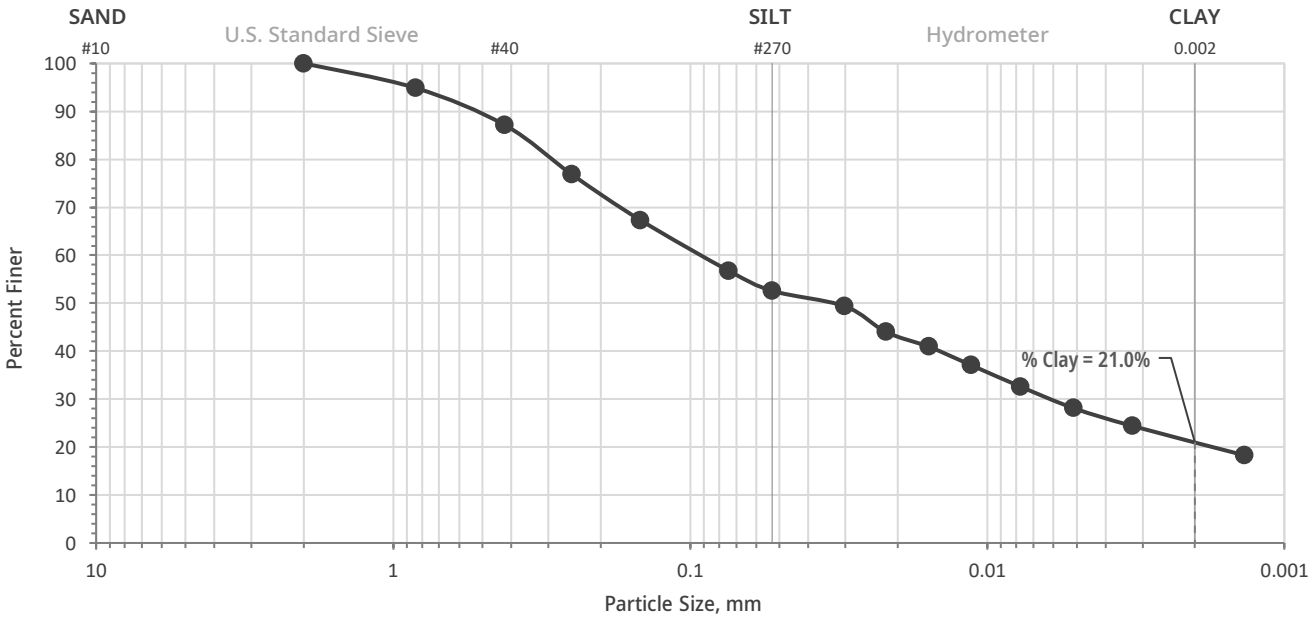
Location: -

Sample Date: -

USDA Summation Curve

Test Method: ASTM D-6913 / ASTM D-7928

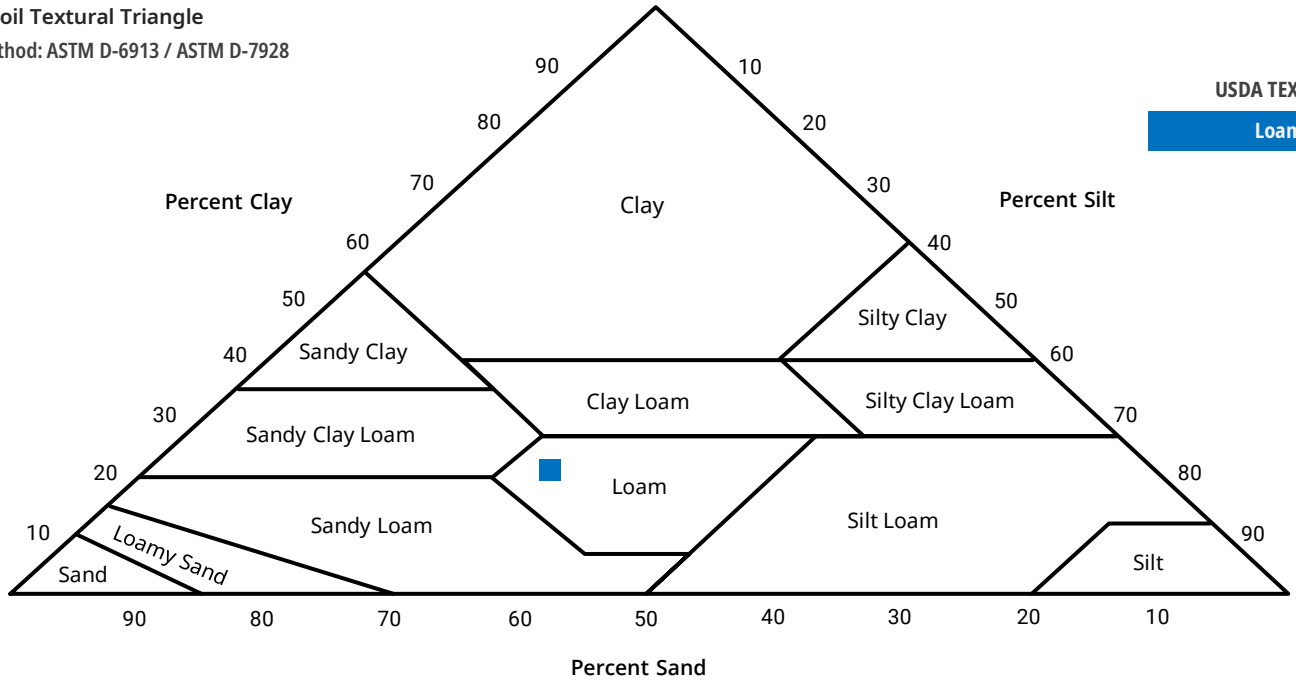
USDA Soil Textural Analysis



% SAND	% SILT	% CLAY
47.4	31.6	21.0

USDA Soil Textural Triangle

Test Method: ASTM D-6913 / ASTM D-7928



USDA TEXTURE

Loam

WC	LL	PL	PI
14.5%	35%	21%	14%

Arlington County South Eads Park

Project Number: 01.05718.01

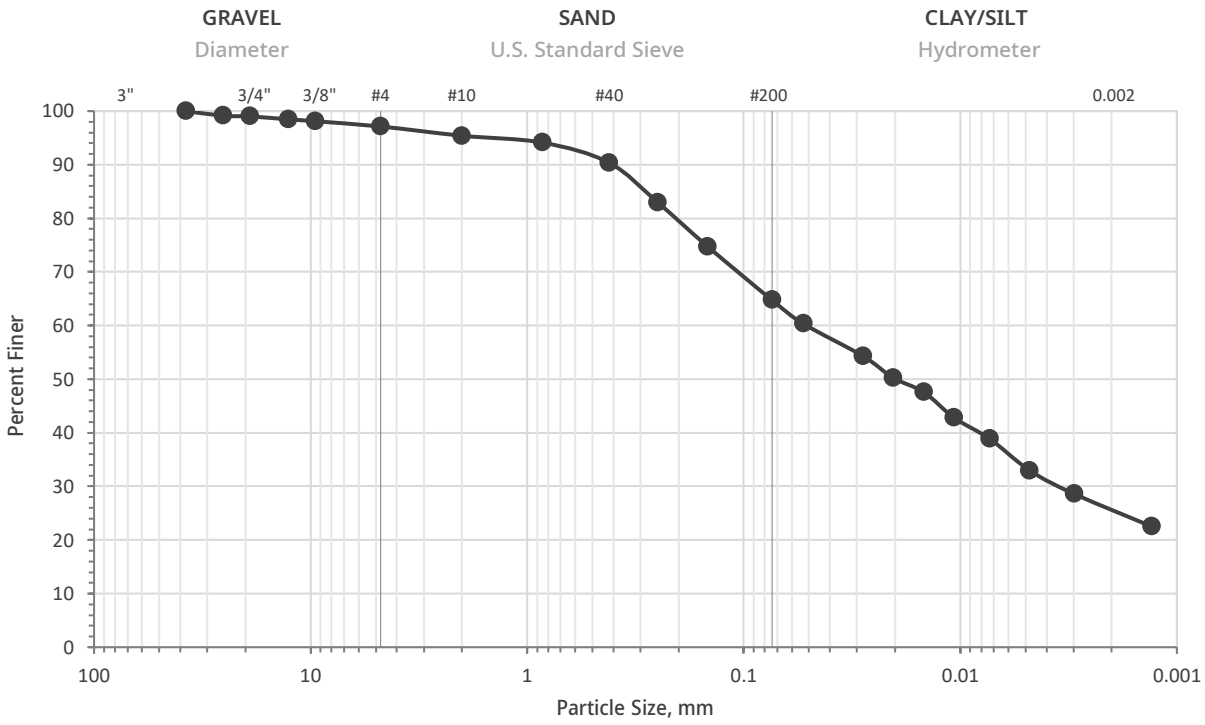
Jay Kay Testing, Inc.

Boring ID	Sample ID	Top	Btm
B-14	Bulk	0.3'	5.3'

Location: -

Sample Date: -

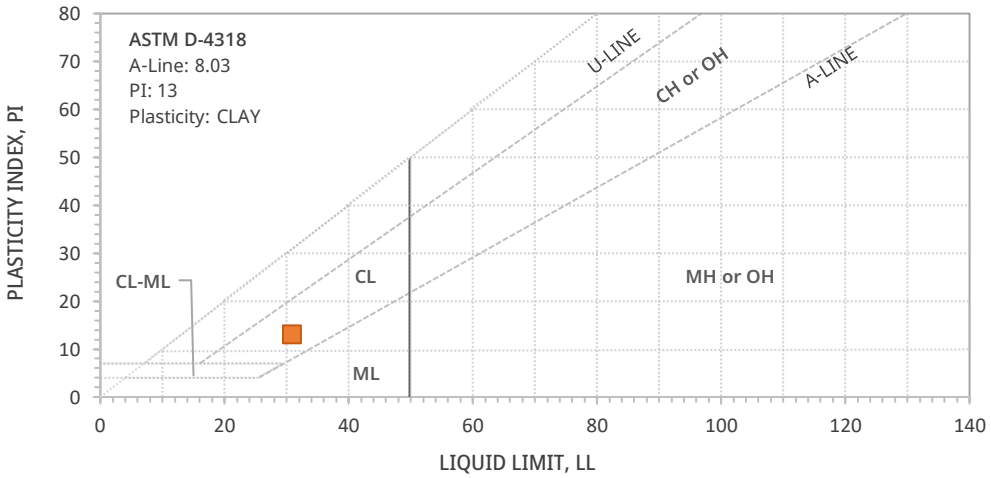
ASTM D-6913 / ASTM D-7928



Sieve	Size	Pass, %
-	*mm*	%
6"	150.0	-
3"	75.0	-
2"	50.8	-
1.5"	37.5	100.0
1"	25.4	99.1
3/4"	19.0	99.0
1/2"	12.7	98.5
3/8"	9.51	98.1
#4	4.75	97.1
#10	2.00	95.4
#20	0.85	94.1
#40	0.42	90.4
#60	0.25	83.0
#100	0.147	74.8
#200	0.074	64.7

% Gravel				% Sand				
Coarse	Fine		Total	Coarse	Medium	Fine		Total
1.0	1.9	=	2.9	1.7	5.0	25.7	=	32.4

D10	-		
D30	-	CC	-
D60	-	CU	-



Liquid Limit, %	31
Plastic Limit, %	18
Plasticity Index, %	13

USCS (D-2487)	AASHTO M-145
CL	A-6

Soil Description (D-2487)

Brown sandy lean CLAY

WC	16.9%
OM	-
+ 3/8"	1.9%

Specific gravity* 2.70 (assumed)

*Applies to hydrometer-based calculations only

Data 1	-
Data 2	-
Data 3	-

Data 4	-
Data 5	-
Data 6	-

Arlington County South Eads Park

Project Number: 01.05718.01

Jay Kay Testing, Inc.

Boring ID	Sample ID	Top	Btm
B-14	Bulk	0.3'	5.3'

Location: -

Sample Date: -

Moisture-Density Relationship of Soils

STANDARD PROCTOR

Test Method: VTM-1

Percent oversize particles: 2.9%

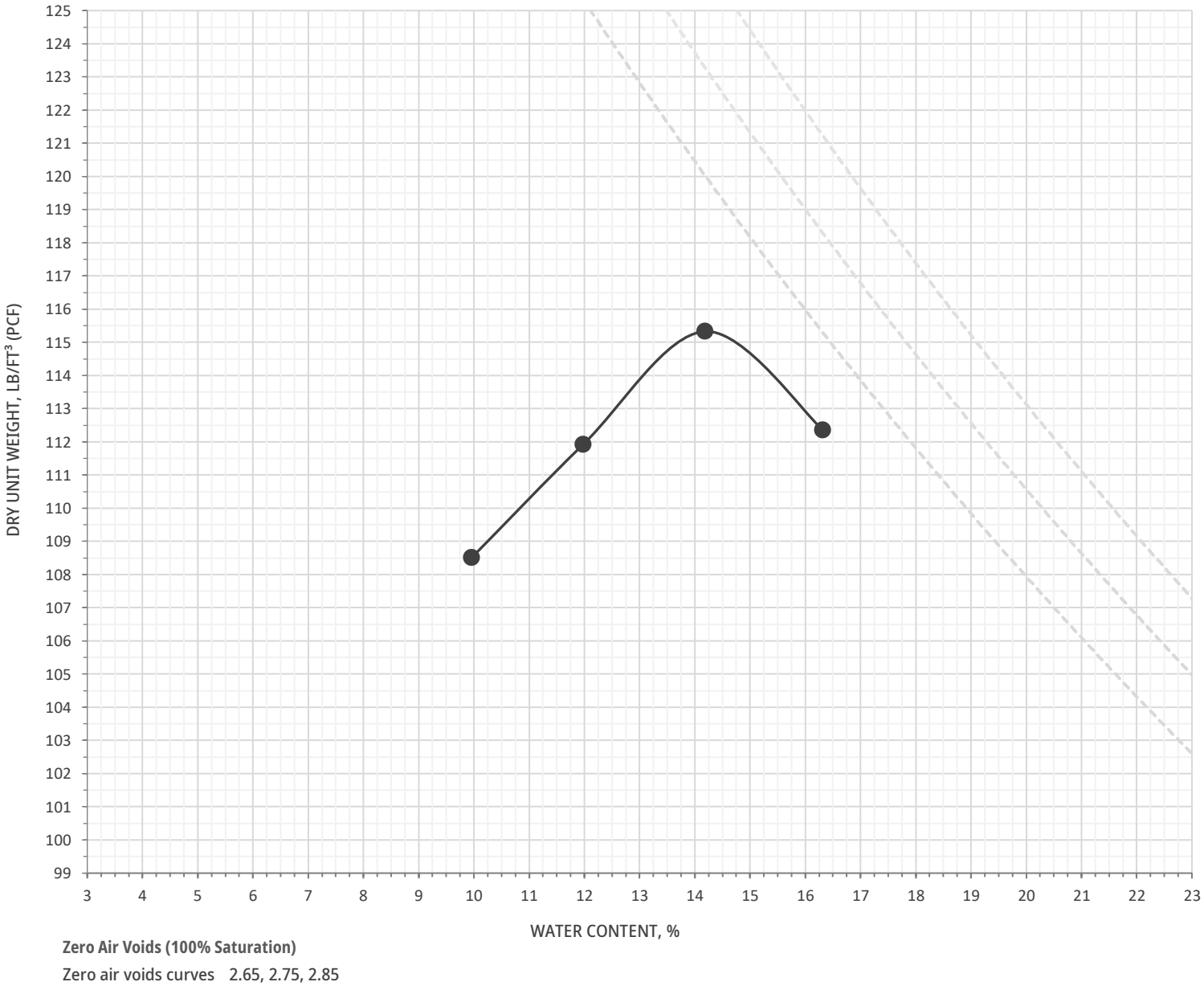
Oversized particles sieve: #4

Threshold for correction: >= 10.0%

	Uncorrected	*Corrected**
Maximum dry unit weight, lb/ft³	115.3	-
Optimum water content	14.2%	-

*Threshold not met for oversized particle correction

Maximum Dry Unit Weight	Optimum Water Content
115.3	14.2%
lb/ft³ (PCF)	



Zero Air Voids (100% Saturation)

Zero air voids curves 2.65, 2.75, 2.85

WC	LL	PL	PI	% Fines	USCS	AASHTO	Soil Description (D-2487)
16.9%	31%	18%	13%	64.7	CL	A-6	Brown sandy lean CLAY

Arlington County South Eads Park

Project Number: 01.05718.01

Jay Kay Testing, Inc.

Boring ID	Sample ID	Top	Btm
B-14	Bulk	0.3'	5.3'

Location: -

Sample Date: -

California Bearing Ratio of Laboratory-Compacted Soils (CBR)

Test Method: VTM-8, Compaction Method: VTM-1

	Uncorrected	*Corrected*
Soaked (96 hours) CBR at 0.1"	10.6%	-
Soaked (96 hours) CBR at 0.2"	11.3%	-

Surcharge, lb/ft^2	50
Target MDD, lb/ft^3	115.3
Target OMC	14.2%

CBR at 0.1"	CBR at 0.2"
10.6%	11.3%

Specimen Swell 0.49%

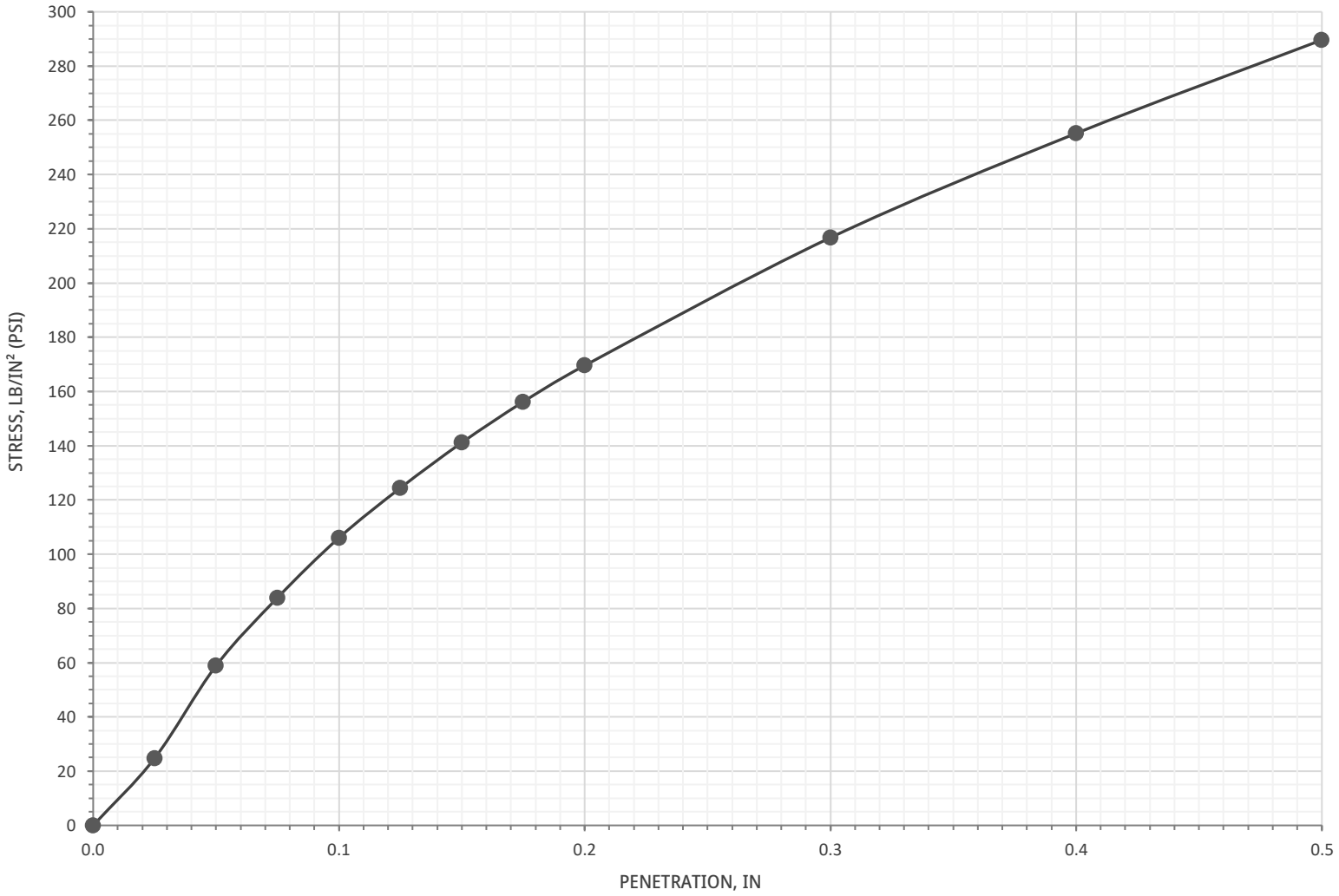
Specimen Data

AS-MOLDED

Dry unit weight, lb/ft^3	115.7	Blows per layer, #	56
Water content	13.9%	Achieved compaction	100.4%

AFTER-SOAK

Water content of top 1" layer 17.1%



WC	LL	PL	PI	% Fines	USCS	AASHTO	Soil Description (D-2487)
16.9%	31%	18%	13%	64.7	CL	A-6	Brown sandy lean CLAY

APPENDIX D INFILTRATION TESTING RESULTS

DMY ENGINEERING CONSULTANTS INC.

Project Name: Arlington County South Eads Park **DMY Project No.:** 01.05718.01

Boring ID: INF-1 **Test Date:** 03/18/2022

Aardvark Permeameters

Time interval between readings: 0.5 minute

Ksat Method: Earth Manual

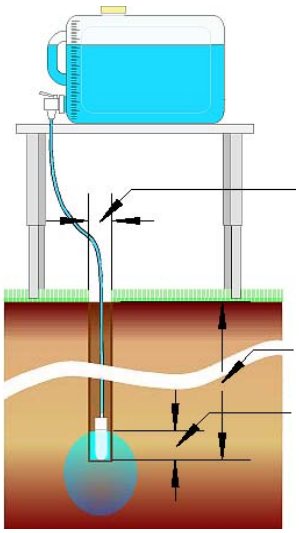
Steady Flow Rate Condition

Steady Flow Rate achieved when Water Consumption Rate changes less than

+/- 15 % for 3 consecutive readings

Steady Flow Rate:	6.267 ml/min
Temp. Adj. FR:	6.276 ml/min
Percolation Rate:	28.159 min/cm
Ksat:	0.19 Inches / hour

Notes:



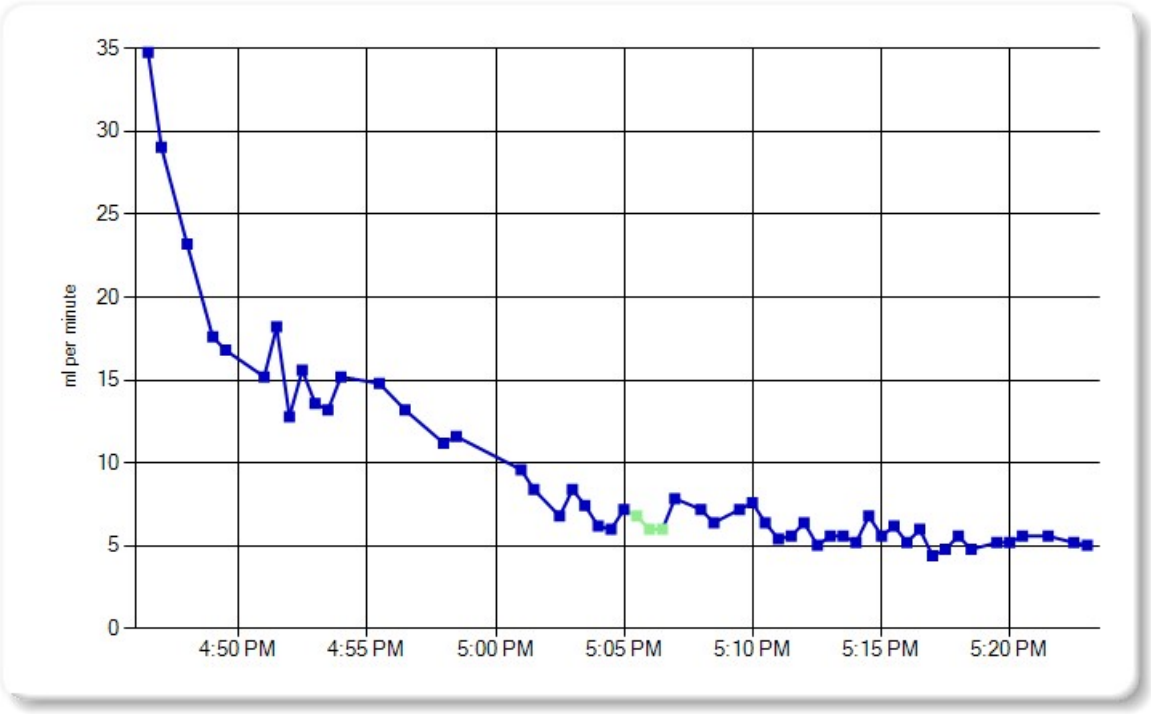
6.0 inches	Hole Diameter
65 ° F	Water Temperature
60 inches	Hole Depth
3.0 inches	Water Height in Hole
90 inches	Water Table Depth

Site GPS Position

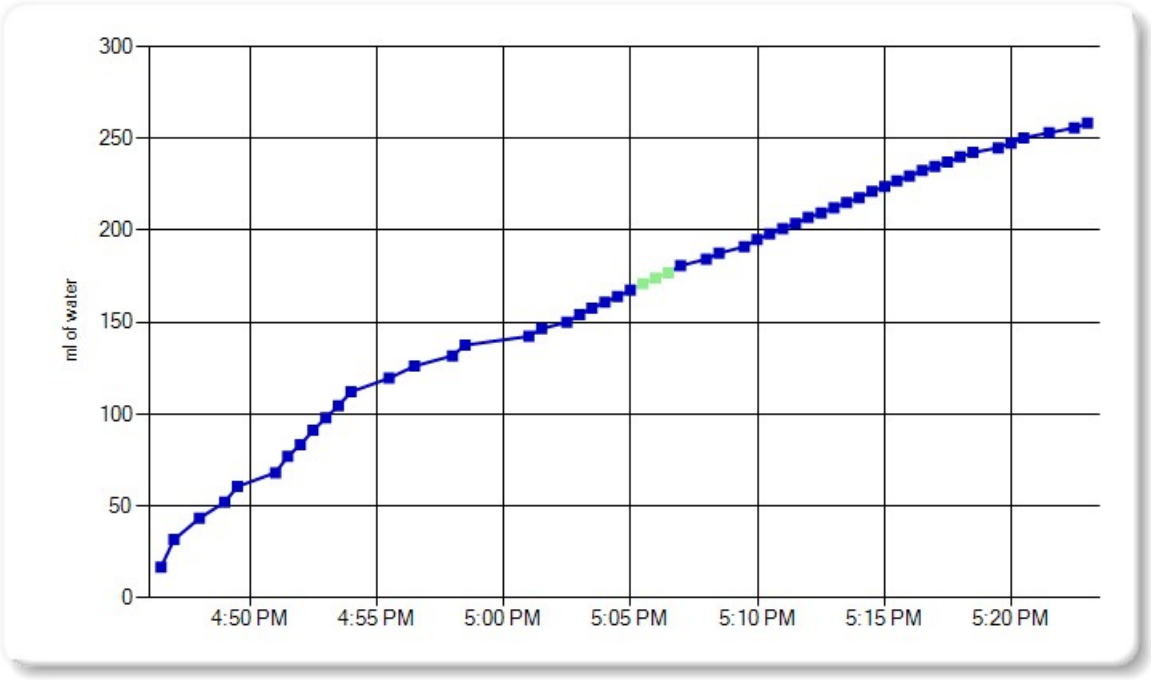
	Degrees	Minutes	Seconds	
Longitude:	0	0	0	East
Latitude:	0	0	0	North

Soil Texture-Structure Category:

Water Consumption Rate



Total Water Consumed



Time	Reservoir Water Level	Elapsed Time Interval	Interval Water Consumed	Total Water Consumed	Water Consumption Rate	Ignore Reading
4:45:29 PM	8444.6 ml	30 seconds				Yes
4:45:59 PM	8437.2 ml	30 seconds				Yes
4:46:28 PM	8420.4 ml	29 seconds	16.8 ml	16.8 ml	34.759 ml/min	
4:46:59 PM	8405.4 ml	31 seconds	15.0 ml	31.8 ml	29.032 ml/min	
4:47:29 PM	8394.2 ml	30 seconds				Yes
4:47:59 PM	8382.6 ml	30 seconds	11.6 ml	43.4 ml	23.200 ml/min	
4:48:29 PM	8372.6 ml	30 seconds				Yes
4:48:59 PM	8363.8 ml	30 seconds	8.8 ml	52.2 ml	17.600 ml/min	
4:49:29 PM	8355.4 ml	30 seconds	8.4 ml	60.6 ml	16.800 ml/min	
4:49:59 PM	8347.6 ml	30 seconds				Yes
4:50:29 PM	8338.8 ml	30 seconds				Yes
4:50:59 PM	8331.2 ml	30 seconds	7.6 ml	68.2 ml	15.200 ml/min	
4:51:28 PM	8322.4 ml	29 seconds	8.8 ml	77.0 ml	18.207 ml/min	
4:51:58 PM	8316.0 ml	30 seconds	6.4 ml	83.4 ml	12.800 ml/min	
4:52:28 PM	8308.2 ml	30 seconds	7.8 ml	91.2 ml	15.600 ml/min	
4:52:58 PM	8301.4 ml	30 seconds	6.8 ml	98.0 ml	13.600 ml/min	
4:53:28 PM	8294.8 ml	30 seconds	6.6 ml	104.6 ml	13.200 ml/min	
4:53:58 PM	8287.2 ml	30 seconds	7.6 ml	112.2 ml	15.200 ml/min	
4:54:28 PM	8280.0 ml	30 seconds				Yes
4:54:58 PM	8273.2 ml	30 seconds				Yes
4:55:28 PM	8265.8 ml	30 seconds	7.4 ml	119.6 ml	14.800 ml/min	
4:55:58 PM	8258.4 ml	30 seconds				Yes
4:56:28 PM	8251.8 ml	30 seconds	6.6 ml	126.2 ml	13.200 ml/min	
4:56:58 PM	8244.0 ml	30 seconds				Yes
4:57:28 PM	8236.8 ml	30 seconds				Yes
4:57:58 PM	8231.2 ml	30 seconds	5.6 ml	131.8 ml	11.200 ml/min	
4:58:28 PM	8225.4 ml	30 seconds	5.8 ml	137.6 ml	11.600 ml/min	
4:58:59 PM	8219.6 ml	31 seconds				Yes
4:59:28 PM	8213.6 ml	29 seconds				Yes
4:59:59 PM	8209.8 ml	31 seconds				Yes
5:00:29 PM	8203.2 ml	30 seconds				Yes
5:00:59 PM	8198.4 ml	30 seconds	4.8 ml	142.4 ml	9.600 ml/min	
5:01:29 PM	8194.2 ml	30 seconds	4.2 ml	146.6 ml	8.400 ml/min	
5:01:59 PM	8190.4 ml	30 seconds				Yes
5:02:29 PM	8187.0 ml	30 seconds	3.4 ml	150.0 ml	6.800 ml/min	
5:02:59 PM	8182.8 ml	30 seconds	4.2 ml	154.2 ml	8.400 ml/min	
5:03:28 PM	8179.2 ml	29 seconds	3.6 ml	157.8 ml	7.448 ml/min	
5:03:59 PM	8176.0 ml	31 seconds	3.2 ml	161.0 ml	6.194 ml/min	
5:04:29 PM	8173.0 ml	30 seconds	3.0 ml	164.0 ml	6.000 ml/min	
5:04:59 PM	8169.4 ml	30 seconds	3.6 ml	167.6 ml	7.200 ml/min	
5:05:29 PM	8166.0 ml	30 seconds	3.4 ml	171.0 ml	6.800 ml/min	
5:05:59 PM	8163.0 ml	30 seconds	3.0 ml	174.0 ml	6.000 ml/min	
5:06:29 PM	8160.0 ml	30 seconds	3.0 ml	177.0 ml	6.000 ml/min	
5:06:58 PM	8156.2 ml	29 seconds	3.8 ml	180.8 ml	7.862 ml/min	
5:07:29 PM	8153.4 ml	31 seconds				Yes

5:07:59 PM	8149.8 ml	30 seconds	3.6 ml	184.4 ml	7.200 ml/min	
5:08:29 PM	8146.6 ml	30 seconds	3.2 ml	187.6 ml	6.400 ml/min	
5:08:59 PM	8144.2 ml	30 seconds				Yes
5:09:29 PM	8140.6 ml	30 seconds	3.6 ml	191.2 ml	7.200 ml/min	
5:09:59 PM	8136.8 ml	30 seconds	3.8 ml	195.0 ml	7.600 ml/min	
5:10:29 PM	8133.6 ml	30 seconds	3.2 ml	198.2 ml	6.400 ml/min	
5:11:00 PM	8130.8 ml	31 seconds	2.8 ml	201.0 ml	5.419 ml/min	
5:11:30 PM	8128.0 ml	30 seconds	2.8 ml	203.8 ml	5.600 ml/min	
5:12:00 PM	8124.8 ml	30 seconds	3.2 ml	207.0 ml	6.400 ml/min	
5:12:31 PM	8122.2 ml	31 seconds	2.6 ml	209.6 ml	5.032 ml/min	
5:13:01 PM	8119.4 ml	30 seconds	2.8 ml	212.4 ml	5.600 ml/min	
5:13:31 PM	8116.6 ml	30 seconds	2.8 ml	215.2 ml	5.600 ml/min	
5:14:01 PM	8114.0 ml	30 seconds	2.6 ml	217.8 ml	5.200 ml/min	
5:14:31 PM	8110.6 ml	30 seconds	3.4 ml	221.2 ml	6.800 ml/min	
5:15:01 PM	8107.8 ml	30 seconds	2.8 ml	224.0 ml	5.600 ml/min	
5:15:30 PM	8104.8 ml	29 seconds	3.0 ml	227.0 ml	6.207 ml/min	
5:16:00 PM	8102.2 ml	30 seconds	2.6 ml	229.6 ml	5.200 ml/min	
5:16:30 PM	8099.2 ml	30 seconds	3.0 ml	232.6 ml	6.000 ml/min	
5:17:00 PM	8097.0 ml	30 seconds	2.2 ml	234.8 ml	4.400 ml/min	
5:17:30 PM	8094.6 ml	30 seconds	2.4 ml	237.2 ml	4.800 ml/min	
5:18:00 PM	8091.8 ml	30 seconds	2.8 ml	240.0 ml	5.600 ml/min	
5:18:30 PM	8089.4 ml	30 seconds	2.4 ml	242.4 ml	4.800 ml/min	
5:19:00 PM	8086.2 ml	30 seconds				Yes
5:19:30 PM	8083.6 ml	30 seconds	2.6 ml	245.0 ml	5.200 ml/min	
5:20:00 PM	8081.0 ml	30 seconds	2.6 ml	247.6 ml	5.200 ml/min	
5:20:30 PM	8078.2 ml	30 seconds	2.8 ml	250.4 ml	5.600 ml/min	
5:21:00 PM	8074.8 ml	30 seconds				Yes
5:21:30 PM	8072.0 ml	30 seconds	2.8 ml	253.2 ml	5.600 ml/min	
5:22:00 PM	8068.8 ml	30 seconds				Yes
5:22:30 PM	8066.2 ml	30 seconds	2.6 ml	255.8 ml	5.200 ml/min	
5:23:01 PM	8063.6 ml	31 seconds	2.6 ml	258.4 ml	5.032 ml/min	

DMY ENGINEERING CONSULTANTS INC.

Project Name: Arlington County South Eads Park **DMY Project No.:** 01.05718.01

Boring ID: INF-2 **Test Date:** 03/18/2022

Aardvark Permeameters

Time interval between readings: 1 minute

Ksat Method: Earth Manual

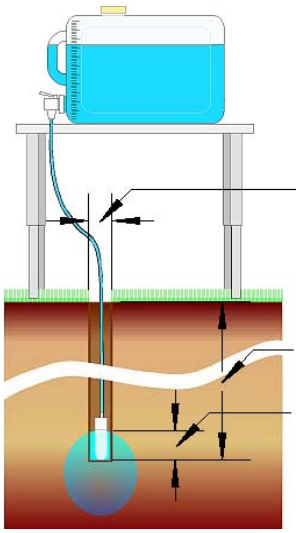
Steady Flow Rate Condition

Steady Flow Rate achieved when Water Consumption Rate changes less than

+/- 15 % for 3 consecutive readings

Steady Flow Rate:	41.130 ml/min
Temp. Adj. FR:	41.154 ml/min
Percolation Rate:	4.294 min/cm
Ksat:	1.34Inches / hour

Notes:



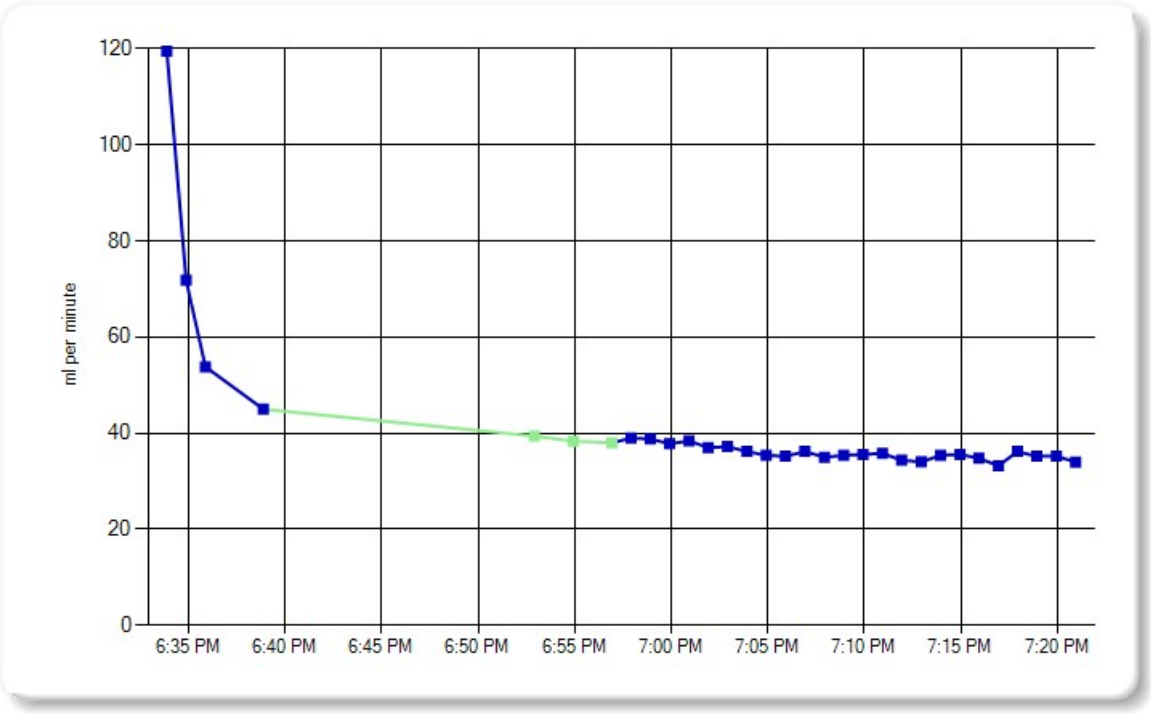
6.0 inches	Hole Diameter
55 ° F	Water Temperature
60 inches	Hole Depth
3.0 inches	Water Height in Hole
90 inches	Water Table Depth

Site GPS Position

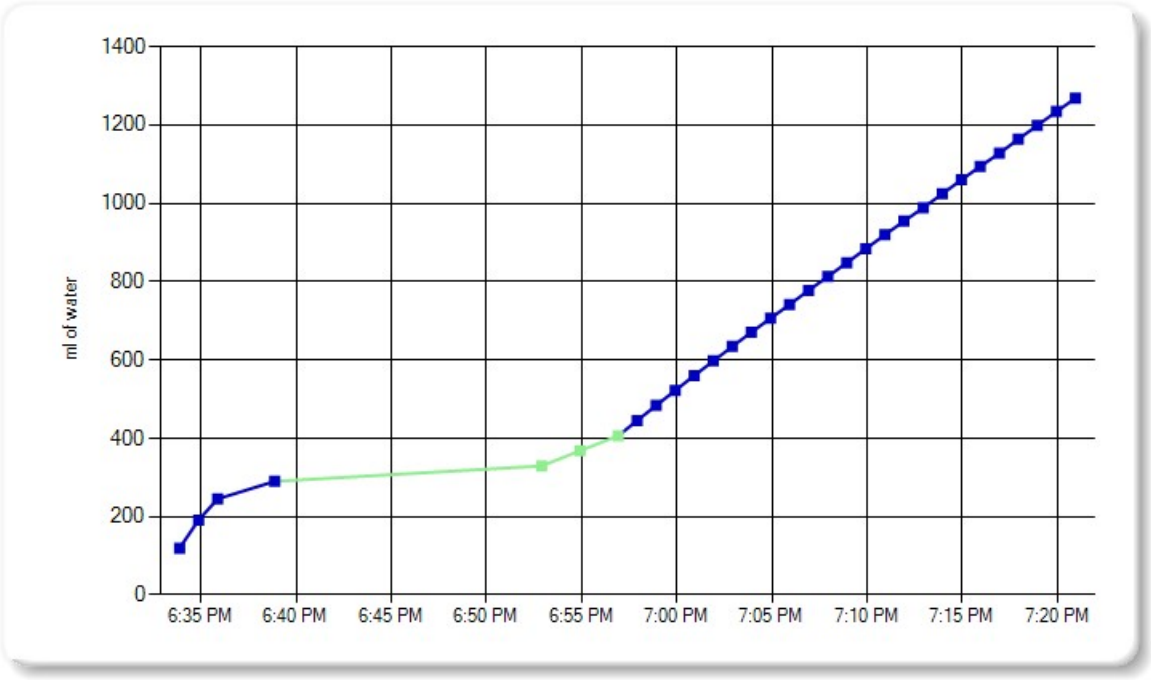
	Degrees	Minutes	Seconds	
Longitude:	0	0	0	East
Latitude:	0	0	0	North

Soil Texture-Structure Category:

Water Consumption Rate



Total Water Consumed



Time	Reservoir Water Level	Elapsed Time Interval	Interval Water Consumed	Total Water Consumed	Water Consumption Rate	Ignore Reading
6:31:52 PM	7960.4 ml					
6:32:52 PM	7857.0 ml	1 minute				Yes
6:33:52 PM	7737.6 ml	1 minute	119.4 ml	119.4 ml	119.400 ml/min	
6:34:52 PM	7665.8 ml	1 minute	71.8 ml	191.2 ml	71.800 ml/min	
6:35:52 PM	7612.0 ml	1 minute	53.8 ml	245.0 ml	53.800 ml/min	
6:36:52 PM	7563.2 ml	1 minute				Yes
6:37:52 PM	7515.4 ml	1 minute				Yes
6:38:52 PM	7470.4 ml	1 minute	45.0 ml	290.0 ml	45.000 ml/min	
6:39:52 PM	7427.2 ml	1 minute				Yes
6:40:53 PM	7382.8 ml	1 minute				Yes
6:41:53 PM	7340.0 ml	1 minute				Yes
6:42:53 PM	7296.4 ml	1 minute				Yes
6:43:53 PM	7254.4 ml	1 minute				Yes
6:44:53 PM	7211.8 ml	1 minute				Yes
6:45:53 PM	7169.0 ml	1 minute				Yes
6:46:53 PM	7128.4 ml	1 minute				Yes
6:47:53 PM	7088.2 ml	1 minute				Yes
6:48:54 PM	7047.4 ml	1 minute				Yes
6:49:54 PM	7006.2 ml	1 minute				Yes
6:50:54 PM	6964.8 ml	1 minute				Yes
6:51:54 PM	6924.2 ml	1 minute				Yes
6:52:54 PM	6884.8 ml	1 minute	39.4 ml	329.4 ml	39.400 ml/min	
6:53:54 PM	6843.6 ml	1 minute				Yes
6:54:55 PM	6804.6 ml	1 minute	39.0 ml	368.4 ml	38.361 ml/min	
6:55:55 PM	6766.0 ml	1 minute				Yes
6:56:55 PM	6728.0 ml	1 minute	38.0 ml	406.4 ml	38.000 ml/min	
6:57:55 PM	6689.0 ml	1 minute	39.0 ml	445.4 ml	39.000 ml/min	
6:58:55 PM	6650.2 ml	1 minute	38.8 ml	484.2 ml	38.800 ml/min	
6:59:55 PM	6612.4 ml	1 minute	37.8 ml	522.0 ml	37.800 ml/min	
7:00:55 PM	6574.0 ml	1 minute	38.4 ml	560.4 ml	38.400 ml/min	
7:01:55 PM	6537.0 ml	1 minute	37.0 ml	597.4 ml	37.000 ml/min	
7:02:55 PM	6499.8 ml	1 minute	37.2 ml	634.6 ml	37.200 ml/min	
7:03:55 PM	6463.6 ml	1 minute	36.2 ml	670.8 ml	36.200 ml/min	
7:04:55 PM	6428.2 ml	1 minute	35.4 ml	706.2 ml	35.400 ml/min	
7:05:55 PM	6393.0 ml	1 minute	35.2 ml	741.4 ml	35.200 ml/min	
7:06:55 PM	6356.8 ml	1 minute	36.2 ml	777.6 ml	36.200 ml/min	
7:07:56 PM	6321.2 ml	1 minute	35.6 ml	813.2 ml	35.016 ml/min	
7:08:56 PM	6285.8 ml	1 minute	35.4 ml	848.6 ml	35.400 ml/min	
7:09:56 PM	6250.2 ml	1 minute	35.6 ml	884.2 ml	35.600 ml/min	
7:10:56 PM	6214.4 ml	1 minute	35.8 ml	920.0 ml	35.800 ml/min	
7:11:56 PM	6180.0 ml	1 minute	34.4 ml	954.4 ml	34.400 ml/min	
7:12:57 PM	6145.4 ml	1 minute	34.6 ml	989.0 ml	34.033 ml/min	
7:13:57 PM	6110.0 ml	1 minute	35.4 ml	1024.4 ml	35.400 ml/min	
7:14:57 PM	6074.4 ml	1 minute	35.6 ml	1060.0 ml	35.600 ml/min	
7:15:56 PM	6040.2 ml	59 seconds	34.2 ml	1094.2 ml	34.780 ml/min	
7:16:57 PM	6006.4 ml	1 minute	33.8 ml	1128.0 ml	33.246 ml/min	
7:17:56 PM	5970.8 ml	59 seconds	35.6 ml	1163.6 ml	36.203 ml/min	

7:18:56 PM	5935.6 ml	1 minute	35.2 ml	1198.8 ml	35.200 ml/min
7:19:57 PM	5899.8 ml	1 minute	35.8 ml	1234.6 ml	35.213 ml/min
7:20:57 PM	5865.8 ml	1 minute	34.0 ml	1268.6 ml	34.000 ml/min

DMY ENGINEERING CONSULTANTS INC.

Project Name: Arlington County South Eads Park **DMY Project No.:** 01.05718.01

Boring ID: INF-3 **Test Date:** 03/21/2022

Aardvark Permeameters

Time interval between readings: 1 minute

Ksat Method: Earth Manual

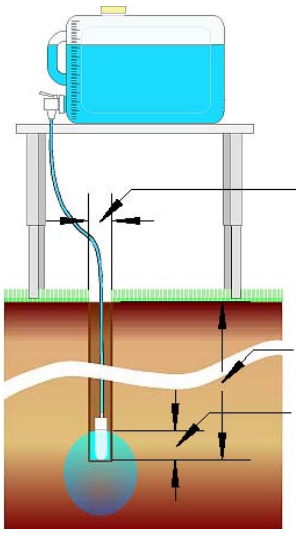
Steady Flow Rate Condition

Steady Flow Rate achieved when Water Consumption Rate changes less than

+/- 15 % for 3 consecutive readings

Steady Flow Rate:	18.767 ml/min
Temp. Adj. FR:	18.794 ml/min
Percolation Rate:	9.403 min/cm
Ksat:	0.55 Inches / hour

Notes:



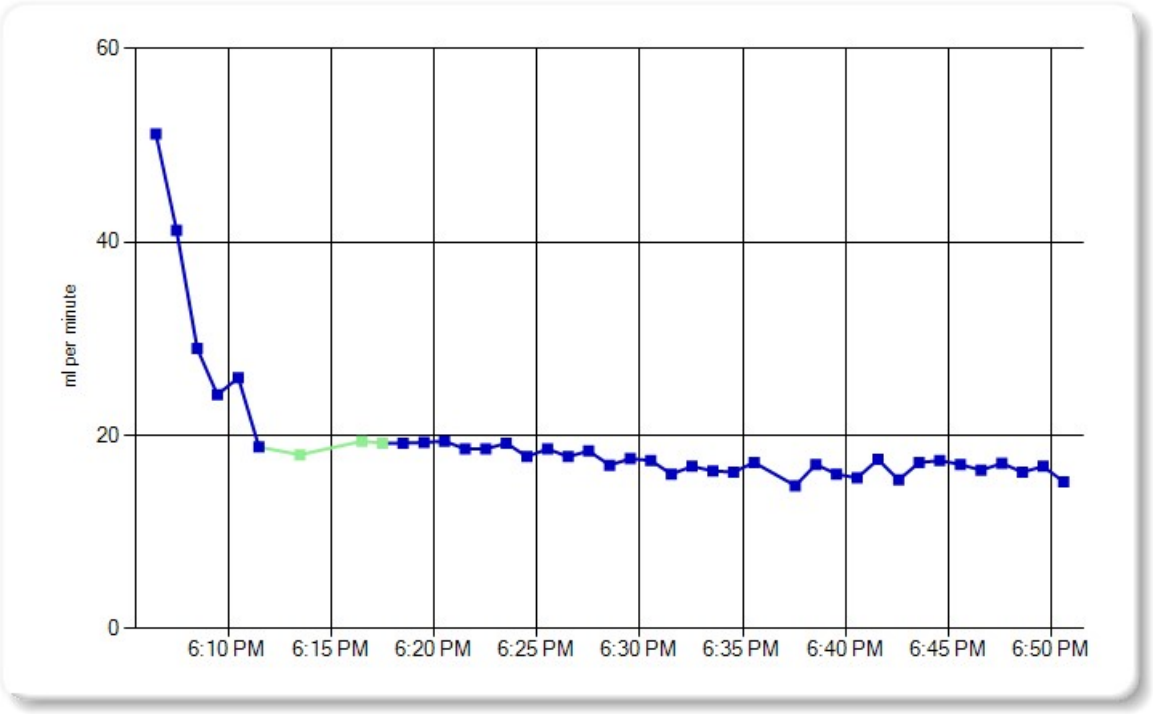
6.0 inches	Hole Diameter
65 ° F	Water Temperature
60 inches	Hole Depth
3.0 inches	Water Height in Hole
87 inches	Water Table Depth

Site GPS Position

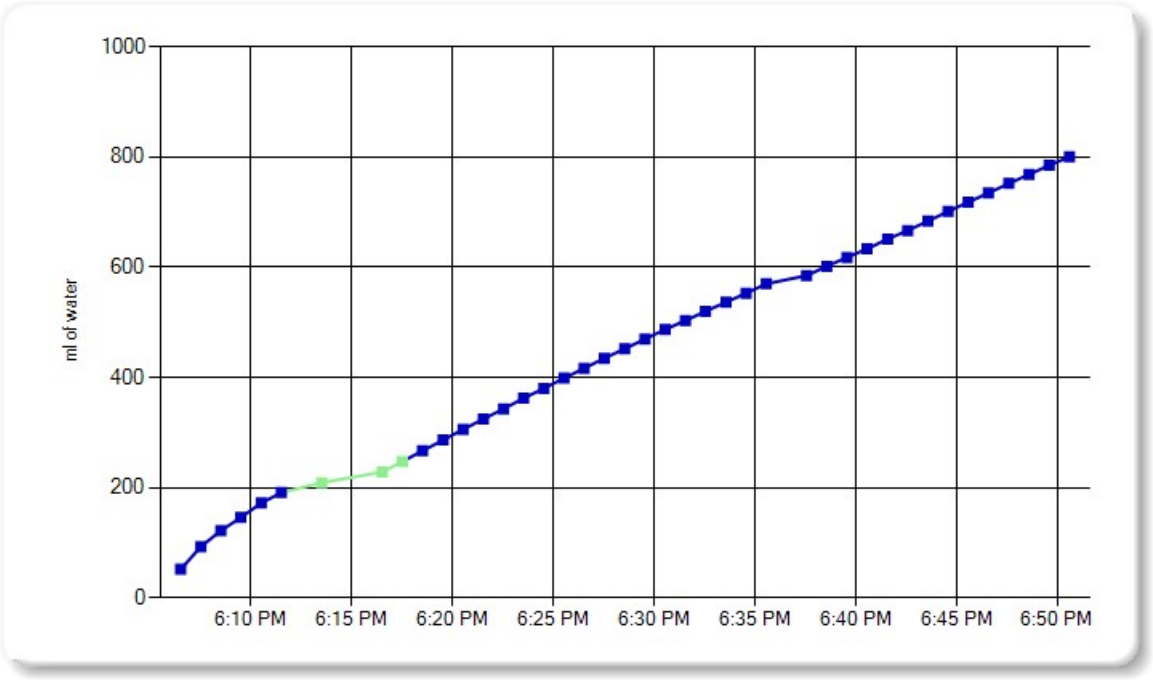
	Degrees	Minutes	Seconds	
Longitude:	0	0	0	East
Latitude:	0	0	0	North

Soil Texture-Structure Category:

Water Consumption Rate



Total Water Consumed



Time	Reservoir Water Level	Elapsed Time Interval	Interval Water Consumed	Total Water Consumed	Water Consumption Rate	Ignore Reading
6:04:29 PM	8376.4 ml					
6:05:29 PM	8303.0 ml	1 minute				Yes
6:06:30 PM	8251.0 ml	1 minute	52.0 ml	52.0 ml	51.148 ml/min	
6:07:30 PM	8209.8 ml	1 minute	41.2 ml	93.2 ml	41.200 ml/min	
6:08:30 PM	8180.8 ml	1 minute	29.0 ml	122.2 ml	29.000 ml/min	
6:09:29 PM	8157.0 ml	59 seconds	23.8 ml	146.0 ml	24.203 ml/min	
6:10:30 PM	8130.6 ml	1 minute	26.4 ml	172.4 ml	25.967 ml/min	
6:11:30 PM	8111.8 ml	1 minute	18.8 ml	191.2 ml	18.800 ml/min	
6:12:30 PM	8092.6 ml	1 minute				Yes
6:13:30 PM	8074.6 ml	1 minute	18.0 ml	209.2 ml	18.000 ml/min	
6:14:30 PM	8050.8 ml	1 minute				Yes
6:15:30 PM	8037.8 ml	1 minute				Yes
6:16:30 PM	8018.4 ml	1 minute	19.4 ml	228.6 ml	19.400 ml/min	
6:17:30 PM	7999.2 ml	1 minute	19.2 ml	247.8 ml	19.200 ml/min	
6:18:30 PM	7980.0 ml	1 minute	19.2 ml	267.0 ml	19.200 ml/min	
6:19:31 PM	7960.4 ml	1 minute	19.6 ml	286.6 ml	19.279 ml/min	
6:20:31 PM	7941.0 ml	1 minute	19.4 ml	306.0 ml	19.400 ml/min	
6:21:31 PM	7922.4 ml	1 minute	18.6 ml	324.6 ml	18.600 ml/min	
6:22:31 PM	7903.8 ml	1 minute	18.6 ml	343.2 ml	18.600 ml/min	
6:23:31 PM	7884.6 ml	1 minute	19.2 ml	362.4 ml	19.200 ml/min	
6:24:31 PM	7866.8 ml	1 minute	17.8 ml	380.2 ml	17.800 ml/min	
6:25:31 PM	7848.2 ml	1 minute	18.6 ml	398.8 ml	18.600 ml/min	
6:26:31 PM	7830.4 ml	1 minute	17.8 ml	416.6 ml	17.800 ml/min	
6:27:31 PM	7812.0 ml	1 minute	18.4 ml	435.0 ml	18.400 ml/min	
6:28:32 PM	7794.8 ml	1 minute	17.2 ml	452.2 ml	16.918 ml/min	
6:29:32 PM	7777.2 ml	1 minute	17.6 ml	469.8 ml	17.600 ml/min	
6:30:32 PM	7759.8 ml	1 minute	17.4 ml	487.2 ml	17.400 ml/min	
6:31:32 PM	7743.8 ml	1 minute	16.0 ml	503.2 ml	16.000 ml/min	
6:32:32 PM	7727.0 ml	1 minute	16.8 ml	520.0 ml	16.800 ml/min	
6:33:33 PM	7710.4 ml	1 minute	16.6 ml	536.6 ml	16.328 ml/min	
6:34:33 PM	7694.2 ml	1 minute	16.2 ml	552.8 ml	16.200 ml/min	
6:35:33 PM	7677.0 ml	1 minute	17.2 ml	570.0 ml	17.200 ml/min	
6:36:33 PM	7656.8 ml	1 minute				Yes
6:37:33 PM	7642.0 ml	1 minute	14.8 ml	584.8 ml	14.800 ml/min	
6:38:33 PM	7625.0 ml	1 minute	17.0 ml	601.8 ml	17.000 ml/min	
6:39:33 PM	7609.0 ml	1 minute	16.0 ml	617.8 ml	16.000 ml/min	
6:40:33 PM	7593.4 ml	1 minute	15.6 ml	633.4 ml	15.600 ml/min	
6:41:34 PM	7575.6 ml	1 minute	17.8 ml	651.2 ml	17.508 ml/min	
6:42:34 PM	7560.2 ml	1 minute	15.4 ml	666.6 ml	15.400 ml/min	
6:43:34 PM	7543.0 ml	1 minute	17.2 ml	683.8 ml	17.200 ml/min	
6:44:34 PM	7525.6 ml	1 minute	17.4 ml	701.2 ml	17.400 ml/min	
6:45:34 PM	7508.6 ml	1 minute	17.0 ml	718.2 ml	17.000 ml/min	
6:46:34 PM	7492.2 ml	1 minute	16.4 ml	734.6 ml	16.400 ml/min	
6:47:35 PM	7474.8 ml	1 minute	17.4 ml	752.0 ml	17.115 ml/min	
6:48:35 PM	7458.6 ml	1 minute	16.2 ml	768.2 ml	16.200 ml/min	
6:49:35 PM	7441.8 ml	1 minute	16.8 ml	785.0 ml	16.800 ml/min	
6:50:35 PM	7426.6 ml	1 minute	15.2 ml	800.2 ml	15.200 ml/min	

Aardvark Permeameters

Location: Arlington County South Eads Park

Site: INF4

Time interval between readings: 1 minute

Ksat Method: Earth Manual

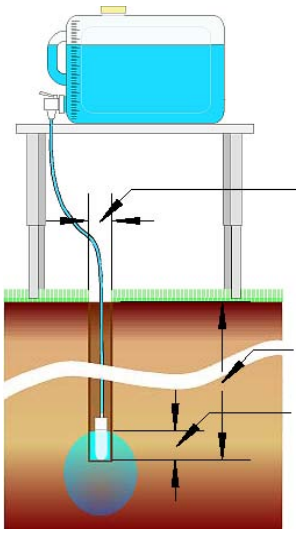
Steady Flow Rate Condition

Steady Flow Rate achieved when Water Consumption Rate changes less than

+/- 15 % for 3 consecutive readings

Steady Flow Rate:	6.333 ml/min
Temp. Adj. FR:	6.334 ml/min
Percolation Rate:	27.898 min/cm
Ksat:	0.26 Inches / hour

Notes:



6.0 inches	Hole Diameter
47.0 ° F	Water Temperature
60 inches	Hole Depth
3.0. inches	Water Height in Hole
156 inches	Water Table Depth

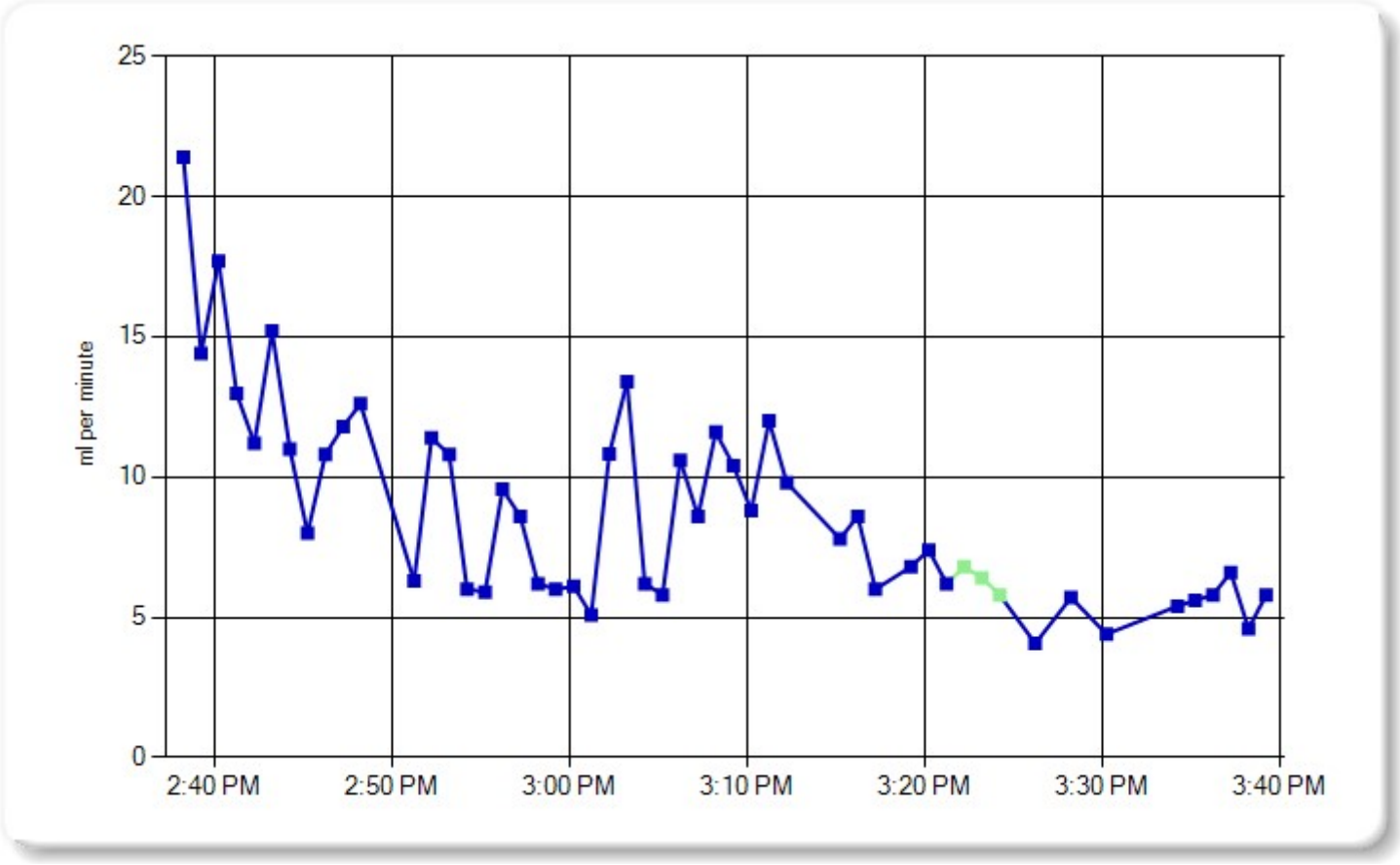
Site GPS Position

	Degrees	Minutes	Seconds	
Longitude:	0	0	0	East
Latitude:	0	0	0	North

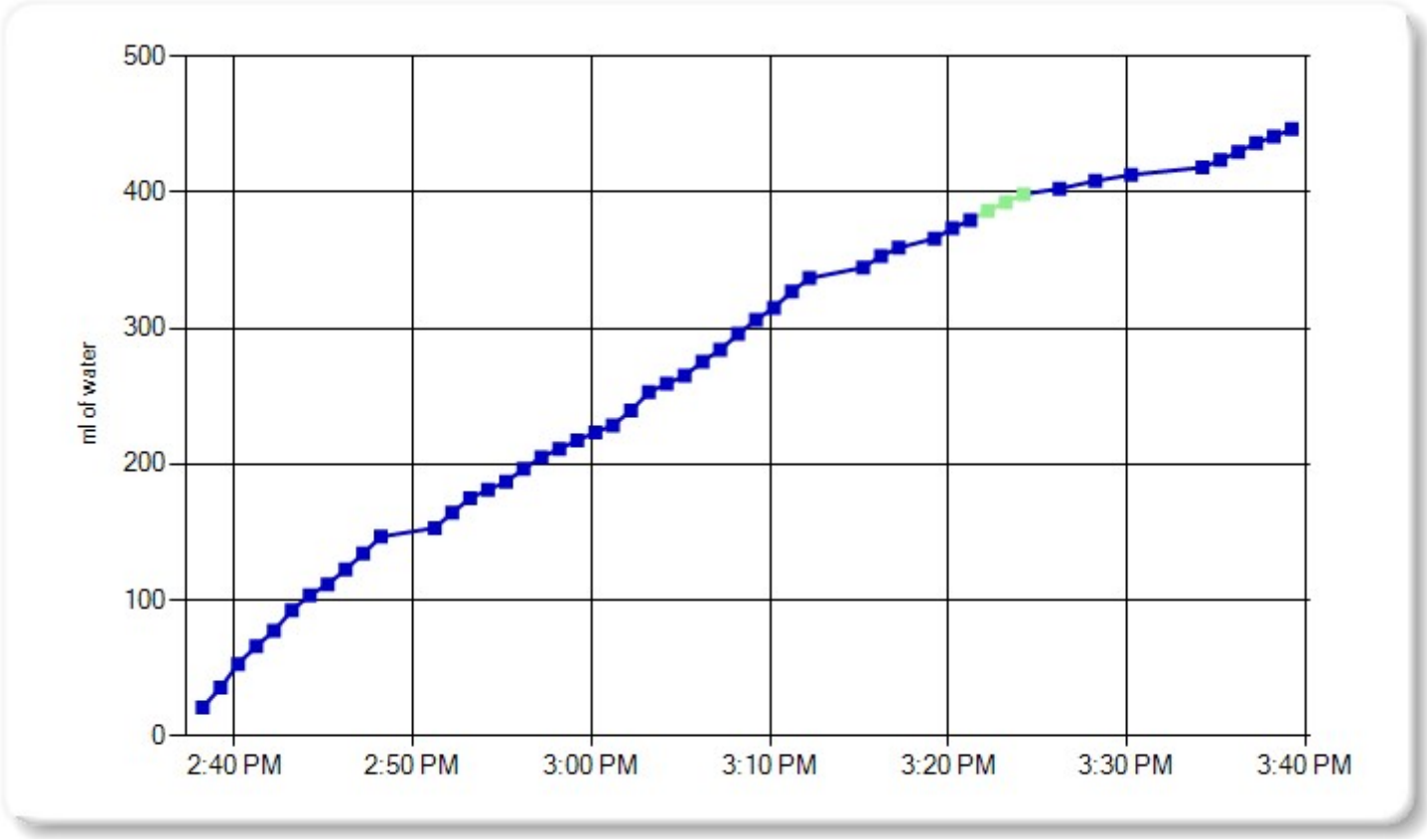
Soil Texture-Structure Category:

Compacted, structure-less, clayey or silty materials such as landfill caps and liner, lacustrine or marine sediments, etc.

Water Consumption Rate



Total Water Consumed



Time	Reservoir Water Level	Elapsed Time Interval	Interval Water Consumed	Total Water Consumed	Water Consumption Rate	Ignore Reading
2:37:12 PM	9078.0 ml					
2:38:12 PM	9056.6 ml	1 minute	21.4 ml	21.4 ml	21.400 ml/min	
2:39:12 PM	9042.2 ml	1 minute	14.4 ml	35.8 ml	14.400 ml/min	
2:40:11 PM	9024.8 ml	59 seconds	17.4 ml	53.2 ml	17.695 ml/min	
2:41:12 PM	9011.6 ml	1 minute	13.2 ml	66.4 ml	12.984 ml/min	
2:42:12 PM	9000.4 ml	1 minute	11.2 ml	77.6 ml	11.200 ml/min	
2:43:12 PM	8985.2 ml	1 minute	15.2 ml	92.8 ml	15.200 ml/min	
2:44:12 PM	8974.2 ml	1 minute	11.0 ml	103.8 ml	11.000 ml/min	
2:45:12 PM	8966.2 ml	1 minute	8.0 ml	111.8 ml	8.000 ml/min	
2:46:12 PM	8955.4 ml	1 minute	10.8 ml	122.6 ml	10.800 ml/min	
2:47:12 PM	8943.6 ml	1 minute	11.8 ml	134.4 ml	11.800 ml/min	
2:48:11 PM	8931.2 ml	59 seconds	12.4 ml	146.8 ml	12.610 ml/min	
2:49:11 PM	8918.8 ml	1 minute				Yes
2:50:11 PM	8907.4 ml	1 minute				Yes
2:51:12 PM	8901.0 ml	1 minute	6.4 ml	153.2 ml	6.295 ml/min	
2:52:11 PM	8889.8 ml	59 seconds	11.2 ml	164.4 ml	11.390 ml/min	
2:53:11 PM	8879.0 ml	1 minute	10.8 ml	175.2 ml	10.800 ml/min	
2:54:11 PM	8873.0 ml	1 minute	6.0 ml	181.2 ml	6.000 ml/min	
2:55:12 PM	8867.0 ml	1 minute	6.0 ml	187.2 ml	5.902 ml/min	
2:56:11 PM	8857.6 ml	59 seconds	9.4 ml	196.6 ml	9.559 ml/min	
2:57:11 PM	8849.0 ml	1 minute	8.6 ml	205.2 ml	8.600 ml/min	
2:58:11 PM	8842.8 ml	1 minute	6.2 ml	211.4 ml	6.200 ml/min	
2:59:11 PM	8836.8 ml	1 minute	6.0 ml	217.4 ml	6.000 ml/min	
3:00:12 PM	8830.6 ml	1 minute	6.2 ml	223.6 ml	6.098 ml/min	
3:01:11 PM	8825.6 ml	59 seconds	5.0 ml	228.6 ml	5.085 ml/min	
3:02:12 PM	8814.6 ml	1 minute	11.0 ml	239.6 ml	10.820 ml/min	
3:03:12 PM	8801.2 ml	1 minute	13.4 ml	253.0 ml	13.400 ml/min	
3:04:12 PM	8795.0 ml	1 minute	6.2 ml	259.2 ml	6.200 ml/min	
3:05:12 PM	8789.2 ml	1 minute	5.8 ml	265.0 ml	5.800 ml/min	
3:06:12 PM	8778.6 ml	1 minute	10.6 ml	275.6 ml	10.600 ml/min	
3:07:12 PM	8770.0 ml	1 minute	8.6 ml	284.2 ml	8.600 ml/min	
3:08:12 PM	8758.4 ml	1 minute	11.6 ml	295.8 ml	11.600 ml/min	
3:09:12 PM	8748.0 ml	1 minute	10.4 ml	306.2 ml	10.400 ml/min	
3:10:12 PM	8739.2 ml	1 minute	8.8 ml	315.0 ml	8.800 ml/min	
3:11:12 PM	8727.2 ml	1 minute	12.0 ml	327.0 ml	12.000 ml/min	
3:12:12 PM	8717.4 ml	1 minute	9.8 ml	336.8 ml	9.800 ml/min	
3:13:12 PM	8708.6 ml	1 minute				Yes
3:14:12 PM	8699.8 ml	1 minute				Yes
3:15:12 PM	8692.0 ml	1 minute	7.8 ml	344.6 ml	7.800 ml/min	
3:16:12 PM	8683.4 ml	1 minute	8.6 ml	353.2 ml	8.600 ml/min	
3:17:12 PM	8677.4 ml	1 minute	6.0 ml	359.2 ml	6.000 ml/min	
3:18:12 PM	8669.8 ml	1 minute				Yes
3:19:12 PM	8663.0 ml	1 minute	6.8 ml	366.0 ml	6.800 ml/min	
3:20:12 PM	8655.6 ml	1 minute	7.4 ml	373.4 ml	7.400 ml/min	
3:21:12 PM	8649.4 ml	1 minute	6.2 ml	379.6 ml	6.200 ml/min	
3:22:12 PM	8642.6 ml	1 minute	6.8 ml	386.4 ml	6.800 ml/min	
3:23:12 PM	8636.2 ml	1 minute	6.4 ml	392.8 ml	6.400 ml/min	

3:24:12 PM	8630.4 ml	1 minute	5.8 ml	398.6 ml	5.800 ml/min	
3:25:13 PM	8622.4 ml	1 minute				Yes
3:26:12 PM	8618.4 ml	59 seconds	4.0 ml	402.6 ml	4.068 ml/min	
3:27:12 PM	8610.2 ml	1 minute				Yes
3:28:13 PM	8604.4 ml	1 minute	5.8 ml	408.4 ml	5.705 ml/min	
3:29:13 PM	8602.0 ml	1 minute				Yes
3:30:13 PM	8597.6 ml	1 minute	4.4 ml	412.8 ml	4.400 ml/min	
3:31:13 PM	8590.4 ml	1 minute				Yes
3:32:13 PM	8577.8 ml	1 minute				Yes
3:33:13 PM	8570.0 ml	1 minute				Yes
3:34:13 PM	8564.6 ml	1 minute	5.4 ml	418.2 ml	5.400 ml/min	
3:35:13 PM	8559.0 ml	1 minute	5.6 ml	423.8 ml	5.600 ml/min	
3:36:13 PM	8553.2 ml	1 minute	5.8 ml	429.6 ml	5.800 ml/min	
3:37:13 PM	8546.6 ml	1 minute	6.6 ml	436.2 ml	6.600 ml/min	
3:38:13 PM	8542.0 ml	1 minute	4.6 ml	440.8 ml	4.600 ml/min	
3:39:13 PM	8536.2 ml	1 minute	5.8 ml	446.6 ml	5.800 ml/min	
3:40:13 PM	8527.8 ml	1 minute				Yes
3:41:13 PM	8530.2 ml	1 minute				Yes