

SUBMITTED VIA ONBASE

March 24, 2023

Mr. Michael Powers, Environmental Protection Specialist
Bureau of Environmental Cleanup and Brownfields – Division of Storage Tanks
Southeast Regional Office
Pennsylvania Department of Environmental Protection
2 East Main Street
Norristown, PA 19401

Subject: Covanta Delaware Valley, L.P.
Delaware Valley Resource Recovery Facility (DVRRF)
Storage Tank Facility ID: [REDACTED]
Storage Tank Site Specific Installation Permit – SNCR Project

Dear Mr. Powers:

In accordance with 25 Pa Code Chapter 245.231, Covanta Delaware Valley, LP (Covanta) is submitting a Site Specific Installation Permit (SSIP) Application for the installation of an ammonia (19% conc.) 35,000-gallon storage tank required to operate the Selective Non-Catalytic Reduction (SNCR) air pollution control device (APCD). The permitting and installation of this APCD is required for Covanta to comply with 25 Pa Code Chapter 129 (Additional RACT Requirements for Major Sources of NOx and VOCs for the 2015 Ozone NAAQS, or RACT III) that went into effect on January 1, 2023. Additional permitting approvals are also being sought from PADEP Air Quality Management and Bureau of Solid Waste as well.

If you have any questions regarding the information provided, please contact me at lsmith2@covanta.com or Kim Bradford at kbradford@covanta.com.

Sincerely,

Larry A. Smith

cc:

File- Delaware Valley Air Quality eFiles

Storage Tank Site Specific Installation Permit

NOTE: Locational information is redacted throughout this publicly available application due to the DEP Access to Sensitive Information Policy, which restricts the providing of locational information for large aboveground storage tanks. The complete application package may be viewed by scheduling a file review at the DEP Southeast Regional Office.

Prepared for
Covanta Delaware Valley, L.P.


Delaware County, Pennsylvania

March 2023

Storage Tank Site Specific Installation Permit
Covanta Delaware Valley, L.P., Delaware County, PA

March 2023

Prepared for
Covanta Delaware Valley, L.P.
[REDACTED]
Chester, Pennsylvania 19013

Prepared by
Barton & Loguidice, DPC
3901 Hartzdale Drive
Camp Hill, Pennsylvania 17011

TABLE OF CONTENTS

Application Checklist	
GIF Checklist	
GIF-General Information Form	
Site Specific Installation Permit Form Part I	
Site Specific Installation Permit Form Part II	
Attachments	
Public Notifications	
EERP Plan	
Compliance History Certification	
Plot Plan	
Tank Drawings	
Topographic Map	
Flood Map	
Wetlands Inventory Map	
Geological Evaluation/Map	
Environmental Assessment	
Scenic Rivers Map	
Soil Map	
Geotechnical Report	
Copy of Application Check	

Application Checklist



STORAGE TANK SITE SPECIFIC INSTALLATION PERMIT (SSIP) APPLICATION COMPLETENESS REVIEW CHECKLIST

<input checked="" type="checkbox"/>	PERMIT APPLICATION PARTS I AND II <ul style="list-style-type: none"> - Two full copies of the SSIP application package - Certification statements in Part I, Section VI must be hand-initialed - SSIP Application Part I signed by applicant - SSIP Application Page 3 sealed by PA-licensed professional - Proper application fee submitted, check made payable to Commonwealth of Pennsylvania
<input checked="" type="checkbox"/>	GENERAL INFORMATION FORM (GIF) <ul style="list-style-type: none"> - All sections completed; signed by appropriate individual - All questions answered; additional information provided when needed - Section G – Time Schedules provided
<input checked="" type="checkbox"/>	NOTIFICATION LETTERS TO COUNTY AND MUNICIPALITY <ul style="list-style-type: none"> - Proof of receipt for each letter - Letters must inform the county and municipality of the facility location, the proposed installation of storage tanks, and the submittal of the SSIP application to DEP
<input checked="" type="checkbox"/>	CURRENT SPILL PREVENTION & RESPONSE PLAN (SPRP) <ul style="list-style-type: none"> - Submitted with the SSIP application (preferred) or submitted directly to the DEP Regional Office
<input checked="" type="checkbox"/>	MAPPING <u>PLOT PLAN</u> <ul style="list-style-type: none"> - Seal of PA-registered Professional Engineer, Geologist, or Land Surveyor - Facility boundaries - Facility name - Tank locations - Public roads - Streams, lakes, other watercourses - Municipality and county name - Latitude/Longitude of tank systems (may be on topographic map) - Scale of no less than one inch to 400 feet - Locations of any test borings and/or monitoring wells
<input checked="" type="checkbox"/>	<u>TOPOGRAPHIC MAP</u> <ul style="list-style-type: none"> - Facility name - Municipality and county name - Facility boundaries - Approximate tank locations - Quadrangle name - Surface drainage courses not obvious from the map - Location and ownership of public and private groundwater wells within 2,500 feet of the facility
<input checked="" type="checkbox"/>	GEOTECHNICAL ANALYSIS (if required – see SSIP instructions) <ul style="list-style-type: none"> - Sealed by an appropriate PA-registered professional
<input checked="" type="checkbox"/>	ENVIRONMENTAL ASSESSMENT (if required – see SSIP instructions) <ul style="list-style-type: none"> - Discussion and documentation of each of the areas identified in the SSIP instructions

General Information Form Checklist



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

GENERAL INFORMATION FORM -- AUTHORIZATION APPLICATION APPLICANT'S CHECKLIST

This final checklist is to assist the applicant in assuring that all requests for responses, contacts, additional documentation, etc. have been addressed. Please check the following list to make sure that you have included all the required information. Failure to provide all of the requested information will delay the processing of the application and may result in the application being placed on hold with no action, or will be considered withdrawn and the application file closed. This applicant's checklist need not be returned to DEP with your completed application.

REQUIREMENTS	
<input checked="" type="checkbox"/>	1. ATTACHMENTS. The completion of the GIF may require the submission of some or all of the following. Where appropriate, include the appropriate attachment(s) with the completed GIF.
<input checked="" type="checkbox"/>	a) Site Information, Written Directions to Site – Attach additional sheets as necessary.
<input checked="" type="checkbox"/>	b) Facility Information, Latitude/Longitude – Attach additional sheets as necessary.
<input checked="" type="checkbox"/>	c) Project Information, Project Description – Attach additional sheets as necessary.
<input checked="" type="checkbox"/>	d) Project Information, Time Schedules -- Attach additional sheets as necessary.
<input checked="" type="checkbox"/>	e) Land Use Information – Please attached completed County and Municipal Land Use Letters. If County and Municipal Land Use Letters are not included, please attach documentation indicating zoning approval (for early opt-out option), or certified mail receipts indicating that requests for County and Municipal Land Use Letters were sent to the county and municipality. For more information, see GIF Instructions and the Department's Policy for Consideration of Local Comprehensive Plans and Zoning Ordinances in DEP Review of Authorizations for Facilities and Infrastructure – Document ID: 012-0200-001.
<input type="checkbox"/>	f) Coordination Information - If land is disturbed, it may be the applicant's responsibility to also notify the PA Historical and Museum Commission, Bureau of Historic Preservation, 400 North Street, Floor 2, Harrisburg, PA 17120-0093, (717) 787-3362.
	PHMC notification is required for construction activities that have not been exempted under DEP's Policy for PHMC and DEP Coordination During Permit Application Review and Evaluation of Historic Resources :
	For additional information, see Project Review Form instructions to determine whether submission of information to PHMC is required for this permit application.
<input type="checkbox"/>	g) Coordination Information, Question 9.0.1 – Attach copy – Act 537 Approval Letter. <u>Note</u> : Approval required prior to 105/NPDES approval.
<input type="checkbox"/>	h) Coordination Information, Question 16.0.2 – Attach copy – Public Water Supplier's Agreement Letter to Serve the Project.
<input checked="" type="checkbox"/>	2. CONTACTS MADE. According to information provided in the Coordination Information section, the appropriate DEP office may need to be contacted; as well as some agencies outside DEP. See the Instructions document for appropriate contact per coordination question.
	In addition to contacts referenced above, prior to proceeding with any project, DEP encourages applicants to be in touch with municipal and county governments to get information on and secure, if possible, any local permits or approvals that might be required for the project. By doing so, potential conflicts at the local level can be resolved prior to application submission to DEP.
<input checked="" type="checkbox"/>	3. BEFORE YOU DIG -- CONTACT. Pennsylvania One Call System at 1-800-242-1776.
<input checked="" type="checkbox"/>	4. APPLICATION SUBMITTED. Application has been completed and properly signed according to instructions and type codes; and will be submitted to the appropriate DEP office.

Form GIF
General Information Form



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

GENERAL INFORMATION FORM – AUTHORIZATION APPLICATION

Before completing this General Information Form (GIF), read the step-by-step instructions provided in this application package. This form is used by the Department of Environmental Protection (DEP) to inform our programs regarding what other DEP permits or authorizations may be needed for the proposed project or activity. This version of the General Information Form (GIF) must be completed and returned with any program-specific application being submitted to the DEP.

Related ID#s (If Known) Client ID# 94120 APS ID# 1086100 Site ID# [REDACTED] Auth ID# 1435474 Facility ID# [REDACTED]		DEP USE ONLY Date Received & General Notes SSIP 23001
--	--	---

CLIENT INFORMATION

DEP Client ID# 94120	Client Type / Code LLP	Dun & Bradstreet ID# 129835265	
Legal Organization Name or Registered Fictitious Name Covanta Delaware Valley, L.P.		Employer ID# (EIN) 76-0531017	Is the EIN a SSN? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> NO
State of Incorporation or Registration of Fictitious Name Pennsylvania		<input type="checkbox"/> Corporation <input type="checkbox"/> LLC <input type="checkbox"/> Partnership <input type="checkbox"/> LLP <input checked="" type="checkbox"/> LP <input type="checkbox"/> Sole Proprietorship <input type="checkbox"/> Association/Organization <input type="checkbox"/> Estate/Trust <input type="checkbox"/> Other	
Individual Last Name	First Name	MI	Suffix
Additional Individual Last Name	First Name	MI	Suffix
Mailing Address Line 1 [REDACTED]		Mailing Address Line 2	
Address Last Line – City Chester	State PA	ZIP+4 19013	Country USA
Client Contact Last Name Smith	First Name Larry	MI	Suffix
Client Contact Title Facility Manager	Phone 610-497-8116	Ext	Cell Phone
Email Address lsmith2@covanta.com	FAX		

SITE INFORMATION

DEP Site ID# [REDACTED]	Site Name Delaware Valley Resource Recovery Facility		
EPA ID# [REDACTED]	Estimated Number of Employees to be Present at Site		107
Description of Site Energy-from-Waste facility that processes municipal and approved residual waste to generate electricity and recover metals.			
Tax Parcel ID(s): [REDACTED]			
County Name(s)	Municipality(ies)	City	Boro
Delaware	Chester	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
Site Location Line 1 [REDACTED]		Site Location Line 2	
Site Location Last Line – City Chester	State PA	ZIP+4 19013	
Detailed Written Directions to Site			

[REDACTED]

Site Contact Last Name Smith	First Name Larry	MI	Suffix
Site Contact Title Facility Manager		Site Contact Firm Covanta Delaware Valley LP	
Mailing Address Line 1 [REDACTED]		Mailing Address Line 2	
Mailing Address Last Line – City Chester		State PA	ZIP+4 19013
Phone 610-497-8116	Ext	FAX	Email Address lsmith2@covanta.com
NAICS Codes (Two- & Three-Digit Codes – List All That Apply) 56			6-Digit Code (Optional) 562213
Client to Site Relationship OWNOP			

FACILITY INFORMATION

Modification of Existing Facility

- | | | | |
|----|---|-------------------------------------|--------------------------|
| | | Yes | No |
| 1. | Will this project modify an existing facility, system, or activity? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. | Will this project involve an addition to an existing facility, system, or activity? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
- If "Yes", check all relevant facility types and provide DEP facility identification numbers below.

Facility Type	DEP Fac ID#	Facility Type	DEP Fac ID#
<input type="checkbox"/> Air Emission Plant		<input type="checkbox"/> Industrial Minerals Mining Operation	
<input type="checkbox"/> Beneficial Use (water)		<input type="checkbox"/> Laboratory Location	
<input type="checkbox"/> Blasting Operation		<input type="checkbox"/> Land Recycling Cleanup Location	
<input type="checkbox"/> Captive Hazardous Waste Operation		<input type="checkbox"/> Mine Drainage Treatment / Land Recycling Project Location	
<input type="checkbox"/> Coal Ash Beneficial Use Operation		<input checked="" type="checkbox"/> Municipal Waste Operation	[REDACTED]
<input type="checkbox"/> Coal Mining Operation		<input type="checkbox"/> Oil & Gas Encroachment Location	
<input type="checkbox"/> Coal Pillar Location		<input type="checkbox"/> Oil & Gas Location	
<input type="checkbox"/> Commercial Hazardous Waste Operation		<input type="checkbox"/> Oil & Gas Water Poll Control Facility	
<input type="checkbox"/> Dam Location		<input type="checkbox"/> Public Water Supply System	
<input type="checkbox"/> Deep Mine Safety Operation -Anthracite		<input type="checkbox"/> Radiation Facility	
<input type="checkbox"/> Deep Mine Safety Operation -Bituminous		<input type="checkbox"/> Residual Waste Operation	
<input type="checkbox"/> Deep Mine Safety Operation -Ind Minerals		<input type="checkbox"/> Storage Tank Location	
<input type="checkbox"/> Encroachment Location (water, wetland)		<input type="checkbox"/> Water Pollution Control Facility	
<input type="checkbox"/> Erosion & Sediment Control Facility		<input type="checkbox"/> Water Resource	
<input type="checkbox"/> Explosive Storage Location		<input type="checkbox"/> Other:	

Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
Center of Tipping Floor Building	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Horizontal Accuracy Measure	Feet			--or-- Meters		
Horizontal Reference Datum Code	<input type="checkbox"/> North American Datum of 1927 <input checked="" type="checkbox"/> North American Datum of 1983 <input type="checkbox"/> World Geodetic System of 1984					
Horizontal Collection Method Code						
Reference Point Code						
Altitude	Feet			--or-- Meters		
Altitude Datum Name	<input type="checkbox"/> The National Geodetic Vertical Datum of 1929 <input type="checkbox"/> The North American Vertical Datum of 1988 (NAVD88)					
Altitude (Vertical) Location Datum Collection Method Code						
Geometric Type Code						
Data Collection Date						
Source Map Scale Number	Inch(es)			=	Feet	

--or--

Centimeter(s)

=

Meters

PROJECT INFORMATION

Project Name

Minor Permit Modification for Permit # [REDACTED]

Project Description

Installation of an aboveground storage tank within the solid waste permit boundary, as part of the SNCR addition at the facility to improve air emissions.

Project Consultant Last Name

Dobak

First Name

Ashley

MI

N

Suffix

P.E.

Project Consultant Title

Managing Engineer

Consulting Firm

Barton & Loguidice, D.P.C.

Mailing Address Line 1

3901 Hartzdale Drive

Mailing Address Line 2

Suite 101

Address Last Line – City

Camp Hill

State

PA

ZIP+4

17011

Phone

717-737-8326

Ext

2317

FAX

Email Address

adobak@bartonandloguidice.com

Time Schedules

2023/2024

Project Milestone (Optional)

Installation of tank

Q4 2025+

Startup and commissioning

1. Is the project located in or within a 0.5-mile radius of an Environmental Justice community as defined by DEP?

☒ Yes ☐ No

To determine if the project is located in or within a 0.5-mile radius of an environmental justice community, please use the online [Environmental Justice Areas Viewer](#).

2. Have you informed the surrounding community prior to submitting the application to the Department?

☒ Yes ☐ No

Method of notification: Act 14 Notification Letters

3. Have you addressed community concerns that were identified?

☐ Yes ☐ No ☒ N/A

If no, please briefly describe the community concerns that have been expressed and not addressed.

4. Is your project funded by state or federal grants?

☐ Yes ☒ No

Note: If "Yes", specify what aspect of the project is related to the grant and provide the grant source, contact person and grant expiration date.

Aspect of Project Related to Grant

Grant Source: _____

Grant Contact Person: _____

Grant Expiration Date: _____

5. Is this application for an authorization on Appendix A of the Land Use Policy? (For referenced list, see Appendix A of the Land Use Policy attached to GIF instructions)

☐ Yes ☒ No

Note: If "No" to Question 5, the application is not subject to the Land Use Policy.

If "Yes" to Question 5, the application is subject to this policy and the Applicant should answer the additional questions in the Land Use Information section.

LAND USE INFORMATION

Note: Applicants should submit copies of local land use approvals or other evidence of compliance with local comprehensive plans and zoning ordinances.

1.	Is there an adopted county or multi-county comprehensive plan?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
2.	Is there a county stormwater management plan?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
3.	Is there an adopted municipal or multi-municipal comprehensive plan?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
4.	Is there an adopted county-wide zoning ordinance, municipal zoning ordinance or joint municipal zoning ordinance?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
<p>Note: If the Applicant answers "No" to either Questions 1, 3 or 4, the provisions of the PA MPC are not applicable and the Applicant does not need to respond to questions 5 and 6 below. If the Applicant answers "Yes" to questions 1, 3 and 4, the Applicant should respond to questions 5 and 6 below.</p>					
5.	Does the proposed project meet the provisions of the zoning ordinance or does the proposed project have zoning approval? If zoning approval has been received, attach documentation.	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
6.	Have you attached Municipal and County Land Use Letters for the project?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No

COORDINATION INFORMATION

Note: The PA Historical and Museum Commission must be notified of proposed projects in accordance with DEP Technical Guidance Document 012-0700-001 utilizing the [Project Review Form](#).

If the activity will be a mining project (i.e., mining of coal or industrial minerals, coal refuse disposal and/or the operation of a coal or industrial minerals preparation/processing facility), respond to questions 1.0 through 2.5 below.

If the activity will not be a mining project, skip questions 1.0 through 2.5 and begin with question 3.0.

1.0	Is this a coal mining project? If "Yes", respond to 1.1-1.6. If "No", skip to Question 2.0.	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
1.1	Will this coal mining project involve coal preparation/ processing activities in which the total amount of coal prepared/processed will be equal to or greater than 200 tons/day?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
1.2	Will this coal mining project involve coal preparation/ processing activities in which the total amount of coal prepared/processed will be greater than 50,000 tons/year?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
1.3	Will this coal mining project involve coal preparation/ processing activities in which thermal coal dryers or pneumatic coal cleaners will be used?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
1.4	For this coal mining project, will sewage treatment facilities be constructed and treated waste water discharged to surface waters?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
1.5	Will this coal mining project involve the construction of a permanent impoundment meeting one or more of the following criteria: (1) a contributory drainage area exceeding 100 acres; (2) a depth of water measured by the upstream toe of the dam at maximum storage elevation exceeding 15 feet; (3) an impounding capacity at maximum storage elevation exceeding 50 acre-feet?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
1.6	Will this coal mining project involve underground coal mining to be conducted within 500 feet of an oil or gas well?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
2.0	Is this a non-coal (industrial minerals) mining project? If "Yes", respond to 2.1-2.6. If "No", skip to Question 3.0.	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
2.1	Will this non-coal (industrial minerals) mining project involve the crushing and screening of non-coal minerals other than sand and gravel?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
2.2	Will this non-coal (industrial minerals) mining project involve the crushing and/or screening of sand and gravel with the exception of wet sand and gravel operations (screening only) and dry sand and gravel operations with a capacity of less than 150 tons/hour of unconsolidated materials?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No

2.3	Will this non-coal (industrial minerals) mining project involve the construction, operation and/or modification of a portable non-metallic (i.e., non-coal) minerals processing plant under the authority of the General Permit for Portable Non-metallic Mineral Processing Plants (i.e., BAQ-PGPA/GP-3)?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
2.4	For this non-coal (industrial minerals) mining project, will sewage treatment facilities be constructed and treated waste water discharged to surface waters?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
2.5	Will this non-coal (industrial minerals) mining project involve the construction of a permanent impoundment meeting one or more of the following criteria: (1) a contributory drainage area exceeding 100 acres; (2) a depth of water measured by the upstream toe of the dam at maximum storage elevation exceeding 15 feet; (3) an impounding capacity at maximum storage elevation exceeding 50 acre-feet?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
3.0	Will your project, activity, or authorization have anything to do with a well related to oil or gas production, have construction within 200 feet of, affect an oil or gas well, involve the waste from such a well, or string power lines above an oil or gas well? If "Yes", respond to 3.1-3.3. If "No", skip to Question 4.0.	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
3.1	Does the oil- or gas-related project involve any of the following: placement of fill, excavation within or placement of a structure, located in, along, across or projecting into a watercourse, floodway or body of water (including wetlands)?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
3.2	Will the oil- or gas-related project involve discharge of industrial wastewater or stormwater to a dry swale, surface water, ground water or an existing sanitary sewer system or storm water system? If "Yes", discuss in <i>Project Description</i> .	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
3.3	Will the oil- or gas-related project involve the construction and operation of industrial waste treatment facilities?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
4.0	Will the project involve a construction activity that results in earth disturbance? If "Yes", specify the total disturbed acreage.	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No
4.0.1	Total Disturbed Acreage <5,000 sf				
4.0.2	Will the project discharge or drain to a special protection water (EV or HQ) or an EV wetland?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
4.0.3	Will the project involve a construction activity that results in earth disturbance in the area of the earth disturbance that are contaminated at levels exceeding residential or non-residential medium-specific concentrations (MSCs) in 25 Pa. Code Chapter 250 at residential or non-residential construction sites, respectively?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
5.0	Does the project involve any of the following: water obstruction and/or encroachment, wetland impacts, or floodplain project by the Commonwealth/political subdivision or public utility? If "Yes", respond to 5.1-5.7. If "No", skip to Question 6.0.	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
5.1	Water Obstruction and Encroachment Projects – Does the project involve any of the following: placement of fill, excavation within or placement of a structure, located in, along, across or projecting into a watercourse, floodway or body of water?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
5.2	Wetland Impacts – Does the project involve any of the following: placement of fill, excavation within or placement of a structure, located in, along, across or projecting into a wetland?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
5.3	Floodplain Projects by the Commonwealth, a Political Subdivision of the Commonwealth or a Public Utility – Does the project involve any of the following: placement of fill, excavation within or placement of a structure, located in, along, across or projecting into a floodplain?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
5.4	Is your project an interstate transmission natural gas pipeline?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No

5.5	Does your project consist of linear construction activities which result in earth disturbance in two or more DEP regions AND three or more counties?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
5.6	Does your project utilize Floodplain Restoration as a best management practice for Post Construction Stormwater Management?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
5.7	Does your project utilize Class V Gravity / Injection Wells as a best management practice for Post Construction Stormwater Management?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
6.0	Will the project involve discharge of construction related stormwater to a dry swale, surface water, ground water or separate storm water system?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No
6.1	Will the project involve discharge of industrial waste stormwater or wastewater from an industrial activity or sewage to a dry swale, surface water, ground water or an existing sanitary sewer system or separate storm water system?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
7.0	Will the project involve the construction and operation of industrial waste treatment facilities?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
8.0	Will the project involve construction of sewage treatment facilities, sanitary sewers, or sewage pumping stations? If "Yes", indicate estimated proposed flow (gal/day). Also, discuss the sanitary sewer pipe sizes and the number of pumping stations/treatment facilities/name of downstream sewage facilities in the <i>Project Description</i> , where applicable.	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
8.0.1 Estimated Proposed Flow (gal/day)					
9.0	Will the project involve the subdivision of land, or the generation of 800 gpd or more of sewage on an existing parcel of land or the generation of an additional 400 gpd of sewage on an already-developed parcel, or the generation of 800 gpd or more of industrial wastewater that would be discharged to an existing sanitary sewer system?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
9.0.1	Was Act 537 sewage facilities planning submitted and approved by DEP? If "Yes" attach the approval letter. Approval required prior to 105/NPDES approval.	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
10.0	Is this project for the beneficial use of biosolids for land application within Pennsylvania? If "Yes" indicate how much (i.e. gallons or dry tons per year).	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
10.0.1	Gallons Per Year (residential septage)				
10.0.2	Dry Tons Per Year (biosolids)				
11.0	Does the project involve construction, modification or removal of a dam? If "Yes", identify the dam.	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
11.0.1	Dam Name				
12.0	Will the project interfere with the flow from, or otherwise impact, a dam? If "Yes", identify the dam.	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
12.0.1	Dam Name				
13.0	Will the project involve operations (excluding during the construction period) that produce air emissions (i.e., NOX, VOC, etc.)?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
13.0.1	If "Yes", is the operation subject to the agricultural exemption in 35 P.S. § 4004.1?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
13.0.2	If the answer to 13.0.1 is "No", identify each type of emission followed by the estimated amount of that emission. Enter all types & amounts of emissions; separate each set with semicolons.				

14.0	Does the project include the construction or modification of a drinking water supply to serve 15 or more connections or 25 or more people, at least 60 days out of the year? If "Yes", check all proposed sub-facilities.	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
14.0.1	Number of Persons Served				
14.0.2	Number of Employee/Guests				
14.0.3	Number of Connections				
14.0.4	Sub-Fac: Distribution System	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
14.0.5	Sub-Fac: Water Treatment Plant	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
14.0.6	Sub-Fac: Source	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
14.0.7	Sub-Fac: Pump Station	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
14.0.8	Sub Fac: Transmission Main	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
14.0.9	Sub-Fac: Storage Facility	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
15.0	Will your project include infiltration of storm water or waste water to ground water within one-half mile of a public water supply well, spring or infiltration gallery?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
16.0	Is your project to be served by an existing public water supply? If "Yes", indicate name of supplier and attach letter from supplier stating that it will serve the project.	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
16.0.1	Supplier's Name				
16.0.2	Letter of Approval from Supplier is Attached	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
17.0	Will this project be served by on-lot drinking water wells?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
18.0	Will this project involve a new or increased drinking water withdrawal from a river, stream, spring, lake, well or other water bod(ies)? If "Yes", reference Safe Drinking Water Program.	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
18.0.1	Source Name				
19.0	Will the construction or operation of this project involve treatment, storage, reuse, or disposal of waste? If "Yes", indicate what type (i.e., hazardous, municipal (including infectious & chemotherapeutic), residual) and the amount to be treated, stored, re-used or disposed.	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No
19.0.1	Type & Amount MSW (>1M TPY), Residual (<50,000 TPY)				
20.0	Will your project involve the removal of coal, minerals, contaminated media, or solid waste as part of any earth disturbance activities?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
21.0	Does your project involve installation of a field constructed underground storage tank? If "Yes", list each Substance & its Capacity. Note: Applicant may need a Storage Tank Site Specific Installation Permit.	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
21.0.1	Enter all substances & capacity of each; separate each set with semicolons.				
22.0	Does your project involve installation of an aboveground storage tank greater than 21,000 gallons capacity at an existing facility? If "Yes", list each Substance & its Capacity. Note: Applicant may need a Storage Tank Site Specific Installation Permit.	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No
22.0.1	Enter all substances & capacity of each; separate each set with semicolons.	Ammonia, 35,000 gallons			
23.0	Does your project involve installation of a tank greater than 1,100 gallons which will contain a highly hazardous substance as defined in DEP's Regulated Substances List, 2570-BK-DEP2724? If "Yes", list each Substance & its Capacity. Note: Applicant may need a Storage Tank Site Specific Installation Permit.	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No
23.0.1	Enter all substances & capacity of each; separate each set with semicolons.	Ammonia, 35,000 gallons			

24.0 Does your project involve installation of a storage tank at a new facility with a total AST capacity greater than 21,000 gallons? If "Yes", list each Substance & its Capacity. **Note:** Applicant may need a Storage Tank Site Specific Installation Permit. ☐ Yes ☒ No

24.0.1 Enter all substances & capacity of each; separate each set with semicolons.

NOTE: If the project includes the installation of a regulated storage tank system, including diesel emergency generator systems, the project may require the use of a Department Certified Tank Handler. For a full list of regulated storage tanks and substances, please go to www.dep.pa.gov search term storage tanks

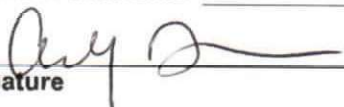
25.0 Will the intended activity involve the use of a radiation source? ☐ Yes ☒ No

CERTIFICATION

I certify that I have the authority to submit this application on behalf of the applicant named herein and that the information provided in this application is true and correct to the best of my knowledge and information.

For applicants supplying an EIN number: I am applying for a permit or authorization from the Pennsylvania Department of Environmental Protection (DEP). As part of this application, I will provide DEP with an accurate EIN number for the applicant entity. By filing this application with DEP, I hereby authorize DEP to confirm the accuracy of the EIN number provided with the Pennsylvania Department of Revenue. As applicant, I further consent to the Department of Revenue discussing the same with DEP prior to issuance of the Commonwealth permit or authorization.

Type or Print Name Ashley N. Dobak, P.E.

Signature 

Managing Engineer

Title

3/17/2023
Date

Site Specific Installation Permit Form Part I and II

3/24/2023
 Date Received

Coordination #

STORAGE TANK SITE-SPECIFIC INSTALLATION PERMIT APPLICATION PART I

All required information must be typed or legibly printed in the spaces provided herein:
 This form must be fully and accurately completed.

I. FACILITY BACKGROUND INFORMATION

- ☐ New Facility ☒ Existing Regulated Aboveground Storage Tanks at Facility
☐ Existing Facility (Enter Storage Tank Facility ID No. below)

II. TANK OWNER/BUSINESS INFORMATION

Owner Name Covanta Delaware Valley
 Phone No. (610) 291-3890

III. FACILITY INFORMATION

Storage Tank Facility ID NO. [REDACTED]
 Facility Name Covanta Delaware Valley LP
 Phone No. (610) 291-3890

IV. PROPOSED TANK SYSTEM INFORMATION

Tank Type	Substance	Substance	Capacity	Fee
AST	UST	Name	CAS No.	(Gallons)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ammonia	7664417	35000
<input type="checkbox"/>	<input type="checkbox"/>	Applicant confirmed storage at atmospheric pressure 4/12/23		
<input type="checkbox"/>	<input type="checkbox"/>			

V. TOTAL FEE FOR THIS APPLICATION (see instructions): \$80

VI. CERTIFICATION OF GENERAL REQUIREMENTS FOR SITE SPECIFIC INSTALLATION PERMITS

Please acknowledge the following requirements by placing your initials in front of the requirements listed below.

- LS I certify that the tank handling and inspection activities performed on the tank system(s) listed in this application will be performed by Department certified individuals.
- LS I certify that the storage tank system(s) listed in this application will be in compliance with applicable administrative, technical and operational requirements of subchapter E, F or G.
- LS I have notified the municipality and county in which the tank(s) will be located and have attached proof of this notification to this application.
- LS I have submitted to the Department's Regional Storage Tank Section: ☐ a new SPR Plan; ☒ revisions to an existing SPR Plan, on February 2023.
- LS I have included a description of the company structure and identified related companies owning or operating storage tanks in Pennsylvania.
- LS Applicant agrees to notify the Department's Regional Storage Tank Section within 30 days of receiving notification that mining activities will occur beneath the storage tank site.

I certify under penalty of law that I have personally examined and that I am familiar with the information submitted in this application and all attached documents. I certify under penalty of law as provided in 18 PA C.S.A. Section 4904 (relating to unsworn falsification to authorities), the information provided in this application is true, accurate, and complete to the best of my knowledge and belief.

Larry Smith

Typed Name

Signature

Facility Manager
 Title

3/10/23
 Date

(610) 497-8116
 Phone

DEP Use Only

eFACTS INFORMATION

Date Rec'd _____ Fee Submit (yes/no) _____
 Date Adm. Cmpl. _____ Adm. Reviewer Init. _____
 Date Tech. Rev. _____ Tech. Reviewer Init. _____
 Date Approval _____
 Date Ret. Applicant _____

APS ID _____
 Client ID _____
 Authority ID _____
 Program ID (Permit #) _____

**STORAGE TANK
SITE-SPECIFIC INSTALLATION PERMIT APPLICATION
PART II**

TANK OWNER/BUSINESS NAME: Covanta Delaware Valley LP

FACILITY NAME: Delaware Valley Resource Recovery Facility

Please acknowledge the following requirements by placing a yes or no in front of the requirements listed below.

1. Mapping requirements for site specific installation permits

- Yes Plot Plan attached meeting requirements §245.233
Yes Latitude and Longitude must be shown on the plot plan for each proposed tank location(s).
Yes Copy of the 7¹/₂ minute USGS map attached showing proposed tank location(s).

2. Siting

Floodplain:

No All or part of the tank system or facility is located in the 100-year floodplain or records show that this site has been inundated by flood waters.

If the answer is yes, answer the following: _____ This site was used for industrial purposes prior to August 5, 1989.

Wetlands

No All or part of the tank system or facility is located in a wetland.

If the answer is yes, answer the following: _____ A Chapter 105 permit has been obtained

3. Geological Considerations

No All or part of the tank system or facility location has been deep mined.

If the answer is yes, answer the following:

_____ An assessment is provided showing the degree of and potential for surface subsidence and include the methods to be used to stabilize the tank system.

_____ Applicant assures that minerals providing surface support will not be mined as long as the facility stores regulated substances.

No All or part of the tank system or facility is underlain by carbonate bedrock limestone. If yes, provide information on and an assessment of the prevalence of solution channels and the potential for sinkholes. Include the methodology that will be used to stabilize the tank system's foundation.

No There are other geological features at the tank system site that have a potential to affect the tank system integrity. If yes, provide a geological assessment and methods to be used to stabilize the tank system foundation.

4. Environmental Assessment

The environmental assessment determines the potential impact of this facility on the environment, public health and public safety. Please provide an explanation of your investigation to determine whether the proposed tank(s) are located near or pose any potential threat to each of the areas listed below. The explanation of the investigations in each area must include the source of the information, the date the information was valid, the extent of the investigation and the findings. When a potential threat exists, provide detailed information and analysis of the threat and the proposed mitigation measures that will protect the environment.

- A. A community water supply.
- B. A private water supply.
- C. Wetlands.
- D. Critical or unique wildlife habitats or is located within an area which supports an endangered, threatened or rare plant or animal.
- E. Historical or archaeological sites.
- F. Recreational parks and forests, natural areas or environmental centers.
- G. A waterway designated as a Pennsylvania Scenic River or a waterway included in the National Wild and Scenic River System.
- H. Prime farmland or an agriculture security area.
- I. A Special Protection Watershed as designated in Chapter 93.

PROFESSIONAL CERTIFICATION

Storage Tank Site-Specific Installation Permit Application Part II – Siting Requirements – Geological Considerations

Facility Name: Delaware Valley Resource Recovery Facility

Registered Professional

By affixing my seal to this application (document), I am certifying that the information is true and correct. I further certify I am licensed to practice in the Commonwealth of Pennsylvania and that it is within my professional expertise to verify the correctness of the information.

Ashley N. Dobak, P.E.

(Name of Professional)



(Signature)

Signed and sealed this day March 17, 2023



SEAL

Public Notifications

SENT VIA UPS

February 20, 2023

Mr. James Warner
Interim CEO, Delaware County Solid Waste Authority
Rose Tree Park – Hunt Club
1521 North Providence Road
Media, PA 19063

Subject: Covanta Delaware Valley, L.P.
Delaware Valley Resource Recovery Facility (DVERRF)
Storage Tank ID [REDACTED]
Storage Tank Site Specific Installation Permit (SSIP) Application Submittal
Notification of Application Submittal

Dear Mr. Schuster:

Covanta Delaware Valley, L.P. (Covanta) is providing this Municipal Notification, pursuant to 25 PA Code Chapter 245 Subchapter C, to inform you that Covanta is submitting a Storage Tank Site Specific Installation Permit (SSIP) for the installation of a 35,000-gallon storage tank that will contain ammonia at a 19% concentration. The storage tank is required for the Selective Non-Catalytic Reduction (SNCR) air pollution control technology that will be utilized to reduce Nitrogen Oxide (NOX) emissions at the DVERRF by approximately 18% each year. Implementation of this project will have a significant positive environmental impact on the surrounding community and region. The construction and installation of SNCR are being undertaken pursuant to 25 PA Code Chapter 129 (Additional RACT Requirements for Major Sources of NOx and VOCs for the 2015 Ozone NAAQs, or RACT III).

SNCR will be installed on all six (6) combustor units at the DVERRF located at [REDACTED] Chester, Delaware County. The units currently operate under Title V Operating Permit No. [REDACTED] Solid Waste Disposal and Processing Facility Permit No. [REDACTED], and Division of Storage Tank Identification Number [REDACTED], all issued by the PA Department of Environmental Protection (DEP).

The City of Chester and the County of Delaware may make comments to the DEP within thirty (30) days of receipt of this notification. The application will be submitted to the DEP by March 15, 2023. The DEP will accept comments from the public on the application. Comments may be submitted to:

Department of Environmental Protection
Southeast Regional Office
2 East Main Street
Norristown, PA 19401
Attention:

Mr. Michael Powers, Environmental Protection Specialist
Division of Storage Tanks

In addition to the written comment period, Covanta will hold a public meeting in the first quarter of 2023 to solicit comments and feedback. If you have any questions regarding this matter, please contact me or Kim Bradford at (610) 291-3890.

Sincerely,

Larry A. Smith
Facility Manager

cc: Michael Powers, PADEP Southeast Office
File – Delaware Valley - Title V

Justin Surrat (Central PADEP)

Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number

1Z1VX7782998507666

Weight

1.00 LBS

Service

UPS Next Day Air Saver®
with UPS Carbon Neutral 

Shipped / Billed On

02/21/2023

Additional Information

Signature Required

Delivered On

02/22/2023 9:39 A.M.

Delivered To

MEDIA, PA, US

Received By

FERZETTI

Left At

Office

Please print for your records as photo and details are only available for a limited time.

Sincerely,

UPS

Tracking results provided by UPS: 02/23/2023 8:45 A.M. EST

SENT VIA UPS

February 20, 2023

Dr. Monica Taylor
Chair, Delaware County Council
201 West Front Street
Media, PA 19063

Subject: Covanta Delaware Valley, L.P.
Delaware Valley Resource Recovery Facility (DVRRF)
Storage Tank ID [REDACTED]
Storage Tank Site Specific Installation Permit (SSIP) Application Submittal
Notification of Application Submittal

Dear Mr. Schuster:

Covanta Delaware Valley, L.P. (Covanta) is providing this Municipal Notification, pursuant to 25 PA Code Chapter 245 Subchapter C, to inform you that Covanta is submitting a Storage Tank Site Specific Installation Permit (SSIP) for the installation of a 35,000-gallon storage tank that will contain ammonia at a 19% concentration. The storage tank is required for the Selective Non-Catalytic Reduction (SNCR) air pollution control technology that will be utilized to reduce Nitrogen Oxide (NOX) emissions at the DVRRF by approximately 18% each year. Implementation of this project will have a significant positive environmental impact on the surrounding community and region. The construction and installation of SNCR are being undertaken pursuant to 25 PA Code Chapter 129 (Additional RACT Requirements for Major Sources of NOx and VOCs for the 2015 Ozone NAAQs, or RACT III).

SNCR will be installed on all six (6) combustor units at the DVRRF located at [REDACTED] Chester, Delaware County. The units currently operate under Title V Operating Permit No. [REDACTED] Solid Waste Disposal and Processing Facility Permit No. [REDACTED], and Division of Storage Tank Identification Number [REDACTED], all issued by the PA Department of Environmental Protection (DEP).

The City of Chester and the County of Delaware may make comments to the DEP within thirty (30) days of receipt of this notification. The application will be submitted to the DEP by March 15, 2023. The DEP will accept comments from the public on the application. Comments may be submitted to:

Department of Environmental Protection
Southeast Regional Office
2 East Main Street
Norristown, PA 19401
Attention:
Mr. Michael Powers, Environmental Protection Specialist
Division of Storage Tanks

In addition to the written comment period, Covanta will hold a public meeting in the first quarter of 2023 to solicit comments and feedback. If you have any questions regarding this matter, please contact me or Kim Bradford at (610) 291-3890.

Sincerely,

Larry A. Smith
Facility Manager

cc: Michael Powers, PADEP Southeast Office
File - Delaware Valley - Title V

Justin Surrat (Central PADEP)

Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number

1Z1VX7782995875676

Weight

1.00 LBS

Service

UPS Next Day Air Saver®
with UPS Carbon Neutral 

Shipped / Billed On

02/21/2023

Additional Information

Signature Required

Delivered On

02/22/2023 10:03 A.M.

Delivered To

MEDIA, PA, US

Received By

DCCH

Left At

Inside Delivery

Please print for your records as photo and details are only available for a limited time.

Sincerely,

UPS

Tracking results provided by UPS: 02/23/2023 8:47 A.M. EST

SENT VIA UPS

February 20, 2023

Ms. Gina Burritt
Director, Delaware County Planning Department
1055 E. Baltimore Pike
Media, PA 19063

Subject: Covanta Delaware Valley, L.P.
Delaware Valley Resource Recovery Facility (DVRRF)
Storage Tank ID [REDACTED]
Storage Tank Site Specific Installation Permit (SSIP) Application Submittal
Notification of Application Submittal

Dear Mr. Schuster:

Covanta Delaware Valley, L.P. (Covanta) is providing this Municipal Notification, pursuant to 25 PA Code Chapter 245 Subchapter C, to inform you that Covanta is submitting a Storage Tank Site Specific Installation Permit (SSIP) for the installation of a 35,000-gallon storage tank that will contain ammonia at a 19% concentration. The storage tank is required for the Selective Non-Catalytic Reduction (SNCR) air pollution control technology that will be utilized to reduce Nitrogen Oxide (NOX) emissions at the DVRRF by approximately 18% each year. Implementation of this project will have a significant positive environmental impact on the surrounding community and region. The construction and installation of SNCR are being undertaken pursuant to 25 PA Code Chapter 129 (Additional RACT Requirements for Major Sources of NOx and VOCs for the 2015 Ozone NAAQs, or RACT III).

SNCR will be installed on all six (6) combustor units at the DVRRF located at [REDACTED] Chester, Delaware County. The units currently operate under Title V Operating Permit No. [REDACTED], Solid Waste Disposal and Processing Facility Permit No. [REDACTED], and Division of Storage Tank Identification Number [REDACTED], all issued by the PA Department of Environmental Protection (DEP).

The City of Chester and the County of Delaware may make comments to the DEP within thirty (30) days of receipt of this notification. The application will be submitted to the DEP by March 15, 2023. The DEP will accept comments from the public on the application. Comments may be submitted to:

Department of Environmental Protection
Southeast Regional Office
2 East Main Street
Norristown, PA 19401
Attention:

Mr. Michael Powers, Environmental Protection Specialist
Division of Storage Tanks

In addition to the written comment period, Covanta will hold a public meeting in the first quarter of 2023 to solicit comments and feedback. If you have any questions regarding this matter, please contact me or Kim Bradford at (610) 291-3890.

Sincerely,

Larry A. Smith
Facility Manager

cc: Michael Powers, PADEP Southeast Office
File - Delaware Valley - Title V

Justin Surrat (Central PADEP)

Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number

1Z1VX7782996533284

Weight

1.00 LBS

Service

UPS Next Day Air Saver®
with UPS Carbon Neutral 

Shipped / Billed On

02/21/2023

Additional Information

Signature Required

Delivered On

02/22/2023 2:19 P.M.

Delivered To

MEDIA, PA, US

Received By

SIGNORA

Left At

Office

Please print for your records as photo and details are only available for a limited time.

Sincerely,

UPS

Tracking results provided by UPS: 02/23/2023 8:48 A.M. EST

SENT VIA UPS

February 20, 2023

Mr. Kenneth R. Schuster
Solicitor, City of Chester
Chester City Hall
1 Fourth Street
Chester, PA 19013-4400

Subject: Covanta Delaware Valley, L.P.
Delaware Valley Resource Recovery Facility (DVRRF)
Storage Tank ID [REDACTED]
Storage Tank Site Specific Installation Permit (SSIP) Application Submittal
Notification of Application Submittal

Dear Mr. Schuster:

Covanta Delaware Valley, L.P. (Covanta) is providing this Municipal Notification, pursuant to 25 PA Code Chapter 245 Subchapter C, to inform you that Covanta is submitting a Storage Tank Site Specific Installation Permit (SSIP) for the installation of a 35,000-gallon storage tank that will contain ammonia at a 19% concentration. The storage tank is required for the Selective Non-Catalytic Reduction (SNCR) air pollution control technology that will be utilized to reduce Nitrogen Oxide (NOX) emissions at the DVRRF by approximately 18% each year. Implementation of this project will have a significant positive environmental impact on the surrounding community and region. The construction and installation of SNCR are being undertaken pursuant to 25 PA Code Chapter 129 (Additional RACT Requirements for Major Sources of NOx and VOCs for the 2015 Ozone NAAQs, or RACT III).

SNCR will be installed on all six (6) combustor units at the DVRRF located at [REDACTED] Chester, Delaware County. The units currently operate under Title V Operating Permit No. [REDACTED], Solid Waste Disposal and Processing Facility Permit No. [REDACTED] and Division of Storage Tank Identification Number [REDACTED], all issued by the PA Department of Environmental Protection (DEP).

The City of Chester and the County of Delaware may make comments to the DEP within thirty (30) days of receipt of this notification. The application will be submitted to the DEP by March 15, 2023. The DEP will accept comments from the public on the application. Comments may be submitted to:

Department of Environmental Protection
Southeast Regional Office
2 East Main Street
Norristown, PA 19401
Attention:
Mr. Michael Powers, Environmental Protection Specialist
Division of Storage Tanks

In addition to the written comment period, Covanta will hold a public meeting in the first quarter of 2023 to solicit comments and feedback. If you have any questions regarding this matter, please contact me or Kim Bradford at (610) 291-3890.

Sincerely,

Larry A. Smith
Facility Manager



cc: Michael Powers, PADEP Southeast Office
File – Delaware Valley - Title V

Justin Surrat (Central PADEP)

Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

Tracking Number

1Z1VX7782998496491

Weight

1.00 LBS

Service

UPS Next Day Air Saver®
with UPS Carbon Neutral 

Shipped / Billed On

02/21/2023

Additional Information

Signature Required

Delivered On

02/22/2023 12:46 P.M.

Delivered To

CHESTER, PA, US

Received By

DUKE

Left At

Inside Delivery

Please print for your records as photo and details are only available for a limited time.

Sincerely,

UPS

Tracking results provided by UPS: 02/23/2023 8:49 A.M. EST

PHILADELPHIA GROUP

AFFIDAVIT OF PUBLICATION
390 Eagleview Boulevard • Exton, PA 19341**COVANTA DELAWARE VALLEY, LP**
[REDACTED]
[REDACTED]**Attention:****STATE OF PENNSYLVANIA,**

The undersigned Shelley J. Memon, being duly sworn the he/she is the principal clerk of Delaware County Daily Times, Daily & Sunday Times Digital, published in Delaware County for the dissemination of local or transmitted news and intelligence of a general character, which are duly qualified newspapers, and the annexed hereto is a copy of certain order, notice, publication or advertisement of:

COVANTA DELAWARE VALLEY, LP**Published in the following edition(s):**

Delaware County Daily Times, Daily & Sunday Times Digital
02/28/23, 03/01/23, 03/02/23, 03/03/23, 03/04/23, 03/05/23, 03/06/23

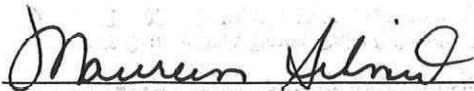
**PUBLIC NOTICE OF MINOR PERMIT MODIFICATION
AND SSIP SUBMISSION BY COVANTA DELAWARE VALLEY, L.P.**

Notice is hereby given, in accordance with 25 PA Code 771.141, that on or about March 15, 2023, Covanta Delaware Valley, L.P. will file with the Southeast Regional Office of the Pennsylvania Department of Environmental Protection (PADEP) an application for a minor permit modification to the existing Delaware Valley Resource Recovery Facility Solid Waste Permit No. [REDACTED] and a Site Specific Installation Permit (SSIP) with the Storage Tank Division of the same PADEP regional office for the installation of a storage tank on site. The Delaware Valley Resource Recovery Facility is an existing resource recovery facility located at [REDACTED] Chester, PA 19013 in the City of Chester, Delaware County.

Copies of the minor permit modification and SSIP applications will be available for review and copying at the PADEP Southeast Regional Office, 2 East Main Street, Norristown, PA between the hours of 9:00 AM and 4:00 PM. An appointment must be made with the Southeast Regional Office to review the application. A fee for copying may be charged by PADEP. Copies of the application will also be submitted by PADEP to the City of Chester and Delaware County. The City of Chester and Delaware County may submit recommendations for permit conditions, revisions, permit approval or disapproval, and other comments to PADEP within 60 days of their receipt of the application.

PADEP will also accept and consider comments from the public during the permit review period. Comments should be sent to the attention of the Waste Management Program Manager, PADEP Southeast Regional Office, 2 East Main Street, Norristown, PA 19401.

DCT: Feb. 28, Mar. 1, 2, 3, 4, 5, 6, a-1

Sworn to the subscribed before me this 3/6/23.

Notary Public, State of Pennsylvania
Acting in County of Montgomery

Commonwealth of Pennsylvania - Notary Seal
MAUREEN SCHMID, Notary Public
Montgomery County
My Commission Expires March 31, 2025
Commission Number 1248132

Advertisement Information**Client Id:** 999139**Ad Id:** 2440917**PO:** SSIP Notification**Sales Person:** 063308

Ad ID: 2440917

Cost: \$1,605.91

Start: 02/28/23

Stop: 03/06/23

Class: 1201, Legal Notices

**PUBLIC NOTICE OF MINOR PERMIT MODIFICATION
AND SSIP SUBMISSION BY COVANTA DELAWARE VALLEY, L.P.**

Notice is hereby given, in accordance with 25 PA Code 271.141, that on or about March 15, 2023, Covanta Delaware Valley, L.P. will file with the Southeast Regional Office of the Pennsylvania Department of Environmental Protection (PADEP) an application for a minor permit modification to the existing Delaware Valley Resource Recovery Facility Solid Waste Permit No. [REDACTED] and a Site Specific Installation Permit (SSIP) with the Storage Tank Division of the same PADEP regional office for the installation of a storage tank on site. The Delaware Valley Resource Recovery Facility is an existing municipal waste resource recovery facility located at [REDACTED] Chester, PA 19013 in the City of Chester, Delaware County.

Copies of the minor permit modification and SSIP applications will be available for review and copying at the PADEP Southeast Regional Office, 2 East Main Street, Norristown, PA between the hours of 9:00 AM and 4:00 PM. An appointment must be made with the Southeast Regional Office to review the application. A fee for copying may be charged by PADEP. Copies of the application will also be submitted by PADEP to the City of Chester and Delaware County. The City of Chester and Delaware County may submit recommendations for permit conditions, revisions, permit approval or disapproval, and other comments to PADEP within 60 days of their receipt of the application.

PADEP will also accept and consider comments from the public during the permit review period. Comments should be sent to the attention of the Waste Management Program Manager, PADEP Southeast Regional Office, 2 East Main Street, Norristown, PA 19401.

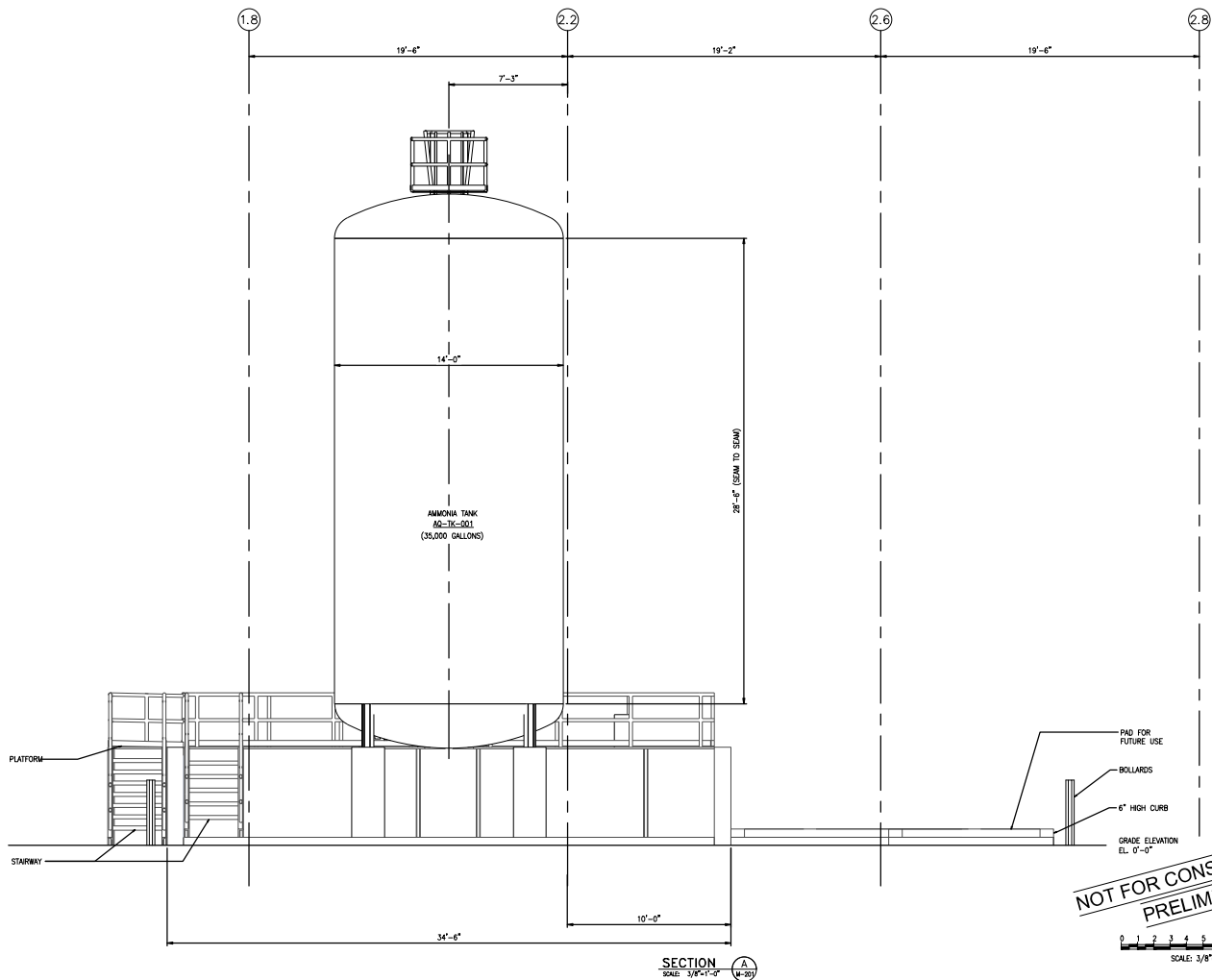
DCT: Feb. 28. Mar. 1, 2, 3, 4, 5, 6. a-1

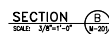
Plot Plan

Plot Plan redacted due to Access to Sensitive Information Policy limiting public access to large aboveground storage tank location information. This figure may be viewed by conducting a file review at the DEP Southeast Regional Office.

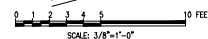
Tank Drawings

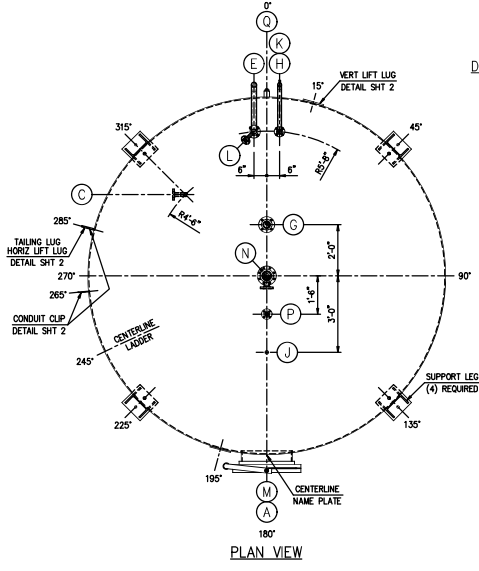
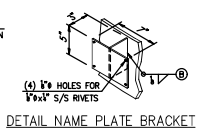
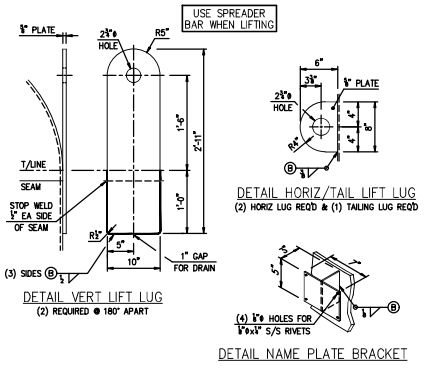
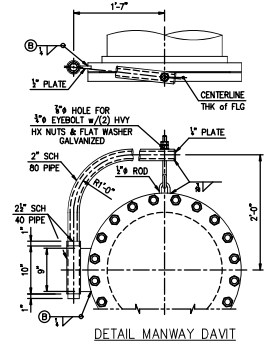
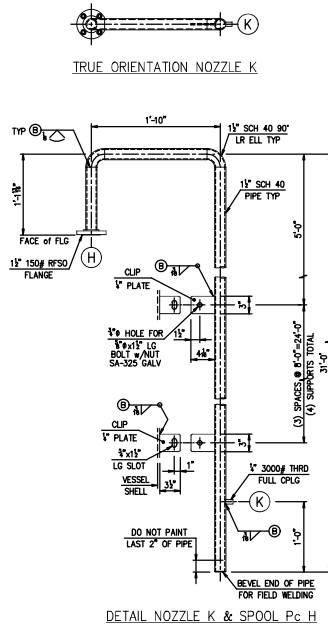
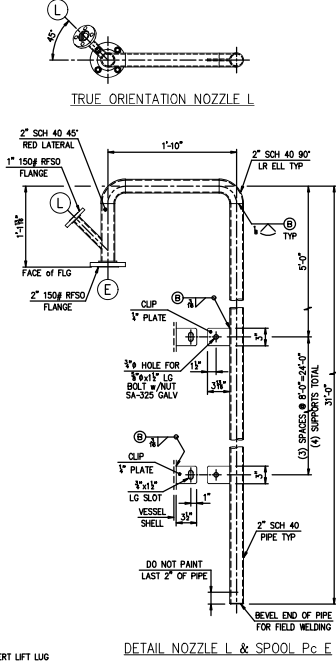
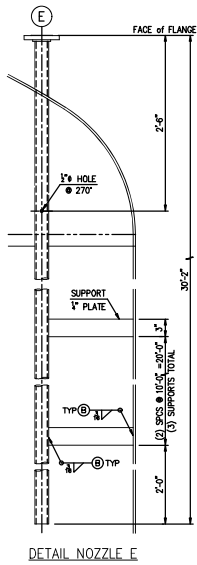
Two plan drawings redacted due to Access to Sensitive Information Policy limiting public access to large aboveground storage tank location information. These figures may be viewed by conducting a file review at the DEP Southeast Regional Office.





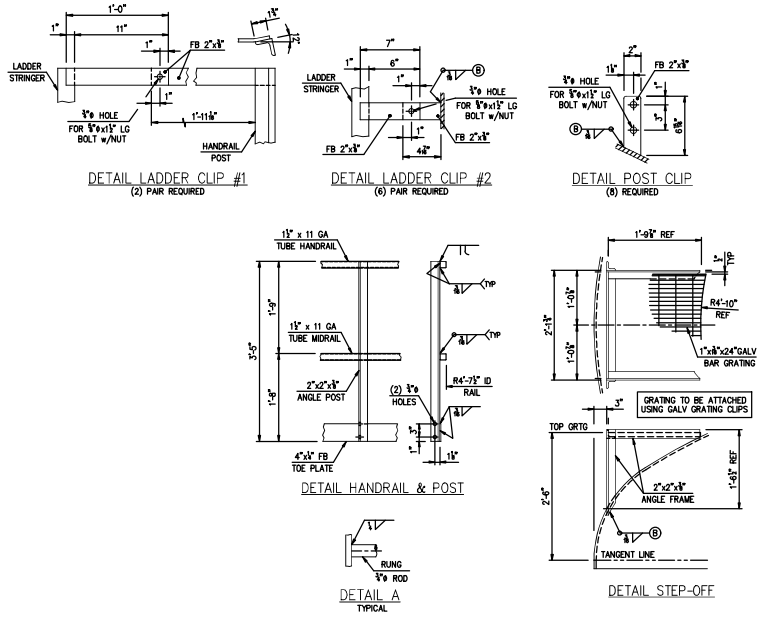
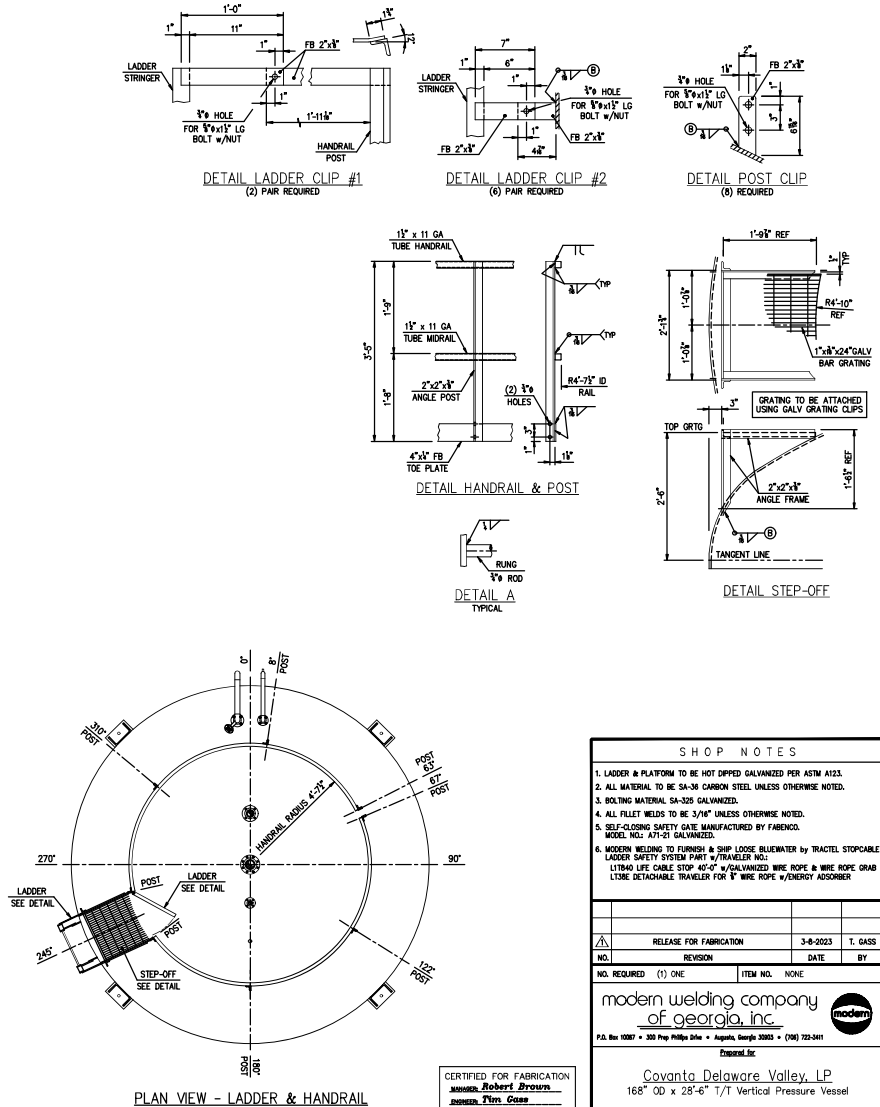
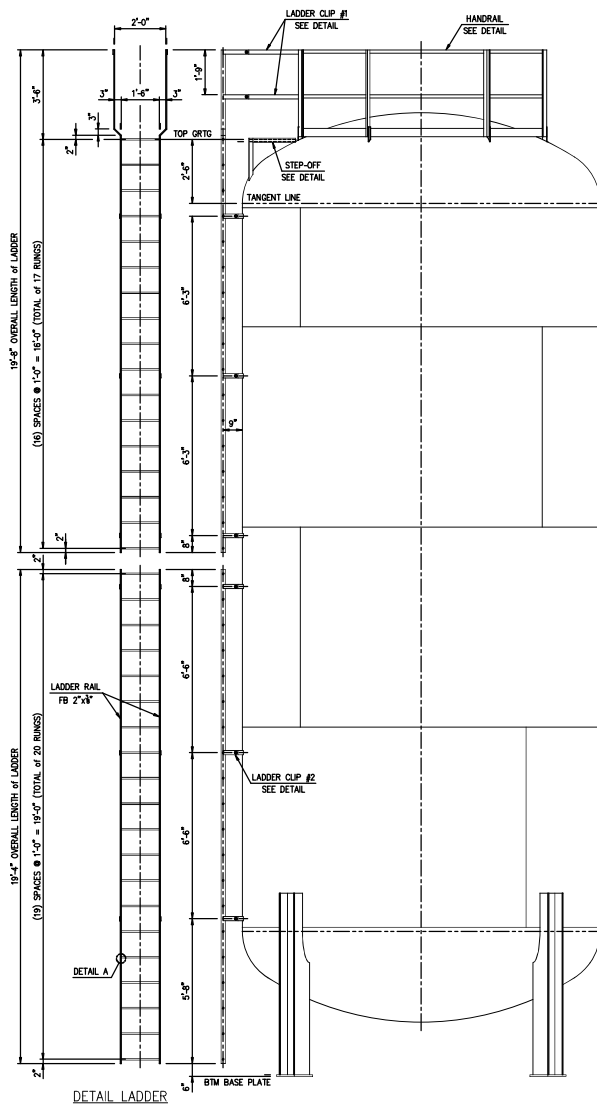
NOT FOR CONSTRUCTION
PRELIMINARY





SHOP NOTES			
1. DO NOT PAINT LAST 2" OF SPOOL PIECES & BEVEL END OF PC FOR FIELD WELDING.			

CERTIFIED FOR FABRICATION
Robert Brown
 JUNE 8, 2023
 MODERN WELDING COMPANY
 OF GEORGIA, INC.



SHOP NOTES			
1.	LADDER & PLATFORM TO BE HOT DIPPED GALVANIZED PER ASTM A123.		
2.	ALL MATERIAL TO BE SA-36 CARBON STEEL UNLESS OTHERWISE NOTED.		
3.	BOLTING MATERIAL SA-305 GALVANIZED.		
4.	ALL FULLET WELDS TO BE 3/16" UNLESS OTHERWISE NOTED.		
5.	SELF-CLOSING SAFETY GATE MANUFACTURED BY FARNICO, MODEL NO. A71-01 GALVANIZED.		
6.	WOODEN WELDING TO FURNISH & SHIP LOOSE BLUEWATER BY TRACEL STOPCABLE LADDER SAFETY SYSTEM PART W/ TRAVELER NO. 117840 LIFE CABLE STOP 40'-0" w/ GALVANIZED WIRE ROPE & WIRE ROPE GRAB L17840 DETACHABLE TRAVELER FOR 5" WIRE ROPE w/ ENERGY ABSORBER		
NO.	RELEASE FOR FABRICATION	3-8-2023	T. GASS
NO.	REVISION	DATE	BY
NO. REQUIRED (1) ONE	ITEM NO. NONE		
modern welding company of georgia, inc.			
P.O. Box 10007 • 300 West Phillips Drive • Augusta, Georgia 30605 • (706) 724-0411			
Covanta Delaware Valley, LP			
168" OD x 28'-6" T/T Vertical Pressure Vessel			
DRAWN BY: T. Gass	SCALE: None	REV. NO. 1	
CHECKED BY: R. Brown	DATE: February 27, 2023		
PO NO.: DELVA-0000077149	DWG/JOB NO.: 056110-1-1	SHT.	3 of 3

CERTIFIED FOR FABRICATION
Robert Brown
 JAWN, March 8, 2023
 MODERN WELDING COMPANY
 OF GEORGIA, INC.

Topographic Map

Topographic Map redacted due to Access to Sensitive Information Policy limiting public access to large aboveground storage tank location information. This figure may be viewed by conducting a file review at the DEP Southeast Regional Office.

Flood Map

Flood Map redacted due to Access to Sensitive Information Policy limiting public access to large aboveground storage tank location information. This figure may be viewed by conducting a file review at the DEP Southeast Regional Office.

Wetlands Inventory Map

Wetlands Inventory Map redacted due to Access to Sensitive Information Policy limiting public access to large aboveground storage tank location information. This figure may be viewed by conducting a file review at the DEP Southeast Regional Office.

Geological Evaluation/Map

Geological Evaluation Map redacted due to Access to Sensitive Information Policy limiting public access to large aboveground storage tank location information. This figure may be viewed by conducting a file review at the DEP Southeast Regional Office.

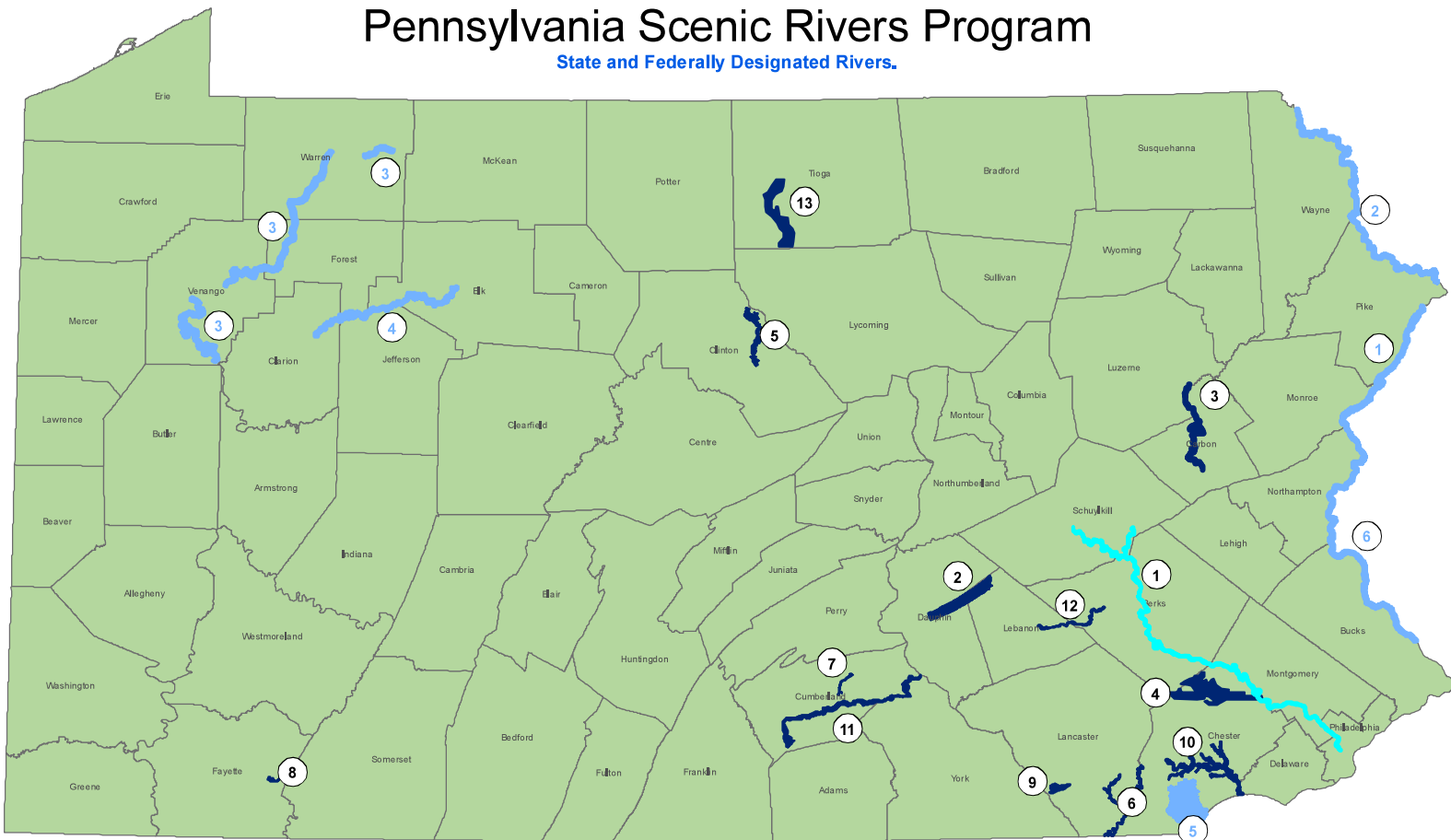
Environmental Site Assessment

- A. A community water supply
 - a. N/A. The Covanta property is located on the edge of a public water supply boundary per the eMap tool of PADEP and the tank installation is planned outside of the public water supply area. The tank will be installed with secondary containment to minimize the impact of any potential spill.
- B. A private water supply
 - a. N/A. There are no private water supplies within 2500 feet of the Covanta Delaware Valley property per the PADEP eMap tool.
- C. Wetlands
 - a. N/A. There are no wetlands on or near the project site per the USDA Web Soil Survey. The results of the web soil survey are attached.
- D. Critical or unique wildlife habitats or is located within an area which supports an endangered or threatened or rare plant or animal.
 - a. N/A. The tank is to be installed on previously disturbed ground within an existing solid waste permit boundary location. A previous PNDI survey was conducted when the site was first established and since modifications have been made and there are no critical or unique wildlife habitats that support endangered or threatened or rare plant or animal life in the vicinity of the tank installation.
- E. Historical or archaeological sites.
 - a. N/A. The tank is to be installed on previously disturbed ground within an existing solid waste permit boundary location. A previous PHMC (now SHPO) survey was conducted when the site was first established and since modifications have been made and there are no historical or archaeological areas of importance that will be impacted by the installation of the tank.
- F. Recreational parks and forests, natural areas or environmental centers
 - a. N/A. Veteran's Memorial Park and Henry Johnson Park are the closest parks, forests, natural areas, or environmental centers to the project site. These locations are both over 2,500 feet away from the project site.
- G. A waterway designated as a Pennsylvania Scenic River or a waterway included in the National Wild and Scenic River System.
 - a. N/A. The Delaware River, in the vicinity of Delaware County, City of Chester and the project site, is not classified as a Pennsylvania or Federal scenic river per the National Wild and Scenic River Systems database. A map is attached.
- H. Prime farmland or an agriculture security area.
 - a. N/A. Per the USDA web soil survey. Web soil survey information attached.
- I. A Special Protection Watershed as designated in Chapter 93.
 - a. N/A. Per Chapter 93, the Delaware River, in the vicinity of the City of Chester, Delaware County and the project site is not considered a special protection watershed.

Scenic Rivers Map

Pennsylvania Scenic Rivers Program

State and Federally Designated Rivers.



Pennsylvania Scenic Rivers

Name	Date Designated	Name	Date Designated
1 Schuylkill River	November 26, 1978	8 Bear Run	December 19, 1988
2 Stony Creek	March 24, 1980	9 Tucquan Creek	December 19, 1988
3 Lehigh River	April 5, 1982	10 Lower Brandywine	June 16, 1989
4 French Creek	April 29, 1982	11 Yellow Breeches Creek	December 4, 1992
5 Lick Run	December 17, 1982	12 Tulpehocken Creek	December 4, 1992
6 Octoraro Creek	October 21, 1983	13 Pine Creek	December 4, 1992
7 Le Tort Spring Run	March 30, 1988		

Federal Scenic Rivers

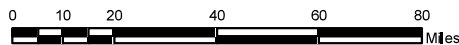
Name	Date Designated	Name	Date Designated
1 Middle Delaware River	September 1, 1965		
2 Upper Delaware River	November 10, 1978		
3 Allegheny River	April 20, 1992		
4 Clarion River	October 19, 1996		
5 White Clay Creek	October 19, 1996		
6 Lower Delaware River	November 1, 2000		

LEGEND

Scenic Rivers

Type

- Federal Scenic River
- Pennsylvania Scenic River
- Counties




Soil Map

Soil Map redacted due to Access to Sensitive Information Policy limiting public access to large aboveground storage tank location information. This figure may be viewed by conducting a file review at the DEP Southeast Regional Office.


Soil Map—Delaware County, Pennsylvania

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils


 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features

 Blowout


 Borrow Pit


 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot


 Landfill

 Lava Flow


 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water


 Perennial Water


 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot




Other



Special Line Features

Water Features

 Streams and Canals


Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Delaware County, Pennsylvania

Survey Area Data: Version 20, Sep 6, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 5, 2022—Jul 4, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ma	Made land, gravelly materials	42.6	96.9%
W	Water	1.4	3.1%
Totals for Area of Interest		44.0	100.0%

Delaware County, Pennsylvania

Ma—Made land, gravelly materials

Map Unit Setting

National map unit symbol: 121fv

Elevation: 200 to 1,500 feet

Mean annual precipitation: 36 to 55 inches

Mean annual air temperature: 45 to 57 degrees F

Frost-free period: 160 to 214 days

Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, shale and sandstone, and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Shale And Sandstone

Setting

Landform: Ridges

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Interfluve, nose slope, side slope

Down-slope shape: Convex, linear

Across-slope shape: Convex, linear

Parent material: Graded areas of sandstone and shale

Typical profile

Ap - 0 to 6 inches: silt loam

C - 6 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 8 percent

Depth to restrictive feature: 20 to 99 inches to lithic bedrock

Drainage class: Well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water

(Ksat): Moderately low to high (0.06 to 6.00 in/hr)

Depth to water table: About 60 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components**Penn**

Percent of map unit: 5 percent

Landform: Hillslopes

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Nose slope, side slope

Down-slope shape: Convex, linear

Across-slope shape: Linear, convex

Hydric soil rating: No

Abbottstown

Percent of map unit: 2 percent

Landform: Hillslopes

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Head slope, base slope

Down-slope shape: Concave, linear

Across-slope shape: Concave, linear

Hydric soil rating: No

Bowmansville

Percent of map unit: 2 percent

Landform: Flood plains

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Head slope

Down-slope shape: Concave, linear

Across-slope shape: Linear, concave

Hydric soil rating: No

Readington

Percent of map unit: 2 percent

Landform: Hillslopes

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Head slope, side slope,
base slope

Down-slope shape: Concave, linear

Across-slope shape: Concave, linear

Hydric soil rating: No

Reaville

Percent of map unit: 2 percent

Landform: Hillslopes

Landform position (two-dimensional): Summit, footslope

Landform position (three-dimensional): Interfluvium, base slope

Down-slope shape: Concave, linear

Across-slope shape: Concave, linear

Hydric soil rating: No

Croton

Percent of map unit: 1 percent

Landform: Depressions

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Berks

Percent of map unit: 1 percent
Landform: Valleys, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Data Source Information

Soil Survey Area: Delaware County, Pennsylvania
Survey Area Data: Version 20, Sep 6, 2022

GEOTECHNICAL ENGINEERING REPORT

Covanta Delaware Valley SNCR Delaware Valley, PA

Schnabel Reference 22140090.000
January 27, 2023



January 27, 2023

Steve Muller, PE, PMP
Merrick & Company
6810 Deerpath Rd., Suite 315,
Elkridge, Maryland 21075

Subject: Geotechnical Engineering Report, Covanta Delaware Valley SNCR, Delaware Valley, Pennsylvania (Schnabel Reference 22140090)

Dear Mr. Muller:

SCHNABEL ENGINEERING, LLC (Schnabel) is pleased to submit our geotechnical engineering report for this project. This study was performed in accordance with our proposal dated November 23, 2022, as authorized by Merrick on December 6, 2022.

We appreciate the opportunity to be of service for this project. Please call us if you have any questions regarding this report.

Sincerely,

SCHNABEL ENGINEERING, LLC



Sung Ryoo, PhD
Staff Engineer



Steve W. Fung, PE
Senior Associate



SCR:jdb

**GEOTECHNICAL ENGINEERING REPORT
COVANTA DELAWARE VALLEY SNCR
DELAWARE VALLEY, PENNSYLVANIA
TABLE OF CONTENTS**

1.0	SCOPE OF SERVICES	1
2.0	DESCRIPTION OF SITE AND PROPOSED CONSTRUCTION	2
3.0	SUBSURFACE EXPLORATION AND LABORATORY TESTING PROGRAM	3
3.1	Subsurface Exploration	
3.2	Laboratory Testing	
4.0	SITE GEOLOGY AND SUBSURFACE CONDITIONS	4
4.1	Site Geology	
4.2	Generalized Subsurface Stratigraphy	
4.3	Groundwater	
4.4	Seismic Site Classification	
5.0	SITE GRADING AND EARTHWORK	8
5.1	Compacted Fill Subgrades	
5.2	Compacted Fill	
6.0	FOUNDATION RECOMMENDATIONS	10
6.1	Helical Piles	
6.2	Micropiles	
6.3	General Recommendations for Helical Piles and Micropiles	
7.0	CONSTRUCTION CONSIDERATIONS	13
7.1	Helical Piles	
7.2	Micropiles	
7.3	Engineering Services During Construction	
8.0	GENERAL SPECIFICATION RECOMMENDATIONS	15
9.0	LIMITATIONS	16

LIST OF FIGURES

Figure 1:	Site Vicinity Map
Figure 2:	Boring Location Plan

LIST OF TABLES

Table 1:	Seismic Design Parameters
----------	---------------------------

APPENDICES

Appendix A:	Subsurface Exploration Data
Appendix B:	Soil Laboratory Test Results

1.0 SCOPE OF SERVICES

Our proposal dated November 23, 2022 defines the scope of services for this project. The scope of services includes evaluating the subsurface conditions at the site and providing geotechnical engineering recommendations regarding the design of the proposed containment carbon storage silo structure. This study was conducted under the supervision of a Professional Engineer registered in Commonwealth of Pennsylvania.

2.0 DESCRIPTION OF SITE AND PROPOSED CONSTRUCTION

The project site is at the Covanta Delaware Valley L.P. Facility (herein after referred to as the facility) located at [REDACTED] Chester, Pennsylvania. The facility is located on the west bank of the Delaware River and is within about 500-ft of the riverbank. The facility includes the Waste-to-Energy Facility building, asphalt paved access roads, an asphalt paved parking area, grass areas and landscaping, substations, etc. We understand that the existing structures at the site are founded on deep foundations. The existing ground contours have not been provided to us. However, based on publicly available data, we estimate the ground surface grades at the site varies from EL 9 (ft) to EL 14 (ft). For this study, we assumed a ground elevation of EL 10 (ft) at the test boring locations.

The proposed structure consists of a new concrete containment pad with two carbon storage and delivery silos and an aqueous ammonia storage tank [REDACTED]. The carbon storage and delivery silos are estimated to be 14 ft in diameter with a live load of 170 kips each, and the aqueous ammonia storage tank will have four legs supported on piers, with a capacity of 35,000 gals and a weight of approximately 325 kips when full.

We obtained site and project information through our subsurface exploration along with correspondence with Merrick & Company. A site vicinity map is included as Figure 1.

3.0 SUBSURFACE EXPLORATION AND LABORATORY TESTING PROGRAM

We performed a subsurface exploration and field testing program to identify the subsurface stratigraphy underlying the site and to evaluate the geotechnical properties of the materials encountered. This program included test borings. Exploration methods used are discussed below. The appendices to this report contain the results of our exploration.

3.1 Subsurface Exploration

Our subcontractor, SANO Drilling, Inc., drilled two test borings under our observation on January 10, 2023. The Standard Penetration Test (SPT) was performed at selected depths in the borings. Appendix A includes specific observations, remarks, and logs for the borings; classification criteria; drilling methods; and sampling protocols. Figure 2, included at the end of this report, indicates the approximate test boring locations. We will retain soil samples up to 45 days beyond the issuance of this report, unless you request other disposition.

The SPT samples were obtained using a hydraulically driven automatic trip hammer (ATH). Most correlations with SPT data are based on N-values collected with a safety hammer. The energy applied to the split-spoon sampler using the ATH is about 33 percent greater than that applied using the safety hammer, resulting in lower N-values. The hammer blows shown on the boring logs are uncorrected for the higher energy. However, we correct SPT N-values for the higher energy when using N-values in our analyses.

3.2 Laboratory Testing

Our subcontractor, Jay Kay Testing, performed tests on selected samples obtained during the subsurface exploration. The testing aided in the classification of materials encountered in the subsurface exploration and provided data for use in the development of recommendations for design of foundations, earthwork, below-grade walls, and pavements. Moisture contents and index test results are shown on the boring logs in Appendix A.

3.2.1 Index Testing

We performed natural moisture content, Atterberg Limit, and gradation tests on four jar samples of soil representing Stratum A and B to provide soil classifications and to provide parameters for use with published correlations with soil properties. The results are presented in the Summary of Laboratory Tests in Appendix B and are summarized (for each stratum) in Section 4.0.

3.2.2 Corrosivity Testing

We performed tests for pH, sulfides, redox potential, and resistivity testing on one sample representing Stratum A. The test results are presented in Appendix B and are summarized in Section 4.0.

4.0 SITE GEOLOGY AND SUBSURFACE CONDITIONS

4.1 Site Geology

We reviewed existing geologic data and information in our files. Based on our review of the Atlas of Preliminary Geologic Quadrangle Maps of Pennsylvania, dated 1981, the geologic stratigraphy consists of Trenton Gravel alluvial deposits, overlying residual materials derived from the in-place chemical and physical weathering processes of the underlying Schist bedrock of the Wissahickon Formation. A capture of the map showing the mapped site geology is shown on Plate 1 below.

Plate 1 redacted due to Access to Sensitive Information Policy.

Plate 1: Section of Geology Map showing the mapped Site Geology

4.2 Generalized Subsurface Stratigraphy

We characterized the following generalized subsurface stratigraphy based on the exploration and laboratory test data included in the appendices.

- Ground Cover
- Stratum A: Existing Fill
- Stratum B: Alluvial
- Stratum C: Residual (not encountered)
- Stratum D: Bedrock (Schist)

4.2.1 Ground Cover

The groundcover at the test boring location consists of about 8 to 9 inches of concrete underlain by 3 inches of aggregate base. The concrete and aggregate base depths were estimated at the boring locations based on visual identification procedures and may vary at other locations.

4.2.2 Stratum A: Existing Fill

Existing fill soils of Stratum A were encountered below the ground cover to depths of about 8 ft. The existing fill soils encountered were generally classified as Well Graded Sand with Silt and Gravel (SW-SM) and Poorly Graded Sand (SP) in accordance with the ASTM D2487 classification system. The SPT N-values (N) within this stratum ranged from 11 to >100 blows per foot (bpf) for the coarse-grained soils, indicating very loose to very dense relative densities.

Moisture content test and index tests on one sample representing this stratum resulted in the following properties:

- Moisture Content: 9.5%
- Liquid Limit: NP
- Plasticity Index: NP
- % Passing No. 200 Sieve: 8.1%

Testing performed on a sample collected from depths of 2 to 4 ft to evaluate the corrosivity of Stratum A soils resulted in a pH value of 7.34, a Redox Potential value of 176 mV, a Resistivity value of 2920 ohm-cm, and negative test for sulfides. The results of the corrosion series testing were used to evaluate the corrosion potential of soils at the site for metallic structures per the American Water Works Association (AWWA) Specification C105 and the Federal Highway Administration (FHWA) GEC 012 Standards. Based on these test results, the soils of Stratum A are considered to be non-corrosive to metallic structures in accordance with AWWA standards and considered to be non-aggressive to buried metallic structures per the FHWA Standards.

We evaluated the soil potential of sulfate attack on concrete using the American Concrete Institute (ACI) Standards. Based on the laboratory test results, the soils at the site have low degree of corrosivity for sulfate attack on concrete. The results of the corrosion series testing are included in Appendix B.

4.2.3 Stratum B: Alluvial

Alluvial soils of Stratum B were encountered below the Stratum A to a depth of 37.7 ft (EL -28.2) below the ground surface. These soils were generally classified as Well Graded Gravel with silt and Sand (GW-GM), Lean Clay (CL), Poorly Graded Gravel with Clay and Sand (GP-GC), Poorly Graded Sand (SP), and Elastic Silt (MH) in accordance with the ASTM D2487 and D2488 classification systems, respectively. The N values of Stratum B coarse grained soils ranged from 2 to >100 bpf, indicating very loose to very dense relative density and the N values of Stratum B fine grained soils ranged from 0 to 11 bpf, indicating very soft to stiff consistency. Fine grained soil samples tested with a pocket penetrometer had compressive strengths of 0.5 to 1.5 tsf.

Moisture content test and index tests on three samples representing this stratum resulted in the following properties:

- Moisture Content: 24.1 to 62.2%
- Liquid Limit: 32 to 75
- Plasticity Index: 11 to 39
- % Passing No. 200 Sieve: 84.1 to 95.6%

4.2.4 Stratum C: Residual Soils

Stratum C residual soils were not encountered within the test borings. However, these materials were encountered during previous studies at other locations at the site, below the alluvial soils.

4.2.5 Stratum D: Bedrock – Schist

Bedrock, defined by auger refusal, was encountered at depth of 37.7 ft (EL -28.2) below the ground surface. Refusal is defined as an N-value of 50 blows for a penetration of one inch or less. Rock coring was performed after refusal. The 5.0 ft rock core was classified as Schist that was strong, slightly weathered, moderately fractured (8 in – 2 ft), bluish gray, and fractured at 30 to 45 degrees. The rock core recovery (REC) was 100% and Rock Quality Designation (RQD) was 70%.

4.3 Groundwater

Groundwater was encountered at depths of 9.0 ft (EL 0.5) and 7.0 ft (EL 2.5) below the ground surface for B-1 and B2, respectively. The test boring log in Appendix A includes groundwater observations obtained during our subsurface exploration. These data include depths to groundwater encountered during drilling and upon drilling completion. We did not obtain long-term water level readings because we backfilled the test boring upon completion for safety.

The groundwater levels on the log indicate our estimate of the hydrostatic water table at the time of our subsurface exploration. The final design should anticipate the fluctuation of the hydrostatic water table depending on variations in precipitation, surface runoff, pumping, evaporation, leaking utilities, river levels, and similar factors.

Based on our groundwater observations we do not expect groundwater to be encountered in excavations for utilities.

4.4 Seismic Site Classification

We evaluated the Seismic Site Class and Seismic Site Coefficients in accordance with IBC 2015 for use in building design based on an extrapolation of data collected in the subsurface exploration. We assumed a structure Risk Category of III, and our analysis indicates Site Class E for this location. This Site Class was evaluated based on corrected SPT values and extrapolated to a depth of 100 ft in accordance with site classification definitions of ASCE 7-16. The seismic design parameters that are calculated based on the recommended site class and project location are summarized in Table 1 below.

Table 1: Seismic Design Parameters

Period	Mapped Acceleration Parameters	Site Coefficient	Adjusted Maximum Spectral Response Acceleration Parameters	Design Spectral Response Acceleration Parameters
Short	$S_s = 0.179 \text{ g}$	$F_a = 2.4 \text{ g}$	$S_{ms} = 0.429 \text{ g}$	$S_{ds} = 0.286 \text{ g}$
1 Second	$S_1 = 0.047 \text{ g}$	$F_v = 4.2 \text{ g}$	$S_{m1} = 0.196 \text{ g}$	$S_{d1} = 0.131 \text{ g}$

Our analysis indicates Site Class E and Seismic Design Category B; thus, the potential for soil liquefaction to occur during the design seismic event at the site was not evaluated.

5.0 SITE GRADING AND EARTHWORK

Based on our understanding of the planned design, we expect only minor cuts and fills (less than 3 ft) will be required for the proposed structures and any below-grade utilities that may be planned. If greater cut and fill depths are anticipated, we should be notified so we can reevaluate our recommendations. Recommendations for compacted fill subgrade preparation, fill soil requirements, placement and compaction criteria are presented in subsequent sections.

5.1 Compacted Fill Subgrades

If below grade utilities are planned, subgrades to receive compacted structural fill for utility support should be stripped of organic matter, or other deleterious materials. Subgrades to receive compacted fills or utility support should be firm. The Geotechnical Engineer should evaluate the suitability of the fill subgrades. Subgrade evaluation techniques could include a combination of probing with a penetrometer, drilling hand augers, test pits, and/or observing the subgrade under compaction equipment. Areas that exhibit excessive pumping, weaving, or rutting should be scarified, dried and recompacted, or undercut and replaced with compacted structural fill as recommended by the Geotechnical Engineer.

Disturbed materials and soils deemed unsuitable by the Geotechnical Engineer on site should be excavated down to suitable subgrade soils. When removal of unsuitable materials is required, the excavation should be performed in a manner to limit disturbance of the underlying suitable material and performed under the observation of the Geotechnical Engineer to evaluate required excavation depths.

The project specifications should indicate the Contractor's responsibility for providing adequate site drainage during construction. Inadequate drainage will most likely lead to disturbance of soils by construction traffic and increased volume of undercut.

Compacted structural fill subgrades should be kept free of ponded water. If flowing water is present at the compacted structural fill subgrade level, the Contractor should direct water to discharge beyond the fill limits.

Compacted structural fill subgrades should be free of snow, ice, and frozen soils. If snow, ice, or frozen soils are present at subgrade levels, these materials should be removed as recommended by the Geotechnical Engineer.

5.2 Compacted Fill

Compacted structural fill and backfill should consist of non-organic on-site soils or off-site borrow materials classifying as CL, ML, SC, SM, SP, SW, GC, GM, GP, or GW according to ASTM D2487. Fill materials should not contain particles larger than 3 inches. In addition, fill materials should exhibit Liquid Limit and Plasticity Index values of less than 40 and 15, respectively. Most of the near-surface on-site soils of Stratum A are anticipated to meet the requirements for reuse as compacted fill.

Compacted structural fill should be placed in maximum 8-inch thick horizontal, loose lifts. Fill should be compacted to at least 95 percent of the maximum dry density per ASTM D698 (Standard Proctor). Soil moisture contents at the time of compaction should be within ± 3 percent of the soil's optimum moisture content.

Backfill in excavations, trenches, and other areas that large compaction equipment cannot access should be placed in maximum 6-inch thick lifts. Backfill should meet the material, placement, and compaction requirements outlined above.

Successful re-use of the excavated, on-site soils as compacted structural fill will depend on their natural moisture contents during excavation. Scarifying and drying of these soils should be anticipated to achieve the recommended compaction. Drying of these soils will likely result in some delays, and may not be possible during cooler, wetter weather. We recommend that the earthwork be performed during the warmer, drier times of the year.

6.0 FOUNDATION RECOMMENDATIONS

We based our geotechnical engineering analysis on the information developed from our subsurface exploration and soil laboratory testing, along with the project development plans, site plans, and structural loading furnished to our office.

We encountered existing fill soils of Stratum A consisting to a depth of about 8-ft (EL -8.5) below the ground surface, and loose Well graded Gravel with Silt and Sand (GW-GM) and very soft Lean Clay (CL) alluvial soils of Stratum B to depth of 23-ft (EL -13.5). The Stratum A fill soils and the loose and soft Stratum B Alluvial soils are not suitable for foundational support of the proposed structures. Therefore, we recommend deep foundations for support of the building.

The structures are fairly lightly loaded, therefore, we recommend a deep foundation system consisting of helical piles or micropiles. The selection of the foundation type should be based on the Owner's risk tolerance, budget, and construction duration. The following sections of the report provide our detailed recommendations.

6.1 Helical Piles

We recommend that the proposed structures be supported on helical piles founded in suitable Alluvial soils of Stratum B. Helical piles are low displacement screwed-in piles that consist of at least one bearing plate shaped in the form of a helix; a center shaft; and a termination connector. The helical bearing plate transfers the load to the bearing stratum at the desired depth. Helical piles can be installed by a small portable equipment in confined, interior spaces, on mild slopes, while being virtually vibration-free and ground disturbance-free, and does not generate spoils, which makes it ideal for work in potentially contaminated sites.

Helical piles are installed by applying torque to a pile with helical plates and screwing it into the ground. As the helical pile is screwed through the subsurface material, the torque applied is monitored until the desired bearing capacity required is achieved. Correlations exist between torque and bearing capacity for various sizes of helical piles in different soil types.

We recommend that the helical piles be drilled through the existing fill soils of Stratum A, and through the loose coarse-grained soils and very soft fine-grained soils of Stratum B, and into the dense coarse-grained soils of Stratum B. We recommend helical piles with an allowable capacity (working load) of 40 kips be used for support of the proposed structure when founded in dense soils of Stratum B. This bearing capacity considers a factor of safety against general bearing capacity failure of at least 2.0 and assumes a maximum post construction settlement of 1-inch.

Based on the depth of suitable alluvial soils encountered at the test boring location, we recommend an estimated helical pile bearing elevation of EL -20 (depth of about 30 ft below the ground surface) for this project. A minimum helical pile bearing elevation of EL -13 (depth of about 23 ft below the ground surface) is recommended to penetrate the unsuitable Strata A and B.

We recommend that the bottom of the helical pile cap should be founded at least 36 inches below the ground surface to reduce frost heave impacts to the cap. If a mat foundation is used, the edges of the mat foundation should be turned-down at least 36 inches below the ground surface if the mat thickness for structural support is less than 36-inches.

A specialty contractor should determine applied torque, spacing, design load, and the number of piles. The specialty contractor should be required to furnish piles of the required capacity with a factor of safety of at least 2.0. The dimensions of the central shaft, the number, size and thickness of the helical bearing plates and the terminal connection shall be designed and manufactured to resist all stresses induced by handling, installing, and the design loads.

6.2 Micropiles

The proposed structures may also be supported on micropiles founded in the residual soils of Stratum B. Drilled and grouted micropiles may be used. Micropiles develop their capacity in side friction. Typically, due to their small size and construction methods, end-bearing is neglected. Micropiles are typically 4 inches to 12 inches in diameter. The significant advantages of using micropiles are that they can be installed with relative ease in restricted working areas, and can be installed with reduced vibrations to surrounding structures that will be functioning during construction.

Micropiles can be installed in suitable geologic conditions with open-hole drilling. This is not recommended for this site as there is a risk that collapsing holes can affect the existing utilities and other structure foundations, which could result in significant damage. The micropile casings should be installed with rotary percussion duplex drilling methods that limit disturbance/undermining of adjacent foundations and utilities.

Higher allowable capacity can be achieved if the micropiles are tipped in rock. Due to the presence of soft soils at the site and the possibility of wide seams or voids within the rock, we recommend that the holes be drilled with casing. If voids are encountered during drilling in rock, the casing should be advanced through the void until competent rock is reached. The casing may be left in place and used as permanent reinforcement. After drilling the hole must be flushed with neat cement grout.

Micropiles should be drilled through the existing fill of Stratum A, Alluvial soils of Stratum B, and be embedded a minimum of 7 ft into competent bedrock of Stratum D. We recommend an allowable grout-to-ground bond strength of 80 psi within Stratum D soils to be used for the design of the micropiles. This bond value considers a factor of safety of at least 2.0. The factor of safety of 2.0 assumes that a load test will be performed. For preliminary design and budgeting purpose, we estimate that an 8-inch diameter micropile installed at a minimum bond length of 5 ft to provide an allowable capacity of 120 kips. The actual bond resistance and length should be determined by the specialty contractor based on the results of the load testing program.

6.3 General Recommendations for Helical Piles and Micropiles

The soils of Stratum A are considered to be non-aggressive to buried metallic structures per the FHWA Standards. However, during previous studies, the fill soils at other locations at the site were determined to be potentially corrosive. Therefore, we recommend that the helical piles and micropiles be designed with corrosion protection to reduce the risk of long-term structural and performance degradation.

There are several proprietary helical pile systems and varying methods of installation techniques for micropiles. Thus, the final design of the helical piles and micropiles is typically designed by a Professional Engineers retained by the helical pile and micropile specialty contractors. The Professional Engineer should be registered in the Commonwealth of Pennsylvania with experience in the design of at least three successfully completed helical pile and micropile projects over the last five years. The helical

piles and micropiles should be designed to reduce the amount of post-construction foundation movements to 1 inch or less, or as specified by the structural engineer. Specific vertical and lateral load carrying requirements, allowable stresses for structural elements, as well as vertical and lateral deflection criteria should be provided to the helical pile and micropile designer for development of the final design.

The specialty contractor's engineer should prepare and submit the helical pile and micropile design calculations for review and approval before starting the work.

Helical pile spacing should be at least five times the largest helix blade diameter; and micropile spacing should be at least 30 inches or three micropile diameters, whichever is greater, to minimize group action.

Battered helical piles and micropiles in compression may be used to resist the horizontal forces and moments at the foundation level.

7.0 CONSTRUCTION CONSIDERATIONS

7.1 Helical Piles

If the existing fill soils contain large rock particles or obstructions at the helical pile locations, there is a possibility that helical piles may not be able to penetrate these materials. The torque applied during installation of the helical piles should not exceed the maximum allowable installation torque of the helical piles. The contractor should prepare a detailed work plan and specifications. This work plan should be reviewed by our office prior to start of work. Inspection of the helical pile installation should also be provided on a full-time basis under the observation of Schnabel personnel. All existing utilities below the site must be accurately located and identified prior to installation of the helical piles to avoid utility damage or impacts.

7.2 Micropiles

The micropile contractor should select the drilling methods and grouting procedures used for the installation of the micropiles, subject to the approval of the Geotechnical Engineer. The drilling equipment and methods should be suitable for drilling into the underlying existing fill, alluvial, and residual soils, until achieving the required design capacity. The micropile contractor should keep complete and accurate records of drilling resistance, drilling fluid level, drilling fluid losses, description of material cuttings, etc.

After drilling, the hole should be inspected to verify whether flushing with water and/or air is necessary to remove drill cuttings and/or other loose debris unless a lightweight neat cement grout is used as the drilling fluid. Grouting should be performed using a stable, homogeneous neat-cement grout or a sand-cement grout with a minimum 28-day unconfined compressive strength of 4,000 psi. The grout should be injected using a tremie tube from the lowest point of the drill hole until clean, pure grout flows from the top of the micropile as confirmed by visual observation and measurement of specific gravity of the grout. The entire pile should be grouted to the design cut-off level.

The micropile contractor should provide systems and equipment to measure the grout quality and quantity during the grouting operations. Specific gravity measurements should be made for each grout batch using a mud balance. All cement should be Portland cement conforming to ASTM C150 (AASHTO M85) Type I, Type II, or Type III.

The sequence of pile installation should be such to avoid interconnection or damage to piles in which grout has not achieved final set.

The reinforcing steel may be installed before or after grouting of the micropiles and should consist of threaded bars in accordance with ASTM A615 (AASHTO M31) Grade 75 for steel. Where reinforcing steel is installed after the grout is in place, the contractor shall provide means for confirming that the bars are installed to the correct depths. For cases of tensile loading, bar couplers should develop the ultimate tensile stress of the bar without any evidence of failure. Centralizers should be provided on bars at 10-ft center maximum spacing on central reinforcement, and should permit free flow of grout without misalignment of the reinforcement.

Soil loss or loss of ground from the drilling operations is not expected, as the casings will be advanced to reduce the risk of collapsing voids, and the casings will be left in place. However, we recommend that the project Geotechnical Engineer observe the drilling operations to observe if there is loss of drilling fluids,

indicating potential voids. Should loss of drilling fluids occur, we recommend that the borehole be pre-grouted to fill the voids prior to final placement of the casing.

All existing utilities below the site must be accurately located and identified prior to installation of the micropiles to avoid utility damage or impacts.

The micropile resistances should be confirmed by at least one tension load test at the site. This test should be performed in accordance with ASTM D3689. A Micropile Special Provision should be prepared for this project. The same methods used to install the test micropile must be utilized on the production piling. It is possible that adjustments to the micropile depths, locations, or installation methods will be necessary after the load test is completed. A Schnabel representative should observe micropile installations and load testing, and we should review the results of micropile load tests.

7.3 Engineering Services During Construction

The engineering recommendations provided in this report are based on the information obtained from the subsurface exploration and laboratory testing. However, conditions on the site may vary between the discrete locations observed at the time of our subsurface exploration. The nature and extent of variations between borings may not become evident until during construction.

To account for this variability, we should provide professional observation and testing of subsurface conditions revealed during construction as an extension of our engineering services. These services will also help in evaluating the Contractor's conformance with the plans and specifications. Because of our unique position to understand the intent of the geotechnical engineering recommendations, retaining Schnabel for these services will allow us to provide consistent service throughout the project construction.

8.0 GENERAL SPECIFICATION RECOMMENDATIONS

An allowance should be established to account for possible additional costs that may be required to construct earthwork and foundations as recommended in this report. Additional costs may be incurred for a variety of reasons including greater than anticipated unsuitable soils, need for borrow fill material, wet on-site soils, longer than anticipated lengths of piles, harder than anticipated drilling, removal of boulders or obstructions, relocation of helical piles or micropiles due to obstructions in the fills, relocation of utilities, need for additional piles, etc.

This report may be made available to prospective bidders for informational purposes. We recommend that the project specifications contain the following statement:

Schnabel Engineering, LLC has prepared this geotechnical engineering report for this project. This report is for informational purposes only and is not part of the contract documents. The opinions expressed represent the Geotechnical Engineer's interpretation of the subsurface conditions, tests, and the results of analyses performed. Should the data contained in this report not be adequate for the Contractor's purposes, the Contractor may make, before bidding, independent exploration, tests, and analyses. This report may be examined by bidders at the office of the Owner, or copies may be obtained from the Owner at nominal charge.

Additional data and reports prepared by others that could have an impact upon the Contractor's bid should also be made available to prospective bidders for informational purposes.

9.0 LIMITATIONS

We based the analyses and recommendations submitted in this report on the information revealed by our exploration. We attempted to provide for normal contingencies, but the possibility remains that unexpected conditions may be encountered during construction.

This report has been prepared to aid in the evaluation of this site and to assist in the design of the project. It is intended for use concerning this specific project. We based our recommendations on information on the site and proposed construction as described in this report. Substantial changes in loads, locations, or grades should be brought to our attention so we can modify our recommendations as needed. We would appreciate an opportunity to review the plans and specifications as they pertain to the recommendations contained in this report, and to submit our comments to you based on this review.

We have endeavored to complete the services identified herein in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality and under similar conditions as this project. No other representation, express or implied, is included or intended, and no warranty or guarantee is included or intended in this report or other instrument of service.

FIGURES

Figure 1: Site Vicinity Map
Figure 2: Boring Location Plan

Figures 1 and 2 redacted due to Access to Sensitive Information Policy limiting public access to large aboveground storage tank location information. These figures may be viewed by conducting a file review at the DEP Southeast Regional Office.

APPENDIX A

SUBSURFACE EXPLORATION DATA

Subsurface Exploration Procedures
General Notes for Subsurface Exploration Logs
Identification of Soil
Boring Log, B-1, B-2

SUBSURFACE EXPLORATION PROCEDURES

Test Boring – Hollow Stem Augers

The boring is advanced by turning a continuous flight auger with a center opening of 2¼ or 3¼ inches. A plug device blocks off the center opening while augers are advanced. Cuttings are brought to the surface by the auger flights. Sampling is performed through the center opening in the hollow stem auger, by standard methods, after removal of the plug. Auger hole was filled with water/bentonite mixture at every 5 ft interval after the depth of 13 ft to reduce the risk of running sands into the auger.

Standard Penetration Test Results

The numbers in the Sampling Data column of the boring log represent Standard Penetration Test (SPT) results. Each number represents the blows needed to drive a 2-inch O.D., 1½-inch I.D. split-spoon sampler 6 inches, using a 140-pound hammer falling 30 inches. The sampler is typically driven a total of 18 or 24 inches. The first 6 inches are considered a seating interval. The total of the number of blows for the second and third 6-inch intervals is the SPT “N-value.” The SPT is performed according to ASTM D1586.

Soil Classification Criteria

The group symbols on the log represent the Unified Soil Classification System Group Symbols (ASTM D2487) based on visual observation and limited laboratory testing of the samples. Criteria for visual identification of soil samples are included in this appendix. Some variation can be expected between samples visually classified and samples classified in the laboratory.

Residual soils are derived through the in-place physical and chemical weathering of the underlying rock. Disintegrated rock is defined as residual material with SPT N-values between 60 blows per foot and refusal. Refusal is defined as an N-value of 50 blows for a penetration of one inch or less.

Pocket Penetrometer Results

The values following “PP=” in the sampling data column of the log represent pocket penetrometer readings. Pocket penetrometer readings provide an estimate of the unconfined compressive strength of fine-grained soils.

Boring Locations and Elevations

Boring location was staked by our personnel and the Owner’s representative. Approximate boring location is shown on Figure 2. A ground surface elevation of EL 10 was assumed at the boring location and is indicated on the boring log as such. Location and elevation should be considered no more accurate than the methods used to determine them.

GENERAL NOTES FOR SUBSURFACE EXPLORATION LOGS

1. Numbers in sampling data column next to Standard Penetration Test (SPT) symbols indicate blows required to drive a 2-inch O.D., 1½-inch I.D. sampling spoon 6 inches using a 140 pound hammer falling 30 inches. The Standard Penetration Test (SPT) N-value is the number of blows required to drive the sampler 12 inches, after a 6-inch seating interval. The Standard Penetration Test is performed in general accordance with ASTM D1586.
2. Visual classification of soil is in accordance with terminology set forth in "Identification of Soil." The ASTM D2487 group symbols (e.g., CL) shown in the classification column are based on visual observations.
3. Estimated water levels indicated on the logs are only estimates from available data and may vary with precipitation, porosity of the soil, site topography, and other factors.
4. Refusal at the surface of rock, boulder, or other obstruction is defined as an SPT resistance of 50 blows for 1 inch or less of penetration.
5. The logs and related information depict subsurface conditions only at the specific locations and at the particular time when drilled or excavated. Soil conditions at other locations may differ from conditions occurring at these locations. Also, the passage of time may result in a change in the subsurface soil and water level conditions at the subsurface exploration location.
6. The stratification lines represent the approximate boundary between soil and rock types as obtained from the subsurface exploration. Some variation may also be expected vertically between samples taken. The soil profile, water level observations and penetration resistances presented on these logs have been made with reasonable care and accuracy and must be considered only an approximate representation of subsurface conditions to be encountered at the particular location.
7. Key to symbols and abbreviations:



S-1, SPT
5+10+1

Sample No., Standard Penetration Test
Number of blows in each 6-inch increment

LL

Liquid Limit

MC

Moisture Content (percent)

PL

Plastic Limit

PP

Pocket Penetrometer Reading (tsf)

%Passing#200

Percent by weight passing a No. 200 Sieve

IDENTIFICATION OF SOIL

I. DEFINITION OF SOIL GROUP NAMES (ASTM D2487)

SYMBOL GROUP NAME

Coarse-Grained Soils More than 50% retained on No. 200 sieve	Gravels – More than 50% of coarse fraction retained on No. 4 sieve Coarse, ¾” to 3” Fine, No. 4 to ¾”	Clean Gravels Less than 5% fines	GW	WELL GRADED GRAVEL
			GP	POORLY GRADED GRAVEL
		Gravels with fines More than 12% fines	GM	SILTY GRAVEL
			GC	CLAYEY GRAVEL
	Sands – 50% or more of coarse Fraction passes No. 4 sieve Coarse, No. 10 to No. 4 Medium, No. 40 to No. 10 Fine, No. 200 to No. 40	Clean Sands Less than 5% fines	SW	WELL GRADED SAND
			SP	POORLY GRADED SAND
		Sands with fines More than 12% fines	SM	SILTY SAND
			SC	CLAYEY SAND
Fine-Grained Soils 50% or more passes the No. 200 sieve	Silts and Clays – Liquid Limit less than 50 Low to medium plasticity	Inorganic	CL	LEAN CLAY
			ML	SILT
		Organic	OL	ORGANIC CLAY
				ORGANIC SILT
	Silts and Clays – Liquid Limit 50 or more Medium to high plasticity	Inorganic	CH	FAT CLAY
			MH	ELASTIC SILT
		Organic	OH	ORGANIC CLAY
				ORGANIC SILT
Highly Organic Soils	Primarily organic matter, dark in color and organic odor	PT	PEAT	

II. DEFINITION OF SOIL COMPONENT PROPORTIONS (ASTM D2487)

Examples

Adjective Form	GRAVELLY SANDY	>30% to <50% coarse grained component in a fine-grained soil	GRAVELLY LEAN CLAY
	CLAYEY SILTY	>12% to <50% fine grained component in a coarse-grained soil	SILTY SAND
"With"	WITH GRAVEL	>15% to <30% coarse grained component in a fine-grained soil	FAT CLAY WITH GRAVEL
	WITH SAND	>15% to <50% coarse grained component in a coarse-grained soil	POORLY GRADED GRAVEL WITH SAND
	WITH SILT	>5% to <12% fine grained component in a coarse-grained soil	POORLY GRADED SAND WITH SILT
	WITH CLAY		

III. GLOSSARY OF MISCELLANEOUS TERMS

SYMBOLS	Unified Soil Classification Symbols are shown above as group symbols. A dual symbol “-” indicates the soil belongs to two groups. A borderline symbol “/” indicates the soil belongs to two possible groups.
FILL	Man-made deposit containing soil, rock and often foreign matter.
PROBABLE FILL	Soils that contain no visually detected foreign matter but which are suspect with regard to origin.
DISINTEGRATED ROCK (DR)	Residual materials with a standard penetration resistance (SPT) between 60 blows per foot and refusal. Refusal is defined as an SPT of 100 blows for 2" or less penetration.
PARTIALLY WEATHERED ROCK (PWR)	Residual materials with a standard penetration resistance (SPT) between 100 blows per foot and refusal. Refusal is defined as an SPT of 100 blows for 2" or less penetration.
BOULDERS & COBBLES	Boulders are considered rounded pieces of rock larger than 12 inches, while cobbles range from 3 to 12-inch size.
LENSES	0 to 1/2-inch seam within a material in a test pit.
LAYERS	1/2 to 12-inch seam within a material in a test pit.
POCKET	Discontinuous body within a material in a test pit.
MOISTURE CONDITIONS	Wet, moist or dry to indicate visual appearance of specimen.
COLOR	Overall color, with modifiers such as light to dark or variation in coloration.



TEST BORING LOG

Project: Covanta Delaware Valley SNCR
Delaware Valley, Pennsylvania

Boring Number: **B-1**
Contract Number: 22140090.000
Sheet: 1 of 2

Contractor: SANO Drilling, Inc.
Sewell, New Jersey
Contractor Foreman: N. Parisano
Schnabel Representative: B. Glass
Equipment: Acker Rebel
Method: 3-1/4" I.D. Hollow Stem Auger

Hammer Type: Auto Hammer (140 lb)
Dates Started: 1/10/23 Finished: 1/10/23
Location: See Location Plan

Ground Surface Elevation: 10± (ft) Total Depth: 42.7 ft

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered ▽	1/10	10:35 AM	9.0'	8.0'	---
Completion ▼	1/10	12:20 PM	10.0'	37.7'	---
Casing Pulled ▼	1/10	12:51 PM	7.2'	---	32.0'

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRA TUM	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.8	Concrete; 9 inches		9.3					
1.0	GRAVEL; 3 inches		9.0					Fill
	FILL, sampled as well graded sand with silt and gravel; moist, black							
		FILL		A	5	S-1, SS 14+21+16+16 REC=24", 100%		
						S-2, SS 10+11+12+10 REC=8", 33%		
	Change: light pinkish brown	▼				S-3, SS 8+5+6+8 REC=6", 25%	LL = NP PI = NP MC = 9.5% % Passing #200 = 8.1	
8.0	WELL GRADED GRAVEL WITH SILT AND SAND; moist, red and black	▼	2.0			S-4, SS 12+6+4+3 REC=12", 50%		Alluvial
					10			
	Change: black					S-5, SS 1+1+1+2 REC=13", 54%		
		GW-GM		B	15			
18.0	LEAN CLAY; moist, dark gray		-8.0			S-6, SS WOH/24" REC=24", 100%	LL = 34 PI = 17 MC = 30.5% % Passing #200 = 84.1 PP = 0.50 tsf	
		CL			20			
23.0	POORLY GRADED GRAVEL WITH CLAY AND SAND; wet, dark gray		-13.0			S-7, SS 20+30+50/2" REC=7", 54%		
		GP-GC						

(continued)

TEST BORING LOG: P:COVANTA SNCR GINT.GPJ; D: L:GINT LIBRARY_2021_01_12[BALTIMORE]\GLB; Print:1/27/23



TEST BORING LOG

Project: Covanta Delaware Valley SNCR
Delaware Valley, Pennsylvania

Boring Number: **B-1**
Contract Number: 22140090.000
Sheet: 2 of 2

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
	POORLY GRADED GRAVEL WITH CLAY AND SAND; wet, dark gray (continued)	GP-GC						
28.0	POORLY GRADED SAND; wet, brown, estimated 5 - 10% gravel	SP	-18.0	B	30	S-8, SS 5+9+15+9 REC=10", 42%	LL = 32 PI = 11 MC = 24.1% % Passing #200 = 93.5 PP = 2.50 tsf	
33.0	LEAN CLAY; moist, dark gray	CL	-23.0		35	S-9, SS 4+5+6+7 REC=12", 50%		
37.7	SCHIST, strong, slightly weathered, moderately fractured (8 in - 2 ft), bluish gray, fractures at 30 to 45 degrees	RK	-27.7	D	40	S-10, SS 50/0" REC=0" R-1, CORE Run = 5.0 ft REC=60", 100% RQD=42", 70%		
42.7			-32.7					Bedrock

Bottom of Boring at 42.7 ft.
Boring terminated at selected depth.
Boring grouted and patched with concrete upon completion.



TEST BORING LOG

Project: Covanta Delaware Valley SNCR
Delaware Valley, Pennsylvania

Boring Number: **B-2**
Contract Number: 22140090.000
Sheet: 1 of 1

Contractor: SANO Drilling, Inc.
Sewell, New Jersey
Contractor Foreman: N. Parisano
Schnabel Representative: B. Glass
Equipment: Acker Rebel
Method: 3-1/4" I.D. Hollow Stem Auger

Hammer Type: Auto Hammer (140 lb)
Dates Started: 1/10/23 Finished: 1/10/23
Location: See Location Plan

Ground Surface Elevation: 10± (ft) Total Depth: 10.0 ft

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered ▽	1/10	1:50 PM	7.0'	8.0'	---
Completion ▼	1/10	1:51 PM	7.0'	8.0'	---
Casing Pulled ▼	1/10	2:00 PM	6.2'	---	6.9'

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING		TESTS	REMARKS
					DEPTH	DATA		
0.7 0.9	Concrete; 8 inches GRAVEL; 3 inches FILL, sampled as poorly graded sand; moist, black	FILL	9.3 9.1	A			Resistivity = 2920 Ohms-cm Redox = 176 mv pH = 7.34 Sulfates = 28 mg/kg Chlorides = 24 mg/kg	Fill
	Change: estimated 5 - 10% gravel							
8.5	ELASTIC SILT; moist, gray, contains organics	MH	1.5	B			LL = 75 PI = 39 MC = 62.2% % Passing #200 = 95.6 PP = 0.50 tsf	Grinding/Hard drilling from 6.3 ft to 7 ft Alluvial
10.0			0.0					

Bottom of Boring at 10.0 ft.
Boring terminated at selected depth.
Boring grouted and patched with concrete upon completion.

APPENDIX B

SOIL LABORATORY TEST DATA

Summary of Laboratory Tests

Atterberg Limits

Gradation Curves

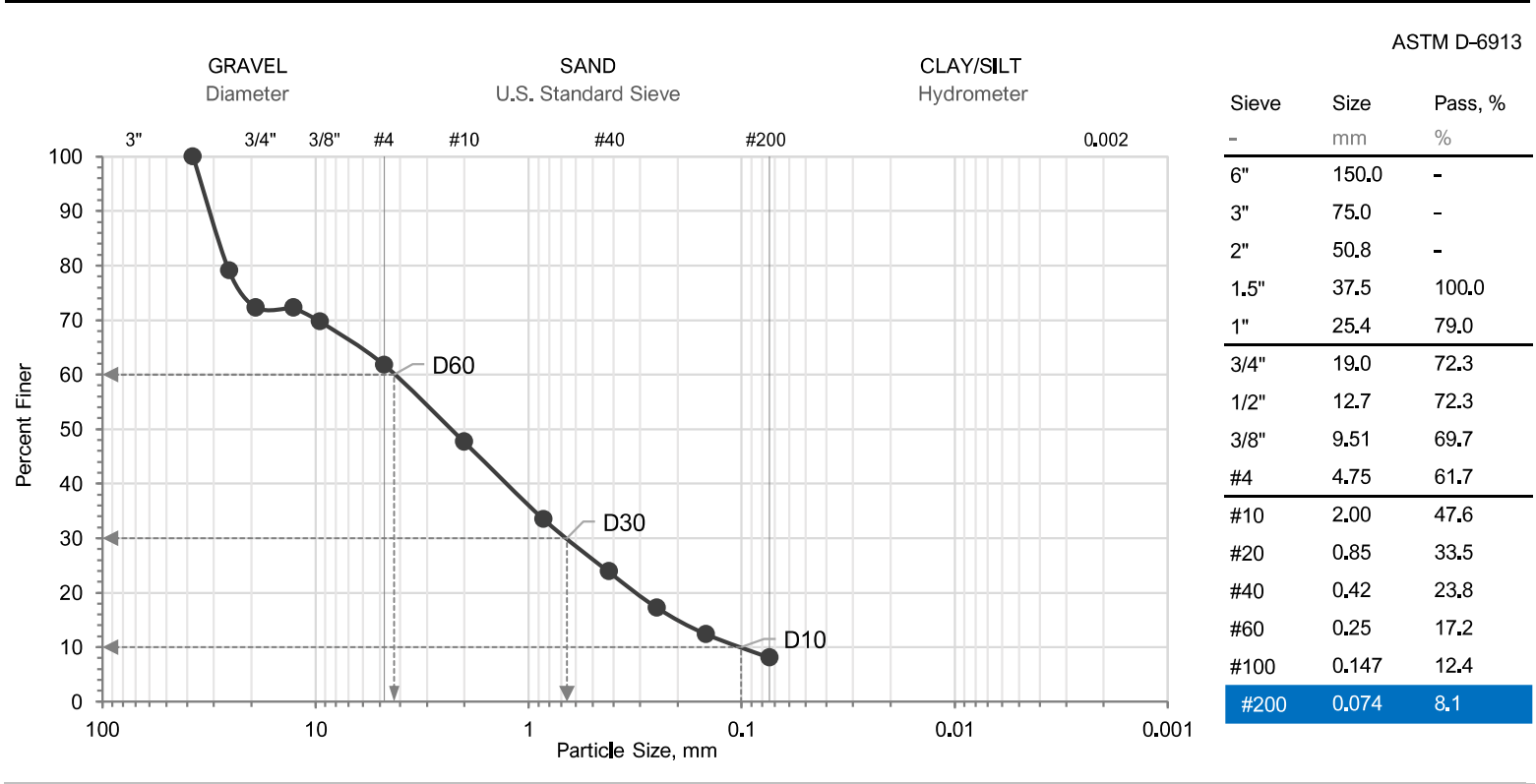
Chloride and Sulfate Test Results

Project Number: 22140090.000
Location: Delaware Valley, PA
Sample Date: 01/10/23

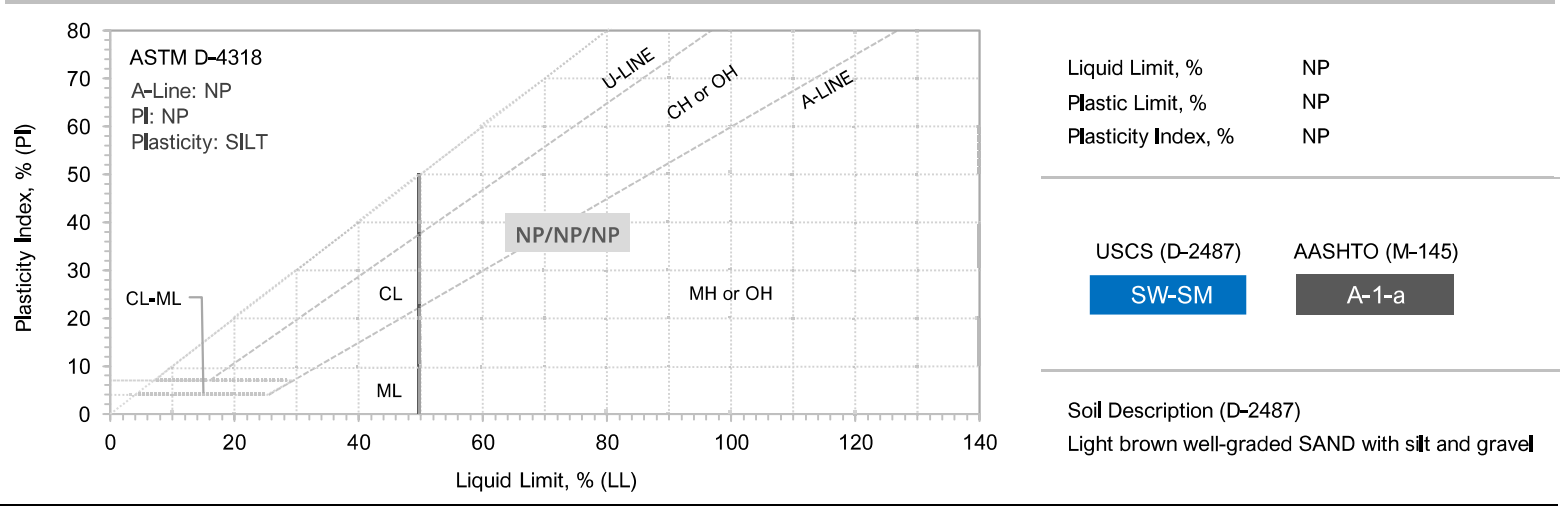
[illegible]

Boring ID	Sample ID	Top	Btm
B-1	S-3	6'	8'

Location: Delaware Valley, PA
Sample Date: 01/10/23



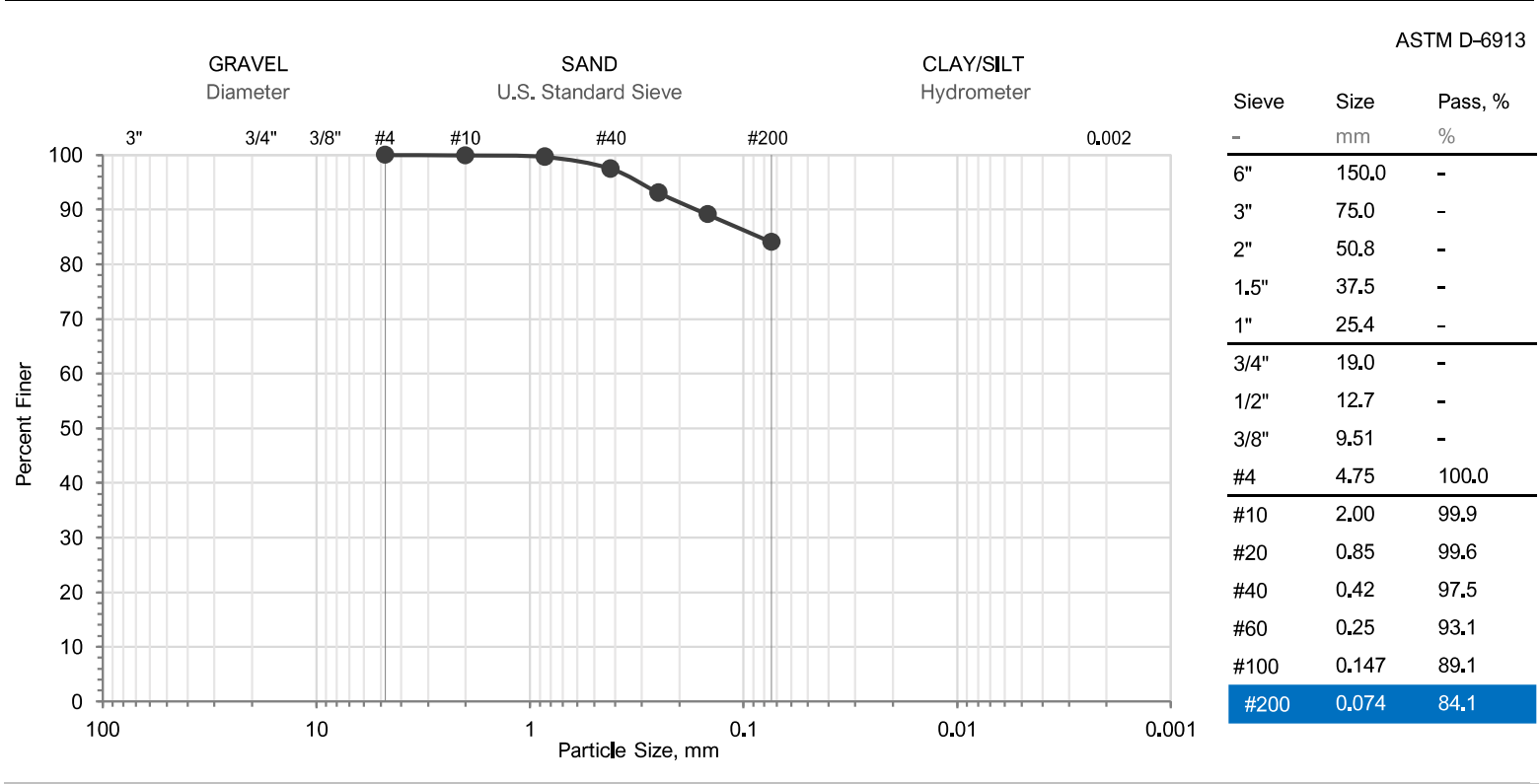
% Gravel			% Sand					
Coarse	Fine	Total	Coarse	Medium	Fine	Total	D10	0.1006
27.7	10.6	= 38.3	14.1	23.8	15.7	= 53.6	D30	0.6597 CC 1.013
							D60	4.2707 CU 42.45



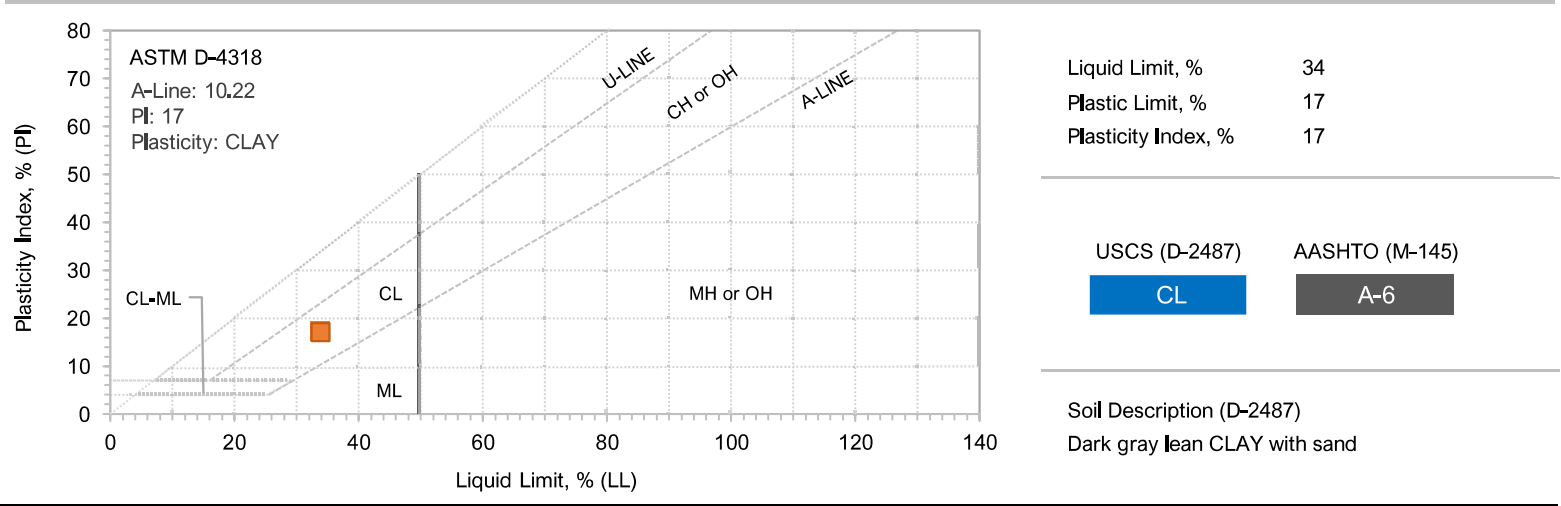
NMC 9.5%	Sample Type* -	Data 4 -
OM -	Data 2 -	Data 5 -
+ 3/8" 30.3%	Data 3 -	Data 6 -

Boring ID	Sample ID	Top	Btm
B-1	S-6	18'	20'

Location: Delaware Valley, PA
Sample Date: 01/10/23



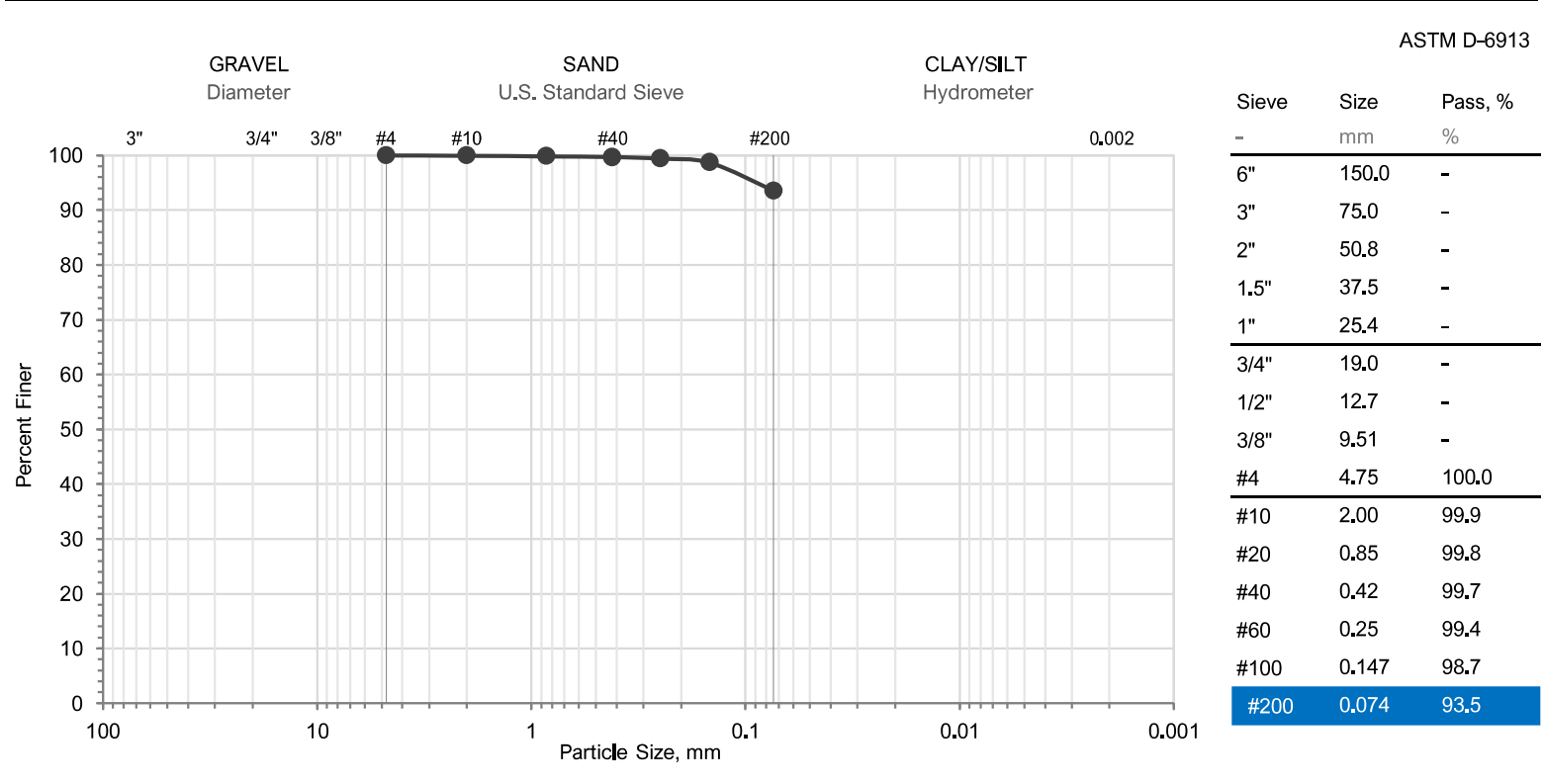
% Gravel			% Sand					
Coarse	Fine	Total	Coarse	Medium	Fine	Total	D10	
0.0	0.0	= 0.0	0.1	2.4	13.4	= 15.9	-	
							D30	- CC -
							D60	- CU -



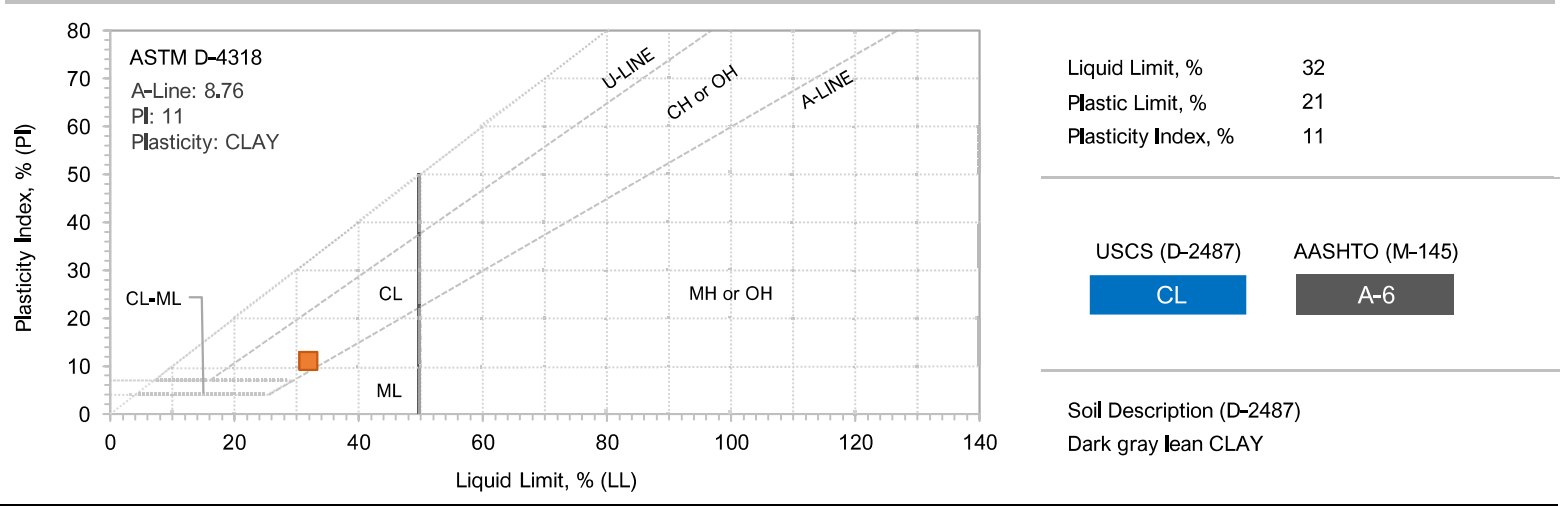
NMC	30.5%	Sample Type*	-	Data 4	-
OM	-	Data 2	-	Data 5	-
+ 3/8"	0.0%	Data 3	-	Data 6	-

Boring ID	Sample ID	Top	Btm
B-1	S-9	33'	35'

Location: Delaware Valley, PA
Sample Date: 01/10/23



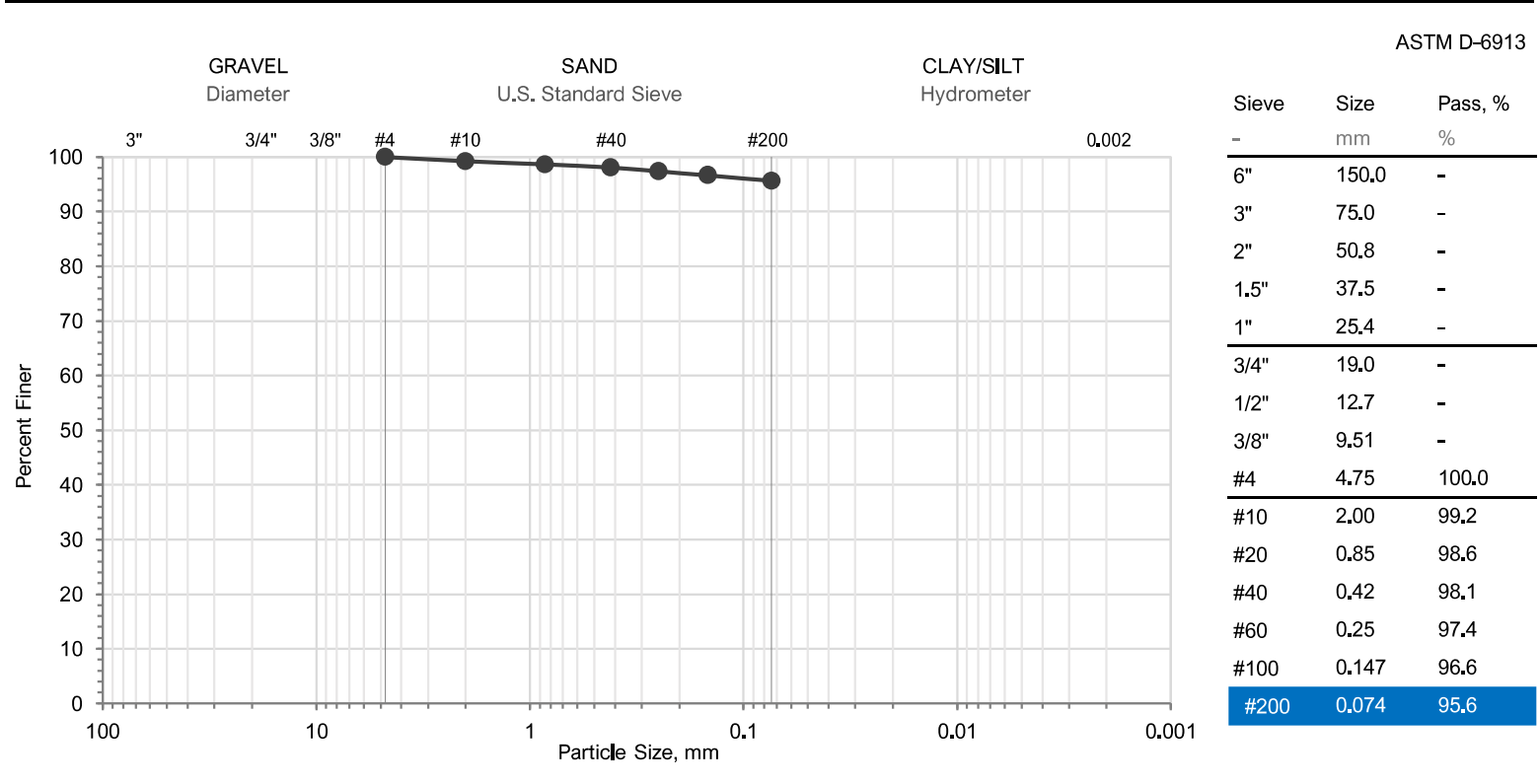
% Gravel			% Sand					
Coarse	Fine	Total	Coarse	Medium	Fine	Total	D10	
0.0	0.0	= 0.0	0.1	0.2	6.2	= 6.5	-	
							D30	- CC -
							D60	- CU -



NMC 24.1%	Sample Type* -	Data 4 -
OM -	Data 2 -	Data 5 -
+ 3/8" 0.0%	Data 3 -	Data 6 -

Boring ID	Sample ID	Top	Btm
B-2	S-4	8'	10'

Location: Delaware Valley, PA
Sample Date: 01/10/23



% Gravel

Coarse

0.0

Fine

0.0

=

Total

0.0

% Sand

Coarse

0.8

Medium

1.1

Fine

2.5

=

Total

4.4

D10

-

D30

-

CC

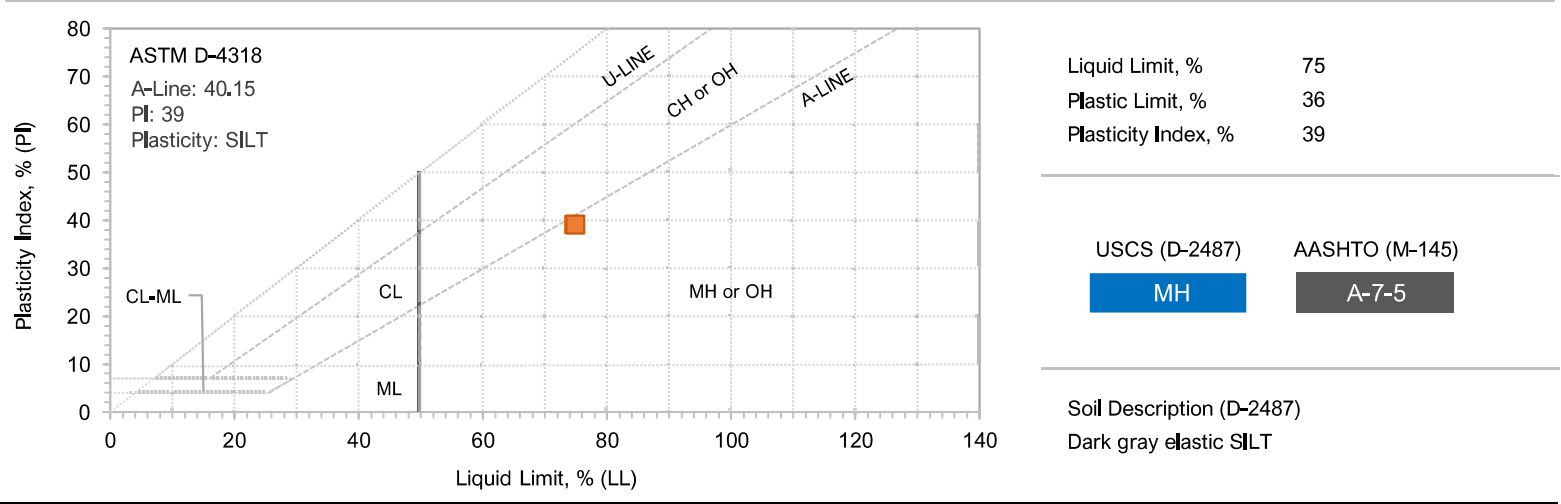
-

D60

-

CU

-



Liquid Limit, %

75

Plastic Limit, %

36

Plasticity Index, %

39

USCS (D-2487)

MH

AASHTO (M-145)

A-7-5

Soil Description (D-2487)

Dark gray elastic SILT

NMC	62.2%	Sample Type*	-	Data 4	-
OM	-	Data 2	-	Data 5	-
+ 3/8"	0.0%	Data 3	-	Data 6	-

Project Number: 22140090.000

[illegible]¹ pH verified with pH paper.² Verified with separate chloride photometer method.

³ Turbidimetric photometer method. Verified with separate turbidimetric titration method. All dilutions are 1:1 except sulfate, 3:1.

⁴ Pomeroy methylene blue method (titration). Verified with separate colorimetric method.

Copy of Application Check

REDACTED